Babeş-Bolyai University Cluj-Napoca

Faculty of Psychology and Educational Sciences

Doctoral School "Education, Reflection, Development"

ABSTRACT OF DOCTORAL THESIS

DEVELOPING THE CREATIVE POTENTIAL OF VOCATIONAL PRIMARY EDUCATION STUDENTS - ART. APPLICATIONS IN THE CONTEXT OF ESEP/eTWINNING COLLABORATIVE PROJECTS

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CONTENT

Creativity is the most complex dimension of human personality in the 21st century, it is influenced and determined by a multitude of cognitive, behavioral, social and educational factors, it manifests itself in a diverse range of fields and can be measured from the perspective of the personality's potential for expression, the individual’s, the group’s or the product’s. It is through creativity that the greatest artistic achievements and the greatest scientific discoveries are characterized. Creativity transcends the boundaries and curricular frameworks of educational sciences as an interest. It is an existential problem of the surrounding reality, it is a phenomenon that requires a holistic vision of approach, analysis, evaluation and interpretation. In search of an argument on the study of creativity, Anucuța L. and Anucuța P. (2005) specify that the very complexity of this phenomenon is "the main motivation for the assiduous and nuanced research of creativity in the last decades by a very large number of authors".

By carrying out this research, we wanted to verify the creative potential of the students in vocational primary education - arts who, at the beginning of schooling, through the initial aptitude test, were confirmed with musical skills. The insight for the research theme was triggered by the careful observation of the behaviors and attitudes displayed by the children

(curiosity, inventiveness, creativity, adaptability, availability and openness to new things, sensitivity), but also from the observation of the evolution of the approach to the development of original artistic products (artistic-plastic compositions), which demonstrate strength and creative potential. The socio-educational and cultural climate, the environment in which they carry out their learning activities (vocational art schools), the musical aptitude are fundamental components in the manifestation of creative potential.

In the activities leading up to this research, the artistic-plastic and literary creation contest "Windows towards the light" and in the "Musical landscape" study, we found that the method of evaluating creative products constantly requires improvements. Each time we concluded that the results obtained and reported to the average of the results of the participants in these activities represent a valid indicator of creativity. The theoretical foundation of our research has edified this aspect. The way of evaluating creativity is a complex, holistic approach, with a double orientation: quantitative and qualitative evaluation, in which the evaluator has a solid baggage of information for the success of the implementation.

E.P. Torrance (1960) lays the foundations of a famous hybrid psychometric test "Torrance Test of Creative Thinking (TTCT)" for the assessment of creativity, in which the collection of data, of the solutions provided by the respondents is open and projective, thus the evaluation method becomes easy for teachers as well, not only for psychologists or researchers. The tests are associated with a rigorous scale of analysis, norming and interpretation of the answers, but also of comparing the results by reference to the standard.

Evaluation and scoring represent complex structured scoring procedures, scoring relative to the norm through **specific indicators** is carried out according to a rigorously established set of rules and criteria. Quantitative assessment measures intellectual factors (Fluidity, Originality, Elaboration, Semantic abstraction of titles, Resistance to premature closure), and qualitative assessment measures creative traits (Emotional expressiveness, Story coherence, Movement or action, Emotional expressiveness in title or drawing, Synthesis of incomplete figures, Line or circle synthesis, Unusual visualization, Internal visualization, Expanding or breaking boundaries, Humor, Imagery richness, Image oloring, and Fantastic images and ideas.

The raw scores compared to the norms of the benchmark, become **general indicators**, respectively standardized scores (SS – Standard Score, IC – Creativity Index), which are used for any type of group performance analysis, and (CN – National Centina) centiles are used for assessing the level of individual performance. The standardized score classification model

from the Technical and Normative Manual (2019, p.162) is the creative potential specification matrix (very strong, strong, above average, average, below average, weak).

The theme of our research **"Developing the creative potential of students in vocational primary education - art. Applications in the context of ESEP/eTwinning collaborative projects"** aims to develop and measure the level of creativity of students in vocational primary art education, including students in mass primary education, being part of the sample. Through the measured results we will show the existence/non-existence of the aptitude for fine arts, respectively the aptitude polyvalence. The syntactic and semantic language of the Visual Arts and Practical Skills discipline is used in playful and digital contexts, favoring creative potentials. The stimulus contents of the research test belong to this discipline which is part of the common core of the Framework Plan for each schooling level (preparatory class, first class, second class, third class, fourth class). The testing was carried out and carried out through the ESEP/eTwinning educational platform, within the collaborative project "MUZART-Twinna - the development of the creative potential of students in vocational and mainstream primary education" in 2020-2021.

This thesis comprises five chapters and is structured as follows: the theoretical foundation part comprises three chapters, and the research part two chapters. At the end, the research conclusions are presented.

In the first chapter, **Contemporary Perspectives of Creativity**, we developed three sub-themes of utmost importance for the foundation of our thesis, all of which have as a center point the issue of creativity of the 21st century: **Creativity-a complex dimension of human personality, Paradigms of creativity and A psychometric model of creativity evaluation**.

In the sub-chapter **Creativity-a complex dimension of the human personality**, common definitions and interpretations of the complex phenomenon of creativity are presented, made by psychologists and researchers against apparent diversities of opinion. In accordance with the "uniqueness in diversity" principle, the thematic perspectives addressed are multiple, but most of the time they converge: the concept of creativity aims at the product, the process and the manifestation. E.P.Torrance outlines the creativity traits of the highly creative, and the *Manifesto for Creativity* article individualizes and humanizes the creative person, highlights the multilevel structure of creativity.

In the sub-chapter **Paradigms of creativity** we have detailed and deepened some of the multiple themes addressed by researchers of the last century, considering them a defining premise of contemporary creativity. R. J. Sternberg (2005) presents seven paradigms that have

contributed to the understanding of the concept of creativity: mystical, pragmatic, psychoanalytic, cognitive, psychometric, social/of personality and that of the confluence of theories. We have chosen to present **Comparative Perspectives on Creativity, Systemic Perspectives on Creativity, and the Psychometric Perspective on Creativity** as a source of inspiration for the third millennium teachers in assessing creativity.

In the sub-chapter **A psychometric model of assessing creativity**, we presented the TTCT test battery and the Torrrance Test of Creative Thinking (TTCT): description, composition of the instrument, how to use the test, instructions related to administration, structured scoring, technical and normative instructions, understanding standardized scores and using the benchmark organized by school year, score ranking. This psychometric model of creativity assessment can be used by teachers concerned with the phenomenon of creativity.

I have structured the chapter **Aspects of artistic-plastic creativity in vocational primary arts education** in three sub-chapters as follows: **Vocational arts education in Romania from the legislative perspective, The psycho-pedagogical dimension of the development of creative potential and Aesthetic sensibility – the input for triggering creative potentials.**

In the sub-chapter **Vocational art education in Romania from a legislative perspective**, we presented the legislative framework for organizing and conducting activities in pre-university art education.

