© Kamla-Raj 2013 Int J Edu Sci, 5(3): 187-193 (2013) PRINT: ISSN 0975-1122 ONLINE: 2456-6322 DOI: 10.31901/24566322.2013/05.03.04

The Use of Caricatures in Teaching Verbs¹

Fulya Topcuoglu Unal2* and Umit Yegen3

²School of Education, Dumlupinar University, Department of Turkish Language Education,
Kutahya, 43100, Turkey
E-mail: fulyatopcuoglu@hotmail.com

³Ministry of National Education, Turkish Teacher
E-mail: umit yegen@hotmail.com

KEYWORDS Academic Achievement. Turkish Education. Caricature. Verbs, Visual. Language Skills

ABSTRACT The aim of this study is to prove that teaching the verbs through caricatures has a great effect on the success of the students in the Turkish lessons. In the study, pre test-post test controlled group model was used. The sample of the study were 80 7th grade students who were attending a secondary school in Bursa during the education years of 2012-2013. The students were seperated into two groups, each group consisting of 40 students. After having been taught the subject the students were taken to post-test to measure their success. With the experimental group the verbs were taught through caricatures but with the control group the same topic was processed with the classical and traditional teaching methods. At the end of the study the outcomes were compared by considering the sex of the samples towards the Turkish lesson. According to the data obtained, the conclusion was that teaching the verbs through caricatures increases the success in Turkish lessons and it affects the attitudes towards the lesson positiveley. In addition, it was observed that the rate of post-test scores of male students who learned the vebs by means of caricatures was higher than that of post-test scores of female students.

INTRODUCTION

"Language is a significant means of communication which determines the position/identity and value of individuals in their lives. An individual expresses what he sees, hears and learns via language" (Kolac 2008: 64). Acquired at home from parents, mostly from a child's mother, and close family circle in earliest childhood, and later from different communities in contact, native language is the language that is engraved in one's subconscious and constitutes the strongest bonds between an individual and the society (Aksan 1994: 65). The main objective of native language teaching is to promote the ability of comprehension, to provide an individual with the skill and habit of expression along with the skills and good tastes of listening and reading. Moreover, enriching the active and passive verbal vocabulary, teaching basic grammar rules, and consequently raising linguistic consciousness and appreciation are the concepts that are intended to be attained in native language teaching (Kavcar et al. 1995). Studies of native language education aim to enable learners to make use of four basic language skills effectively. Accordingly, the fundamental objective of Turkish language education is to improve the speaking, listening, reading, and writing skills of learners, and as a result, to raise individuals equipped with those skills. As these skills are interrelated and in integration, it is essential that they should be improved in a balanced way. In association with the development of language skills of learners, basic language skills are those which learners build up. vertically by the end of one year and horizontally by the end of 8th grade, and facilitate lifelong. Turkish Language Education Program ensures the development of those basic language skills through the acquirements within the program. The basic skills aimed to be achieved in the program are:

- Use of Turkish language properly/effectively
- Critical thinking
- Creative thinking
- Interpersonal communication skills
- Problem-solving (Ministry of National Education [MoNE] 2006: 4)

Recent studies indicate that the uses of language are examined under six categories: listening, reading, writing, visual reading, and visual presentation, which are listed as learn-

E-mail: fulyatopcuoglu@gmail.com

^{*}Address for correspondence:
Asst. Prof. Dr. Fulya Topcuoglu Unal
Directory
School of Education,
Department of Turkish Language,
Dumlupinar University,
Tavsanli Yolu, 10.km Evliya Celebi Yerleskesi,
Kutahya, Turkey
Telephone: +902742652031-Ext.4585
Cell: 00905053882755

ing domains as well. Learning domain is a composition of skills, methods, values and attitudes, etc. which are intended to be improved linguistically, cognitively, individually, and socially (Palacios and Gonzales 2005).

