

DEFINE A CONCEPT: DRAWING AS A PEDAGOGICAL TOOL

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ABSTRACT

The main objective of this paper is to assess the effectiveness of drawing as a pedagogical tool in defining a concept. The findings of this paper are based on a sample of 400 drawings produced by undergraduate students at a public university in Sri Lanka. By producing their own picture, as an assignment, undergraduate students were asked to respond to the question: “What is meant by Internet”. In this paper we discuss the research process, we analyze the drawings produced and we explore the effectiveness of drawing as a pedagogical tool. The drawing studied in this study are revealed that drawing covers key three modes of pedagogy: teaching, learning and assessment. At the same time, it is also shown that drawing helpful to motivate students to engage in learning while improving their socio-emotional skills like creativity, critical thinking and so on. Teachers are required to adopt more experience-based learning activities and can be adopted drawing as effective pedagogical tool in terms of teaching, learning, and assessment.

Key Words: Drawing, Pedagogical tool, Concept, Internet.

1. INTRODUCTION

Define the concept of drawing is rather difficult thing, although, it is used differently in the literature. According to Quillin and Thomas [1], “Drawing is a learner-generated visual representation depicting any type of content, whether structure, relationship, or process, created in static two dimensions in any medium”. Drawing is superior to activities like reading or writing because it forces the person to process information in multiple ways: visually, kinesthetically and semantically [2]. The advantages of drawing were not dependent on learners’ level of creative skills, suggesting that this strategy may work for all learners, not just ones who are able to draw well. Drawing is an active task that requires elaboration on the meaning of the concept and transforming the definition to a picture. When a learner draws a concept, they must concern on its meaning as well as its semantic features.

According to Gunther Kress [3] “Images represent the recollection of the visually encountered world through the spatially organized mode, while text is the recollection of the action ally experienced world through the temporally organized mode”. To him, drawings are able to express the relationship between visual elements in a way that would be difficult to express through text. Therefore, images are allowing for a more holistic representation of concepts, emotions, and information [4]. In addition to that, images can be used to generate concepts by stimulating abstract and creative thoughts. When comparing with digital media like photographs, drawing is more generative because both physical and abstract realities can be expressed [5]. Furthermore, drawing is a technology-independent tool, gives equal footing to the learners.

As per Seymour Papert's constructionist paradigm, individuals learn by making things, and therefore the very act of producing a creative drawing is a valuable learning opportunity [6]. Within the new media literacies pedagogical framework, drawing is suitable as it exhibits all five characteristics of participatory learning: creativity, co-constructed expertise, motivation and engagement, relevance, and connection [7]. Moreover, it can foster crucial novel medial literacies: visualization, simulation and distributed cognition as well as socio-emotional skills such as self-awareness [8] [9]. Drawing can also help motivate students and make them more self-aware of their own learning [1].

The effectiveness of drawing as a learning tool depends on the alignment between intended outcomes, activities and assessments [10]. In addition to improving motivation and observational skills, drawing can be assigned to improve both lower-order and higher-order cognitive skills in terms of student-centered pedagogical goals. At the same time, teacher can assess learning which also helps to improve student learning. While reviewing existing researches, it is found that studies related to drawing, more specifically, participatory drawing have discussed as a visual research tool rather than a pedagogical tool. Therefore, the present study will open up new knowledge regarding use of drawing in terms of pedagogical viewpoint.

2. METHODOLOGY

As materials of the study, it was analyzed pictures drawn by 400 first-year students enrolled to a compulsory course unit: Information Technology. These students who came from different areas in the country got registered in the Faculty of Humanities and Social Sciences at the University of Sri Jayewardenepura, Sri Lanka. Due to the Covid-19 pandemic, they were unable to engage in learning at the university physically. With the guidance of the faculty, they were asked and guided to enroll in the Information Technology course unit which is compulsory to all. As an individual assignment related to this course unit, students asked to draw a picture by themselves in order to answer the question: "What is meant by Internet?".

