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A REVIEW OF THE CRITERIA OF THE PREDICTION OF STUDENTS' CREATIVE SKILLS IN THE VISUAL ARTS EDUCATION

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Abstract. This study aimed to predict the creativity in the painting area of students in visual arts education. This study reviews conducted on the publications. In this review, eight categories were classified related to the creativity by a hierarchical method as follows: definition, components, assessment, measurement, criteria, tests, scoring, and the art. According to the content analysis, the categories were originality, fluency, flexibility, boundary-breaking independent, unconventionality, and perspective which were determined as universal criteria for general content regarding creativity measurement. However, the aesthetic, technical skill, imagination, elaboration, closure, and idea generation were identified as specific criteria for the creativity measurement regarding the painting in the visual arts education. This review study indicated that the creative skills of students in the visual arts education can be predicted by the criteria in which a combination of the universal and specific criteria inclusively.

Keywords: creativity, creativity measurement, creativity tests, criteria, visual arts education.

Introduction

Creativity, as an idea or product, transforms into an existing thing into a new one (Csikszentmihalyi, 2013). In this manner, creativity is a kind of human skill that can be used in a project or a work, which is an important trait in every area from engineering to the art (Hokanson & McCluske, 2016). Creativity includes multiple conceptual factors as personal, cognitive processes, environment, and product. According to Batey (2012), this approach seems to have accepted in a wide consensus among scholars. Although there are many invented creativity measurements on these factors, there is a need for creativity measurement in specific areas because of the creativity measurement should not be based on just general content. Therefore, measurement of creativity is an important subject (Plucker & Makel, 2010; Viskontas & Miller, 2013) and this issue addresses in a wide variety of fields (Fink & Benedek, 2013). However, creativity in art has been frequently confused with artistic talent (Zaidel, 2013). Whereas, the creativity in the art can be different regarding disciplines of

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visual, music, dans *etc.* For instance, the creativity in visual arts discipline should be needed different assessments (Diket & Brewer, 2011). Because, creative traits in painting can exhibit different characteristics from the other disciplines (Weinstein et al., 2014).

United Nations Educational, Scientific and Cultural Organization (2006) reported that all individuals possess creative skills potentially, and art supports an individual's creativity. Art encourages children to construct their creative ideas (Jolley, 2019). However, it is difficult to find any favorable criterion on what is known about creativity when we look at children (Csikszentmihalyi, 2013). Possible criteria for the creativity measurement exists in the art activities for children because of the art supports their imagination and creativity (Irish National Teachers' Organization, 2019). The art education is one of the best tool for nurturing creativity (United Nations Educational, Scientific and Cultural Organization, 2006) and, the visual arts education possesses specific role to play in fostering individuals to be creative (Alter, 2010). The painting involves visual things as a visual arts product. Therefore, children easily express themselves by drawing before telling her/himself (Ulger, 2015) and they exhibit in the painting their imagination infinitely. So what do we do in this situation in the name of assessment of their painting? In terms of the visual arts education, Mannathoko and Mamvuto (2018) stated that assessment in the visual arts education was not sufficient. According to them, there are a few reasons for this situation. One of them is that teachers' limited knowledge of appropriate assessment procedures. The other is that the teacher only considered the measurement of children's artistic growth and development. Broome (2016) found that many art teachers' preferences in the assessment were based on the professional development needs of them. Whereas, a necessary assessment ought to build on the students' development needs. As Hallam, Hewitt, and Buxton (2014) stated, the art teachers should assess artwork to help develop children's art appreciation. Mannathoko and Mamvuto (2018) recommended scholars a common approach to this area to the measurement of creativity. However, there are already many creativity tests in general use but, these tests have also limitations. Therefore, alternative tests should be developed (Clapham, 2004) and further research need to be implemented in this area (United Nations Educational, Scientific and Cultural Organization, 2006). At this point, Russ A. Schultz (2002) emphasized that the proper assessment is only useful when it is done appropriately.

From this perspective, it can be forwarded that creative skill prediction is a prominent topic in visual arts education. As Sabol (2004) stated, the creativity measurement in art education would be beneficial for both teachers and students. However, there has not been any attempting to searching some properties of criteria about predict creativity in visual arts education. The main aim of this study is to predict creativity in the painting of students in visual arts education. Accordingly, the research question of this study was determined as follows:

Q1. What do the criteria to predict creativity in the painting of students in visual arts education?

1. The sample and data collection

This study conducted a systematic literature review of creativity on publications published over the last decades between 2000 and the first quarter of 2018. In this study, a keyword search was used to review these publications, which was creativity term. Also, snowball

sampling strategy was implemented to increase the study samples. In this way, the study sample was enlarged to 141 publications as related to the search subject (Boise State University, 2019). The snowball sampling strategy provides searching on the cited source in the publications. This sample was classified into 16 categories by their contents. Subsequently, as a search strategy, a set of inclusion/exclusion criteria was conducted on each category (Table 1).

Thus, eight categories for the study sample were determined by the inclusion/exclusion criteria as direct or indirect terms as related to the search subject respectively as followed: 1 – definition of (creativity), 2 – components, 3 – art with, 4 – assessment, 5 – measurement, 6 – criteria measurement, 7 – (creativity) tests, and 8 – scoring measurement (Table 2).

The inclusion/exclusion criteria provide to determine which trait can be included or excluded from the study sample. The inclusion criteria involve traits for research subject without confusing matters, whereas the exclusion criteria contain insufficient characteristics for the research subject (Garg, 2016). The inclusion and exclusion criteria were described as direct or indirect related factors to search the subject for this study sample correspondingly. Accordingly, eight categories with the inclusion of 75 publications were determined and analyzed in terms of their content for this study (Appendix).

Table 1. The classified papers as 16 categories (source: created by author)

Categories	Inclusion criteria:	Exclusion criteria:	Type of production		
	direct related to category	indirect related to category	Article	Book/ book chapter	Dissertation/ report or text
Assessment	12	6	14	3	1
Measurement	9	6	14	1	–
Criteria	12	7	14	5	–
Gender difference in creativity	3	2	4	1	–
Scoring	5	1	6	–	–
Product (creative)	1	–	1	–	–
Art with creativity	10	4	8	2	4
Survey studies for creativity	9	3	12	–	–
Personality (creative)	3	1	3	1	–
Experimental studies for creativity	6	1	7	–	–
Creativity in education	2	1	1	2	–
Creativity tests	12	2	12	2	–
Definition of creativity	7	1	4	3	1
Components of creativity	8	1	4	3	2
Review studies for creativity	3	1	4	–	–
General creativity	2	–	–	2	–
TOTAL	104	37	108	25	8

Table 2. The inclusion/exclusion criteria regarding for the 16 categories (source: created by author)

	The inclusion criteria: direct related to search subject	The exclusion criteria: indirect related to search subject
Categories	– Definition of (creativity)	– Gender differences in (creativity)
	– Components of (creativity)	– Product (creative)
	– Art with (creativity)	– Survey studies for (creativity)
	– Assessment of (creativity)	– Personality (creative)
	– Measurement of (creativity)	– Experimental studies for (creativity)
	– Criteria of (creativity) measurement	– (Creativity) in education
	– (Creativity) tests	– Review studies for (creativity)
	– Scoring of (creativity) measurement	– General (creativity)

The eight categories were classified by hierarchical method, which provides a preliminary list of concepts as relevant to the main subject (Butler & Kline, 1998). In this method, the upper category was determined as the definition of creativity. According to this category, the other categories were determined (Figure 1). By this method, it was aimed to occur a hierarchical path from the specific to the general.

