

The Importance of Info graphics in The Process of Perception and Creativity as A Teaching access to The Design Field of Art Education

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Abstract: The full acceptance of infographics as a device for transmitting complicated information to a broad audience, it has considerable potential as a method of efficiently, precisely, without vagueness and delivering abstract, complex, and intensive instructional content, thus this technique supporting student learning. Because of this potentiality, infographics professionals require more substantial experience for instructional, performances, interpreting and assessment. However, there is limited scholarly literature that focuses on Infographics use in art education or on the practical design of infographics specifically for art educational curricula. The present investigation concerned to investigate common infographics to be as guidance about how utilising the Infographics methods to be as a process of perception and creativity of the art design. The present research demonstrates the results of the analysis of popular infographics, and what makes an excellent method for the educational process as well as and how to do it.

Key words: infographics, audience, scholarly literature, educational process.

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I. Introduction

Lamb et al. (2014) [1] Declared that Since the world has nowadays become more growing by gradual increases in the sense of information while receiving and dealing with such a massive amount of data, infographics designs are, therefore, required as a proper technique. Infographics as having simplifying such information as making such data processing much more comfortable and faster are more appropriate for the art education process. In the educational process, the student who does not have previous experience of the fundamentals of programming as modern science, the infographics will enable the student to learn better. It is first believed that teaching with visual communication makes reading much faster. It enhances the information in the students' brain and makes enable them to understand it quickly and to analyse data smoothly and attractively.



Fig (1)

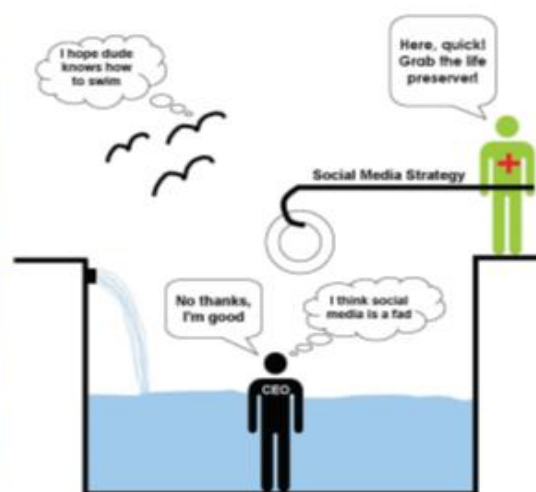


Fig (2)

Smiciklas (2012) [2] stated that Employing infographics to illustrate any event process can assist internal and external audiences for understanding what any organisation does and how it operates. Infographics, however, make it easier for viewers to engage with any company or any brand. Furthermore, it has protruded as a popular as visual communication approach to delivering dense messages, abstract, and complex. Besides, it is widely used in newspapers and newscasts because they are efficient with encapsulating various details in one visual while still being easy to perceive and precise as shown in Fig (1) is showing the stairway to brand heaven and hell, and Fig (2) is showing the goal was to highlight an opinion for a responsibility to how to swim in the “social media pool.”

The infographics example below is using bright colors, illustrates characters combined with bold text, is immediate grabs the attention and gives an overview of the topic. Bearing in mind that the target of infographics is not only to inform but also to make the viewing experience amusement and audience engagement. Furthermore, to explain a topic in an evoking interest and the easy-to-understand the way is how to integrate different graphic elements—like colors, icons, images, illustrations and fonts as shown in fig (3).

Bishop (2014) [3] reported that infographics are a visual representation of any information or data. The infographics, therefore, is considered as one of the fields of Instructional Design and Technology (IDT) as visual literacy has been a focus of IDT since the 1970s.

The infographics in fig (4), illustrates the statistics and percentages in a visual form using radials and a chart. However, and even if the text above isn't readable but still get the picture.



Fig (3)



Fig (4)

Smiciklas (2012) [2] explained that visualisation of data or ideas that attempts to transfer complex information to an audience in a way that can be quickly conceived and easily understood as shown in fig (5,6). The visualisation could make a massive difference in how the audience perceives data. Infographics are more attractive, more reachable, more disguised, and more accessible as faculty of remembering something learned or experienced as its shareability. Infographics easy to be posted on social media, e-mailed, or readily contained as part in posters or presentations.