During the analysis, each picture has carefully explored whether elements of the picture express the meaning of Internet. For that, acceptable definition of Internet which is given with the reading material was considered and key terms of the definition were identified. According to the reading material given, Internet is defined as "A worldwide collection of interconnected networks that are used by millions of people to obtain information, disseminate information, access entertainment and communicate with others". It was identified six key terms which exhibit the meaning of Internet as Worldwide (Global), Interconnected Networks, People (Individual), Information, Entertainment and Communication. If a picture drawn with expressing these key terms rationally and sufficiently, such drawing has exhibited the meaning of internet well. Otherwise, the picture does not align to the meaning of internet correctly. It was recorded whether each picture express these key terms or not by exploring each and individual picture.

These pictures were, then, given marks ranged from 0 to 6, based on how many key terms were expressed by itself. Based on the marks, pictures are ranked from higher-level to lower-level enabling to measure the students' ability of defining a concept through their own drawing. With a qualitative perspective, few of the interesting pictures were purposively selected in the analysis in order to describe the pedagogical features of a drawing.

3. DATA ANALYSIS AND DISCUSSION

Data analysis was carried out in both quantitative and qualitative approaches. Under the quantitative approach, the data analysis process consists three steps: exploring pictures drawn, recognizing and recording the number of key terms that each picture expressed, and analyzing the marks given to each picture. Likewise, figure 1 shows the counts of undergraduates who illustrate each of key terms in the definition of Internet through their drawing.