We have detailed the contents of the sub-chapter **The psycho-pedagogical dimension of the development of creative potential** following two directions: **An integrative vision of the Visual Arts subject and practical skills in vocational primary education in Romania** and **Skills and development of creative potential**. From the study of the school documents for primary education with an integrated and additional art-music program, we found that in the Framework Plan there are 4 hours of specialized Music (2 of instrument and 2 of theory-solfeggio-dictation), within the Arts curriculum area, and they are in addition to the total number of hours in the common core for mass education, for each individual year of study. These hours are assigned to grades I-IV, the preparatory class is an exception to the study of specialized subjects, this rule applies only to primary education with an integrated program and additional art. For primary education with an integrated and additional choreography program, the discipline of Specialized Artistic Education is allocated, in the framework plan, 8 hours, starting with the 4th grade. In the field of visual arts and practical skills for vocational primary education, there are no differences in the Framework Plan compared to

mass education. This aspect, in addition to the multiple arguments presented in **Skills and the development of creative potential**, leads us to appreciate that an integrated assessment of creative potential at the end of the 4th grade, especially for students in vocational institutions, should be considered, in order to the identification of aptitude polyvalence. The training profile of the 4th grade graduate, this holistic evaluation tool, from the perspective of competences, behaviors, skills formed would become a predictable indicator for the destination of the specialization profile or, why not for the destination of the professional profile.

In the third sub-chapter, **Aesthetic sensibility - the input for triggering of creative potentials**, we presented the role and importance of the subject Visual Arts and practical skills, both for students in mass education and for those in vocational schools.

In the sub-chapter **Indicators of aesthetic sensitivity of students in vocational primary education**, we presented theoretical aspects about indicators of aesthetic sensitivity (reactivity, imaginative capacity, oscillation of aesthetic taste, sense of selection, intellectuality, stages of intelligence development and creativity), but also areas of manifestation of visual sensations and their effects.

The sub-chapter **Plastic language elements - the alphabet of semantic and syntactic expression** and the sub-chapter **The relationship between plastic language elements and psychophysiological processes** are thought of as complementary, and the contents cover the fundamental functions of the elements of plastic language (semantic and syntactic). Artistic language represents the decoding of artistic thinking from an aesthetic perspective and offers the opportunity to convey ideas, feelings, impressions, emotional states. The plastic language (artistic - plastic) is a metaphorical one and makes it possible to make associations, analogies between signs (symbols) and soul experience, it is a "system of relations established conventionally between several signs" specifies M. Ilioaia (1981, p.48). The elements of the artistic - plastic language outline the materialization of ideas, feelings or aesthetic emotion, develop the passion for artistic culture. The point, the line, the stain, the color, the value, the shape are signs of the plastic language that, from a semantic and expressive perspective, convey messages, meanings, meanings, etc. The expressive force is conditioned by the relationship between the plastic language elements (signs) and defines the expression of the composition. The structure (syntax) of the plastic language represents the rules or the way of combining all the elements of the plastic language.

The third chapter of the paper **Connectivist European Educational Framework - ESEP (European School Education Platform)** is structured in two subchapters **ESEP –**

European School Education Paltform and **Didactic creativity and technology. Creative approaches in eTwinning projects.** The implementation of new technologies provides access to education through global digital networks, and the way to access the facilities of the ESEP and eTwinning educational communities, involves rethinking teaching approaches in the instructional-educational approach and rethinking the continuous professional training of teachers.

In the first sub-chapter **ESEP – European School Education Paltform** we presented the European platform for school education ESEP with all the opportunities it offers, including the collaborative variant of the eTwinning platform. eTwinning-part integrated in ESEP, is a new pedagogical approach anchored in real contexts of teaching-learning-evaluation, it is a methodological apparatus, a community of educational practice and a platform that allows innovation, and connectivism (communication and collaboration) in education.

In the following sub-chapters **The eTwinning action - a collaborative and creative educational initiative** and **eTwinning – The community for all schools in Europe** we presented the eTwinning platform and the eTwinning Action (eTwinning community actions) which are in a process of permanent updating, registering growth from a project perspective carried out, of the topics addressed, of the blended-learning work methods and strategies, of the skills formed or developed, of the educational results obtained.

In the last sub-chapter of the theoretical foundation part **The eTwinning project - "MUZART-Twinna - developing the creative potential of students in vocational and mass primary education"** we detailed the collaborative project through which all the creative potential testing activities took place. Digital educational games created specifically for the theme and purpose of the project, access the content area of the Visual Arts and Practical Skills discipline and are presented for all levels of primary education (preparatory class - IVth class).

The second part of this thesis includes two chapters: **Psychopedagogical research** and **Final conclusions**.

The **Psychopedagogical Research** chapter indicates the entire research approach: Contextualization of the research, Research premises, The purpose and the objectives of the research, Research questions, Research hypothesis and variables, Sample, Research methodology, Research instrument validation, Research stages, Administration and scoring instructions for the Pre-Test stage, Statistical analyses and interpretations for the Pre-Test Phase, Administration and scoring instructions for the Experimental Phase, Analyses and

interpretations for the Experimental Phase, Administration and scoring instructions for the Post-Test Phase, Statistical analyses and interpretations for the Post-Test Phase, Comparative analyses Pre-Test Stage and Post-Test Stage, Conclusions of the results of the research. Analyses and interpretations are carried out according to the specifics of education, vocational or mass, but also according to the level of primary education, the fundamental acquisition cycle and the acquisition development cycle.

The need to carry out this study is justified, in the context of the approach to the curricular contents of vocational-arts primary education in Romania and completed by a series of shortcomings experienced at the level of education beneficiaries:

- students of arts-specific vocational schools in the Romanian education system benefit from an initial musical aptitude test, according to the current legislation, at the beginning of primary classes (the aptitude test of students does not also provide for the verification of artistic-plastic skills at the beginning of schooling);
- in the Framework Plan (primary education) for vocational schools in primary art education, the same number of hours is found in the Visual Arts and Practical Skills discipline as in mass schools;
- The inconsistency between the contents of the subjects Music and Movement and Theory, Solfeggio, Dictation, subjects that are part of the common core of the Framework Plan for vocational art primary education.

Following the scientific, pedagogical, psychological, didactic documentation and the observation of the students, the analysis of the horizon of knowledge and the directions of action and manifestation, the following premises of the research were outlined:

- creativity is a complex phenomenon determined by a series of factors (intellectual, personality, social, special skills, etc.), and creative potential is an attribute, an innate individual characteristic and is based on the analytical-synthetic peculiarities of the nervous system;
- each person has a certain creative potential that must be stimulated and trained, the triggering of creative potentials and the development of the student's creativity starts from an early age, creative skills involve a higher level of structuring and functioning of cognitive, motivational, volitional variables, etc. (in our study we only dealt with cognitive variables);

- at the early school age, the artistic-plastic expression has certain particularities that must be taken into account (cognitive and affective development, the transition from the concrete to the abstract stage through playful forms/games);
- stimulating students' creativity can be done by encouraging the freedom of plastic and chromatic visual expression, based on the most diversified strategies, creative and innovative working methods and techniques (use of plastic language elements, technology - educational platforms, digital educational games, applications graphics etc.)
- dynamisation of individual creative potential (specific skills), in the sense of the appropriate valorization of talents, the cultivation of aesthetic sense and creative attitudes/behaviors (the educational context can support the transformation of potential into creative performance);
- measuring creativity and reporting the results to a standardized benchmark, especially in the case of children with multi-talented skills, in order to outline the skills profile and future insertion on the labor market (Technical and normative manual – Torrance tests of creative thinking by Paul. E. Torrance, adapted in Romania by Dragoș Iliescu, Margareta Dincă and Ioana Panc and distributed in Romania, under license, by D&D Consultants Grup SRL).

