

TEACHERS' PERSPECTIVE OF THE USE OF VISUAL EFFECTS IN DIGITAL CONTENT ON LEARNING READINESS, CREATIVE THINKING, AND STUDENT PERFORMANCE IN PRIMARY SCHOOLS OF ABU DHABI

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Abstract

Students at primary stage usually face difficulty in understanding scientific subjects, especially abstract sciences. Therefore, relying on traditional learning methods only will lead to a lack creative thinking in the learning process and a weak readiness to continue in the study, this scenario requires alternative learning methods such as visual effects based on digital content. The aim of this study is to examine the interrelationships between visual effects in digital content, creative thinking, learning readiness, student performance. This study applied quantitative methods to analyze the relationships between visual effects in digital content, creative thinking, learning readiness, and student performance. The population is the teaching staff in primary schools of UAE. Data instrument is self-administrated questionnaire. The data collection has been conducted on a sample of 700 teachers in 248 schools in Abu Dhabi. Simple random sampling technique has been applied in the survey procedure. SPSS software is deployed to conduct data analysis. Regression analysis and SEM have been deployed to conduct data analysis and test the hypothesis of this study. The result revealed that visual effects in digital content has a significant effect on creative thinking, learning readiness, and student performance, as well as creative thinking and learning readiness have significant effects on student performance. To that end, incorporating visual effects into digital textbooks is a promising approach to improving the educational experience of students in the UAE. Therefore, this study recommend inclusion of visual effects in education curriculum is necessary, whereas more studies on this field should help the policymakers in the ministry of education to regulate alternative learning methods and set new guidelines for this goal.

Keywords: Visual Effects in Digital content, Creative Thinking, Learning Readiness, Student Performance

1. INTRODUCTION

The primary school stage is considered critical for academic career of students because it lays the foundation for the advanced stages that follow (Mustafa, 2014). Students at this stage usually face difficulty in understanding scientific subjects, especially abstract sciences such as mathematics and physics, whereas these lessons include ambiguous terms and complex concepts (Mihardi et al., 2022). Therefore, relying on traditional learning methods only will lead to a lack of students' motivation and a weak desire to learn, as well as absence of creative thinking among the student (Schoevers et al., 2019). This scenario requires alternative learning methods such as visual effects based on information technology and digital photography. For example, infographic has been reported to helps students raise the level of academic performance by integrating visual effects into study materials, which motivates the student to participate in the lesson with a desire and enjoyment to receive information (Wulandari et al., 2022). The visual effects have always been considered part of the emotional human experience

as a means of expression, communication, exploration, imagination, culture and historical understanding. Hence, the challenge for visual effect integration should not only focus on one particular discipline but must extend across the whole curriculum (Jovita, 2018). Many academics have integrated visual effects in the fields of education with other educational methods, either traditional or technical. However, the literature did not report the significance of visual effects with digital content on student performance in the United Arab Emirates (UAE). There is a lack of studies on this field in the UAE educational system, while the role of learning readiness and creativity in fostering student performance remain a gap that need to be addressed from the perspective of teachers. Although there are lots of studies that covered teaching methods and how visual effects influence student performance, the growth of their scientific cognitive ability, and overcoming the difficulties they face in acquiring abstract scientific concepts, there is a scarcity of studies that indicate the impact of integrating visual effects with digital content in primary schools with the influence of other factors like learning readiness and creative thinking. Therefore, research address this gap and attempt to provide an empirical evidence on the significance of these relationships. As today's digital age cannot be overstated. Visual effects are a fundamental aspect of digital content, whether it is in the form of videos, animations, or interactive media (Liu et al., 2022). These effects have the power to captivate and engage students, making the learning experience more enjoyable and effective. To that end, the aim of this study is to examine the interrelationships between visual effects in digital content, creative thinking, learning readiness, student performance, the result provides valuable insights into how to design and deliver educational content that maximizes learning outcomes from the lens of visual effects. Therefore, this research can contribute to understanding this relationship in the educational system of primary schools and highlight the crucial function that the visual effects curriculum plays in identifying what education needs to improve its programs in the future in light of new technology such as digital content.