Grammar is defined as the body of rules facilitating listening, writing, speaking and reading learning domains of a language. Within the program, the acquirements related to Turkish language grammar rules are presented stage-bystage and in compliance with learners' levels (MoNE 2006: 7). Learners are essentially expected to learn nouns and verbs in the 1st stage. After achieving the subjects in this stage, they learn the other structures of the target language progressively in a meaningful context. Teaching grammar is evaluated as an instrument for the development of various skills, not an objective. The concept that functional, well-defined, and instrumental grammar teaching promotes the development of four basic language skills is emphasized (Versaci 2001). With this regard, in the program, implemented by MoNE in 2006, grammar subjects were not presented as separate learning domains, but integrated within the other skills, supporting the concept of "acquiring" skills.

Not only the program itself but also teaching method(s) should be modified in terms of acquiring skills in order to meet the objectives of grammar teaching. Following is the key principles related to grammar teaching:

- 1- Grammar rules cannot be taught as distinct units separated from discourse and script as the teaching method mentioned above leads to memorization and hence hinders production.
- 2- Teaching only grammar rules is not desired; these rules should be internalized with exercises/drills in order to be skills/ habits.

It is only through the appeal of the learning to various senses of an individual that forms the habit of using grammar rules (Demirel 1999: 87).

It has been proven several times that learners who use the concepts at the same time as they learn them and do further study/exercises do not forget what they learn.

It has been demonstrated in the studies that 83% of sense of sight, 11% of sense of hearing, 3.5% of sense of smell, 1.5% of sense of touch, and 1% of sense of smell are effective in the

learners' learning process (Ergin 1995). That is, using visual materials used in native language teaching/learning becomes more important.

It is of great importance to put emphasis on the methods/techniques to be resorted in the process of providing learners with the desired skills. Learner-centered activities through which learners make use of and improve their thinking skills, and methods/techniques to be used in these activities are claimed to have a significant effect on learners' academic success (Caliskan 2005). Along with these activities, the materials used in class have a positive effect on learners' achievement. Materials which are exploited properly/ effectively help increase learners' achievement level motivate learners to comprehend the subject, and provide them with positive attitudes towards learning (Basak 2002; Esgi 2006; Seferoglu 2006). The most intriguing type of educational tool among all is caricatures.

Caricatures, with their strengths of comparison, establishing cause-effect relationships, classification, assessment, activating background knowledge, summarization, motivation, permanence, etc. are in accordance with the principles of the approaches/models which determine Turkish Language Teaching Program (Akkaya 2011). In this sense, caricatures facilitates reaching the goal of teaching the verbs which are used in this study effectively in a meaningful way. Ozer (1994: 37) states the advantages of caricatures as: "There is not a more powerful instrument in teaching rather than caricatures, if it is considered with a realistic approach. In countries where traditional sense of humor has been established it is a shortcoming not to make use of the society's disposition towards humor and caricatures presented in people's daily life. Primarily, caricatures are visual. Caricatures provide motivation and the opportunity of discussion/reflection. Through caricatures, all the issues become free from complexity and abstractness." Caricatures aim not only to entertain the audience but also to engage the audience in critical thinking on any issues addressed in caricatures. A caricaturist's intension is to encourage his audience to reflect on the issue he handles with his satirical and exaggerated drawings

Caricatures are often of a critical perspective. The audience is expected to examine the caricature, addressing an issue with creativity,

with a critical viewpoint (Topuz 1986). Caricatures in education eliminate memorization. Ideas reflected in the eyes are processed exclusively in the brain, which restrains rote learning by the effect of humor. The message is delivered in more than one panel in a comic strip (Efe 2005). In caricatures, the reader is supposed to create his own way of thinking while the caricaturist presents his own (Ozer 2007). Caricatures can be designed as classroom materials which help teach learners concepts in an entertaining and effective way (Kete et al. 2009). Engaging learners to think critically and hence to project/produce, the use of caricatures can be conducive to meet teaching objectives in the new program aiming to engage learners in classroom participation, and to inspire them to be active participants rather than passive recipients, contrary to the traditional classroom setting (Altun 2009). Enriching course content with several approaches contributes to motivate students in classroom by overcoming prejudice even for socalled "difficult subject matters". One of these approaches, caricatures presents the unique characteristic of capturing the attention of uninterested and unmotivated students. It should be kept in mind that caricatures play a significant role in capturing learners' attention on underlying teaching/learning concepts such as interest, attention and motivation of learners in education.