The purpose of this study is to measure the level of creativity of primary education students, including art vocational primary education students, using an instrument suitable for scientific research.

Through this research - action we proposed to investigate what is the creative potential of students from vocational primary education - art, initially tested for musical aptitude, compared to students from mass primary education and to identify cases of aptitude polyvalence.

Musical artistic abilities are instrumental structures of the personality that ensure the achievement of above-average performances in the musical sphere. They have influence in literature, painting, sculpture, theater, acting, etc. Through the measured results we will show the existence of the aptitude for fine arts, of aptitude polyvalence. According to research in the field, the syntactic and semantic language of the Visual Arts and Practical Skills discipline used in playful and digital contexts favors the development of creative potential.

The objectives of the research are constituted as "curriculum sections" each of them contributing through the possibilities offered by its specifics to the outline of the theme as a whole.

These are:

- identifying the level of creativity in the researched sample by measuring the dependent variable using the specific indicators of creativity: originality, fluidity, flexibility, evaluation, resistance to premature closure, semantic abstraction;
- the use of "blended-learning" as a pedagogical method to stimulate creativity in order to carry out the activities on the eTwinning portal;
- verifying the effectiveness of using "digital educational games" as a pedagogical method to stimulate creativity;
- building a tool for measuring the creative level by adapting it according to the TTCT-Torrance Tests of Creative Thinking ("Let's think creatively in images, colors and words" and "Musical story");
- he development, use and verification of the effectiveness of a curriculum product called "Muzart-Twinna's Stories Notebook" in digital and written format.

The series of questions in relation to the proposed research covers the following aspects:

- What is the creative potential of primary school students with musical skills initially tested at the beginning of schooling?
- Do the musical skills of the students participating in the experiment lead to better results? How will they influence their creative personality?
- Does the socio-cultural climate in which the student grows and develops, in the present case an educational institution with specific arts, influence only the formation and affirmation of creative potential or also the manifestation of creative performance?

The level of expression and visual-plastic and chromatic expressiveness of students in primary mass education and primary vocational art, in response to certain stimuli (sensations, perceptions, representations), through tests and digital (sensory) educational games, we assume that they indicate the development of creative potential. This is how the hypothesis of this research was shaped: **"The use of digital educational games in blended-learning format developed through the educational platform ESEP/eTwinning influences the level of artistic creativity of students".**

The independent variable is represented by digital educational games administered in blended-learning format through the collaborative project "MUZART-Twinna - developing the creative potential of students in vocational and mass primary education", registered in the ESEP/eTwinning educational platform.

The dependent variable is represented by the level of artistic creativity of students expressed by the following specific indicators:

1. **Originality** - figurative or verbal indicates the ability to integrate different elements in the same perceptual field and represents the uniqueness or rarity of the response, unused ideas, measured by reference to frequency or percentage distribution;
2. **Fluidity -** figurative or verbal is an indicator of the ease of association in the cognitive plane of images, colors, sounds, words, etc., of speed, and is measured according to the total number of answers, as many ideas as possible;
3. **Flexibility -** figurative or verbal is an indicator of the ability to restructure thinking in relation to new situations and is measured by the total number of different categories in which the answers can be included;
4. **Elaboration -** figurative or verbal indicates the ability to combine or transform ideas in the process of cognitive construction and is measured by the number of details, components that complete or nuance the answer;
5. **Resistance to premature closure** - measures the ability of perceptual resistance to the figure induced as a stimulus or "gestalt resistance", is specific only to figural creativity and indicates the ability to work unconditionally from perceptual learning;
6. **Semantic abstraction capacity** - represents the capacity for abstract-verbal interpretation of the figure, measures the capacity for abstract-verbal interpretation of the drawing through the title.

The sample consists of students enrolled in art vocational primary education and students enrolled in mass primary education in the urban environment, a total of 387 students, from the following educational institutions in Romania:

- 102 students from the College of Arts, Baia Mare, Maramureș, guided by 5 teachers for primary education;
- 47 students from the Art High School, Sibiu, guided by 3 teachers for primary education;
- 63 students from "Ioan Sima" Art High School, Zalău, Sălaj, guided by 4 teachers for primary education;

- 74 students from "Avram Iancu" Middle School, Baia Mare, Maramureș, guided by 3 teachers for primary education;
- 59 students from "Lucian Blaga" Middle School, Baia Mare, Maramureș, guided by 2 teachers for primary education;
- 15 students from "Vasile Alecsandri" Middle School, Baia Mare, Maramureș, guided by 1 teacher for primary education;
- 27 students from "Nichita Stănescu" Middle School, Baia Mare, Maramureș, guided by 1 teacher for primary education.

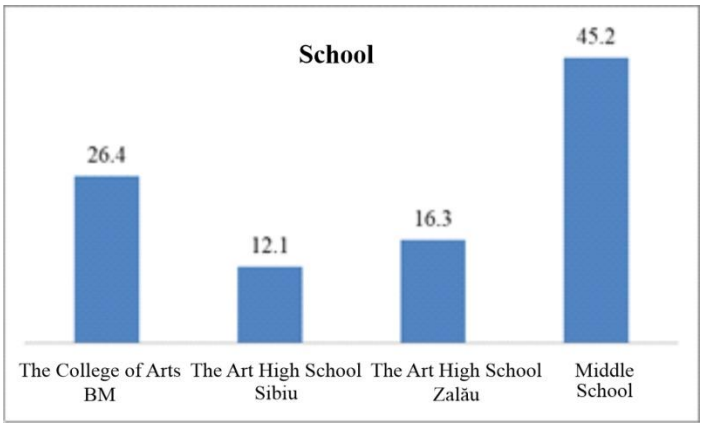
In the present research, the 387 students participated in all the proposed games in the three analyzed stages: pre-test stage, experimental stage, post-test stage.