Besides, the Fisher's Exact Test (FET) was carried out to determine whether each category was taken from the sample equally. This test compares nominal variables in a category with other categories (McDonald, 2014). The FET showed that any category from the upper category to lower categories was not different significantly each other regarding the study sample. Thus, the inclusion/exclusion criteria, hierarchical method, and Fisher exact test were used respectively upon the sample before the content analysis done to the data. The conceptual analysis as one of the content analysis types was used to establish the absence and presence of concepts in the categories regarding the study sample (Writing@CSU, 2019). The content analysis was done on these eight categories (Table 3). The content analysis was also done on the criteria in terms of existing, used tests in the Creativity Tests category (Table 4).

2. Results

The other categories followed hierarchically creativity if the creativity term was determined as the upper category. The categories were ranked as seen in Figure 1: 1 – definition of creativity; 2 – components of creativity; 3 – art with creativity; 4 – assessment of creativity; 5 – measurement of creativity; 6 – criteria of creativity measurement; 7 – creativity tests, and 8 – scoring of creativity measurement.

The FET did not detect a significant difference among these categories (Social Science Statistics, 2019), which means that each category was taken from the literature equally as the study sample. The data was examined by content analysis in eight categories (Table 3). In this way, the categories were codified as *presence* or *absence* according to be represented concepts in each category (Table 3).

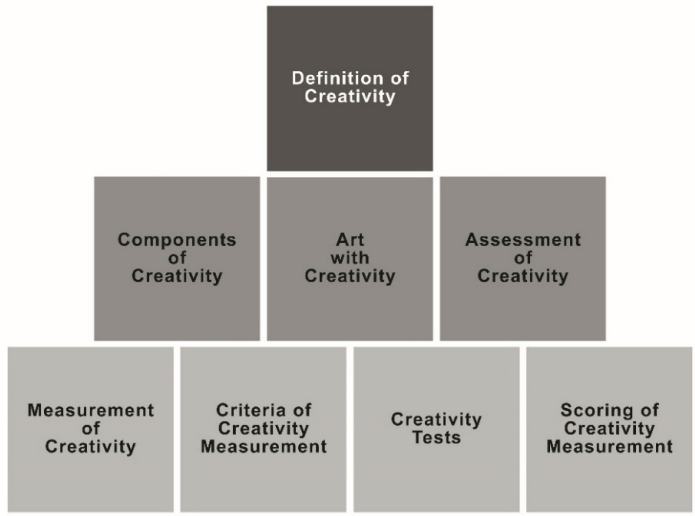

Figure 1. The classifications of the categories by hierarchical method (source: created by author)

Table 3. The content analysis regarding the eight categories (source: created by author)

	Definition of creativity	Components of creativity	Art with creativity	Assessment of creativity	Measurement of creativity	Criteria of creativity measurement	Creativity tests	Scoring of creativity measurement
Absence	68 %91	67 %89	65 %87	63 %84	66 %88	63 %84	63 %84	70 %93
Presence	7 %9	8 %11	10 %13	12 %16	9 %12	12 %16	12 %16	5 %7

Also, the content analysis was done on the criteria in terms of the creativity tests category, as follows: Torrance Tests of Creative Thinking (TTCT), Basadur Preference Scale (BPS), Remote Associates Test (RAT), Test for Creative Thinking–Drawing Production (TCT–DP), Wallach–Kogan Test of Creativity (WKTC), Consensual Assessment Technique (CAT), and Next Generation Creativity Survey (NGCS) (Table 4).

The most seen criteria in the tests are the originality criteria (Table 4). The fluency, flexibility, boundary breaking independent, unconventionality and perspective criteria come respectively after the originality (Figure 2).

Table 4. Content analysis of the criteria regarding the used creativity tests (source: created by author)

Criteria \ Tests		Torrance Tests of Crearive Thinking	Basadur Preference Scale	Remote Associates Test	Test for Creative Thinking–Drawing Production	Wallach–Kogan Test of Creativity	Consensual Assessment Technique	Next Generation Creativity Survey	Presence Frequency
1	Fluency	+		+		+		+	4
2	Originality	+	+	+		+		+	5
3	Titles	+							1
4	Elaboration	+							1
5	Closure	+							1
6	Strengths	+							1
7	Imagination		+						1
8	Aesthetic appeal						+		1
9	Technical skill						+		1
10	Idea-generation		+						1
11	Flexibility	+		+				+	3
12	Extension				+				1
13	Completion				+				1
14	New elements				+				1
15	Connections				+				1
16	Boundary breaking dependent				+				1
17	Boundary breaking independent	+			+				2
18	Perspective	+			+				2
19	Humor (and affectivity)				+				1
20	Unconventionality (manipulative)				+				1
21	Unconventionality (abstractive)	+			+				2
22	Unconventionality (symbolic)				+				1
23	Unconventionality (using)				+				1
24	Speed (time)				+				1
25	Alternate uses					+			1

Note 1: The "+" sign indicates the presence of the related criteria in the measurement tool.

Note 2: The 25 criteria indicates the all criteria in the used the creativity tests.

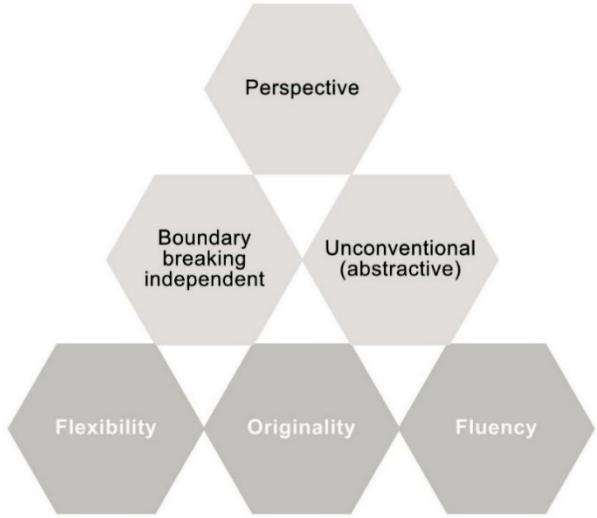

Figure 2. The most used criteria in the used creativity tests (source: created by author)

Subsequently, the (abstractness of) titles, elaboration, (resistance to premature) closure, (creative) strengths, imagination, aesthetic (aesthetic appeal), technical skill (technical execution), idea-generation, extension, completion, new elements, connections, boundary breaking dependent, humor (and affectivity), unconventionality (manipulative), unconventionality (symbolic), unconventionality (using), speed (time) and the alternate uses come equally (Table 4). It is understood that these criteria seem as common content for the creativity tests in the creativity tests category.