Meeusah et al. (2013) [4]; explained that as far as infographics could readily illustrate comprehensive information, it could be employed to serve other purposes such as remembering the available information. Furthermore, it is showing the connection between concepts, convey of processes and events, presentation, also content and summarising the knowledge acquired.



Fig (5)

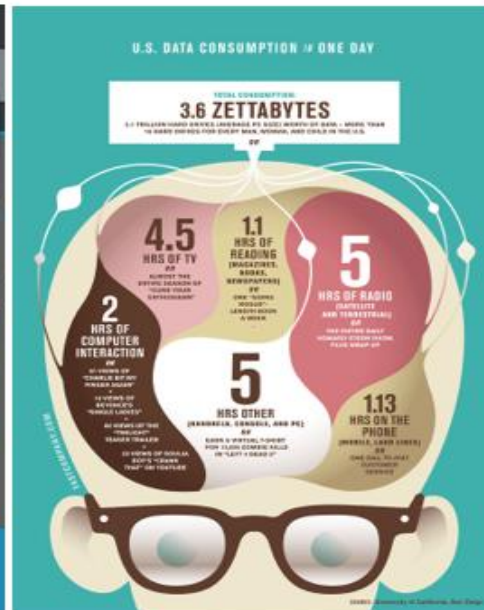


Fig (6)

Yildirim (2017) [5] proposed that infographics must be simple, assess to present complex information rapidly and clearly. They are also consolidating the presentation of information by attractive visuals and texts for readers self-explanatory. To create an engaging infographic, however, students might develop critical thinking, analysis and synthesis of specific skills of designers. It could lead the students to obtain new methods of instructional design skills.

Damyaynov et al. (2018) [6] declared that the qualities enhanced by infographics through the usage of it and related models supply environment which promotes higher-level knowledge. Also, supplies opportunities to make the most effective use of cognitive capacities. The enhancement of students' cognitive abilities through incorporation and explanation raises self-dependence and creativity of students as well as learners. Fadzil (2018) [7] reported that this technique promotes learners' motivation, collaborative learning, concise information presentation.

II. Conceptual Framework

II.1. The research problem

It might be stated in the following question:

- What is the effectiveness of using infographics as an approach to teaching the fundamentals design of art working?
- What is the efficacy of using infographics in developing the students' analytical thinking skills in the design field in art education?

II.2. Objectives of the Study

The main objectives of this research are:

- To increase the awareness of opportunities that infographics cater to education.
- The data of this research are gathered by the quantitative and analytical research method.
- Emphasise onrealising the effectiveness of using infographics as an approach to teaching the fundamentals of design on developing higher education of art students'
- Enhancing the analytical thinking skills of art students' in the field of art design work.

II.3. Research Methodology

By employing the qualitative and analysing methodology, the researcher attempted to illuminate how comprising an infographics design assignment into the artwork to give supporting and challenging the students' artwork content and technological literacies.

II.4. Significance of the research

This research, as far as mentioned, is a starting point for researchers which used infographics as an approach for teaching the fundamentals of art design in higher education.

- This research may attract supervisors, educators and instructors in general, and computer learners in particular to the need of varying education strategies.
- The research emphasises the importance of acquiring analytical thinking skills through visual learning.
- Give particular emphasis on the necessity of varying the educating approaches and students' learning styles.
- Based on visual figures, triggering the students' motivation by utilising a new method of learning.
- Shed attention and opportunities for curricula projects and developers to the requirement of activating the visual approach.
- To constitute the content of the advanced curriculum according to teaching approaches.

II.5. Terminology

Infographics

Infographics are two words "information" and "graphics" combination used to combine the data into a design. Moreno et al. (2001) [8] describe visual images (infographics) which include illustrations, photos, graphics, maps, drawings, animations, simulations, and video as the non-verbal mode of content knowledge performing. By definition, infographics are a visual representation of any information or data. Also, infographics can help to present that information in the form of an attractive visual graphic

Krum (2014) [9] defines infographics as graphic design that combines data visualisations, illustrations, text, and images into a format that inform a comprehensive description.

