New Trends and Issues Proceedings on Humanities and Social Sciences

Volume 5, Issue 6 (2018)157-160

www.prosoc.eu
ISSN 2547-8818

Selected Paper of 7th World Conference on Design and Arts (WCDA 2018), 28-30 June 2018, BAU International Berlin University of Applied Sciences, Berlin – Germany

Effect of concept cartoons used in teaching the mole concept

Nimet Akben*, Department of Elementary Education, Ankara University, Ankara, Turkey

Suggested Citation:
Akben, N. (2018). Effect of concept cartoons used in teaching the mole concept. *New Trends and Issues Proceedings on Humanities and Social Sciences.* [Online]. *5*(6), pp 157-160. Available from: www.prosoc.eu

Selection and peer review under responsibility of Prof. Dr. Sinisa Opic, Zagreb University, Croatia & Prof. Dr. Ayse Cakir Ilhan, Ankara University, Turkey.

Abstract

Visual materials that can be used in classes such as PowerPoint presentations, analogies, documentaries and concept cartoons appeal to more than one sense of students and thus enable them to be more active in the learning process and learn more permanently by structuring knowledge in their minds more easily. In concept cartoons used to discover students' conceptual structures and develop their comprehension, the intention is to create a discussion environment to reach knowledge by discussions without giving the answers directly. With this purpose, primary school candidates were given a variety of pictures and concept cartoons regarding the mole concept in the general chemistry class in order to explore the effect of these images on the concept learning as well as evaluating their view. This study's result was parallel to the results of the studies that suggest that concept cartoons are effective on improving student success and developing a positive opinion.

Keywords: Concept cartoons, chemistry education, mole concept.

* ADDRESS FOR CORRESPONDENCE: **Nimet Akben,** Department of Elementary Education, Ankara University, Ankara, Turkey.
E-mail address: nakben@gmail.com / Tel.: +3633350/52060

1. Introduction

Today's educational programmes strongly advise that individuals having developed high-order thinking skills, discovering his/her own learning method and responsible for his/her own learning must be raised. To this end, it is argued that various supporting materials for learners to acquire information in classes must be developed. In this respect, the effects of visual materials on learning are as quite many as not to be overlooked. Materials that can be used in classes such as PowerPoint presentations, analogies, documentaries and concept cartoons appeal to more than one sense of students and thus enable them to be more active in the learning process and learn more permanently by structuring knowledge in their minds more easily (Balim, Inel & Evrekli, 2008). In concept cartoons used to discover students' conceptual structures and develop their comprehension, the intention is to create a discussion environment for students to reach knowledge by discussions without giving the answers directly. Concept cartoons are able to increase understanding, attention and interest, improve motivation towards learning and divergent thinking and increase active participation of students in the learning process (Gafoor & Shilna, 2013). According to Dabell (2004), concept cartoons in general;

- Improve students' knowledge and make thoughts emerge
- Facilitate detailing by deepening thoughts
- Offer alternative perspectives
- Ensure discussion environment
- Allow students to question their thoughts
- Reveal misconceptions and instabilities
- Direct to research
- Increase participation and motivation
- Help summarise or repeat the subject.

Concept cartoons used more commonly in science teaching in the recent years (Keogh, Naylor & Wilson, 1998) are pictures of cartoon style that mostly contain daily events, suggest alternative perspectives to scientific topics and invite characters to discuss with each other (Keogh et al., 1998; Ugurel & Morali, 2006). This way, they can discover any concept misperceptions in students and correct and change them with new and right knowledge (Ors, 2007).

2. Methods

The research was carried out with a total of 83 teacher candidates, 60 female and 23 male. Teacher candidates were asked to find the right or wrong expressions in the concept cartoon and to correct the wrong one. In order to determine these views, firstly a discussion environment was formed and then opinions were taken in writing. The questionnaire was applied to get the opinions about the images. In order to ensure the scope validity of the questionnaire developed by the researcher, expert opinion was consulted. The concept cartoon used in the research is given in Figure 1.

Figure 1. The concept cartoon used in the research

3. **Findings**

Firstly, the conceptual learning levels of the candidates were tried to be determined. For this purpose, the frequency and percentage values of the answers given to each expression in the concept cartoon were investigated. The values are provided in Table 1.

Table 1. Teacher candidates' answers to expressions

Expressions	*f*	%
The mass of 1 molar substance is equal to the molecular mass.	10	12.1
1 M of each substance is 22.4 L.	6	7.2
1 M contains 6.02×10^{23} particles.	11	13.2
Statements 1 and 3 are correct.	54	65.1
All wrong.	2	2.4

The findings showed that 65% of the candidates fully learned the general concept. Twenty-five percent of the candidates knew one of the two correct expressions. At the end of the discussion about the concept cartoons, candidates views about this practice were taken. Frequency and percentage values related to opinions are given in Table 2.