		Frequency	Percentage
School	The College of Arts, Baia Mare	102	26.4
	The Art High School, Sibiu	47	12.1
	The Art High School, Zalău	63	16.3
	Middle School	175	45.2
Grade	I	68	17.6
	II	130	33.6
	III	65	16.8
	IV	87	22.5
	Preparatory	37	9.6
Gender	Male	164	42.4
	Female	223	57.6
Musical skills	Vocational	212	54.8
	Mass education	175	45.2

Source: Personal work in the SPSS program version 20.0

Table no. 1. Sample structure

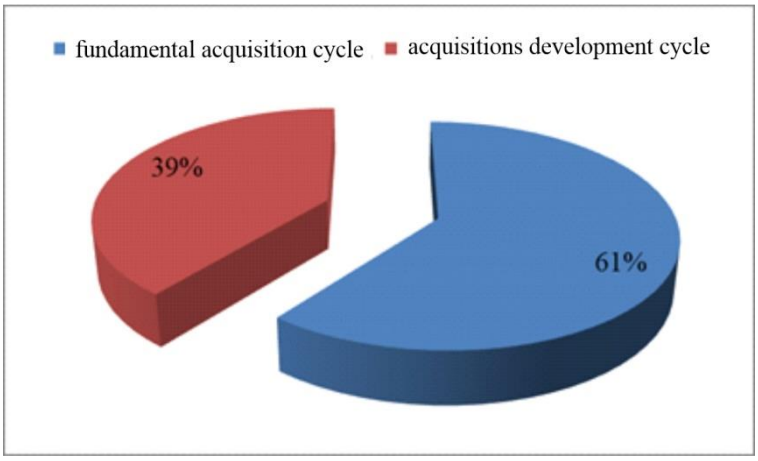
Of the 387 students, almost half (45.2%) attend Middle School, almost a quarter (26.4%) attend the courses of the Baia-Mare College of Arts, 16.3% attend the classes held at the Zalău Arts High School and 12.1% go to Sibiu Arts High School. From the point of view of the class they attend, most students (33.6%) are in the 2nd grade, 22.5% attend the 4th grade classes, 17.6% of the students are in the 1st grade, 16.8% attend the 3rd grade and only 9.6% are students of a secondary school. From the gender point of view, 57.6% are girls and 42.4% are boys, and from the point of view of musical skills, 54.8% of the students attend a vocational school, and 45.2% attend a mass education unit.



Source: Personal work in the SPSS program version 20.0

Figure no. 1. Distribution of students according to the educational unit attended

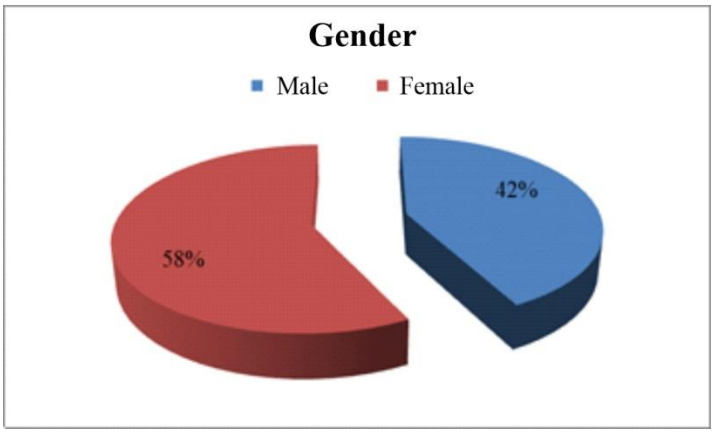
From the point of view of the distribution of students according to the educational unit, 45.2% of the respondents are students of a secondary school, that is of a form of mass education, while 54.8% of the students attend an institution oriented towards the development of vocational arts skills.



Source: Personal work in the SPSS program version 20.0

Figure no. 2. Distribution of students according to the learning cycle

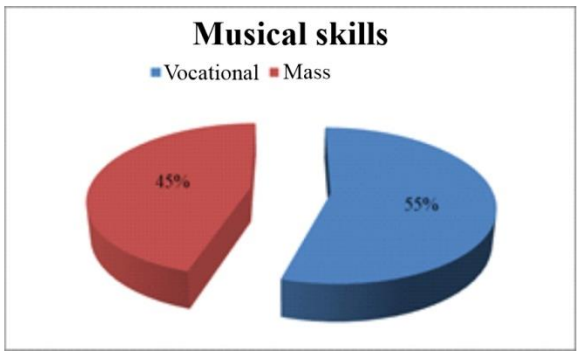
From Figure IV.2. it is observed that a significant share of students (61%) attend the acquisitions development cycle (3rd and 4th grades), and 39% follow the fundamental acquisition cycle, the courses of the preparatory class, the 1st grade and the 1st grade II.



Source: Personal work in the SPSS program version 20.0

Figure no. 3. Distribution of students according to gender

The distribution of students according to gender is directly influenced by the composition of classes, so the share of girls (58%) is slightly higher compared to the share of boys (42%).



Source: Personal work in the SPSS program version 20.0

Figure no. 4. Distribution of students according to musical skills

In order to have a more realistic, complex and comparative picture between the two groups (vocational, mainstream education), an attempt was made to distribute an equal number of questionnaires both to the schools that develop vocational skills (55%) and to the mass education schools (45%).

The methods and tools used in the research are:

1. The psychopedagogical experiment
2. The tests method
3. Study of school documents
4. The method of systematic observation
5. Methods of statistical analysis and data processing

The test method has a wide applicability in the educational process, respectively in didactic evaluation, as well as in pedagogical research, allowing to obtain valuable

information about the personality of the young schoolchild, his level of skills and knowledge, his behaviors, creativity, etc. The test is a research tool made up of a set of items, aimed at knowing the student's informative and educational background, respectively identifying the presence/absence of certain knowledge, abilities, skills, behaviors, mental processes, etc. A test is an instrument consisting of a sample/item or a set of samples/items, designed and administered to record a behavior or a reaction to stimuli. Creativity tests have generally taken on the quantifiable aspect, namely the measurement of factors – abilities, skills or personality traits that intervene in the creative process. The construct of the test instrument is composed of three stages (pre-test, experimental stage and post-test), and the test samples are proposed by us, they are adapted according to the model of the Creative Thinking Tests developed by E.P. Torrance and contain a total of thirteen samples/items, activities – creative potential development game.

To measure the students' creative performance, we used the data evaluation and interpretation method from the Torrance Tests of Creative Thinking (TTCT) tool for Figural Form A. (see chapter I.3)

The test for measuring creativity, the E. P.Torrance "Creative Thinking Test (TTCT)" is the most widely used internationally psychometric tool. It is a hybrid method of measuring creativity both quantitatively and qualitatively and involves the open and projective collection of solutions offered by respondents. The test is associated with a rigorous scale of analysis, norming and interpretation of the answers, but also for comparing the results from the calibration of the test and from the normative benchmark. The test allows the assessment of two forms of figurative and verbal creativity. For our study, the TTCT test represents an inspirational model.

We adapted Figural Form A of the test according to the purpose of our research, thus the construct of the adapted test is also a hybrid form of creativity measurement, quantitative (according to creativity factors) and qualitative (according to creative traits and color frequency). The components of the test are 4 game activities, with tasks in which plastic language elements (visual stimuli) and title – metaphor (verbal stimulus) are used. The tasks are also reformulated and adapted to the age level (6 – 11 years) of the students in vocational primary education art and students in mass primary education. These game-activities fall under the Pre-Test and Post-Test Stages, and in the Experimental Stage 5 digital educational games are played as methods of stimulating creativity. TTCT tests are used only with a license, and Test Central - D&D Consultants Grup SRL has all rights reserved on the tests and accessories in Romania. In order to use the "scoring and grading mode" we received the

consent of D&D Consultants Grup SRL. The method of scoring the level of creativity is carried out with the help of the scoring model from the Creative Thinking Tests (TTCT) – Figural Test A, E. P.Torrance.