III. Review of literatures

Fadzil (2018) [7] illustrated in her research that most of the pre-service science educators were able to separately provide useful and exciting information, well-structured and visually attractive infographics. Three subjects also come out from the analysis reflected by the pre-service science educators and observation notes of the researchers.

The subjects were:

- For the pre-service science educators, the infographics work created a significance experience. Also showed a positively expressed points of view about the infographics' assignment.
- The infographics enhanced the pre-service science educators' imaginary knowledge.
- The assigns of a useful infographics should endorse to the pre-service educators.

Kibar et al. (2019) [10] by integrating the infographics design model into the team-based and technology, investigated the method for visualising complex information required for learners to produce in-depth knowledge of content and enabled them to visualise and share this knowledge for collaborative learning situations briefly. By using the infographics design rubric, this study was investigated using an academic educational design by organising three main cycles included three macrocycles:

- Analysis and investigation;
- Design and assembling;
- Assessment and reflection. based on both qualitative and quantitative methods, the process was developed and promoted from cycle to cycle.

Amin et al (2014) [11] examined the use of infographics as a tool for facilitating learning among graphic design and digital media learners. The findings suggested that the acceptance of learners about infographics application in facilitating their learning sessions was most appreciated due to its high suitability to make information concise and coherent, it enhances creativity and productivity. Therefore, infographics should be promoted as one of the tools to ease learners' problems especially those that involve learners with tendency of having visual literacy skills.

Alyahya (2019) [12] has presented a qualitative analysis of the proposed design strategy, which focuses on the infographic's development process. The results have suggested that infographics assignment design, when included in instructional technology disciplines, helps instructional designers to enhance message delivery during visual transfers that eventually leads to increased learning interests among learners. The study also revealed five vital themes that emerged upon analyzing the collected data from participants involved. The present study has provided research scholars, an insight into the developed state-of-the-art tool, which in future research studies might serve as a basis for the development of an Instructional Infographics model.

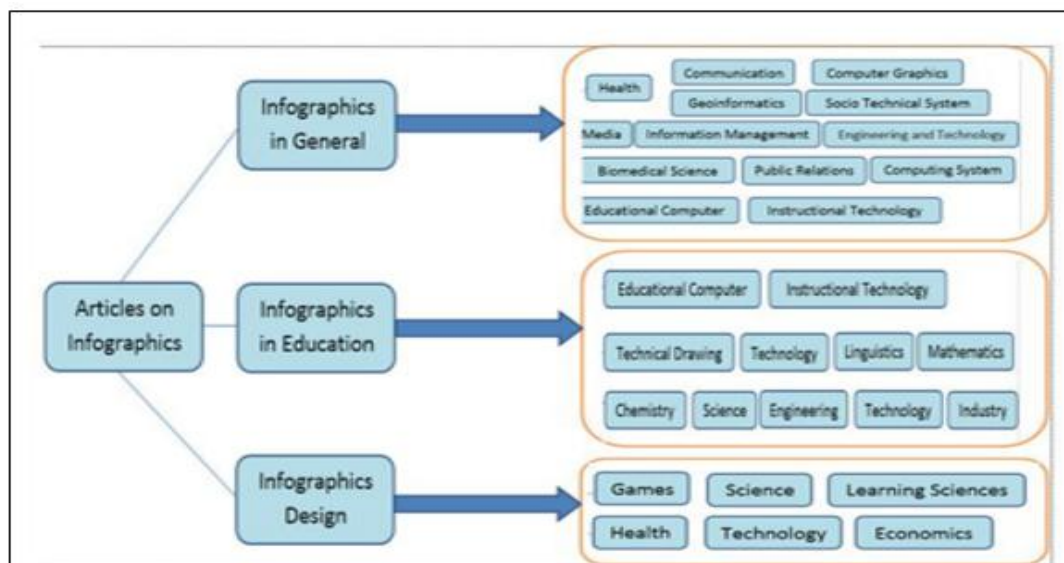


Fig (7)

Meeusah et al. [4], declared that as new educational environments in visual communication, infographics were used to provide information to their readers. Furthermore, using various visuals such as texts, pictures, drawings, diagrams, graphs, etc. Naparin et al. (2017) [13] investigated infographics for educational materials, type of infographics, structure and use of infographics orientations. Infographics could be used to serve different educational purposes. Since overall information could be illustrated through infographics, they could be used for demonstrating the relationship between different connotations. For example, transferring processes and events, of the course content presentation and the subjects learn summarisation as shown in fig (7).