2. LITERATURE REVIEW

2.1 Visual Effect in Digital Content

Learning through visual stimuli is a complex process in which the imagination and mind help students to establish a new sense that boost their learning skills. Many researchers have emphasized the importance of using new strategies and models in education by adopting technical methods that are characterized by inclusion and diversity, working with small groups, and using applications and practical skills (Wang et al., 2021; Chung & Ko, 2023). Visual effects stimulates the learner's mind and thinking. It pushes him to think more in other, unconventional ways. Enik (2013) points out that the visual effects offer a combination of material and social facts, and extracting the specific connections between concepts to human experience so that digital content provide a magnificent tools that help student to understand the complex concepts.

There is an essential factor, which is the connection between the artist and the learner, as is the case with the technology media in the current era. We will see that there is a strong relationship between art and new learning methods that simplify the concepts for students (Chang, 2022).

Based on the analysis of some relevant research literature, findings have been revealed that visualizations positively influence students' behavior, creativity in engagement, and academic performance. Researchers may disagree about the best way to teach children to read and write or learn science, history, and mathematics, but they share the direct impact of art education on students' academic performance. Researchers agree that arts is an important part of our life, but researchers investigated whether this effect is important in education. Therefore, the inclusion of visual effects in education legislation is necessary, whereas more studies on this field should help the policymakers to regulate alternative learning methods and set new guidelines for this purpose.

2.2 Learning Readiness

Readiness is personal motive that an individual behavior will lead to achieving what he/she wants (Howard et al., 2021). There are three factors that an individual expects before he/she begins to exert an effort required to achieve a specific goal. These factors are the power of influence, expectation, and reward. The power of influence stems from the individual's belief that successful performance can bring him/her a reward. As for expectation, it means that the individual expects that any valuable effort made by him/her will result in an acceptable result. As for the third factor, which is the reward, it means that an individual's appreciation of the reward. And his knowledge of the power of its influence on satisfying his/her basic needs (Liu et al., 2020). Readiness to learn new knowledge is very important for students to achieve their goals. If a student is motivated, the student will have inner satisfaction with his/her performance in school (Kearney & Garfield, 2022).

Motivation helps the student to boost their readiness for study. Intrinsic motivation is internally focused and fueled by the inherent satisfaction a student feels from completing a task or mastering a skill (Chung et al., 2020). While extrinsic motivation is often driven by external rewards and consequences. Self-motivation is important for students because it helps the student. Having a strong sense of self-motivation not only makes your students better equipped to excel in the classroom. Self-motivation is an important life skill. It is integral to achieving goals, feeling fulfilled, progressing in learning and experiencing greater personal satisfaction. In short, learning readiness enhances cognitive processing (Jong, 2020).

The readiness to learn influenced is associated with the knowledge that should be acquired inside the school. In this regard, the role of the teacher is important during the learning process, as students are more motivated to study when they receive praise or a positive reaction from their teachers, they will establish a high level of learning readiness. The teacher who applies focus in the methods that motivate students to learn determine the learning methods that students prefer and pleased to use. If the student is given an incentive within a short period of time; they may have high degree of readiness to learn. While diversification of learning methods may lead to negative consequences on student performance, so that incentives given for students must be varied and numerous at the same time. The diversity of incentives makes it more effective than using a single form that may be boring for the student, is useless, and does not lead to a positive change in behavior (Van Themaat, 2019).

2.3 Creative thinking

Creative thinking is a special way of thinking that leads to the generation of valuable and unique ideas. Students' creative thinking involves learning how to generate new ideas and apply them in specific contexts, seeing a complex situations in a new way, identify alternative explanations, and making new connections that generate a positive outcome. This involves combining parts to form something original, sifting and refining ideas to discover possibilities, building theories and objects, and working on intuition. Creative thinking can involve complex representations and images, digital and computer-generated outputs, or occur as virtual reality. Some studies have shown that creative thinking is affected by various conditions, including whether the work is collaborative and how motivated individuals are to solve a problem (Brophy, 2006). These findings support the idea that creativity is based on flexible thinking (DeHaan, 2011). In the same context, Schacter et al. (2006) demonstrated that classrooms in which teachers promoted creative thinking in students saw significant improvements in student academic performance. Concept formation is the mental activity that helps us compare, contrast, and classify ideas, objects, and events.