Quantitatively, creativity is measured by six operational variables (factors of creativity): fluidity, flexibility, originality, elaboration, semantic abstraction and resistance to closure. Originality, fluidity, flexibility and elaboration are variables that belong to cognitive processes on the divergent-convergent axis. Resistance to premature closure is defined at the level of perception, and P.E Torrance believes that it is an indicator of the ability to create the new, to generate ideas, the ability to span the "gestalt" or to resist premature closure. Semantic abstraction capacity indicates the capacity for abstract-verbal interpretation of images, generalizes and individualizes creation through abstraction valences.

The qualitative evaluation of performances is carried out on the basis of a list of thirteen creative features: emotional expressiveness, degree of complexity of the drawing, movement and action in the drawing, expressiveness of the title, combination of several incomplete figures, combination of two or more sets of lines, unusual visual perspective, internal visual perspective, overcoming limits, humor in titles and drawings, richness of imagination, richness of color, speed of creative engagement in sample work. As part of the qualitative assessment, the artistic-plastic sensitivity is also checked through the frequency of expressive colors, which is interpreted as a psychosensory effect on the stimuli in the test.

We reported the results obtained from the measurements to the samples organized according to the year of schooling, obtaining standardized scores (SS – average standard score, IC – creativity index, CN – national centile). This standardized benchmark helps us to identify the level of creativity compared to internationally validated standards, but also in Romania, for each student, class, schooling cycle. Our research received approval to use the scoring and evaluation method presented in the Technical and Normative Manual – Torrance Tests of Creative Thinking by Paul. E. Torrance, adapted in Romania by Dragoș Iliescu, Margareta Dincă and Ioana Panc and distributed in Romania, under license, by D&D Consultants Grup SRL, on which copyright is reserved. The tests delivered to students in our research are created and adapted from the Figural A test model, and are consistent with our topic of interest.

The study of school documents is an indirect investigation method that involves analysis, from the perspective of established indicators, in accordance with the hypothesis and research objectives. The official curriculum documents for art vocational primary education and related legislation were the starting point for this research: Education Law No. 1 of 2011,

National Curriculum, school programs, framework plans, manuals in text and digital format, auxiliaries. The Technical and Normative Manual for the Torrance Tests of Creative Thinking (TTCT) is a rich source of normative and procedural information around which we conducted the measurements, and equally a source of inspiration for all teachers who are interested in assessing the phenomenon of creativity. All the research bibliography and webography represent fundamental information for the investigated approach. The study of school documents is justified in the context of the 21st century, of integrated approaches to the curricular contents of vocational-arts primary education in Romania, and complemented by a series of good practice models taken from the European school community, found in the collaborative educational space of the ESEP platform /eTwinning.

The method of analyzing the portfolios/products of the activity of the subjects of education involves the analysis, in terms of the product, but also of the process, from the perspective of the indicators established in accordance with the purpose and objectives of the research.

In terms of the process, the students operationalize with didactic materials made available by the teachers, to carry out the tasks in blended-learning format: Test Book (text format) and e-Portfolio. The e-Portfolio contains the following teaching materials in digital format:

1. The MUZART-Twinna's Stories Notebook, a RED resource, created in the Bookcreator app that contains all the digital educational games used in this research: https://read.bookcreator.com/0lGY3N8bAKe8OzRaRQXzOdCQOTf1/y8PZRGywTtOy18HTz5ej9Q.

2. The digital educational games, made with the help of Adobe Photoshop (realization of visual elements) and Adobe Premiere Pro (animation of visual elements), are exported in MP4 format, and later uploaded to the YouTube channel to be accessed by students and used in blended format -learning:

"The Magic Bag" - https://youtu.be/EpxhSP4lvqQ;

"Master Chef" - https://youtu.be/Bo8Cinpxvq0;

"The Scent of Summer"- https://youtu.be/SOKJl_GjV64;

"The Enchanted Ear" - https://youtu.be/h2rEUNMKs6E;

"The Enchanted Eyes of Artists!" - https://youtu.be/sZSgSHTOdjs.

3. The digital exhibitions, in terms of the product, are made in the Padlet application, an open digital resource in which each student presents his/her drawing: Digital exhibition-

https://padlet.com/carmen_coviza98/muzart-twinna-dezvoltarea-poten-ialului-creativ-al-elevilor--eufwhxtj8xjq .

The components of the students' portfolios, respectively the products of their activity, represent drawings, compositions, media products (images-photos, music, etc.) that have been analyzed and evaluated according to the method of measurement and scoring recommended by the Torrance Tests of Creative Thinking (TTCT). The analysis of the portfolios also provided us with data related to certain features, aspects and distinctive attributes of their personality (concerns, inclinations, interests, educational needs, etc.)

Observation (systematic), this method is used in all stages of the research in order to obtain additional data related to various investigated aspects. We carried out the systematic observation according to the purpose of the research, the hypothesis of the research, we recorded all the pedagogical facts as accurately as possible and interpreted them from the perspective of their intrinsic meanings. As a grid model for learning outcomes on the value axis (to be), in accordance with the competence profile of primary school students, we used the observation tool proposed by T. Martin, P. Teeuwsen and J. Molnar, presented by Drake (2007): values – responsible, cooperative, independent, curiosity and creativity.

The collection and analysis of data is carried out by means of the statistical program SPSS version 20.0, at a confidence threshold of 95% and at a level of statistical significance where $p<0.05$. We will start presenting the results by validating (Cronbach Alpha) for each research tool (applied game) separately because each game is characterized by a different number of aspects and a distinct scoring system.

The present research is longitudinal and includes analyses and interpretations aimed at the specifics of the sample, vocational education and mass education, but also the level of schooling, the fundamental acquisition cycle and the acquisition development cycle:

A. The specifics of the education, on three stages: the pre-test stage, the experimental stage, the post-test stage and two groups: students from vocational art primary education and students from mass primary education. The first part presents the results for each game separately and for each stage (pre-test, experimental, post-test) and compared between the two groups (vocational, mainstream education) taking into account each stage. Descriptive analyses (absolute and relative frequencies, mean, standard deviation, variance) and statistical tests (Independent T-Test, Chi-Square, ANOVA) will be included. In the last part, pre-post test comparative analyses will be found, descriptive analyzes (absolute and relative frequencies, mean, standard deviation, variance) and statistical tests (Paired T Test) will be included.

B. Schooling level (schooling cycles), in three stages: the pre-test stage, the experimental stage, the post-test stage and two levels: the fundamental acquisition cycle (preparatory class, first class and second class) and the cycle of acquisition development (3rd class, 4th class). The results are presented for each game separately and for each stage (pre-test, experimental, post-test) and compared between the two levels (fundamental acquisition cycle, acquisition development cycle) taking into account each stage, but also the stages in the evolution of children's drawing (M. Ilioaia, 1981). Descriptive analyses (absolute and relative frequencies, the average, standard deviation, variance) and statistical tests (independent T-test, Chi-Square, ANOVA) will be included. In the last part, pre-post test comparative analyzes will be found, where descriptive analyses (absolute and relative frequencies, the average, standard deviation, variance) and statistical tests (Paired T Test) will be included.