Afterward, the set of *inclusion/exclusion* criteria strategy was conducted on the rest of the criteria. According to this set, the criteria should be related to the main subject as the painting output directly, and indirectly. Thus, aesthetic appeal, technical skill, imagination, elaboration, closure, and idea-generation revealed for possible criteria of the painting output in the visual arts education.

Discussion

This study revealed that the criteria in the creativity measurement were flexibility, originality, and fluency generally (Table 4). The others were listed as the boundary-breaking independent, unconventional and the perspective respectively (Figure 2). This result is consistent with previous studies regarding the flexibility, originality, and fluency criteria (Chang et al., 2015). However, the boundary-breaking criteria were used by Urban (2005) in the TCT–DP. This criterion happens when the test taker uses to extend some given figural fragments independently apart from any given fragment. The boundary-breaking criteria exhibit the risk-taking of the individual. This trait is one of the creativity components. Accordingly, boundary-breaking is the encouragement to disrupt any shape for rearranging, which is a

creative attempt. In general, this criterion is used as a feature belonging to the drawing area and observed easily in the painting of creative individuals. Hence this criteria seems also to be appropriate for both using to predict creativity in the visual arts area and general content.

The unconventionality as the other general content represents surrealistic, fictional, abstract elements or drawings in a given fragment in the TCT–DP. This criterion is a manipulation of the material. It is a surrealistic, fictional and abstract elements or drawings (Urban, 2005). The unconventionality tends to ignore the tradition. Torrance (1966, p. 9) indicated that unconventional thinking is one of the creative attitudes. In this manner, the unconventionality seems to include a few things such as any trait which belongs to the drawing regarding the material.

The perspective criteria as another general content seen in the TCT–DP and TTCT. This criterion assesses in the drawing area as appearing of a different point of view. The perspective is a performance to move away from two-dimensionality (Urban, 2005). Although the perspective criteria are used by the general content of the creative measurement, as Nauert (2006) stated, the perspective technique is consistent with the visual arts field in the development of the painting since the Renaissance. Accordingly, the visual arts field is more related to the perspective criterion than other fields. However, originality is an important criterion as increasingly used as an inclusionary in all creativity tests without exception. According to Torrance, the production of something new as a basic takes place in all the definitions of creativity. He defined the originality as "try to think of things that no one else will think of" (Torrance, 1966, p. 15). In this way, the originality may be defined that is a rare way of thought. The used current creativity tests with their qualifications seen in Table 5.

The originality has been benefiting from aesthetic, which is used frequently in terms of artistic thinking (Acar & Runco, 2015). Rostan, Pariser, and Gruber (2002) stated that students' aesthetic values were only improved in the visual arts education by the drawing. Therefore, the aesthetic criterion is also meaningful for the visual arts field in terms of establishing a conceptual basis to predict creativity in the painting. The aesthetic as a criterion belongs in the visual arts field. However, the aesthetic is also needed as external effectiveness in the other fields apart from the visual arts area in terms of the function (usefulness) of the product. According to Cropley (2004), some artists might be prepared to abandon "external effectiveness" (usefulness) to get "internal effectiveness" (aesthetic) in a practical setting. This expression supported in a previous study by a result that a difference found between the students (non-artists) and art students in terms of aesthetic judgment. The non-artist students judged abstraction in the painting as worthless, while the art students judged as valuable content (Kozbelt, 2006). Therefore, the aesthetic assessed in this study as specific criteria. The aesthetic as a criterion should take place in the visual arts education area to predict the creativity of students.

The aesthetic, technical skill, imagination, elaboration, closure, and idea-generation were determined for possible criteria of the creativity measurement as specific in the visual arts education regarding the painting output. According to Hennessey, Amabile, and Mueller (2011), product creativity apart from subjective judgments can be assessed by aesthetic appeal and technical goodness. At first view, technical skill seems to be related to making manual works. However, it also can be more about than this. Hennessey, Amabile, and

Table 5. The used creativity tests with their qualifications (source: created by author)

Instruments Qualification	Torrance Tests of Creative Thinking Tests	Basadur Preference Scale	Remote Associates Test	Test for Creative Thinking–Drawing Production	Wallach–Kogan Creativity Test	Consensual Assessment Technique	Next Generation Creativity Survey
First author / inventor year	Torrance / 1966	Basadur /1994	Mednick / 1962	Urban / 1996	Wallach / 1965	Amabile / 1979	Catterall / 2012
Framework of the test	DT-Gestalt psychology	Creative attitude	Creative attitude	DT-Gestalt oriented	Divergent thinking	Creativity	Creative thinking behavior and motivation
Measurement	Creative thinking potential	Creativity	Creativity	Creative potential	Creativity	Product creativity	General creativity and domain specific creativity
Measurement bases	Process (cognitive)	Person	Person	Process (cognitive)	Person	Product	Person
In the range of usage area	Wide	–	–	Wide	Wide	Wide	Wide
Age range of test application	Wide	–	–	Wide	Wide	–	–
Output of the test	Figural-verbal	Verbal	Verbal	Figural	Visual-verbal	Product	Verbal

Mueller (2011) found a strong correlation between technical goodness and the completion of the products. In the CAT, technical skill possesses an unlimited scope to visualize as activities of designing, drawing, and manipulating images in mind as spatial-visual creativity (Kerr & McKay, 2013). For example, Rostan (2005) found that experienced art students had higher scores on technical skill and creativity than novice art students. In other studies, art students had higher scores on technical skills than non-art students did (Chan & Zhao, 2010; Rostan et al., 2002). These results indicate that students' technical skills can be related to the visual arts area regarding the painting more than other fields. However, the aesthetic appeal and technical goodness were also in the CAT in terms of the general content criteria. In this manner, Hennessey, Amabile, and Mueller (2011) claimed that the CAT helps the understanding of creativity. Thus, the aesthetic and technical skills can be determined to predict creativity both for the specific criterion and general criterion.

The imagination as the other specific criterion is related to new meanings of producing creative thinking (Ho et al., 2013). The creativity fed from the imagination (*e.g.*, Runco, 2007). The imagination can be a unique way to create new things such as the original. Although imagination starts in the cognitive process at first, it can exhibit itself easily in visual forms such as painting or drawing. As Rostan (1997) reported, free-drawing (from imagination) is more correlated with novelty than the life-drawing (from any scene seen before). Although the imagination stands up closer to the visual arts area, it has been used in the BPS as the creativity measurement as the general content. The imagination allows the ideation boundless as it happened in brainstorming (Basadur & Finkbeiner, 1985). It can be said that the imagination is infinite thinking as logical or illogical, provides a contribution to the creativity in terms of a great variety of ways. Therefore, the imagination is a criterion that can be used in both a specific content domain and general content domain to predict creativity.