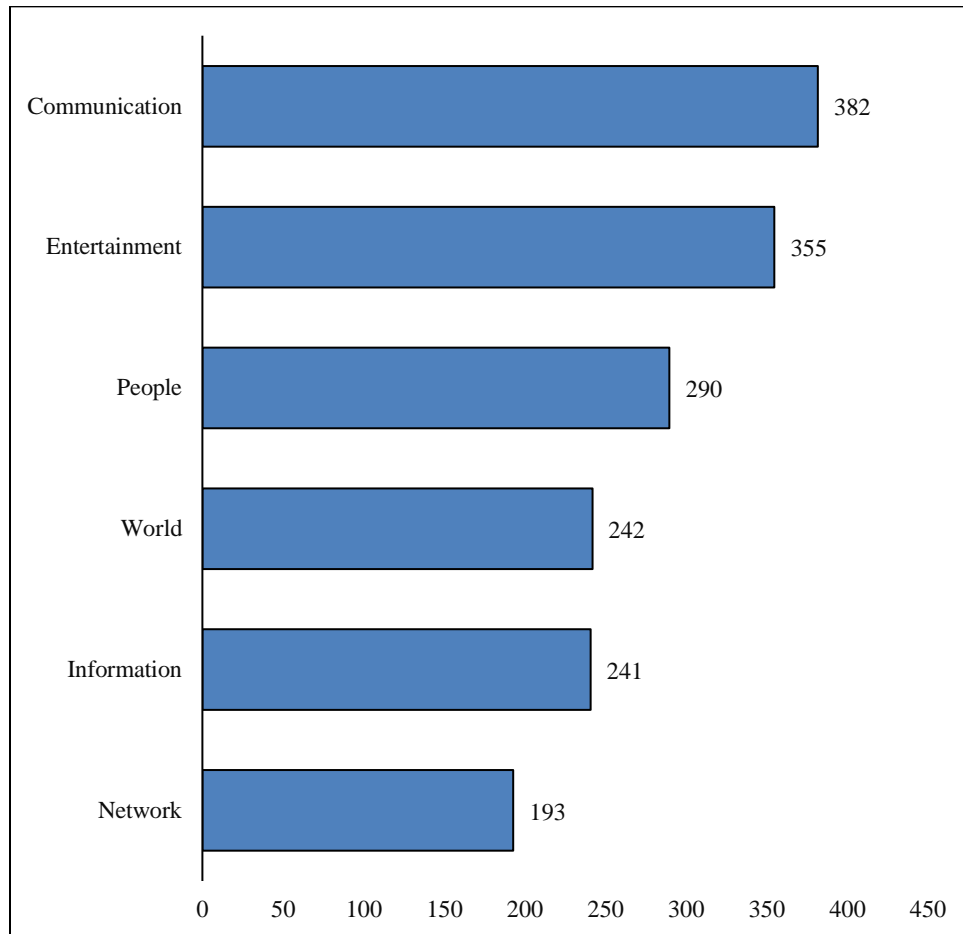


Figure 1: Counts corresponding to each key term

According to the figure 1, most of the students (382) illustrated communication as a feature of the Internet while second most was for Entertainment, and that is 355 undergraduates. People and world were illustrated 290 and 242 undergraduates respectively. However, most of the students didn't illustrated network properly through their drawing, actually, it is the major aspect of internet conceptually. Therefore, as a whole, this indicates the definition of internet was grabbed by students through their experiences or practical sense rather conceptualism. This can be further described with experiential learning under the pedagogical school of experientialism, that is learner more tends to learn through their experiences. According to Kolb (1984), experiential learning can

be defined as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combinations of grasping and transforming the experience."

The histogram in the figure 2 shows how we can give marks for students as response to their illustration. Teachers more like to see a normal distribution for the marks of students which is more natural and justifiable. Likewise, figure 2 shows a distribution like a normal, and majority of the students were scored 4 marks. If we could compare these marks with giving the same question to students to write the answer instead of drawing, distribution of marks may not much differ. Therefore, we can even think drawing as an assessment tool which enables to assess students as same as what we do with text.

