

# THE RELATIONSHIP BETWEEN CREATIVE MIND AND ANIMATION ABILITY OF STUDENTS AT GUANGXI TALENT INTERNATIONAL COLLEGE\*

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## Abstract

The objectives of this research were: 1) to study creative mind of students at Guangxi Talent International College, 2) to study animation ability of students at Guangxi Talent International College, and 3) to study the relationship between creative mind and animation ability of students at Guangxi Talent International College. This study adopts a quantitative method to explore the relationship between creative mind and animation ability of students. The accidental random sampling was 375 students at Guangxi Talent International College, selected according to Krejcie and Morgan table (1970). The research instrument was a self-designed questionnaire. The statistics used were frequency, percentage, mean, standard deviation, and Pearson product moment correlation coefficient.

The research results were:

1. Creative mind of students at Guangxi Talent International College in 5 aspects was at a high level ( $\bar{x}$ =3.91, S.D.=0.84). Considering the results of these 5 research aspects were as follows: the highest rank was "Sensitivity" ( $\bar{x}$ =3.95,

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S.D.=0.83), indicates a high level, followed by “Elaboration” ( $\bar{x}$ =3.92, S.D.=0.81), whereas “Fluency” was the lowest rank ( $\bar{x}$ =3.88, S.D.=0.88).

2. Animation ability of students at Guangxi Talent International College in 5 aspects was at a high level ( $\bar{x}$ =3.93, S.D.=0.85). Considering the results of these 5 research aspects were as follows: the highest rank was “Modeling/Character Design Ability” ( $\bar{x}$  =3.95, S.D.=0.84), indicates a high level, followed by “Integrated Creative Ability” ( $\bar{x}$  =3.94, S.D.=0.83), whereas “Digital Tool Proficiency” was the lowest rank ( $\bar{x}$ =3.90, S.D.=0.87).

3. It is shown that the overall relationship between creative mind and animation ability has a positive correlation at the high level with statistical significance at the .01 level ( $r$ =0.84).

**Keywords:** Creative Mind, Animation Ability, Guangxi Talent International College

## Introduction

With the rapid development of digital technology and artificial intelligence, vocational animation education is increasingly required to integrate creative thinking and professional technical skills. In contemporary creative industries, students are expected not only to operate animation software but also to generate original ideas and transform them into coherent visual works.

Creativity research defines creative mind as the capacity to generate ideas that are original and useful (Runco, 2014). In animation education, professional competence involves character design, storytelling, motion expression, and digital production (Wells, 2006; Furniss, 1998). However, in practice, some students demonstrate strong technical skills but limited originality, while others possess creative ideas but lack technical execution. This suggests a potential relationship between creative mind and animation ability. (Daming, H. et to all. 2023, Peihao, X. et to all., 2023, Xiang Hui, J. et to all., 2023, Yanting, C. et to all., 2023, Intarasompun, W., . et to all. 2022)

Creative mind plays a crucial role in students' creative development. Creativity research suggests that creative mind involves generating ideas that are original and useful, and it can be cultivated through everyday learning experiences and supportive educational environments. (Meng, C. et to all., 2023; Zimin, Z., et to all., 2023; Zhonghua. et to all., 2023)

Despite the importance of this issue, empirical studies examining this relationship among vocational animation students remain limited. Therefore, this study investigates the level of creative mind and animation ability and examines the relationship between these two constructs.

## Objectives

1. To study creative mind of students at Guangxi Talent International College.
2. To study animation ability of students at Guangxi Talent International College.
3. To study the relationship between creative mind and animation ability of students at Guangxi Talent International College.

## Literature Review

### 1. Creative Mind

Creative mind has been widely conceptualized in creativity research as a multidimensional cognitive capacity underlying idea generation and innovative performance. Within divergent thinking theory, it includes fluency, flexibility, originality, and elaboration (Guilford, 1967), while later scholarship emphasizes sensitivity to problems and contextual awareness (Runco, 2014). From an educational perspective, creative mind is considered a developable capacity shaped by instructional design (Beghetto, 2016). The investment theory (Sternberg & Lubart, 1991) and the componential theory (Amabile, 2011) further

suggest that creative thinking interacts with domain-relevant skills to support professional competence. Overall, creative mind can be viewed as a dynamic construct comprising fluency, flexibility, originality, elaboration, and sensitivity, functioning as a foundational mechanism for domain-specific creative performance.