In a previous study (Ülger, 2016), a significant correlation was found between students' technical skills and elaboration skills exhibited in their paintings. This result supports that the elaboration criteria can be used to predict creativity in the painting. However, the elaboration is only used in the TTCT as general content. The elaboration is to add ideas to an object or a picture throughout the drawing to make it tell us interesting a story as possible (Torrance, 1966). According to Csikszentmihalyi (2013), the elaboration criteria is a necessary criteria on whether an artwork is creative or not. Although the elaboration used in the general content, it should be considered in the visual arts area as the specific content criteria to predict creativity in the painting.

The closure as other specific criteria is the ability to maintain openness as a long through investigating (*e.g.*, Kim, 2011), and remaining open to uncertainty (Chávez-Eakle et al., 2012) for individuals. In this manner, the closure means as thinking without depending on any fixed idea. However, there are some disadvantages for individuals to remain this uncertainty (Basadur, 1994). Whereas, the uncertainty is essential for creativity (Sternberg, 2003). Independent thinking from any fixed idea is open-ended thinking, which keeps the uncertainty. The openness as a bridge between art and creative thinking (Ulger, 2016), it should be predicted in the arts (Barry Kaufman et al., 2016). Kay (1994) found that creative artists consumed more time to complete a drawing task than less creative artists. That is, the closure is shown in the extension of the uncertainty. Accordingly, the closure is a necessary criterion

to predict creativity in the painting. From this perspective, the closure as a specific content domain can be in the painting like imagination, aesthetic, and technical skill.

Numerous scholars stated that challenging, broadening and innovation are important traits to predict creativity (Epstein et al., 2008; Runco, 2016). The other scholars also emphasized the importance of the *idea generation* in the prediction of creativity (Almeida et al., 2008; Clapham et al., 2005; Ho et al., 2013). In general, divergent thinking tests for creativity measurement contain idea generation (Reiter-Palmon et al., 2019). Also, Basadur and Finkbeiner (1985, p. 38) underlined that the idea generation is a trait of creativity as imaginative and divergent thinking. Also, the imagination supports both the originality and idea generation (Ho et al., 2013). The idea generation can be closer as related to the specific content criteria for the visual arts field when considered interrelated traits of the challenging, broadening, innovation, originality and imagination.

Some of the creativity tests as the TTCT, TCT–DP, and WKTC are more related to the visuality predominantly in terms of either figure or drawing forms (Table 5) than the others such as BPS, RAT, and the NGCS. Whereas, visuality is very important to predict creativity, especially the child's painting. On the other hand, although the creativity test judgments (*e.g.*, scoring) appear to vary broadly, responses are commonly scored for fluency, flexibility, and originality which are just prominent traits among the many processes (Reiter-Palmon et al., 2019). In this study, common criteria were identified to predict creativity as the flexibility, originality, fluency, boundary breaking independent, unconventional, and perspective. Besides that, the aesthetic, technical skill, imagination, elaboration, closure, and idea generation were recognized as the specific criteria for the visual arts field to predict creativity in the painting. In a previous study, it was found different traits of creativity skills in persons in various domains such as music, visual arts, creative writing, science, and technology areas. However, personal traits were also observed changeability in different domains (Hong et al., 2014). This result indicates that a holistic approach to predict the creative skills of individuals can be possible as a combination of the specific and general content criteria to predict creativity in an inclusive format (Figure 3). Creative work is made possible in a domain. Also, creativity is limitless to any domain. However, creativity is influenced by other domains at least in the final product in terms of the creative process. In a study on how different domains effect on creativity, cross-domains were found to be prevalent. So, as a ubiquitous component of the creative process, different domains support creative tasks (Scotney et al., 2019).

However, according to Cropley (2004), a creativity test could be improved in a specific domain by comparing some traits. Such a test with including appropriate criteria, it can help students to reveal their creative skills. Therefore, the requirements of the criteria to predict creativity need to be debated to qualify properly under the frame of the domain. The scholars (Lindström, 2006; McKay et al., 2017) suggest further study to conduct in the future for the specific measurement of creativity for various fields.

Limitations and implications

The publications published between 2000 and the first quarter of 2018s was the limitation of this study. Therefore, the result of this study was dependent on the content analysis of the

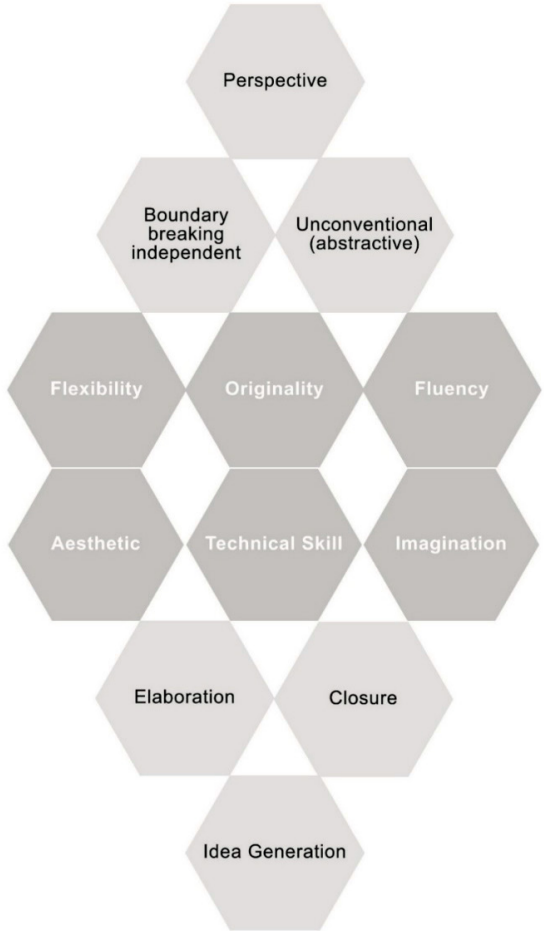

Figure 3. The combination of the criteria in terms of overall creativity measurement (source: created by author)

seven creativity tests in the creativity tests category of the study sample. However, this study was the first to attempt a searching of the priorities as the criteria to predict creativity in the visual arts education. As an implication, this study indicated that a student's creativity in any field could be predicted based on the specific criteria.

Conclusions

This study aimed to predict creativity in the painting of students in visual arts education. With this purpose, this study reviewed the literature to predict creativity in this education discipline. Despite the creativity skill is vital for visual arts students, this education discipline has lacked any criteria in the creativity prediction. By this study, some priority criteria (aesthetic, technical skill, imagination, elaboration, closure, and idea generation) revealed to

predict creativity in the painting. Also, the flexibility, originality, fluency, boundary breaking independent, unconventional, and perspective were the universal criteria for the general content of creativity. Reiter-Palmon, Forthmann, and Barbot (2019) stated that creativity tests generally include common criteria such as fluency, flexibility, and originality, which are just one dimension among many dimensions. Whereas, scholars suggest that the measure of creativity as the predictors may be specific. The possible scoring criteria to predict the creativity revealed by this study in visual arts education as a specific domain, which leads future research. Finally, this study was an initial step for searching for a common ground for the criteria to predict creativity in the paintings of the visual arts education students. Therefore, future studies should be conducted on the measurement of creativity in the painting for the development of a tool, to predict the creativity skills of the students.