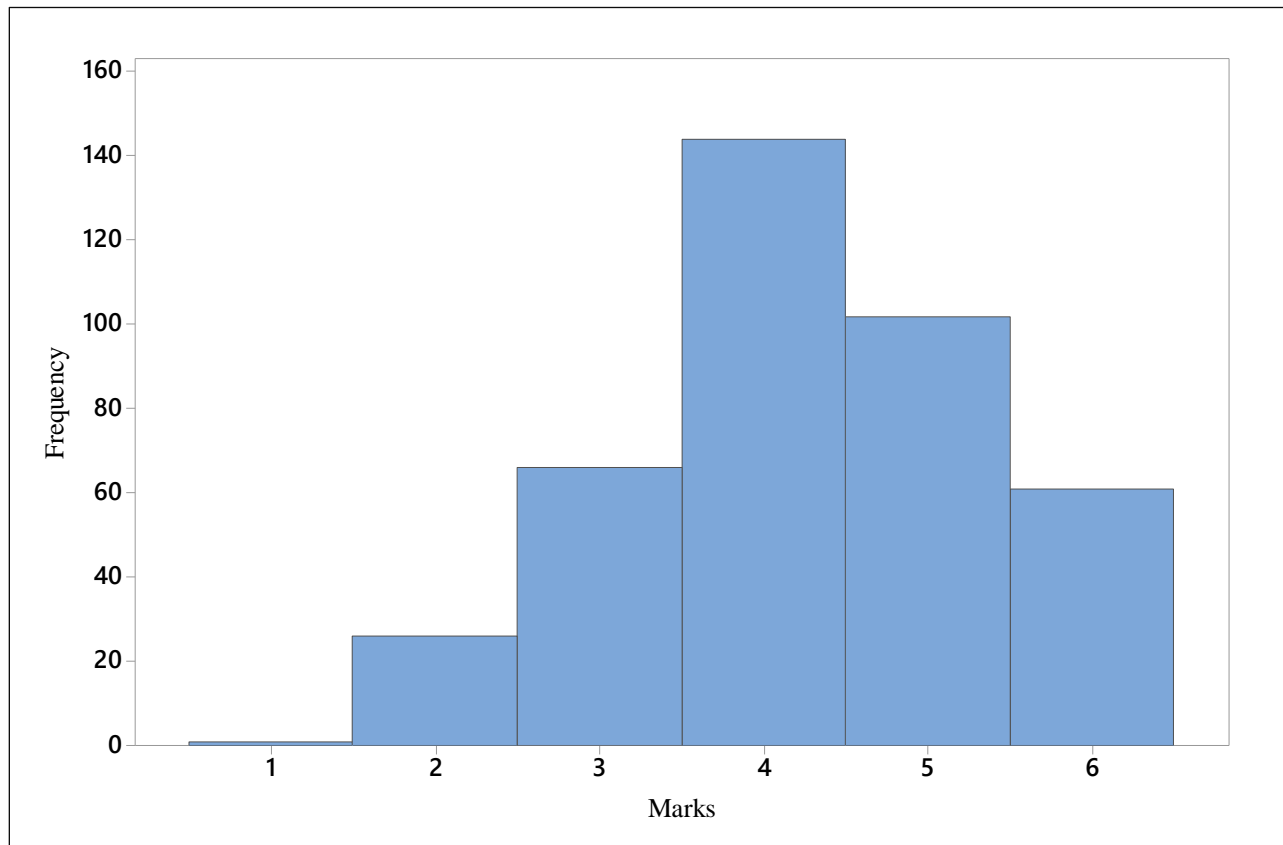


Figure 2: Histogram of marks given

Although, the idea of visual research methods is not new in Social Sciences, here, it is used to explore the drawings of undergraduate students in order to explore benefits of drawings in terms of teaching and learning. Therefore, few of the drawings were purposively selected and were analyzed qualitatively in this study. Drawing enables students to utilize their soft skills like creativity when they define a concept. While they are expressing the meaning of a concept, they can apply creative thinking in order to enhance the attraction of that expression. For an example if we carefully look the pictures in figure 3, they express all the key terms that we identified for

defining Internet. More probably, this will help students to engage in learning as an interesting activity.