## **2. Animation Ability**

Animation ability is increasingly defined as a multidimensional professional competence integrating artistic design, narrative planning, motion expression, and digital technology. Animation production theory highlights the coordination of character construction, visual design, and narrative structure (Furniss, 1998), while Wells (2006) emphasizes the integration of design, storytelling, and motion for expressive coherence. In digital contexts, Manovich (2013) stresses the importance of technological proficiency in creative production. Accordingly, animation ability encompasses modeling/character design ability, storyboard ability, motion expression ability, digital tool proficiency, and integrated creative ability, reflecting both artistic and technological dimensions of animation practice.

## **3. Related Research**

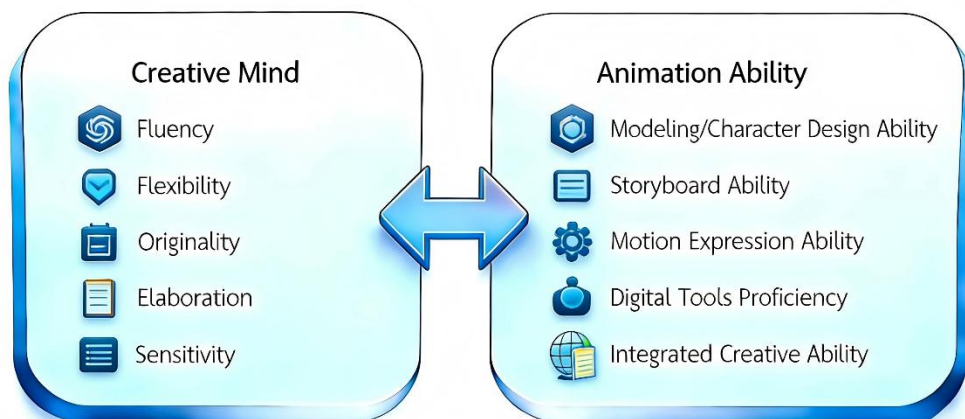
Previous studies have examined creative mind and animation-related competencies separately. Research on creative mind confirms its multidimensional structure and measurable nature. Karwowski (2014) validated creativity constructs through large-scale survey research, while Barbot, Besançon, and Lubart (2015) found significant associations between creative thinking and artistic performance. Ritter et al. (2020) further demonstrated that creativity training can enhance ideation and cognitive flexibility. Research on animation ability emphasizes motion understanding, digital competence, and project-based production performance. Bétrancourt and Tversky (2000) highlighted the importance of motion representation, Huang and Liaw (2018) confirmed the role

of digital tool proficiency, and Untari et al. (2020) reported improvements in animation production through project-based learning. However, limited research has directly explored the relationship between creative mind and animation ability as structured multidimensional constructs, particularly among animation major students. Therefore, this study aims to address this gap.

## Research Framework

This study adopts a two-variable analytical framework in which creative mind serves as the independent variable and animation ability as the dependent variable. Creative mind is conceptualized as a multidimensional cognitive construct involving the generation of original and useful ideas (Runco, 2014) and is considered developable through educational experience (Beghetto, 2016). Based on established creativity frameworks (Guilford, 1967; Runco, 2014), it includes five dimensions: fluency, flexibility, originality, elaboration, and sensitivity. Animation ability is defined as a multidimensional professional competence integrating visual design, storytelling, motion expression, and production processes (Wells, 2006; Furniss, 1998), as well as digital tool proficiency in contemporary media contexts (Manovich, 2013). Accordingly, it comprises modeling/character design ability, storyboard ability, motion expression ability, digital tool proficiency, and integrated creative ability. The framework assumes that creative mind positively influences animation ability at both overall and dimensional levels. A structured questionnaire survey is employed to measure both constructs, and statistical analyses are conducted to examine their relationships.

The research framework can be illustrated in the following figure:



**Figure 1 Research Framework**

## Methodology

This study adopts a quantitative research method to systematically explore the relationship between creative mind and animation ability of students. The research process includes population and sample determination, research instrument design, data collection, and data analysis.

### 1. Population and the Sample Group

#### Population

The research population is 12,000 students from Guangxi Talent International College.

#### Sample

The sample group of this study is 375 students in Guangxi Talent International College according to Krejcie and Mogan table (1970) by accidental random sampling.

### 2. Research Instrument

The research instrument is a questionnaire with 3 parts:

Part 1: General Information. This section has 4 questions to gather background information on the respondent's gender, year of study, professional

direction and animation production experience.