References

Acar, S., & Runco, M. A. (2015). Thinking in multiple directions: hyperspace categories in divergent thinking. *Psychology of Aesthetics, Creativity, and the Arts, 9*(1), 41–53. https://doi.org/10.1037/a0038501

Almeida, L. S., Prieto Prieto, L., Ferrando, M., Oliveira, E., & Ferrándiz, C. (2008). Torrance test of creative thinking: the question of its construct validity. *Thinking Skills and Creativity, 3*(1), 53–58. https://doi.org/10.1016/j.tsc.2008.03.003

Alter, F. (2010). Using the visual arts to harness creativity. *UNESCO Observatory, Faculty of Architecture, Building and Planning, the University of Melbourne Refereed E-Journal, 1*(5). https://pdfs.semanticscholar.org/319a/592fc933573c004cb987f5e3da445a11feb3.pdf

Barry Kaufman, S., Quilty, L. C., Grazioplene, R. G., Hirsh, J. B., Gray, J. R., Peterson, J. B., & DeYoung, C. G. (2016). Openness to experience and intellect differentially predict creative achievement in the arts and sciences. *Journal of Personality, 84*(2), 248–258. https://doi.org/10.1111/jopy.12156

Basadur, M. (1994). Managing the creative process in organizations. In M. A. Runco (Ed.), *Problem finding, problem solving, and creativity* (pp. 237–268). Ablex Publishing Corporation.

Basadur, M., & Finkbeiner, C. T. (1985). Measuring preference for ideation in creative problem-solving training. *The Journal of Applied Behavioral Science, 21*(1), 37–49. https://doi.org/10.1177/002188638502100104

Batey, M. (2012). The measurement of creativity: from definitional consensus to the introduction of a New Heuristic framework. *Creativity Research Journal, 24*(1), 55–65. https://doi.org/10.1080/10400419.2012.649181

Boise State University. (2019). *Research compliance.* https://www.boisestate.edu/research-compliance/

Broome, J. (2016). Assessing the professional development needs of arts instructors working in multiage classrooms. *Arts Education Policy Review, 117*(1), 65–72. https://doi.org/10.1080/10632913.2016.1107395

Butler, D. L., & Kline, M. A. (1998). Good *versus* creative solutions: a comparison of brainstorming, hierarchical, and perspective-changing heuristics. *Creativity Research Journal, 11*(4), 325–331. https://doi.org/10.1207/s15326934crj1104_6

Chan, D. W., & Zhao, Y. (2010). The relationship between drawing skill and artistic creativity: do age and artistic involvement make a difference? *Creativity Research Journal, 22*(1), 27–36. https://doi.org/10.1080/10400410903579528

Chang, Y., Li, B.-D., Chen, H.-Ch., & Chiu, F.-Ch. (2015). Investigating the synergy of critical thinking and creative thinking in the course of integrated activity in Taiwan. *Educational Psychology: An International Journal of Experimental Educational Psychology, 35*(3), 341–360. https://doi.org/10.1080/01443410.2014.920079

Chávez-Eakle, R. A., Eakle, A. J., & Cruz-Fuentes, C. (2012). The multiple relations between creativity and personality. *Creativity Research Journal, 24*(1), 76–82. https://doi.org/10.1080/10400419.2012.649233

Clapham, M. M. (2004). The convergent validity of the Torrance tests of creative thinking and creativity interest inventories. *Educational and Psychological Measurement, 64*(5), 828–841. https://doi.org/10.1177/0013164404263883

Clapham, M. M., Cowdery, E. M., King, K. E., & Montang, M. A. (2005). Predicting work activities with divergent thinking tests: a longitudinal study. *Journal of Creative Behavior, 39*(3), 149–166. https://doi.org/10.1002/j.2162-6057.2005.tb01256.x

Cropley, A. J. (2004). *Creativity in education and learning: a guide for teachers and educators*. Routledge.

Csikszentmihalyi, M. (2013). *Creativity: flow and the psychology of discovery and invention*. HarperCollins Publishers.

Diket, R. M., & Brewer, Th. M. (2011). NAEP and policy: chasing the tail of the assessment tiger. *Arts Education Policy Review, 112*(1), 35–47. https://doi.org/10.1080/10632913.2011.518126

Epstein, R., Schmidt, S. M., & Warfel, R. (2008). Measuring and training creativity competencies: validation of a new test. *Creativity Research Journal, 20*(1), 7–12. https://doi.org/10.1080/10400410701839876

Fink, A., & Benedek, M. (2013). The creative brain: brain correlates underlying the generation of original ideas. In O. Vartanian, A. S. Bristol, & J. C. Kaufman (Eds.), *Neuroscience of creativity* (pp. 207–232). The MIT Press. https://doi.org/10.7551/mitpress/9780262019583.003.0010

Garg, R. (2016). Methodology for research I. *Indian Journal of Anaesthesia, 60*(9), 640–645. https://doi.org/10.4103/0019-5049.190619

Hallam, J. L., Hewitt, D., & Buxton, S. (2014). An exploration of children's experiences of art in the classroom. *The International Journal of Art and Design Education, 33*(2), 195–207. https://doi.org/10.1111/j.1476-8070.2014.12022.x

Hennessey, B. A., Amabile, T. M., & Mueller, J. S. (2011). Consensual assessment. In M. A. Runco & S. R. Pritzker (Eds.-in-Chief), *Encyclopedia of Creativity*, *1*, 253–260. Academic Press. https://doi.org/10.1016/B978-0-12-375038-9.00046-7

Ho, H.-Ch., Wang, Ch.-Ch., & Cheng, Y.-Y. (2013). Analysis of the scientific imagination process. *Thinking Skills and Creativity, 10*, 68–78. https://doi.org/10.1016/j.tsc.2013.04.003

Hokanson, B., & McCluske, M. (2016). The creativity habit. In E. Boling, R. A. Schwier, C. M. Gray, K. M. Smith, & K. Campbell (Eds.), *Studio teaching in higher education: selected design cases* (pp. 180–194). Routledge.

Hong, E., Peng, Y., & O'Neil, Jr. H. F. (2014). Activities and accomplishments in various domains: relationships with creative personality and creative motivation in adolescence. *Roeper Review, 36*(2), 92–103. https://doi.org/10.1080/02783193.2014.884199

Irish National Teachers' Organization. (2019). *Publications*. https://www.into.ie/media-centre/publications/#top

Jolley, R. (2019). The importance of an art education,. *Research and Analysis: AQA*. https://research.aqa.org.uk/perspectives/importance-art-education

Kay, S. (1994). A method for investigating the creative thought process. In M. A. Runco (Ed.), *Problem finding, problem solving, and creativity* (pp. 116–129). Ablex Publishing Corporation.