Validation of the research instruments is applied for (Game 1A, Game 1B, Game 1C, Game 1D) through Cronbach Alpha validity and fidelity coefficient. The game items represent the **specific indicators** of creativity: originality, fluidity, flexibility, elaboration, resistance to closure and semantic abstraction. We will not apply validation to the composite instruments because the characteristic items are derived by summing the common item scores from the individual games (Game 1A+ Game 1B+ Game 1C; Game 1B+Game 1C+Game 1D).

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Game 1A	.746	.817	4
Game 1B	.754	.829	6
Game 1C	.718	.825	4
Game 1D	.848	.869	5

Source: Personal work in the SPSS program version 20.0

Table no. 2. Validation of research tools (games)

According to Table no. 2. Cronbach Alpha coefficient values for unstandardized factors (specific indicators) and Cronbach Alpha coefficient values for standardized factors (general indicators) and the number of items included in each game are presented.

The values of the Cronbach Alpha coefficient both for the standardized factors (Game 1A= 0.817, Game 1B=0.829; Game 1C= 0.825; Game 1D=0.869) and for the unstandardized factors (Game 1A= 0.746, Game 1B=0.754; Game 1C= 0.718; Game 1D=0.848) are above the minimum value (0.7) accepted in the specialized literature, which makes us state that all four applied tools (games) are valid and can be further used in descriptive analyses and

statistical tests. Thus the research tool can be extrapolated to larger scales and similar samples.

The psycho-pedagogical experiment applied in this research-action takes place in three stages, totaling 13 (thirteen) game activities:

Brief presentation of the research design **MUZART-Twinna – developing the creative potential of students in vocational and mass primary education**			
Pre-test stage (stimulus games)	Let's be creative in images, colors and words (I)	Game 1A	- to respond to stimuli (completion of images) using plastic language elements (point, line, shape, color); - assign a title to each work (semantic abstraction);
		Game 1B	
		Game 1C	
	Musical Story (I)	Game 1D	- to respond to stimuli (title – metaphor), using plastic language elements (point, line, shape, color);
	Game 1A+Game 1B+Game 1C and Game 1B+Game 1C+Game 1D		Analyses and interpretations for each individual game but also for the specific summed up indicators;
Experimental stage (digital educational games)	The Magic Bag	Game E	- to respond to stimuli (digital educational games) using plastic language elements (point, line, shape, color);
	Master Chef	Game F	
	The Scent of Summer	Game G	
	The Enchanted Ear	Game H	
	The Enchanted Eyes of Artists!	Game I	
	GameE+GameF+GameG+ GameH+GameI		Analyses and interpretations for the aggregated specific indicators;
Post-test stage (stimulus games)	Let's be creative in images, colors and words (II)	Game 2A	- to respond to stimuli (completion of images) using plastic language elements (point, line, shape, color); - assign a title to each work (semantic abstraction);
		Game 2B	
		Game 2C	
	Musical Story (II)	Game 2D	- to respond to stimuli (title – metaphor), using plastic language

			elements (point, line, shape, color);
	Game 2A+Game 2B+ Game 2C and Game 2B+ Game 2C+Game 2D		Analyses and interpretations for each individual game but also for the specific summed up indicators;

Table no. 3. Research stages

1. **Pre-Test Stage**

Four games were used (Game 1A, Game 1B, Game 1C, Game 1D) according to their presentation in the didactic methodology sequence. The summed results for each specific indicator from Game 1A+Game 1B+Game 1C and Game 1B+Game 1C+Game 1D help us to identify the general standardized indicators, which make exact the interpretations related to the level of creativity of the sample.

2. **Formative (experimental) stage**

Five games were used in the activities with the students in the experimental group, as follows:

"The Magic Bag"- https://youtu.be/EpxhSP4lvqQ;

"Master Chef" - https://youtu.be/Bo8Cinpxvq0;

"The Scent of Summer"- https://youtu.be/SOKJl_GjV64;

"The Enchanted Ear" - https://youtu.be/h2rEUNMKs6E;

"The Enchanted Eyes of Artists!" - https://youtu.be/sZSgSHTOdjs.

The digital educational games are presented in a RED resource made in the BookCreator application in the form of a digital notebook, Muzart-Twinna's Stories:

https://read.bookcreator.com/0lGY3N8bAKe8OzRaRQXzOdCQOTf1/y8PZRGywTtOy18HTz5ej9Q.

3. **Post-Test stage**

The same 4 games from the Pre-Test Stage (Game 1A, Game 1B, Game 1C, Game 1D) were used according to their presentation in the didactic methodology sequence, only the name was changed to make the interpretation and comparison of data easier. Thus Game 1A from Pre-Test is called Game 2A in Post-Test, Game 1B becomes Game 2B, Game 1C becomes Game 2C, and Game 1D becomes Game 2D and the summed results for each specific indicator from Game 2A+Game 2B+Game 2C and Game 2B+Game 2C+Game 2D help us to identify the general standardized indicators, which make exact the interpretations related to the level of creativity of the sample.

Conclusions of the results of the research

A. The specifics of education (vocational, mass)

Following the application of the games from the Experimental Stage, we can state that the results obtained are significantly improved in the two groups: vocational education students and mass education students, for the four games proposed for analysis in the Pre-Test Stage "Let's think creatively in images, colors and words" (Game 1A, 1B, 1C), respectively "Musical story I" (Game 1D).

In the case of the game "Thinking creatively in pictures, colors and words" (Game 1A, 2A) there are statistically significant differences between the two stages of analysis and a greater improvement in the case of students in the arts. Even though improvements are observed in both groups, the impact of the games in the Experimental Stage was stronger for the students in the art vocational primary education.

At the level of the game "Let's think creatively in pictures, colors and words" (Game 1B, 2B) only five items out of six show statistically significant differences for both groups, and a closer analysis highlights the fact that students in vocational education achieve greater differences between the averages of the two stages compared to the differences between the averages of the two stages obtained by students in mass education.

The results of the game "Thinking creatively in pictures, colors and words" (Game 1C, 2C) show statistically significant differences for three of the four items included, and in general the improvements shown by the group of arts students are stronger than the improvements recorded in the mainstream education.

"Musical Story" brings statistical significance for all items in both samples with a greater impact on arts students, for whom the Experimental Stage came with greater cognitive and artistic demand.

From the point of view of the results obtained by the two composite games, the decision to replace the game "Let's think creatively in pictures, colors and words" (Game 1A, 2A) with the game "Musical Story I" (Game 1D), respectively " Musical Story II" (2D Game) was a good one, generating significant improvements between the averages obtained in the post-test stage compared to the averages obtained in the pre-test stage for both vocational and mainstream students.

At the level of the three general indicators of creativity analyzed SS/IC, SS/CN, IC/CN significant improvements are observed both in the case of vocational education and in the case of mass education. Following the games they participated in, arts students benefited from a greater creative stimulation compared to students in mainstream education, so the

intensity of creativity indicators is strong to very strong in the case of vocational education and towards average in the case of mainstream education .