According to Davidson (2014) [14], the points that should be considered when attempting to create good infographics are listed as follows:

- Identification of the purpose,
- Decide on the components that can be used in infographics,
- Determination of the type of infographics to be created,
- Presenting the information in a way that allows learners to understand the subject.

Infographics created for educational purposes allow information to be presented within a particular context. Davidson (2014) [14] argued that good infographics are useful in supporting the development of students. Also, infographics are considered to be a helpful communication tool to communicate with the information.

IV. Types of infographics

Four types of infographics would be to a greatest extent convenient in a given circumstance will depend on the goal of the data visualisation.

IV.1. Informational Infographics

The graphic may be enhanced by icons, shapes, colors and other visual elements but overall, the emphasis is on the words as shown in fig (8).

IV.2. Timeline Infographics

Timeline infographics characterise in a chronological arrangement, as shown in fig (9). infographics are often applied to demonstrate a product's progress, a historical orientation or evolution ideas. Timeline infographics utilise icons, images, and graphic constituents to be shown. The timeline's format may be twisting or spiral, vertical, or horizontal.

IV.3. Charts Infographics

Emerged Charts infographics as shown in fig (10) has a form as the information visualisation centerpiece. For emphasis and explanation, Colors, shapes, and icons may emerge. As far as performing a basic comparison of any items, charts elaborate best.

IV.4. Pie Charts Infographics

A pie charts infographic, as shown in fig (11) is whenever the focused topic is a pie chart. A pie charts infographic, however, is technically a subdivision of a chart infographics [15]. It is a distinct category given its prevalent use. Pie charts are intensity influential tool for demonstrating an item with different components or how one value measure the similarity or dissimilarity between several other benefits

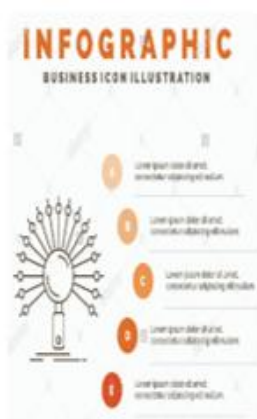


Fig (8)



Fig (9)

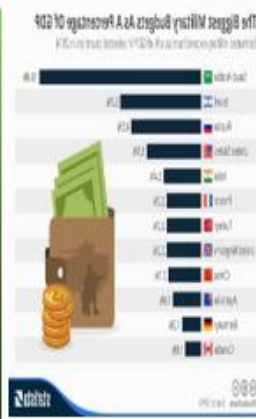


Fig (10)



Fig (11)

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V. Characteristics Of Infographics

V.1. Why infographics Are So Effective in Educational Contexts

Everyone can manipulate language efficiently, and the average person is more susceptible to forget written or verbal connection than visual information. The most interesting matter of fact that people of at what they hear recollect just 10 per cent and 20 per cent of what they read, while they recall 80 per cent of what they see. Also, the ordinary person can compile 60,000 times visual content faster than other types. Furthermore, visual learners' people are approximately 65 per cent.

V.2. How to Use infographics for Teaching and Education

Infographics could be excellent and outstanding teaching tools, whether it required to utilising them to teach in a class or for students to promote their own for grading their project.

V.3. Incorporate infographics into Learning Activities

Bringing your class to examples of considerable infographics is a smart way to employ visual content in your lecture plans. This type of visual content not only could increase student benefit and engagement, but infographics can also assist students in learning about essential subjects ranging from design, literature of artwork and science. Easily could use infographics in several scholarly activities depending on the focus of the classroom literature and the level of students. It most of interest introducing an eye-catching infographic for a new module, by to transmit the fundamental of design or generate interest as shown in fig (12).