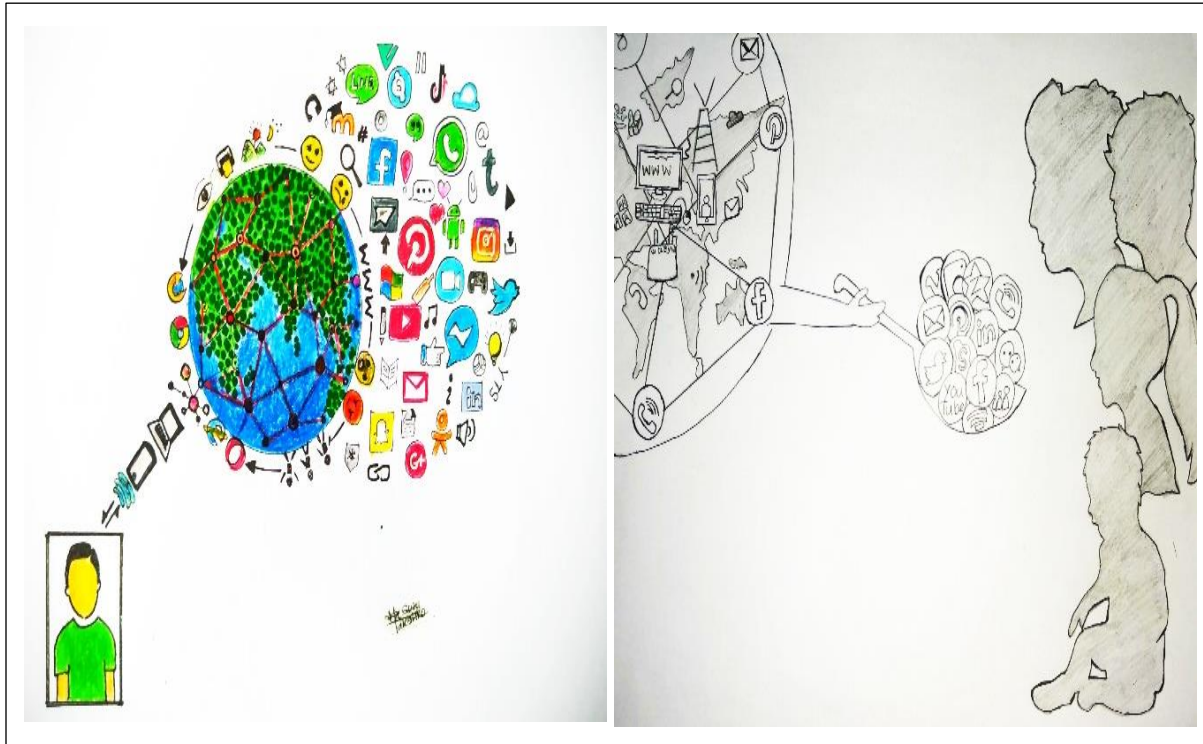


Figure 3: Informativeness and creativeness

When coming to drawing as a pedagogical tool, it is needed to be highlighted that informativeness of the picture is more important rather than creativeness. It was found some pictures like in figure 4 are creative but not much align to the definition of the concept: Internet. This is what happen if a learner is more creative-oriented. As a result, he or she might exclude relevant information from the picture.



Figure 4: Creative but not informative

Appearing relevant text is another strategy that learner can be used to add more information regarding a concept. For an example student who produced the picture in figure 5 used text accordingly to express the idea of internet in a creative way.



Figure 5: Adding text as a strategy

Even though, drawing can use to express meaning of concept given, it helpful to explore students' different perspectives regarding that concept. Figure 6 shows two good examples for

this. As in the one picture, due to the usage of internet, students in modern days like to use Google instead of library to search about something.

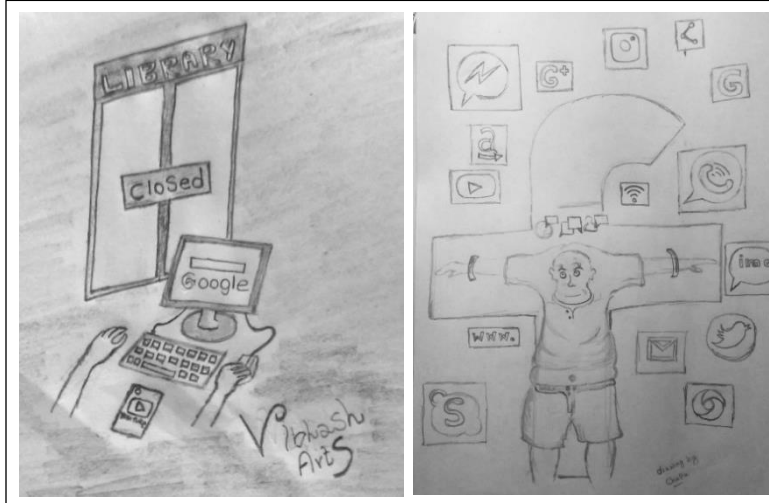


Figure 6: Students' different perspectives

These pictures are also helpful to improve students' social-emotional skills such as critical thinking. However, it not much addressed the outcome of the activity assigned that is to define the concept of internet.



Figure 7: Students' abstraction views

One of the important tasks that drawing can be done is expressing reality as well abstraction. Can anyone imagine the concept of internet inside the eye? The picture in figure 7

shows the ability of drawing which can be used to generate concepts by stimulating abstract and creative thoughts.

4. CONCLUSION

While quantitatively analyze the drawing, it was revealed that students learn through their own experiences. At the same time, drawing can be used for the purpose of assessing students similar to writing questions. Qualitative visual analysis of pictures produces some important facts: drawing with informativeness is required rather creativeness in terms of pedagogical outcome; drawing act as a motivational factor; text-added pictures are also useful in defining a concept; drawing helps to identify students' different perspectives and to improve ability of critical thinking; drawing can also express abstractions. Therefore, drawing as a pedagogical tool helps learners to express the definition of a concept visually while improving their understanding. At the same time, learner can utilize several social-emotional skills such as creativity, critical thinking and so on. Ultimately, drawing can look as an effective tool in terms of pedagogical outcomes since it stimulates both hard skills and soft skills of a learner. Teachers are required to adopt more experience-based learning activities and can be adopted drawing as effective pedagogical tool in terms of teaching, learning, and assessment.

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