The main objective of this study is to determine the effects of caricatures on student achievement in Turkish language teaching.

METHODOLOGY

In the study, experimental models, pre-test, post-test control group quasi experimental model were applied. In post-test control group model there were two groups determined by random selection, one of which is the control group of the study. Groups were given only post-test (post- experiment measurement). In most studies, pre-test procedure is either invalid or unfeasible. It is acknowledged that random selection of groups ensures pre-experimental resemble. That is, effects of pre-experimental measurement on internal and external validity is claimed to be eliminated (Karasar 2004).

The study was conducted in two classes at secondary school level in Bursa during 2012-13 academic year. 7/A class was assigned as the

control group. 7/B was assigned as the test group by random sampling. This type of sampling is the sampling in which a researcher chooses a part of the population by some means or other subject to detected sample size. (Arli and Nazik 2001: 75).

Prior to the study, a standard test on verbs was given to each group at the same time in order to determine if there is difference between groups, if any to eliminate any conditions which may affect the results. For the applied test, five Turkish language teachers and one proclaimed faculty member were asked their opinion. After the test, it was assessed that there was no significant difference on verbs between groups.

Data Analysis

The obtained data was analyzed using SPSS 20.00 program. Interpretations on the data were made with t-test considering post-test averages of both groups. In case that subgroups' sample size is greater than 30, distribution is considered as normal (Buyukozturk 2012). Therefore, for unrelated samples, t-test was used for gender variable.

RESULTS

In the analysis of the first problem in the study, it was analyzed if there was any significant difference between post-test scores of the control and test groups. The results are given in Table 1.

Table 1: Test and control groups post-test scores

Groups	N	Post-test scores	t	р
Test Control	40 40	84.6 53.4	17.24	.000

There is an increase in post-test scores of students in the teaching of verbs using caricatures (Table 1). Through traditional teaching, the score is X=53.4 for the control group. The score is X=84.6 for the test group. This finding shows that there is a significant difference between the control and the test group in the teaching of verbs using caricatures.

In the analysis of the second problem in the study, it was analyzed if there is any significant difference between post-test scores of the control and test groups regarding gender variable. The results are given in Table 2.

Table 2: Test and control groups post-test scores to gender

8						
Groups	N	Post-test scores	SD	p		
Male	42	87.6	7.32	.002		
Female	38	80.4	5.75	.002		

It is suggested that there is a significant difference t(80)=3.38 p<.005 in the teaching of verbs using caricatures regarding gender variable.

DISCUSSION

"It is considered that with traditional teaching methods, the development of children's creativity, problem-solving and self-control potential, independent thinking is not possible" (Koc and Dikici 2003: 1). It is stated in the "New Primary Turkish Language Teaching Program" (6th, 7th, 8th grades), that the main goals of the program have been set as listed: to enable students to build on their acquired knowledge, to find alternative and creative solutions to the problems encountered, to raise the consciousness and courage of working together in a group, to participate in activities for production and discussion, to use different research methods and techniques, to comprehend events and situations correctly using their experiences, to acquire an interdisciplinary viewpoint (MoNE 2006: 2). With this regard, it will be more accurate to provide Turkish language rules and knowledge, especially by visual examples. Given the high rate of retention of individuals' learning by seeing, it has been proven that addressing many senses is inevitable for learning. It is widely known that many studies claim that educational programs supported by visuals are more effective and successful. According to learning and motivation theories, vivid, engaging, and different material make it easier to remember for learners. For example, while only 10% percent of the subject is retained by reading, 50% percent of the same subject is retained by watching a movie (Demirel 1999).