Kerr, B., & McKay, R. (2013). Searching for tomorrow's innovators: profiling creative adolescents. *Creativity Research Journal, 25*(1), 21–32. https://doi.org/10.1080/10400419.2013.752180

Kim, K. H. (2011). The creativity crisis: the decrease in creative thinking scores on the torrance tests of creative thinking. *Creativity Research Journal, 23*(4), 285–295. https://doi.org/10.1080/10400419.2011.627805

Kozbelt, A. (2006). Dynamic evaluation of Matisse's 1935. *Large Reclining Nude*, *Empirical Studies of the Arts, 24*(2), 119–137. https://doi.org/10.2190/A2VY-TEBW-VH45-285E

Lindström, L. (2006). Creativity: what is it? Can you assess it? Can it be taught? *The International Journal of Art and Design Education, 25*(1), 53–66. https://doi.org/10.1111/j.1476-8070.2006.00468.x

Mannathoko, M. C., & Mamvuto, A. (2018). Learner involvement in art and design education assessment: the missing matrix in Botswana's primary schools. *Arts Education Policy Review, 119*(3), 172–184. https://doi.org/10.1080/10632913.2016.1260081

McDonald, J. H. (2014). *Handbook of biological statistics*. Sparky House Publishing.

McKay, A. S., Karwowski, M., & Kaufman, J. C. (2017). Measuring the muses: validating the Kaufman Domains of Creativity Scale (K-DOCS). *Psychology of Aesthetics, Creativity, and the Arts, 11*(2), 216–230. https://doi.org/10.1037/aca0000074

Nauert, Ch. G. (2006). *Humanism and the culture of Renaissance Europe*. Series: New Approaches to European History. Cambridge University Press. https://doi.org/10.1017/CBO9780511808388

Plucker, J. A., & Makel, M. C. (2010). Assessment of creativity. In J. C. Kaufman & R. J. Sternberg (Eds.), *The Cambridge Handbook of Creativity* (pp. 48–73). Cambridge University Press. https://doi.org/10.1017/CBO9780511763205.005

Reiter-Palmon, R., Forthmann, B., & Barbot, B. (2019). Scoring divergent thinking tests: a review and systematic framework. *Psychology of Aesthetics, Creativity, and the Arts, 13*(2), 144–152. https://doi.org/10.1037/aca0000227

Rostan, S. M. (1997). A study of young artists: the development of artistic talent and creativity. *Creative Research Journal, 10*(2–3), 175–192. https://doi.org/10.1207/s15326934crj1002&3_6

Rostan, S. M. (2005). Educational intervention and the development of young art students' talent and creativity. *Journal of Creative Behavior, 39*(4), 237–261. https://doi.org/10.1002/j.2162-6057.2005.tb01260.x

Rostan, S. M., Pariser, D., & Gruber, H. E. (2002). A cross-cultural study of the development of artistic talent, creativity and giftedness. *High Ability Studies, 13*(2), 125–155. https://doi.org/10.1080/1359813022000048789

Runco, M. A. (2016). Creative interpretations of educational contradictions. In R. A. Beghetto & B. Sriraman (Eds.), *Creative contradictions in education: cross disciplinary paradoxes and perspectives* (pp. 75–87). Series: Creativity Theory and Action in Education. Vol. 1. Springer. https://doi.org/10.1007/978-3-319-21924-0_5

Runco, M. A. (2007). *Creativity. Theories and themes*: *research, development, and practice*. Elsevier Academic Press.

Sabol, F. R. (2004). The assessment context: part two. *Arts Education Policy Review, 105*(4), 3–8. https://doi.org/10.3200/AEPR.105.4.3-8

Schultz, R. A. (2002). Apples, oranges, and assessment. *Arts Education Policy Review, 103*(3), 11–16. https://doi.org/10.1080/10632910209600289

Scotney, V. S., Weissmeyer, S., Carber, N., & Gabora, L. (2019). The ubiquity of cross-domain thinking in the early phase of the creative process. *Frontiers in Psychology, 10*. https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01426/full

Social Science Statistics. (2019). *Easy fisher exact test calculator.* https://www.socscistatistics.com/tests/fisher/default2.aspx

Sternberg, R. J. (2003). Creative thinking in the classroom. *Scandinavian Journal of Educational Research, 47*(3), 325–338. https://doi.org/10.1080/00313830308595

Torrance, E. P. (1966). *Torrance tests of creative thinking*. Personnel Press.

Ulger, K. (2016). The creative training in the visual arts education. *Thinking Skills and Creativity, 19*, 73–87. https://doi.org/10.1016/j.tsc.2015.10.007

Ulger, K. (2015). The structure of creative thinking: visual and verbal areas. *Creativity Research Journal, 27*(1), 102–106. https://doi.org/10.1080/10400419.2015.992689

United Nations Educational, Scientific and Cultural Organization. (2006, 6–9 March). Road map for arts education. *The World Conference on Arts Education: Building Creative Capacities for the 21st Century*. http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/CLT/pdf/Arts_Edu_RoadMap_en.pdf

Urban, K. K. (2005). Assessing creativity: The Test for Creative Thinking–Drawing Production (TCT–DP). *International Education Journal, 6*(2), 272–280.

Ülger, K. (2016). Öğrencilerin resim yapma becerilerinde gözlemlenen yaratıcılık ile yaratıcı düşünme becerileri arasındaki ilişki. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 16*(4), 2023–2039.

Viskontas, I. V., & Miller, B. L. (2013). Art and dementia: how degeneration of some brain regions can lead to new creative impulses. In O. Vartanian, A. S. Bristol, & J. C. Kaufman, (Eds.), *Neuroscience of creativity* (pp. 115–132). The MIT Press. https://doi.org/10.7551/mitpress/9780262019583.003.0006

Weinstein, E. C., Clark, Z., DiBartolomeo, D. J., & Davis, K. (2014). A decline in creativity? It depends on the domain. *Creativity Research Journal, 26*(2), 174–184. https://doi.org/10.1080/10400419.2014.901082

Writing@CSU. (2019). *Types of content analysis*. https://writing.colostate.edu/guides/page.cfm?pageid=1308&guideid=61

Zaidel, D. W. (2013). Biological and neuronal underpinnings of creativity in the arts. In O. Vartanian, A. S. Bristol, & J. C. Kaufman (Eds.), *Neuroscience of creativity* (pp. 133–148). The MIT Press. https://doi.org/10.7551/mitpress/9780262019583.003.0007