Table 2. Teacher candidates' opinions about the concept cartoon

Opinions	Yes		Unstable		No	
	f	%	*f*	%	*f*	%
The discussions which we made over the expressions in the concept cartoon made it easier to learn.	46	63.0	22	30.1	5	6.8
Images were fun.	45	61.6	20	27.4	8	11.0
I do not think that such images contribute to the learning of the lessons.	44	60.3	18	24.7	11	15.1
It should also be used in other lessons.	43	58.9	23	31.5	7	9.6
Thanks to concept cartoon, I believe that the concept of moles will remain in my mind for longer.	42	57.5	26	35.6	5	6.8
The concept cartoons were instructive.	41	56.2	27	37.0	5	6.8
Thanks to concept cartoon, I could correct my wrong information.	39	53.4	23	31.5	11	15.1
Concept cartoons did not contribute to learning.	37	50.7	32	43.8	4	5.5
Concept cartoons were childish.	17	23.3	20	27.4	36	49.3

When the views on images and concept cartoons are examined, more than half the candidates appear to have stated that discussions made over the statements in the concept cartoons enable

them to learn more easily (63%) and that discussions help them correct their wrong knowledge (53%). Twenty-three percent of the candidates stated that they found the images childish and that they could be more effective in smaller age groups.

4. Conclusıon

At the and of this study, findings show that concept cartoons are effective on learning and teaching mole concept, and the students enjoy to learn through concept cartoon. These findings are in line with the study of Golgeli and Saracoglu (2011), Turkoguz and Cin (2013) and Durmaz (2007). At the end of this study, which has parallel results with studies that suggest that concept cartoons are effective on improving student success and developing a positive opinion, it can be suggested that the use of various images for different topics of the chemistry class could be useful.

References

Balim, A. G., Inel, D. & Evrekli, E. (2008). Fen Ogretiminde Kavram Karikaturu Kullaniminin Ogrencilerin Akademik Basarilarına ve Sorgulayici Ogrenme Becerileri Algilarina Etkisi. *Ilkogretim Online, 7*(1), 188–202.

Baudrillard, J. (2011). *Simulakrlar ve Simulasyon*. ıstanbul, Turkey: Dogu Bati Yayinlari.

Dabell, J. (2004). Concept Cartoons, Junior Education. Scholastic.

Durmaz, B. (2007). *Yapilandirici Fen Ogretiminde Kavram Karikaturlerinin Ogrencilerin Basarisi ve Duyussal Ozelliklerine Etkisi (Mugla Ili Merkez Ilce Ornegi)* (Yuksek Lisans Tezi). Fen Bilimleri Enstitusu, Mugla Universitesi, Mugla, Turkey.

Foucault, M. (2005). In I. Erguden & T. Birkan (Eds.), *Ozne ve Iktidar—Secme Yazilar 2* (Prepared by Ferda Keskin) (2nd Ed.). ıstanbul, Turkey: Ayrinti Yayinlari.

Gafoor, K. A. & Shilna, V. (2013, December 5 and 6). *Role of concept cartoons in chemistry learning*. Kannur, India: Learning Science by Doing-Sciencing.

Golgeli, D. & Saracoglu, S. (2011). Fen Ve Teknoloji Dersi "Isik Ve Ses" Unitesinin Ogretiminde Kavram Karikaturlerinin Kullaniminin Ogrencilerin Akademik Basarisina Etkisi. *Sosyal Bilimler Enstitusu Dergisi, 31*(2), 113–124.

Isitman, O. (2016). Producers of contemporary art; X, Y, Z generations. *Global Journal of Arts Education, 7*(2), 55–60.

Isitman, O. (2017) Everything Started in the 1990s. In The 60th Anniversary of Korea-Turkey Relations, Art for Peace Exhibition Catalogue.

Keogh, B., Naylor, S. & Wilson, C. (1998). Concept cartoons: a new perspective on physics education. *Physics Education, 33*, 219–224.

Nietzsche, F. W. (2006). *Sen Bilim*. ıstanbul, Turkey: Say Yayinlari.

Ors, N. (2007). *Egitim ve Karikatur, Bilim ve Aklin Aydinliginda Egitim* (Vol. 84, pp. 26–28). Ankara, Turkey: Milli Egitim Bakanligi Yayinlari.

Robins, K. (2013). Imaj: Gormenin Kultur ve Politikasi. ıstanbul, Turkey*: Ayrinti Yayinlari.*

Turkoguz, S. & Cin, M. (2013). Argumantasyona Dayali Kavram Karikaturu Etkinliklerinin Ogrencilerin Kavramsal Anlama Duzeylerine Etkisi. *Buca Egitim Fakultesi Dergisi, 35*, 155–170.Ugurel, I. & Morali, S. (2006). *Karikaturler ve Matematik Ogretiminde Kullanimi*. Milli Egitim Bakanligi Dergisi. Retrieved from www.yayim.meb.gov.tr/dergiler/170/170/sevgi%20morali.pdf