Visuals emphasize on any written or verbal knowledge by presenting it in different ways, simplifying and repeating. Graphics and charts contribute to store information for a long time by establishing a relationship with the concept they explain. Visuals function as means of motivation, repetition, elaboration, notation, editing, and annotation in education (Canpolat 2006). Ozbay (2006) highlights that sense of sights plays an important role in language education, and Turkish language teacher should facilitate materials that appeal to the sense of sight for curricular as well as extra-curricular activities. Visual materials make contribution to learners' understanding and retaining information. The more appealing the classroom materials are to five senses, the more effective the learning is, which is very essential to improve basic language skills (Saban 2005)

Verbs, indispensable elements of native language teaching, should be addressed by appealing to the learners' frame of concepts in various ways. The very first step in teaching is to attract the interest and attention of individuals. If an individual is provided with a learning environment full of various stimuli, the rate of retention is higher (Batur 2010). Especially during secondary level, it is important that children should study in engaging and stimulating learning environments in order to succeed in language learning, along with basic subject matters such as verbs, which is clearly suggested in the findings we obtained in the study.

Sole use of didactic approaches in mother tongue education may lead to many problems. For instance, the individual may have difficulties with some grammar rules throughout her/his life. Such kind of situations is attributed to teaching only the rules and bare information (Yoong 2001). Drawing special attention to the contribution of grammar structures to the meaning facilitates the utilization of these structures as skills. Moreover, using materials with examples on different implementations about the structures in the lessons and supplementing the structures with visuals assist learning (Sturm 2002).

In daily life symbols, logos, pictures, photographs and signs attract more attention and that's why these visual aids are utilized in almost every field. This is proven by the fact that in many fields visuals are preferred over text in many areas (Yengin 1996: 8). In this respect, students should be addressed with visuals from many areas of life, in other words from real life in verb teaching. What students have learnt should be linked to the real life. It is agreed on

that there must be parallelism between student's life at school and life out of school. New learning is always the development and continuum of the information s/he already has (Hutchinson 1949). With middle school students, caricatures are definitely the most gripping means which helps learning.

Ugurel and Morali (2006) state that caricature use in education is not limited to visual aids for written materials and thanks to their psychological influences caricatures are means with substantial effects where humor is used effectively. In this respect, caricature as a visual aid is valid component of education system. It is stated by many researchers that when it comes to memory, visual perception is better than audio perception (Avons 1998). That's why it is vitally important to get students to participate actively in the lessons. Without active participation of the individual, a new subject cannot be presented. Even if it is presented, the study of the subject cannot continue effectively. Teaching depends on attracting students' attention, encouraging them and keeping this attention and enthusiasm to learn (Kinchin 2004). Caricatures are effective tools which enable students to focus on the topic and participate actively in class discussions (Keogh and Naylor 1999). This active participation can influence students' approach to lesson positively. Especially for the students who lose their interest in Turkish lessons, caricatures can be used as an opportunity for them to express themselves more and change their attitudes towards lessons in created positive learning environment. In an experiment where caricatures were used a similar conclusion was reached due to the attitude changes of students from the control group towards lesson (Ozsahin 2009).

The goal of education with caricatures should not be to entertain or to make students memorize but to teach via questioning and to improve creativity (Ors 2005). The subject which is presented with visuals is improved with contemplation. Even though the student does not see the same caricature, s/he can visualize it when s/he comes across a link or a clue. When this visualization conjugates with humor, they turn into thoughts. These are momentary periods. Subjects presented and handled in these periods become permanent, which prevents memorization (Efe 2005). Caricatures can be used for different purposes such as gaining intellectual skills, mastering scientific terminology and

boosting stimulation. Effective and meaningful student-centered education can be achieved via caricatures (Dabell 2004). Caricature use is effective in terms of in constructivist education and actual student participation (Ekici et al. 2007). Caricature contributes to the speed of understanding and interpretation of readers. That's why caricature not only is effective in the education of the aims it has succeeded, but also forming a group ready for education (Uslu 2007). Many structures taught within the frame of mother tongue have a vital role in eliminating memorization from education. Therefore, the caricatures which are used to teach verbs can be very influential on students' acquiring important elements of their mother tongue permanently. Grammar teaching includes difficult, complex and abstract subjects. To teach these subjects teachers can make use of caricatures as visual materials in their lessons (Kleeman 2006). Teaching verbs by embodying them via caricatures makes grammar teaching easier.

Stephenson and Warvick (2002) gave examples for caricatures in their studies on analysis of caricature use in constructivist education and reached the conclusion that caricatures helped them understand the topic better. As this study shows, the subjects which are assisted with caricatures can be taught to the target group in permanent way.