Concept learning can be concrete or abstract and is closely linked to metacognition. What has been learned can be applied to future examples. All people are capable of engaging in creative thinking such as approaching everyday activities in an unconventional way. Creative thinking among students can have a positive impact on students' interest, academic performance, identity, and social and emotional development by supporting the interpretation of experiences, actions, and events (Schoevers et al., 2019). Although knowledge and creative thinking are important to educational and professional achievement, the classroom teacher often provides few opportunities for students to think creatively (Tabieh et al., 2021). However, creative thinking and problem solving can be incorporated into teaching in many ways. For example, teachers can encourage students to look for new connections between disparate ideas or ask students to provide multiple and diverse solutions to complex problems. If the ability to be creative is truly vital to students' future success, teachers must promote and teach creativity in school. To that end, training student to think out of the box is a useful way to make students creative (Robinson, 2001).

2.4 Student performance

Academic performance is a term that expresses the extent to which a student comprehend what they have learned from specific experiences in a prescribed academic subject, and it is measured by the grades that the student obtains in achievement tests (Stajković et al., 2018). Academic performance is also the affective and cognitive performance in a specific activity, whether intellectual or non-intellectual, and often it is a measure of success and excellence in education (Okello et al., 2020). The ultimate goal of any education system is to increase students' knowledge, prepare them for future life and make them active members of society. Therefore, the educational system in all countries is concerned with student achievement, the success rate of students in different subjects, and how well they perform in different subjects (Jadama, 2014). It is important to know academic performance early by evaluating students' performance in childhood in order to develop the educational system in a way that raises the

level of academic performance later.

The importance of academic performance is limited to the grades that students obtain, which qualifies them to continue studying and move to higher levels of study. Student performance has become viewed by many educators and specialists in educational and pedagogical circles as a basic standard in light of which the academic level of pupils and students can be determined. The aim of studying academic performance is to obtain knowledge, information, attitudes, and inclinations that show the extent to which students comprehend what has been learned in the prescribed academic subjects. Knowing the strengths and weaknesses of students; identifying students' special abilities in order to work on developing their learning skills (Abruzzi, 2016). Academic performance is typically measured through examinations or continuous assessments but there is no general agreement on how best to assess it or which aspects of procedural knowledge such as skills or declarative knowledge such as facts are most important (Stajković et al., 2018). In addition, there are results of individual factors that are linked to and affect the student's success in studying, which gives inaccurate indicators of real academic performance. These factors include test anxiety, the study environment, motivation to study, and emotions. (Broaddus et al., 2019). Individual differences in academic performance are closely linked to differences in personality and intelligence. In addition, students' levels of self-efficacy, self-control and motivation also influence their levels of academic performance. Academic performance is often measured by the Academic Performance Index. In sum, student performance is a measure of student's educational achievement in scientific subjects, i.e., reaching a certain level of proficiency in the study. In other sense, student performance can be defined as the final result of learning process and it can be measured through specific test or teacher's observation.

3. RESEARCH METHODOLOGY

This study applied quantitative methods to analyze the relationships between visual effects in digital content, creative thinking, learning readiness, and student performance. The population is the teaching staff in primary schools of UAE. Data instrument is self-administrated questionnaire. The data collection has been conducted on a sample of 700 teachers in 248 schools in Abu Dhabi. Simple random sampling technique has been applied in the survey procedure. SPSS software is deployed to conduct data analysis. Regression analysis and SEM have been deployed to conduct data analysis and test the hypothesis of this study.

4. RESULT AND DISCUSSIONS

Demographic characteristics include statistics that explain the characteristics of the study sample in terms of age, gender, experience, and educational level. The survey also included an evaluation of the student's performance in class. By comparing the percentages in Table-1, it is found that the majority of teachers are female (89.16%) and the largest percentage are between the ages of 31-40 years. It is noted that the largest percentage of teachers hold a bachelor's degree (58.92%), and a large percentage of them have average experience ranging between 6-10 years (56.66%). The teachers' evaluation of the level of students' academic performance

was an average of 40.86%, and this result indicates the need to develop students' performance using good methods other than traditional methods.

Table 1: The demographic profiles of teachers

Description	Frequency	Percentage
Gender		
Male	592	89.16
Female	72	10.84
Age		
22 – 30 years	157	23.70
31-40 years old	336	50.56
41 – 50 years	121	18.28
51 years and older	49	7.45
Academic qualification		
Diploma	94	14.22
Bachelor	391	58.92
Master/Doctoral	178	26.86
Experience		
Less than five years	130	19.64
6-10 years	376	56.66
11-20 years	108	16.25
More than 20 years	49	7.45

To determine the extent of acceptance of the study sample (teachers) regarding visual effects, learning readiness, creative thinking, and student performance, the central tendency of the data set was calculated, i.e. the arithmetic mean, standard deviation, skewness, and kurtosis of the data about the arithmetic mean. Through these results, it is possible to know the extent to which respondents agree or disagree with the statements referred to in the questionnaire items.