In general, following the experimental stage, the game "Thinking creatively in pictures, colors and words" (Game 2A) is assigned more the colors brown, yellow, red, black, the game "Thinking creatively in pictures, colors and words" (Game 2B) is associated with the colors red, black, the felt pens, and the game "Thinking creatively in pictures, colors and words" (Game 2C) is assigned the colours pencil purple, pink, felt pens, and "Musical Story II" is associated with pencil orange, white, yellow and red.

At the level of the two samples, vocational education and mass education, the Experimental Stage brought improvements in the way of thinking and solving the games proposed in the post-test stage, improvements underlined by the results obtained and mentioned previously and with a major positive impact on the students from vocational art education.

B. Education level (fundamental acquisition cycle, acquisition development cycle)

As a result of the application of the games from the Experimental Stage, it can be stated that at the level of the two learning cycles: the fundamental acquisition cycle and the acquisition development cycle, significant improvements were registered in the case of the games "Let's think creatively in images, colors and words" (Game 2A, 2B, 2C) and "The Musical Story II" (Game 2D).

For the game "Let's think creatively in images, colors and words" (Game 2A) in the case of vocational education organized on the two learning cycles: the basic acquisition cycle and the acquisition development cycle, significant statistical differences are recorded between the averages obtained in the post- test and the averages obtained in the pre-test for the four items included in the analysis. In the case of the acquisition development cycle of mass education, the abstraction item does not register significant differences, so there are no notable changes. Improvements in values are obtained both in vocational education and in mass education in the two analyzed cycles, but the greatest impact occurs in the acquisition.

At the level of the game "Let's think creatively in images, colors and words" (Game 2B) the fluidity item from both learning cycles and from both forms of education does not register statistically significant differences. The biggest improvements are registered in the case of vocational art education in the acquisition development cycle where practically the games in the Experimental Stage had the biggest impact.

Even though statistically significant improvements are obtained in both learning cycles for the game "Thinking creatively in pictures, colors and words" (Game 2C), the highest values are obtained for the improvement of originality and elaboration in the case of the acquisition development cycle of vocational education and to increase flexibility in the acquisition development cycle of mainstream education.

The game "Musical story II" (2D game) obtained improved values following the development of the games in the experimental stage, but the greatest impact was registered on the items of the acquisition development cycle of vocational art education.

At the level of the compound games 2A+2B+2C and 2B+2C+2D taken separately, improvements can be seen from one stage to another, on each learning cycle. However, comparatively, replacing the game "Thinking creatively in pictures, colors and words" (1A, 2A) with the game "Musical Story" (1D, 2D) brings significant improvements only in the acquisition development cycle of vocational education, in the other samples the changes being very small or even decreases in the averages are recorded.

In the case of the general indicators of creativity SS/IC, SS/CN, IC/CN, the experimental stage brings a significant improvement in their level both within the fundamental acquisition cycle and within the acquisition development cycle of the two forms of education. The biggest changes are registered at the level of the acquisition development cycle in both vocational and mass education.

In terms of color frequency, in the case of the game "Thinking creatively in pictures, colors and words" (Game 2A) after the experimental stage, the students of the fundamental acquisition cycle associate the game with the colors orange, blue and purple, while the students of the of acquisition development stage assign it the colors blue, yellow, pink, felt pen and gray, and for the game "Thinking creatively in pictures, colors and words" (Game 2B) the students of the fundamental acquisition cycle assign the colors brown and pencil, while students in the acquisition development cycle associate play with the colors orange, brown, blue, pencil, and red.

The game "Let's think creatively in pictures, words and words" (Game 2C) is associated after the Experimental Stage by the students of the fundamental acquisition cycle with the colors brown and pencil, while the students of the development cycle attribute the game to the colors brown, pencil, red and felt pen. In the case of "Musical Story II" (2D Game), the students of the fundamental acquisition cycle name the colors orange, blue, yellow, purple, pink and gray, and the students of the development cycle of acquisition mention the colors green, orange, blue, pink and black.

Following the games carried out in the Experimental Stage, improvements are observed at the level of the two cycles of analysis, but the biggest changes are registered in the case of students from the acquisition development cycle of vocational education.

In the last chapter, **Final conclusions**, the conclusions of the entire research, the validation of the research hypothesis, limits and future directions are presented.

Creativity, by essentializing it, we accept it as a creative act or process, as a product or as a form of manifestation. For our research, creativity represents the area of confluence or convergence of the set of cognitive capacities (creativity factors) with creative traits (creative abilities) and non-cognitive capacities (artistic-plastic sensitivity, etc.).

This psycho-pedagogical research circumscribes the dimensions of intellectual, moral and aesthetic education, the field of approach being from the theory and methodology of the curricular areas Arts and Technologies, more precisely the discipline Visual Arts and Plastic Skills (AVAP). The components of the educational action are carried out from a systemic perspective and represent the teaching-learning-evaluation relational field. The analysis perspective is longitudinal and aims at the specifics of education (vocational and mass), but also the levels of primary education (fundamental acquisition cycle and acquisition development cycle). The nature of the problem addressed is relatively narrow "the development of the creative potential of students in vocational-art and mass primary education" with an immediate practical applicability, operating deductively through direct confrontation with reality. We measured raw scores and standard scores related to the benchmark from the Technical and Normative Manual for the Torrance Test of Creative Thinking (TTCT) for Figural Sample A, we performed comparative analyses between the stages of the research, we formulated conclusions, generalizations and predictions by exploring this educational reality.

The characteristics of the research are: measurement of specific indicators of creativity (research variable) and general indicators of creativity before and after the application of the experiment, validation of the research hypothesis according to the measured variable and the results obtained. Appreciation of the existence of the aptitude for fine arts or dual aptitude (musical and art), but also the appreciation of the superior potential of creativity from the perspective of talent for art as post-validation hypothesis interpretations, is achieved through the results of the general indicators of creativity.

Our research has an inductive purpose, from a given situation to conclusions and decisions. In order to obtain the best interpretations, the entire longitudinal action approach is

completed with successive and comparative measurements between the Pre-Test, Experimental and Post-Test stages, on the same subjects.

From the perspective of the specifics of vocational, respectively mass education, the dependent variable was quantitatively measured through the 6 specific indicators of creativity (originality, fluidity, flexibility, elaboration, resistance to closure and semantic abstraction), but also the general SS/IC, SS/CN, IC/CN, indicators, and qualitatively – creative features and artistic-plastic sensibility (color frequency).

From the perspective of primary education levels, the basic acquisition cycle and the acquisition development cycle were measured quantitatively (specific indicators, general indicators) and qualitatively (creative features, color frequency). This way of approaching the analysis and interpretation of research results takes into account the stages in the evolution of children's drawing, the stage of intellectual realism or ideoplastic drawing is assimilated to the cycle of fundamental acquisitions, and the stage of visual realism or physio-plastic drawing to the acquisition development cycle. The stages also take into account the individual developments of children. Tracking the evolution of the results is facilitated by the way of designing the standard made by E.P. Torrance by years of schooling (grades) and ages. We chose the option for years of schooling, not for ages, schooling year 01 - being allocated to the preparatory class, 02 - to the first class, 03 - to the second class, 04 - to the third class and 05 - to the fourth class.