Caricatures are the most important visual sources which enable students to access to concepts and information with the fun element as well as having a scientific viewpoint to incidents faced in different situations (Martinez 2004). A study in which caricatures were compared to written texts shows that caricatures' visual features facilitate learning (Sones 1944), which shows the effect of caricatures on learning evidently. Also, it is stated that the simple language used in caricatures helps students understand the concepts about the subject (Cox 1999). The fact that students in Keogh and Naylor's (1999) study focused on the subject thanks to caricatures and got engaged in deeper thinking skills highlights the importance of caricatures in education.

It is helpful for the students to draw their own caricatures, express their opinions about the problems they experience or observe from their environment in a creative and courageous way. It is also another way for them to internalize what they have learnt at school. Furthermore, the increase in students' creativity via carica-

tures and the increase in their enthusiasm for class discussions overlap (Song et al. 2008). The results of the study by Nahiley et al. (1981) showing that caricatures increase success in class are also parallel, as well.

CONCLUSION

Use of caricatures in teaching verbs has increased the learning level positively. Visual elements' affecting students positively in teaching abstract subjects will provide guidance in teaching many other subjects.

A higher percentage of male students have learned the verbs by caricatures than female students. This difference can be explained best by the males' interest in caricatures and publications about caricatures regardless of their age.

RECOMMENDATIONS

- Caricatures should be used as visual materials while teaching difficult, complex and abstract subjects of language.
- 2. Caricatures pictures and photos should be used by the teachers of language to prevent learning by heart (memorizing)
- The usage of comics and homor should be increased to devolop thinking skills and to make the message which is intended to be given permanent.

NOTES

¹ Some part of this article is presented as an oral presentation in Innovation and Challenges in International Conference on Education 2013 (CICE 2013) 26 - 28 April 2013 - Kutahya, Turkey.

REFERENCES

- Akkaya A 2011. *Teaching Grammar with Cartoons*. Ph. D. Thesis, Unpublished. Konya: Selcuk University Institute of Education Science.
- Aksan D 1994. Anadili. TOMER Dil Dergisi, 16: 63-71.
- Altun A 2009. Sosyal Bilgiler Dersinde Karikatur Kullanimi.
 In: Refik Turan (Ed.): Sosyal bilgiler ogretiminde yeni
 yaklasimlar. Ankara: Pegema yayıncılik, pp. 192-211.
- Arli M, Nazik H 2001. Bilimsel Arastýrmaya Giris. Ankara: Gazi Kitabevi
- Avons S E 1998. Serial Item Recognition of Novel Visual Patterns, ABD. American Journal of Psychology, 89: 285-308.
- Basak A 2002. The Effect Material on Elementary Primary Schools' Achievement. Master Thesis, Unpublished. Istanbul: Marmara University Institute of Science.
- Batur Z 2010. Place of Semiotics in Teaching of the Mother Tongue: Analysis of the Entirities of Verbal and Visual Texts in the Lesson Books of the Mother Tongue. *Turkish Studies*, 5(4): 174-200.