- Encourage students to read statistics, interpret data, and draw conclusions from infographics as shown in fig (13,14).

- Rather than having students read a textbook passage or a news article, use infographics to start a discussion or lead a classroom debate.



Fig (12) is showing an attractive and eye-catching infographic



Fig (13)



Fig (14)

V.4. How to Design infographics for Education

Use infographics in Creative Assignments

In the lecture, the pre considered infographics to promote learning activities isn't the only methods to employ this visual content. It could encourage students to enhance their infographics.

To promote the student's creativity assignment, try one of these strategies:

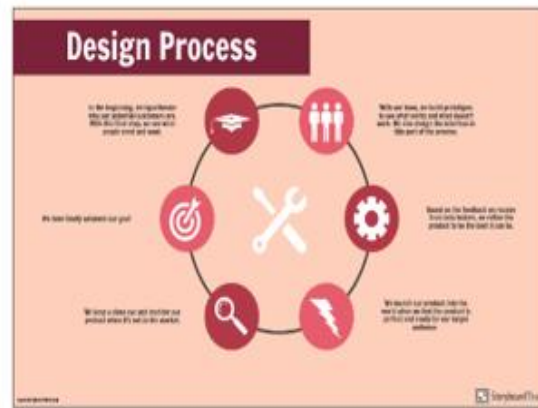
- Have students chart the main events of a historic era.
- How to use of text and images of Graphic design to convey a concept or a message
- How to express the letters of the alphabet by A typeface style for (while a font is a specific variation of a typeface);
- Ask students to develop an infographics figurative artwork rendered in a highly graphic style,
- Prompt students to share their understanding of a process artworks that foreground extensive research into individual, social, cultural, or scientific objects of inquiry.

VI. The process of designing infographics

A closer look at the process, approach as work as a professional, as an example, as shown in fig (15,16).



Fig(15)



Fig(16).

VI.1. Choose a Topic

- Choose a topic for the required infographics.
- Carefully choose a focus area that will resonate with the intended topic. audience,
- For an appropriate topic, consider recent topic in your artwork, the collected key findings and the important issue should be dealt.
- Make sure not to repeat a topic that another educator or isn't original or already covered.

VI.2. Do the Research

- Search for the necessary data to design the infographics.
- External data sources might be required such as internet resources:
 - Google Public Data Explorer:
 - Data.gov:
 - HealthData.gov
 - World Facebook

VI.3. Sketch the design

- Whenever the research and collected data is prepared, begin to envision how the infographics will look like.,
- Transform the data into visual elements to gain the best sense of patterns and critical points.
- Specify the most important elements of information, and then use the data gathered to write short reports for each point intended to cover.

VI.4. Choose a Design Platform

- select a design platform and create your infographics.

Consider one of the following design platforms:

Be Funky; Canva; Easel.ly; Infogram; Piktochart; Snappa; Venn gage and Visme. (see Figure 17)

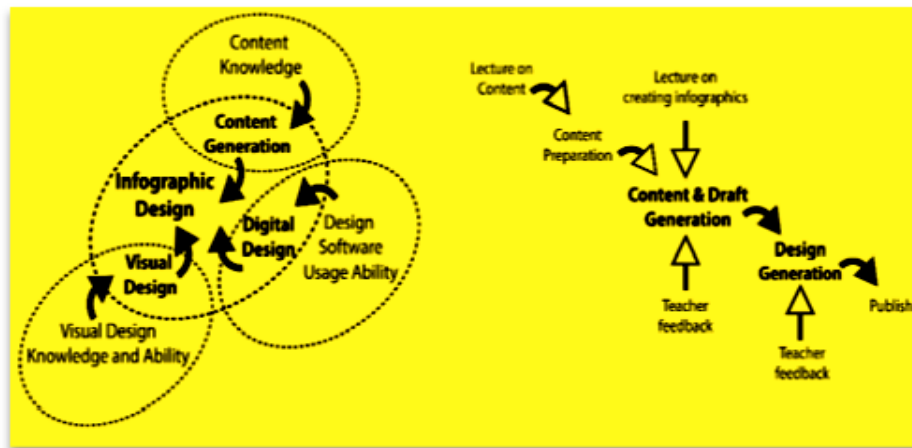


Fig (17)