Table-2 reveals that the arithmetic mean values for visual effects in digital content = 3.74, creative thinking = 3.56, readiness to learn = 3.47, and student performance = 3.31. These values indicate that there is moderate agreement between teachers on the statements mentioned in the questionnaire. If survey participants scored a mean value of the arithmetic mean higher than 3.00 on a Likert scale (1-5), this indicates that they generally have a positive perception of those concepts. It can be concluded that the respondents generally agreed with the statements presented to them. This result reveals a general acceptance among sample members towards these concepts. However, further analysis and interpretation of the data should be undertaken to understand the reasons behind their agreement and identify any potential areas for improvement or clarification

Table 2: Descriptive Statistics of Constructs

	N	Min.	Max	Mean	St. Deviation	Skewness	Kurtosis
1 Visual effects in digital content	664	1.25	5.00	3.74	0.81	-0.91	0.40
2 Creative thinking	664	1.00	5.00	3.56	0.88	-0.82	0.20
3 Learning readiness	664	1.00	5.00	3.47	0.81	-0.54	-0.08
4 Student Performance	664	1.30	4.90	3.31	0.69	-0.40	-0.24

The overall perceived construct validity of the empirical data in this study is important to know the degree to which indicators of digital content visual effects, creative thinking, learning readiness, and student performance are related. In this analysis, the correlations of the indicators are evaluated with regard to variables, whether they are from the first level, such as visual effects, learning readiness, and creative thinking, or from the second level with two dimensions (cognitive and emotional dimensions) in the case of student performance (Hair et al., 2020). The first step is to explore the true structure of the indicators with their associated dimension by evaluating preliminary measurement models based on the data set (Zhongfeng & Juan, 2015). Convergent validity is associated with indicators belonging to one dimension and reveals how closely those indicators identify a particular dimension. To demonstrate convergent validity, the average variance extracted (AVE) must exceed or equal 0.50 (Hair et al., 2019). Referring to the output data in Table-3, it is clear that the AVEs for all variables are within the standard threshold (≥ 0.50), provided that the composite reliability values are ≥ 0.7 (Fornell & Larcker, 1981). In conclusion, each variable is considered sufficient to identify through the variance of the indicators and their convergence to each other.

Table 3: The amount of AVE and composite reliability of dimensions.

Construct	Indicators	AVE	Square root of AVE	Composite Reliability
Visual effects in digital content	7	0.537	0.733	0.888
Creative thinking	4	0.731	0.855	0.873
Learning readiness	5	0.510	0.711	0.845
Student performance - Cognitive	4	0.632	0.795	0.834
Student performance - Affective	5	0.557	0.746	0.863

To test the hypotheses, an analysis of the direct relationships with significant statistical significance between the visual effects of digital content, creative thinking, learning readiness, and student performance. To ensure the validity of the hypotheses and their acceptance, standard regression coefficients were compared to determine the intensity of the association with the above-mentioned variables, as well as the presence of significant statistical significance at the threshold of 0.05. To accept the hypotheses, the critical ratio (CR), which must be greater than 1.95, is compared to evaluate the statistical significance of the regression coefficients between variables (Hair et al., 2019). The following two criteria are used to validate the hypotheses: first if $CR \geq 1.96$ is a direct relationship between two pairs of variables; Secondly, the statistical significance coefficient p-value is less than 0.05, then the hypothesis is supported, otherwise the hypothesis must be rejected. The result of hypothesis analysis is shown in Table-4.

Table 4: The significance and strength of relationships

Direction of effect	Beta	C.R	Sig.	Result
Visual Effects of Digital → Student Performance	0.4	5.53	0.00	Supported
Visual Effects of Digital Content → Creative Thinking	0.30	6.75	0.00	Supported
Visual Effects of Digital Content → Learning Readiness	0.31	6.56	0.00	Supported
Learning Readiness → Student Performance	0.51	6.55	0.00	Supported
Creative Thinking → Student Performance	0.34	4.92	0.00	Supported

As shown in Table-4; The first hypothesis was accepted, which states that the visual effects of digital content have a significant and significant effect on student performance, as the relationship between the visual effects of digital content and student performance in primary schools in Ab Dhabi was statistically significant and the degree of correlation is moderate (C.R = 5.53, Sig. = $0.00 \leq 0.05$, beta = 0.40). This result shows the importance of visual effects in developing the student's cognitive and emotional performance. Therefore, it can be concluded that visual effects in digital textbooks play a crucial role in enhancing the cognitive and emotional performance of students in primary schools in the UAE.