Part 2: Creative mind it is 5 rating Scales. This main section has creative mind statements measured on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". It is organized into 5 dimensions: 1) Fluency (5 statements); 2) Flexibility (5 statements); 3) Originality (5 statements); 4) Elaboration (5 statements); 5) Sensitivity (5 statements).

Part 3: Animation ability it is 5 rating Scales. This main section has animation ability statements measured on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree". It is organized into 5 dimensions: 1) Modeling/Character Design Ability (5 statements); 2) Storyboard Ability (5 statements); 3) Motion Expression Ability (5 statements); 4) Digital Tool Proficiency (5 statements); 5) Integrated Creative Ability (5 statements).

All statements display consistency with the measurement target as evidenced by an average score of 0.67 to 1.00 on the acceptable consistency index (IOC). The reliability of a pilot test of questionnaires assessed using Cronbach's  $\alpha$ , a statistic measuring internal consistency, with  $\alpha$  value of 0.77, indicating excellent internal consistency.

### **3. Data Collection**

To ensure the systematic collection of data, the researcher implemented the following procedures:

Distribution: The online questionnaires were distributed to students at Guangxi Talent International College via digital channels. Each respondent was informed of the research objectives, confidentiality, and their voluntary participation.

Platform Utilization: Data were collected through the "Questionnaire Star" (Wenjuanxing) online platform, which facilitated efficient data gathering and management.

Data Screening: Upon completion of the collection period, the raw data were screened. Invalid responses, such as incomplete forms or patterned answers, were excluded to ensure the integrity of the results.

Preparation for Analysis: The final valid datasets were coded and organized for statistical processing and analysis.

#### 4. Data analysis

Part 1 To study creative mind of students at Guangxi Talent International College, data analysis uses mean and stand deviation.

Part 2 To study animation ability of students at Guangxi Talent International College, data analysis uses mean and stand deviation.

Part 3 The relationship between creative mind and animation ability was analyzed by using the Pearson Product Moment Correlation Coefficient (r).

### Results

#### Part 1: Creative Mind

Table 1 The mean ( $\bar{x}$ ) and standard deviation (S.D.) of creative mind of students at Guangxi Talent International College in 5 aspects

| Creative Mind       | $\bar{x}$   | S.D.        | Level       | Ranking |
|---------------------|-------------|-------------|-------------|---------|
| 1. Fluency (X1)     | 3.88        | 0.88        | High        | 5       |
| 2. Flexibility (X2) | 3.92        | 0.86        | High        | 3       |
| 3. Originality (X3) | 3.90        | 0.84        | High        | 4       |
| 4. Elaboration (X4) | 3.92        | 0.81        | High        | 2       |
| 5. Sensitivity (X5) | 3.95        | 0.83        | High        | 1       |
| <b>Total</b>        | <b>3.91</b> | <b>0.84</b> | <b>High</b> |         |

From Table 1 considering, the overall average of creative mind of students at Guangxi Talent International College in 5 aspects, was at a high level

( $\bar{x}$ =3.91, S.D.=0.84). Considering the results of these 5 research aspects were as follows: the highest rank was “Sensitivity” ( $\bar{x}$ =3.95, S.D.=0.83), indicates a high level. Followed by “Elaboration” ( $\bar{x}$ =3.92, S.D.=0.81), whereas “Fluency” was the lowest rank ( $\bar{x}$ =3.88, S.D.=0.88).

#### Part 2: Animation Ability

Table 2 The mean ( $\bar{x}$ ) and standard deviation (S.D.) of animation ability of Students at Guangxi Talent International College in 5 aspects.

| Animation Ability                         | $\bar{x}$   | S.D.        | Level       | Ranking |
|-------------------------------------------|-------------|-------------|-------------|---------|
| 1. Modeling/Character Design Ability (Y1) | 3.95        | 0.84        | High        | 1       |
| 2. Storyboard Ability (Y2)                | 3.93        | 0.83        | High        | 3       |
| 3. Motion Expression Ability (Y3)         | 3.92        | 0.89        | High        | 4       |
| 4. Digital Tool Proficiency (Y4)          | 3.90        | 0.87        | High        | 5       |
| 5. Integrated Creative Ability (Y5)       | 3.94        | 0.83        | High        | 2       |
| <b>Total</b>                              | <b>3.93</b> | <b>0.85</b> | <b>High</b> |         |

From Table 2 considering, the overall average of animation ability of students at Guangxi Talent International College in 5 aspects, was at a high level ( $\bar{x}$ =3.93, S.D.=0.85). Considering the results of these 5 research aspects were as follows: the highest rank was “Modeling/Character Design Ability”. ( $\bar{x}$ =3.95, S.D.=0.84), indicates a high level. Followed by “Integrated Creative Ability”. ( $\bar{x}$ =3.94, S.D.=0.83), whereas “Digital Tool Proficiency” was the lowest rank ( $\bar{x}$ =3.90, S.D.=0.87).