VI.5. Bridge21 Activity Model

The Bridge21(2016) [16] model is a social constructivist approach to teaching and learning that incorporates team-based, technology-mediated and project-based components (Nuhoğlu et al. 2015) [17]; (Tangney et al.2009) [18] &(Nuhoğlu et al. 2019) [19]. The components of the model are shown in Figure (17). The model recommends teamwork using shared technology by defining project-based learning activities, which allow teams to collaborate and manage their own learning. The role of the teacher is to act as a facilitator or guide, and the learning space and technology resources.

Figure (18a) The Bridge21 learning model (Bridge21, 2016) and (18b) the Bridge21 activity model.

VI.6. Immediacy:

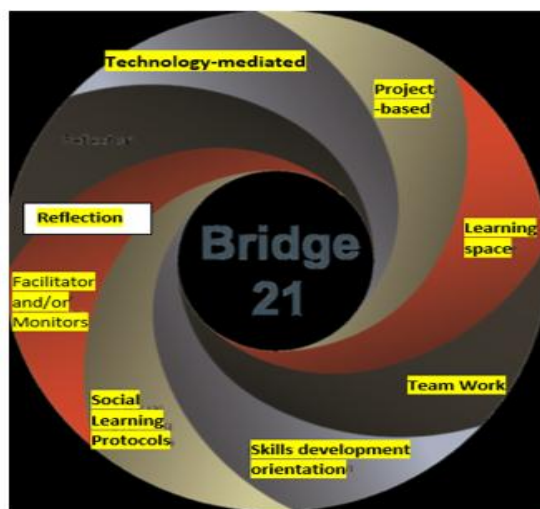


Fig (18a)



Fig (18b)

To establish immediacy, a designer or educator needs to involve learners directly and instantly with the content in order to create a sense of urgency or excitement. Storytelling, for example, is one way of establishing immediacy because it captures the emotional authenticity of the situation.



Fig (21)



Fig (22)



Fig (23)

An infographics' structure and layout can likely support immediacy through the sharing of emotional and sensual details, including clear examples and visual representations of complex ideas as shown in fig (21,22,23).

VI.7. Malleability:

Malleability allows learners to determine personal meaning and relevance, and to be co-owners/co-creators of an experience. On the other hand, infographics request enough pliability so learners can influence their own experience of the infographics. Also, the outcomes should associate with controlled actions as due to exposure to the infographics. Infographics can establish malleability by encouraging learners to interact with the content (e.g. asking learners questions that promote reflection, allowing learners to peruse the infographics in more than one way, providing content pathways based on decision hierarchical).

Fig (24) is representing infographic as a headline as a red silhouette of a person's head and a red bubble above it as thought. Inside the thought bubble is the text that reads, "Is student ability fixed or malleable?", next, a box with an arrow pointing toward the person's face. The wording in the box read, "Indiana University researchers found all STEM students and especially underrepresented minorities as performing better in growth-mindset classes." The text also reads, "Study included: 150 professors and 15,000 students". The second section of the graphic illustrates the findings of the study. The third section of the graphic has white text at the top with a red bottom background, reads, "statistical drawing.

The headline of the graphic reads "Faculty mindsets predict students' performance." The headline is on a red background. Next to it is a lightbulb icon.