Appendix. The list of the publications as related to main subject directly

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Acar, Selcuk	2014	"Assessing Associative Distance Among Ideas Elicited by Tests of Divergent Thinking"	*Creativity Research Journal*	Assessment of creativity
Acar, Selcuk	2015	"Thinking in Multiple Directions: Hyperspace Categories in Divergent Thinking"	*Psychology of Aesthetics, Creativity, and the Arts*	Measurement of creativity
Acar, Selcuk	2017	"Ingredients of Creativity: Originality and More"	*Creativity Research Journal*	Components of creativity
Almeida, Leandro S.	2008	"Torrance Test of Creative Thinking: The Question of Its Construct Validity"	*Thinking Skills and Creativity*	Assessment of creativity
Alter, Frances	2009	"Understanding the Role of Critical and Creative Thinking in Australian Primary School Visual Arts Education"	*International Art in Early Childhood Research Journal*	Art with creativity

Continued Appendix

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Alter, Frances	2010	"Using the Visual Arts to Harness Creativity"	Multi-disciplinary journal in the arts	Art with creativity
Atkinson, Dennis	2006	"School Art Education: Mourning the Past and Opening a Future"	*The International Journal of Art and Design Education*	Criteria of creativity measurement
Baer, John	1994	"Reply / Why You Still Shouldn't Trust Creativity Tests"	*Educational Leadership*	Measurement of creativity
Batey, Mark	2012	"The Measurement of Creativity: From Definitional Consensus to the Introduction of a New Heuristic Framework"	*Creativity Research Journal*	Measurement of creativity
Beketayev, Kenes	2016	"Scoring Divergent Thinking Tests by Computer with a Semantics-Based Algorithm"	*Europe's Journal of Psychology*	Scoring of creativity measurement
Boden, Margaret A.	2013	"Creativity as a Neuroscientific Mystery"	*Neuroscience of Creativity*	Components of creativity
Carson, Shelley H.	2005	"Reliability, Validity, and Factor Structure of the Creative Achievement Questionnaire"	*Creativity Research Journal*	Creativity tests
Chan, David W.	2010	"The Relationship Between Drawing Skill and Artistic Creativity: Do Age and Artistic Involvement Make a Difference?"	*Creativity Research Journal*	Assessment of creativity
Clapham, Maria M.	2004	"The Convergent Validity of the Torrance Tests of Creative Thinking and Creativity Interest Inventories"	*Educational and Psychological Measurement*	Creativity tests
Clarke, Angela	2012	"Fostering Creativity: A Multiple Intelligences Approach to Designing Learning in Undergraduate Fine Art"	*The International Journal of Art and Design Education*	Definition of creativity
Cramond, Bonnie	2005	"A Report on the 40-Year Follow-Up of the Torrance Tests of Creative Thinking: Alive and Well in the New Millennial"	*Gifted Child Quarterly*	Assessment of creativity
Cropley, Arthur J.	2000	"Defining and Measuring Creativity: *Are Creativity Tests Worth Using?*"	*Roeper Review*	Measurement of creativity
Diket, Read M.	2011	"NAEP and Policy: Chasing the Tail of the Assessment Tiger"	*Arts Education Policy Review*	Assessment of creativity
Dumas, Denis	2014	"Understanding Fluency and Originality: A Latent Variable Perspective"	*Thinking Skills and Creativity*	Criteria of creativity measurement

Continued Appendix

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Fink, Andreas	2013	"The Creative Brain: Brain Correlates Underlying the Generation of Original Ideas"	*Neuroscience of Creativity*	Criteria of creativity measurement
Fleming, Mike	2010	*Arts in Education and Creativity: A Literature Review*	Creativity, Culture and Education Series	Art with creativity
Fuchs Holzer, Madeleine	2009	"The Arts and Elementary Education: Shifting the Paradigm"	*Teachers and Teaching: Theory and Practice*	Art with creativity
Giloi, Susan	2013	"Current Approaches to the Assessment of Graphic Design in a Higher Education Context"	*The International Journal of Art and Design Education*	Assessment of creativity
Guilford, Joy Paul	1971	*The Analysis of Intelligence*	McGraw-Hill Series in Psychology	Criteria of creativity measurement
Hao, Ning	2016	"A New Tool to Measure Malevolent Creativity: The Malevolent Creativity Behavior Scale"	*Frontiers in Psychology*	Scoring of creativity measurement
Ho, Hsiao-Chi	2013	"Analysis of the Scientific Imagination Process"	*Thinking Skills and Creativity*	Criteria of creativity measurement
Howell, Cynthia Grenko, Dolares	1990	"The Relationship Between Arts Education and Creativity Among High School Students"	http://media.proquest.com/	Assessment of creativity
Humble, Steve	2018	"Factor Structure of the Torrance Tests of Creative Thinking Figural Form A in Kiswahili Speaking Children: Multidimensionality and Influences on Creative Behavior"	*Thinking Skills and Creativity*	Measurement of creativity
Ibérico Nogueira, Sara	2017	"Two Tracks of Thought: A Structural Model of the Test for Creative Thinking-Drawing Production (TCT–DP)"	*Creativity Research Journal*	Creativity tests
Irish National Teachers' Organization	2009	"Creativity and the Arts in the Primary School"	http://birbhum.nic.in	Definition of creativity
Jolley, Richard	2019	"The Importance of an Art Education"	https://cerp.aqa.org.uk	Art with Creativity
Kargi, Eda	2018	"Reflections of Play and Toys on Impressionist Painting Children and Play as a Pictorial Expression"	*Creativity Research Journal*	Art with creativity

Continued Appendix

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Kaufman, James C.	2012	"Beyond New and Appropriate: Who Decides What Is Creative?"	*Creativity Research Journal*	Creativity tests
Kaufmann, Geir	2003	"What to Measure? A New Look at the Concept of Creativity"	*Scandinavian Journal of Educational Research*	Definition of creativity
Kim, Kyung Hee	2006	"Is Creativity Unidimensional or Multidimensional? Analyses of the Torrance Tests of Creative Thinking"	*Creativity Research Journal*	Creativity tests
Kim, Kyung Hee	2011	"The APA 2009 Division 10 Debate: Are the Torrance Tests Still Relevant in the 21st Century?"	*Psychology of Aesthetics, Creativity, and the Arts*	Assessment of creativity
Kingsborough Community College	2001	"Guide for Analyzing Sculpture and Painting"	http://www.kbcc.cuny.edu/	Art with creativity
Kozbelt, Aaron	2006	"Dynamic Evaluation of Matisse's 1935 *Large Reclining Nude*"	*Empirical Studies of the Arts*	Criteria of creativity measurement
Labno, Jeannie	2008	*Renaissance*	Metro Books	Art with creativity
Lebedeva, Nadezhda	2013	"Implicit Theories of Innovativeness: Cross-Cultural Analysis"	WP5/10 Search Working Paper	Components of creativity
Lemons, Gay	2011	"Diverse Perspectives of Creativity Testing: Controversial Issues when Used for Inclusion into Gifted Programs"	*Journal for the Education of the Gifted*	Creativity tests
Lindström, Lars	2006	"Creativity: What Is It? Can You Assess It? Can It Be Taught?"	*The International Journal of Art and Design Education*	Scoring of creativity measurement
Locher, Paul J.	2010	"How Does a Visual Artist Create an Artwork?"	*The Cambridge Handbook of Creativity*	Criteria of creativity measurement
Meeker, Mary	1978	"Measuring Creativity from the Child's Point of View"	*Journal of Creative Behavior*	Measurement of creativity
Mehta, Ravi	2009	"Blue or Red? Exploring the Effect of Color on Cognitive Task Performances"	*Science*	Criteria of creativity measurement
McKay, Alexander S.	2017	"Measuring the Muses: Validating the Kaufman Domains of Creativity Scale (K-DOCS)"	*Psychology of Aesthetics, Creativity, and the Arts*	Creativity tests
Okuda, Shawn M.	1991	"Creativity and the Finding and Solving of Real-World Problems"	*Journal of Psychoeducational Assessment*	Components of creativity