The function performed by this research is projective (orienting), the level of intentionality is action research, which implies a high degree of intentionality and involvement, intentionally designed, organized and carried out. The delivery form of the tests is hybrid, the activities were carried out in a blended-learning format on the ESEP/eTwinning educational platform, within the collaborative project "MUZART-Twinna - developing the creative potential of students in vocational and mass primary education". The Muzart-Twinna’s Tales Notebook contains the tests in both digital and text format, and the tests in the Experimental Stage are digital educational games. The use of the ESEP/eTwinning educational platform completes the new approach perspectives of blended-learning, favoring the development of students' creative potential and implicitly the development of artistic-plastic skills (identifying the aptitude for fine arts).

There were delivered 5031 tests, for all students, and 4820 drawings were evaluated. The research was carried out on a sample consisting of 212 students with musical skills from vocational primary education - arts, and 175 students from mass primary education, all from the urban environment. The students with musical skills come from three vocational education

institutions, the College of Arts, Baia Mare, the Art High School, Sibiu and the "Ioan Sima" Art High School, Zalău, Sălaj, and are guided by twelve teachers for primary education. The students in mainstream education come from four mass education institutions in Baia Mare, "Avram Iancu" Middle School, "Lucian Blaga" Middle School, "Vasile Alecsandri" Middle School and "Nichita Stănescu" Middle School, and are coordinated by seven primary education teachers. The structuring of the sample is carried out according to the specifics of vocational or mass education, the schooling level composed of the fundamental acquisition cycle and the acquisition development cycle, grades and gender. The research methods used are the experiment (method of tests), the study of school documents, the analysis of portfolios and the products of students' creative activity.

The results obtained are initially recorded as raw scores, then they are reported to the standard from the "Technical and Normative Manual", obtaining the standardized scores, the specific indicators and the general indicators with the help of which we made the interpretations.

From the comparative analyses of the Pre and Post Test Stages, but also from the analyses of the Experimental Stage (Formative Stage) we conclude that all the specific indicators of creativity (originality, fluidity, flexibility, elaboration, resistance to closure and semantic abstraction) were measured according to the assessment method of the Torrance Test of Creative Thinking and in agreement with the research objectives, hypothesis and variables. The results indicate significant differences presented in the comparative analyses by stages but also in the conclusions of the Experimental Stage which positively influenced the results of the Post-Test Stage, especially for the vocational sample, but also the results of the mass education sample are worthy of consideration. Creative traits and color frequency were qualitatively measured and interpreted, then included in standard scores and general indicators, respectively. The digital educational games developed in blended-learning format within the project "MUZART-Twinna - the development of the creative potential of students from vocational and mass primary education", developed in the educational platform ESEP/eTwinning influenced the level of artistic creativity of the students. Thus, we can affirm that **the hypothesis of our research is totally validated!**

Measurements of general indicators contribute to refining the interpretation of results after hypothesis validation.

In the final Post-Test analysis **the general indicator SS/IC**, for vocational education indicates Strong level 21.6% and Above average 74.4%, and for students in mass education indicates Strong 1.8% and Above average 81.8%. **The general indicator SS/IC** from the

final Post Vocational Test analysis - arts, shows us for the fundamental acquisition cycle Strong 21.60%, Above average 74.40%, and for the acquisition development cycle it indicates Very strong 2.30%, Strong 24.14% and Above average 68.97 %. **The general indicator SS/IC** from the final Post Test analysis, mass education, shows us for the fundamental acquisition cycle Strong 1.82%, Above average 81.82%, and for the acquisition development cycle it indicates Strong 4.62%% and Above average 83.08%. These results represent a high level of creative performance or high creativity index.

In the final Post-Test analysis **the general SS/CN indicator** for vocational education indicates Very strong 23.2%, Strong 40% and Above average 28%, and for mass education it indicates Very strong 3%, Strong 10% and Above average 26%. **The general SS/CN indicator** in the Post-Test analysis for vocational education, for the fundamental acquisition cycle indicates Very strong 23.20%, Strong 40% and Above average 28%, and for the acquisition development cycle Very strong 35.63%, Strong 36.78 % and Above average 20.69%. **The general indicator SS/CN** in the Post-Test analysis for mass education indicates for the fundamental acquisition cycle Very Strong 3%, Strong 10% and Above average 26%, and for mass education for the acquisition development cycle it indicates Very Strong 6.56% , Strong 24.59% and Above average 26.23%. **The general indicator SS/CN** more precisely CN (national centile) indicates the level of positioning of a respondent's results in relation to the scores of the respondents in the entire tested sample, and is used to appreciate the level of individual performance in relation to the sample. Thus, as an extension of the hypothesis validation, we can conclude that we have also identified the aptitude for art represented in the CN calculations.

In the final Post-Test analysis **the general IC/CN indicator** for vocational education indicates Very strong 7.2%, Strong 23.2% and Above average 47.2%, and for mainstream education it indicates Strong 5.2% and Above average 21/9%. **The general IC/CN indicator** for vocational education, for the fundamental acquisition cycle indicates Very strong 7.2% Strong 23.2% and Above average 47.2%, and for the acquisition development cycle indicates Strong 5.2% and Above average 21.9%. **The general IC/CN indicator** for mass education, for the acquisition cycle indicates Strong 5.21% and Above Average 21.88%, and for the acquisition development cycle indicates Strong 5.26% and Above Average 28.07%. **The general indicator IC/CN**, following the validation of the hypothesis, we can say that it identifies the potential talent, the higher level of creative potential, i.e. the creativity index related to the positioning level of the individual results of a respondent in relation to the scores of the respondents in the entire tested sample (with higher level of creative potential).

Let's not forget: no matter how great the creative potential is, without its education and development, creativity collapses. Creativity needs training!

The beneficiaries of this psychopedagogical research are the schools participating in the experiment and the entire segment of primary education in Romania.

The limits of the research

A limitation of this research can be considered the sample size. The participation of a relatively small number of students from vocational or mass institutions may influence the results of the measurements.

Future perspectives in research

The ability to adapt to the new or to find contextualized and synergistic solutions, to reconfigure our solution, the solution to the problem or the route we want to take is conditioned by the decisions taken at a personal or professional level. Vocational-arts primary education teachers are often asked: How creative is my child? Does he have creative potential? or Does he also have the aptitude for art? To answer assumedly, after running this test, I would recommend to check the level of creativity and creative potential at the end of the 4th grade, as an external, optional assessment that comes to the aid of the student (confirmation of creative potential) and, why not, and in support of the institution (students with creative qualities and skills for art remain in institutions with a profile for professionalization).

Remote retesting and comparison of the results would involve a test that would further refine the results.

Teacher training, organization of training courses for creativity assessment - creativity assessment modality, with rigorously structured criteria and rules, of this Torrance Test of Creative Thinking is a source of inspiration for all teachers interested in this phenomenon.

Collaboration and communication in virtual environments, especially on the ESEP/eTwinning platform, represents an open horizon for the exchange of good international educational practices, a perspective of checking the creative potential of students from art and culture schools in different European countries and a sustainable option for any educational approach.

The creative teacher has creative students in the class!

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