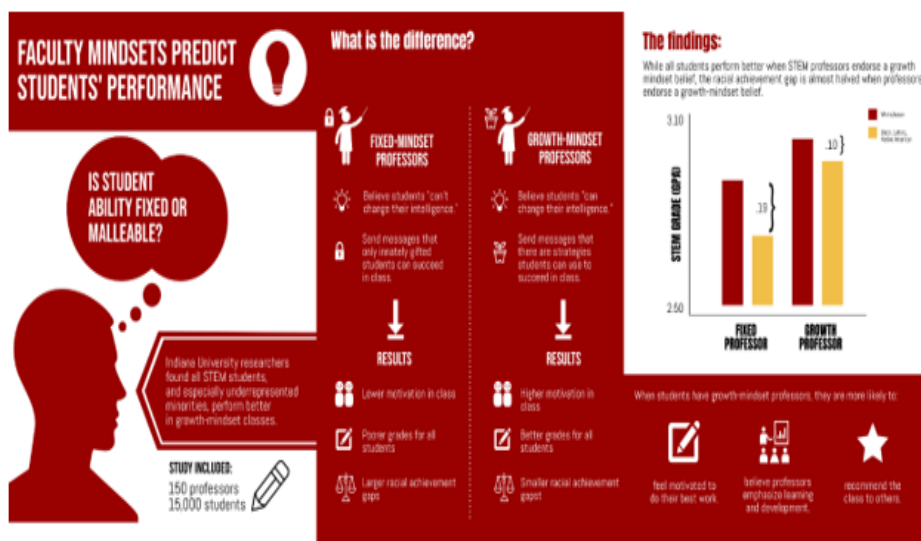


Fig (24)

VI.8. Compellingness:

A compelling infographic is so powerfully too attractive and tempting to be resisted that it demands learners' interest, attention, and appreciation as shown in fig (25,26,27).



Fig (25)



Fig (26)



Fig (27)

VII. Discussion and Conclusion.

In the case of weak design and weakly structured images, it will fail to transmit ideas and information. At the same time, the lack of knowledge about visual communication could prevent learners from explicating images accurately.

The world has newly become more growing by gradual increases in the sense of information technology while receiving and cooperating with such an enormous amount of data. Infographics designs, on the other hand, are considered essential as a proper technique as they have a crucial role in simplifying such information. infographics could make such data processing much more comfortable and quicker. For the student who does not have prior experience for teaching the fundamentals of technology programming as modern science. infographics will enable the student to learn better. Teaching the visual approach, however, first makes reading and understanding much faster. It promotes the development of information in the students' minds and enables them to read and grasp information quickly while analysing data smoothly in an attractive way.

The study proposes that infographics are showing signs of future success instructional tools that coordinate with the attentiveness and characteristics of digital age students as attributed "digital natives" or "digital citizens" accomplished with technology.

References

- [1]. Lamb, G. R., Polman, J. L., Newman, A., & Smith, C. G. (2014). Science news infographics: Teaching students to gather, interpret, and present information graphically. *The Science Teacher*, 81,25–30.
- [2]. Smiciklas, M. (2012). *The Power of infographics: Using Pictures to Communicate and Connect with Your Audiences*. Indianapolis, IN: Que Publishing.
- [3]. Bishop, M. J. (2014). Instructional message design: Past, present, and future relevance. In Spector. M., Merrill, M. D., Elen, J. & Bishop, M. J. (Eds.), *Handbook of research on educational communications and technology* (pp. 373–383). New York: Springer.
- [4]. Meeusah, N., & Tangkijwiwat, U. (2013). Effect of data set and hue on a content understanding of infographics. *Proceeding of the Thanyaburi: Blooming Color for Life*, 272-275. Retrieved from <http://www.repository.rmutt.ac.th/xmlui/handle/123456789/1263>.
- [5]. Yildirim, S. (2017). Approaches of designers in the developed educational purposes of infographics' design processes. *European Journal of Education Studies*, 3 (1), 249-284.
- [6]. Damyanov, I., & Tsankov, N. (2018). The role of infographics for the development of skills for cognitive modeling in education. *International Journal of Emerging Technologies in Learning*, 13, 82–92. <https://doi.org/10.3991/ijet.v13i01.7541>
- [7]. Fadzil, H. M. (2018). Designing infographics for the educational technology course: perspectives of pre-service science teachers. *Journal of Baltic Science Education*, 17(1).
- [8]. Moreno, R., Mayer, R., Spires, H., & Lester, J. (2001). The case for social agency in computer-based teaching: Do students learn more deeply when they interact with animated pedagogical agents? *Cognition and Instruction*, 19 (2), 177-213.
- [9]. Krum, R. (2014). *Cool infographics: Effective communication with data visualization and design*. San Francisco, California: J.Wiley & Sons.
- [10]. Kibar P, N., Sullivan, K., Akkoyunlu, B. (2019). Creating infographics Based on The Bridge21 Model for Team-Based and Technology-Mediated Learning. *Journal of Information Technology Education: Innovations in Practice*.
- [11]. Amin M. N. M.; S. Khalisah W. N.; Liyana A. N. A.; HooF. J.; ShaffeM. D.; NarimahN. A. Nik; FauziH. M. The Use of Infographics as a Tool for Facilitating Learning. Conference: International Colloquium of Art and Design Education Research (CADER 2014)