Continued Appendix

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Ormond, Barbara	2011	"Transformative Shifts in Art History Teaching: The Impact of Standards-Based Assessment"	*The Curriculum Journal*	Scoring of creativity measurement
Palmiero, Massimiliano	2016	"Editorial: Creativity and Mental Imagery"	*Frontiers in Psychology*	Components of creativity
Perignat, Elaine	2018	"Book Review. From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts, by David A. Sousa and Tom Pilecki (2013). Thousand Oaks, CA: Sage"	*Arts Education Policy Review*	Art with creativity
Piffer, Davide	2012	"Can Creativity Be Measured? An Attempt to Clarify the Notion of Creativity and General Directions for Future Research"	*Thinking Skills and Creativity*	Measurement of creativity
Plucker, Jonathan A.	2010	"Assessment of Creativity"	*The Cambridge Handbook of Creativity*	Definition of creativity
Rojas, Joanne P.	2018	"Measuring the Creative Process: A Psychometric Examination of Creative Ideation and Grit"	*Creativity Research Journal*	Creativity tests
Roskos-Ewoldsen, Beverly	2008	"Age-Related Changes in Creative Thinking"	*Journal of Creative Behavior*	Criteria of creativity measurement
Rostan, Susan M.	2002	"A Cross-Cultural Study of the Development of Artistic Talent, Creativity and Giftedness"	*High Ability Studies*	Criteria of creativity measurement
Rostan, Susan M.	2005	"Educational Intervention and the Development of Young Art Students' Talent and Creativity"	*Journal of Creative Behavior*	Scoring of creativity measurement
Runco, Mark A.	2011	*Encyclopedia of Creativity* (Vol. 1)	Academic Press	Creativity tests
Runco, Mark A.	2012	"Divergent Thinking as an Indicator of Creative Potential"	*Creativity Research Journal*	Measurement of creativity
Runco, Mark A.	2012	"The Standard Definition of Creativity"	*Creativity Research Journal*	Definition of creativity
Runco, Mark A.	2014	"The Incremental Validity of a Short Form of the Ideational Behavior Scale and Usefulness of Distractor, Contraindicative, and Lie Scales"	*Journal of Creative Behavior*	Creativity tests
Runco, Mark A.	2016	"Which Test of Divergent Thinking Is Best?"	*Creativity. Theories – Research – Applications*	Components of creativity

End of Appendix

First author	Year	Publication title	Journal and book or conference paper	The reviewed content under the title of the categories
Scott, Sarah	2006	"Art and the Archaeologist"	*World Archaeology*	Art with creativity
Sternberg, Robert J.	2012	"The Assessment of Creativity: An Investment-Based Approach"	*Creativity Research Journal*	Criteria of creativity measurement
Tinio, Pablo P. L.	2013	"The Means to Art's End: Styles, Creative Devices, and the Challenge of Art"	*Neuroscience of Creativity*	Criteria of creativity measurement
Torrance, E. Paul	2000	*Research Review for the Torrance Tests of Creative Thinking Figural and Verbal Forms A and B*	Scholastic Testing Service	Assessment of creativity
Urban, Klaus K.	2005	"Assessing Creativity: The Test for Creative Thinking- Drawing Production (TCT–DP): The Concept, Application, Evaluation, and International Studies"	*International Education Journal*	Assessment of creativity
United Nations Educational, Scientific and Cultural Organization	2006	"Road Map for Arts Education"	The World Conference on Arts Education: Building Creative Capacities for the 21st Century (6–9 March, 2006. Lisbon, Portugal)	Components of creativity
Vartanian, Oshin	2013	"Fostering Creativity: Insights from Neuroscience"	*Neuroscience of Creativity*	Components of creativity
Vessey, William B.	2012	"Heuristics as a Basis for Assessing Creative Potential: Measures, Methods, and Contingencies"	*Creativity Research Journal*	Assessment of creativity
Viskontas, Indre V.	2013	"Art and Dementia: How Degeneration of Some Brain Regions Can Lead to New Creative Impulses"	Neuroscience of Creativity	Measurement of creativity
Wu, Ching-Lin	2017	"Enhancing the Measurement of Remote Associative Ability: A New Approach to Designing the Chinese Remote Associates Test"	*Thinking Skills and Creativity*	Creativity tests
Yarbrough, Nükhet D.	2016	"Assessment of Creative Thinking Across Cultures Using the Torrance Tests of Creative Thinking (TTCT): Translation and Validity Issues"	*Creativity Research Journal*	Assessment of creativity
Zaidel, Dahlia W.	2013	"Biological and Neuronal Underpinnings of Creativity in the Arts"	*Neuroscience of Creativity*	Definition of creativity

STUDENTŲ VIZUALINIO MENINIO UGDYMO KŪRYBINIŲ GEBĖJIMŲ KRITERIJŲ APŽVALGA

Kani ULGER

Santrauka

Šiame tyrime siekiama numatyti vizualiųjų menų studijų studentų kūrybiškumą tapybos srityje. Šio tyrimo apžvalgos skelbiamos publikacijose. Šioje apžvalgoje hierarchiniu metodu išskiriamos tokios aštuonios kūrybiškumo kategorijos: apibrėžtis, komponentai, vertinimas, matavimas, kriterijai, testai, rezultatų sumavimas ir menas. Remiantis turinio analize, išskiriamos kategorijos – originalumas, sklandumas, lankstumas, ribų peržengimas neatsižvelgiant į aplinkybes, netradiciškumas ir perspektyva; vertinant kūrybiškumą jos buvo apibrėžtos kaip universalūs bendrieji kriterijai. Vis dėlto estetiniai, techniniai įgūdžiai, vaizduotė, tobulinimas, uždarumas ir idėjų kūrimas laikomi specifiniais kriterijais, matuojant tapybinį kūrybiškumą vizualinio meninio ugdymo srityje. Šis apžvalginis tyrimas atskleidė, kad studentų vizualinio meninio ugdymo kūrybinius gebėjimus galima numatyti remiantis abiejų – universalių ir specifinių – kriterijų deriniu.

Reikšminiai žodžiai: kūrybiškumas, kūrybiškumo matavimas, kūrybiškumo testai, kriterijai, vizualinis meninis ugdymas.