Part 3: The relationship between creative mind and animation ability of students at Guangxi Talent International College.

**Table 3** The relationship between creative mind and animation ability of students.

| Animation Ability<br>(Ytt) | Creative Mind (Xtt) |        |        |        |        |        |
|----------------------------|---------------------|--------|--------|--------|--------|--------|
|                            | X1                  | X2     | X3     | X4     | X5     | Xtt    |
| Y1                         | 0.68**              | 0.71** | 0.77** | 0.75** | 0.80** | 0.83** |
| Y2                         | 0.63**              | 0.64** | 0.74** | 0.73** | 0.77** | 0.78** |
| Y3                         | 0.68**              | 0.66** | 0.72** | 0.70** | 0.78** | 0.79** |
| Y4                         | 0.58**              | 0.60** | 0.67** | 0.64** | 0.71** | 0.72** |
| Y5                         | 0.57**              | 0.59** | 0.67** | 0.62** | 0.67** | 0.70** |
| Ytt                        | 0.69**              | 0.70** | 0.79** | 0.75** | 0.82** | 0.84** |

\*\* refers to statistical significance level at .01

From Table 3, it is shown that the overall relationship between creative mind and animation ability has a positive correlation at the high level with statistical significance level at .01 ( $r=0.84$ ).

## Discussion

1. Creative mind of students at Guangxi Talent International College in 5 aspects was at a high level, Considering the results of these 5 research aspects were as follows: the highest rank was “Sensitivity”, indicates a high level. Followed by “Elaboration”, whereas “Fluency” was the lowest rank. The reason is that animation learning emphasizes visual observation and project-based refinement, which strengthens students’ sensitivity to problems and their ability to elaborate ideas, while structured tasks may limit rapid idea generation. The findings align with Runco (2014) and Torrance (1966), who emphasized sensitivity to problems as an essential dimension of creative thinking, as well as Beghetto

(2016), who highlighted the role of structured educational practice in developing creativity.

2. Animation ability of students at Guangxi Talent International College in 5 aspects, was at a high level. Considering the results of these 5 research aspects were as follows: the highest rank was “Modeling/Character Design Ability”, indicates a high level. Followed by “Integrated Creative Ability”, whereas “Digital Tool Proficiency” was the lowest rank. The reason is that vocational animation training focuses heavily on drawing fundamentals and character modeling practice, which enhances modeling ability and supports integrated project performance, whereas digital tool mastery requires continuous technological adaptation and extended practice. The results of this study are consistent with those of Wells (2006) and Furniss (1998), who emphasized character design and production integration in animation education, as well as Manovich (2013), who stressed the ongoing demands of digital tool proficiency.

3. It is shown that the overall relationship between creative mind and animation ability has a positive correlation at the high level with statistical significance level at 01. The coefficient was 0.84\*\*. The reason is that creative mind supports idea generation, flexible thinking, and problem solving, which are essential throughout the animation production process and contribute to higher-quality outcomes. The results of this study are consistent with those of Runco (2014), Sternberg and Lubart (1991), and Amabile (2011), who emphasized the interaction between creative cognition and domain-specific skills in producing innovative performance.

## Recommendation

1. The implementation of the research results is as follows: Since students demonstrated relatively lower fluency, animation courses should incorporate more open-ended and time-limited creative tasks, such as rapid brainstorming,

sketch challenges, and idea-mapping activities. Reducing overly structured requirements may also encourage spontaneous idea generation and enhance students' confidence in creative expression.

2. As digital tool proficiency ranked lowest, animation programs should strengthen hands-on software training and workflow practice through workshops and project-based learning. Providing opportunities for extended practice and exposure to updated industry tools can improve students' technical competence and operational efficiency.

3. In addition, animation education should emphasize the integration of creative thinking and technical application. Designing tasks that require students to quickly generate ideas and immediately implement them using digital tools, such as short animation exercises or rapid prototyping, can strengthen the connection between creative mind and animation ability.

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