- [12]. Alyahya D. M. (2019). infographics as a Learning Tool in Higher Education: The Design Process and Perception of an Instructional Designer. *International Journal of Learning, Teaching and Educational Research*. *International Journal of Learning, Teaching and Educational Research* Vol. 18, No. 1, pp. 1-15, January 2019 <https://doi.org/10.26803/ijlter.18.1>.
- [13]. Naparin, H; and Saad, A.B. (2017) INFOGRAPHICSS IN EDUCATION: REVIEW ON INFOGRAPHICSS DESIGN. *The International Journal of Multimedia & Its Applications (IJMA)* Vol.9, No.4/5/6,
- [14]. Davidson, R. (2014). Using infographics in the science classroom. *The Science Teacher*, 81, 34–39. doi:10.2505/4/tst14_081_03_34.
- [15]. Retrieved from <https://www.copyright.com/kb/infographicss/the-benefits-of-infographicss-for-education/>.
- [16]. Bridge21. (2016). Introductory handbook. Retrieved from <http://tft-project.eu/index/handbook>
- [17]. Nuhoglu-K, P., & Akkoyunlu, B. (2015). Searching for visual literacy: Secondary school students are creating infographics. In S. Kurbanoglu, J. Boustany, S. Špiranec, E. Grassian, D. Mizrahi, & L. Roy (Eds.), *Information literacy: Moving toward sustainability* (Vol. 552, pp. 241-251). New York: Springer International Publishing. https://doi.org/10.1007/978-3-319-28197-1_25
- [18]. Tangney, B., E. Oldham, Conneely, C., Barrett, S., & Lawlor, J. (2009) Pedagogy and processes for a computer engineering outreach workshop: The B2C model. *IEEE Transactions on Education* 2010, 53(1), 53-60. <https://doi.org/10.1109/TE.2023210>.
- [19]. Nuhoglu-K, P.; Akkoyunlu, Su. (2019) Creating infographics Based on The Bridge21 Model for Team-Based and Technology-Mediated Learning. *Journal of Information Technology Education: Innovations in Practice* · Volume 18.
- [20]. Hassan, H.G. (2016). Designing infographics to support teaching complex science subject: A comparison between static and animated infographics. A thesis submitted to the graduate faculty in partial fulfillment of the requirements for the degree of Master of Fine Arts.
- [21]. El-Mohammed, N. (2017). The effectiveness of using infographics as an approach for teaching programming fundamentals on developing analytical thinking skills for high school student in the city of Makkah in Saudi Arabia. *Global Journal of Educational Studies* ISSN 2377-3936 2017, Vol. 3, No. 1.
- [22]. Alrwele, N.S. Effects of infographics on Student Achievement and Students' Perceptions of the Impacts of infographics. *Journal of Education and Human Development* September 2017, Vol. 6, No. 3, pp. 104-117.
- [23]. Joanna C. Dunlap & Patrick R. Lowenthal. (2016) Getting graphic about infographics: design lessons learned from popular infographics. *JOURNAL OF VISUAL LITERACY*. VOL. 35, NO. 1, 42–59
- [24]. Zull, J. E. (2002). *The art of changing the brain*. Sterling, VA: Stylus. Medina, J. (2008). *Brain rules: 12 principles for surviving and thriving at work, home, and school*. Seattle, WA: Pear Press
- [25]. Oetting, J. (2015, February). The science behind why our brains crave infographics (In an Infographics). Agency Post. Retrieved from <http://blog.hubspot.com/agency/science-brainscrave-infographics>. doi:10.1007/s11423-007-9060-7.

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