The second hypothesis was accepted, which states that the visual effects of digital content have a significant effect on creative thinking, as the relationship between the visual effects of digital content and creative thinking in primary schools in Abu Dhabi was statistically significant and the degree of correlation is moderate (C.R = 6.75, Sig. = $0.00 \leq 0.05$, beta = 0.30). This result shows the importance of visual effects in developing creative thinking among students. Visual effects play a crucial role in developing creative thinking in primary schools. By incorporating visually stimulating elements into the learning environment, students are encouraged to think in innovative and new ways and explore their imagination through interactive learning. The third hypothesis was accepted, which states that the visual effects of digital content have a significant and statistically significant impact on learning readiness, as the relationship between the visual effects of digital content and creative thinking in primary schools in Abu Dhabi was statistically significant and the degree of correlation is moderate (C.R = 6.56, Sig. = $0.00 \leq 0.05$, beta = 0.31).

This result shows the importance of visual effects in raising the level of motivation for learning among students. It can be concluded from this result the effective impact of visual effects in motivating students to learn, as visual effects play a crucial role in developing readiness for learning in primary schools through digital textbooks. These effects not only enhance student engagement and interest, but also facilitate better content comprehension and retention. The fourth hypothesis was accepted, which states that learning readiness has a significant, statistically significant impact on student performance, as the relationship between learning readiness and student performance in primary schools in Abu Dhabi was statistically significant, and the degree of correlation is moderate (C.R = 6.55, Sig. = $0.00 \leq 0.05$, beta = 0.51).

This result indicates the student's readiness to learn and his ability to participate in the learning process effectively, which will ultimately lead to improving his academic performance. It includes various factors such as cognitive readiness and emotional readiness, all of which play an important role in shaping the student's educational journey. These factors can greatly impact a student's academic performance and overall success in school. Research on the same topic has shown similar results, which is that students who are more prepared to learn tend to have higher levels of motivation, focus, and engagement in their studies.

The fifth hypothesis was accepted, which states that creative thinking has a significant and statistically significant impact on student performance, as the relationship between creative thinking and student performance in primary schools in Abu Dhabi was statistically significant

and the degree of correlation is moderate (C.R = 4.92, Sig. = 0.00 ≤ 0.05, beta = 0.34). It has been proven that creative thinking has a significant impact on the performance of students in primary schools in the UAE. Other researchers have concluded the importance of developing creative thinking among students to improve their cognitive performance.

The effect of a guidance program based on creative thinking strategies in developing the career planning skills of academically gifted tenth grade students, and this result is consistent with the results reached by this study. When students are encouraged to think in innovative and diverse ways and explore different solutions to problems, they not only develop their creative thinking skills, but also become more engaged and motivated in their learning. This type of thinking allows students to approach tasks from a new perspective, leading to innovative solutions and a deeper understanding of the topic. In addition, creative thinking promotes cooperation among students.

5. CONCLUSIONS

This study concludes that one way to improve poor performance of students in primary schools in the UAE is to apply visual effects to digital textbooks. By incorporating interactive elements and visual visuals into digital content, which helps students increase their concentration and information retention and enhance their ability for creative thinking and. In addition, visual effects in digital textbooks can provide a more personalized learning experience, catering to different learning styles and abilities. In addition, the use of digital textbooks can also enhance collaboration among students. Through features such as online forums and virtual group projects, students can actively participate and learn from each other.

This promotes a sense of teamwork and encourages students to take charge of their education. In other words, digital content enhanced with visual effects encourages innovation in learning and contributes to increasing students' motivation toward the lesson, ensuring students' access to modern content. Overall, incorporating visual effects into digital textbooks is a promising approach to improving the educational experience of students in the UAE. Therefore, this study recommends inclusion of visual effects in education curriculum is necessary, whereas more studies on this field should help the policymakers in the ministry of education to regulate alternative learning methods and set new guidelines for this goal.

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