- Buyukozturk S 2012. Sosyal Bilimler Icin Veri Analizi El Kitabi. Ankara: PegemA Yayincilik
- Caliskan F 2005. The Effect of Active Learning Methods of Analysis Story on Academic Success, Attitude, Level of Active Learning of Primary Schools Fourth Class Student in Social Study. Master Thesis, Unpublished. Hatay: Mustafa Kemal University Institute of Social Science.
- Canpolat N 2006. Turkish Undergraduates' Misconceptions of Evaporation, Evaporation Rate, and Vapour Pressure. *International Journal of Science Education*, 28(15): 1757-1770
- Cox C 1999. Drawing conclusions: A study in drafting with cartoons. *Changing English*, 6(2): 219-235.
- Dabell J 2004. The Maths Coordinator's File -Using Concept Cartoons. London: PFP Publishing.
- Demirel O 1999. *Ilkogretim Okullarında Turkce Ogretimi*. Istanbul: Milli Egitim Basimevi.
- Efe H 2005. Karikatur ve Egitim. Izmir: Etki Publication. Ekici F, Ekici E, Aydin F 2007. Utility of Concept Cartoons in Diagnosing and Overcoming Misconceptions Related to Photosynthesis. International Journal of Environmental & Science Education, 2(4): 111-124.
- Ergin A 1995. *Ogretim Teknolojisi ve Iletisim*. Ankara: Pegema Publication.
- Esgi, N 2006. Web temelli ogretimde basili materyal ve yuz yuze ogretimin ogrenci basarisi uzerine etkisi. *Turk Egitim Bilimleri Dergisi*, 4(4): 459-473.
- Hutchinson K 1949. An experiment in the use of comics as instructional material. *Journal of Educational Sociology*, 23: 236-245.
- Karasar N 2010. *Bilimsel Araþtýrma Yöntemi*. Ankara: Nobel Yayin Dagitim.
- Kavcar C, Oguzkan F, Sever S 1995. *Turkce Ogretimi*. Ankara: Engin Yayýnevi.
- Keogh B, Naylor S 1999. "Concept Cartoons, Teaching and Learning In Science: an Evaluation". *International Journal of Science Education*, 21(4): 431-446.
- Kete R, Avcu T, Aydin A 2009. Attitudes of the Teacher Candidates toward to Use Caricatures in Worksheet Papers. *Kastamonu Eðitim Dergisi*, 17: 531-540.
- Kleeman G 2006. Using cartoons to investigate social and environmental issues. *Ethos*, 14(3): 9-19.
- Kinchin I M 2004. "Investigating Students' Beliefs about Their Preferred Role as Learners". *Educational Research*, 46: 301-312.
- Koc M and Dikici H 2003. "Egitimde Dramanin Bir Yontem Olarak Kullanilmasi". *Ilkogretim-Online*, 2(1): 1-4.
- Kolac E 2008. Candidate Primary School Teachers' Awareness of the Problems Affecting Our Mother Tongue: Opinions and Suggestions. The Journal of International Social Research, 1(5): 441-455.
- Martinez Y M 2004. Does the K-W-L Reading Strategy Enhance Student Understanding in Honors High School Science Classroom?, Master Thesis, Unpublished. Fullerton, U.S.A: California State University.
- Ministry of National Education [MoNE] 2006. *Ilkogretim Turkce Dersi (6, 7 ve 8. Siniflar) Ogretim Programi*. Ankara: MoNE Publication.
- Nahiley J, Stephens J, Sutherland J 1982. Cartoons: When they are effective. *Journal of Extansion*, 3-4: 531-540.
- Ors F 2005. Karikaturler, Rasgele Degil, Uzman Egitimciler Tarafından Titizlikle ve Bilincli Bir Sekilde Secilmelidir. *Hürriyet Gösteri Sanat Edebiyat Dergisi*, 275: 80.

- Ozbay M 2006. Ozel Ogretim Yontemleri I. Ankara: Oncu
- Ozer A 1994. *Iletisimin cizgi dili karikatur*. Eskisehir: Anadolu Universitesi Yayinlari.
- Ozer A 2007. Karikatur ve Egitim, Bilim ve Aklýn Aydinliginda Egitim Dergisi, 84: 19-26.
- Ozsahin E 2009. Caricatures with Geography Education. Marmara Universitesi Cografya Dergisi, 20: 101-122.
 Palacios F J P, Gonzales J M V 2005 "The Teaching of Physics
- and Cartoons: Can They Be Interrelated In Secondary Education?". International Journal of Science Education, 27(14): 1647-1670.
- Saban A 2005. Coklu Zeka Teorisi ve Egitim. Ankara: Nobel Yayin Dagitim.
- Seferoglu S 2006. Ogretim teknolojileri ve materyal tasarimi. Ankara: Pegema yayýncilik.
- Sones W 1944. The comics and instructional method. Journal of Educational Sociology, 18: 232-240.
- Song Y, Heo M, Krumenaker L, Tippins D 2008. Catoons: An altenative learning assessment. Science Scope, 31(5):

- Stephenson P, Warvick P 2002 "Using Concept Cartoons To Support Progression In Students' Understanding of Light". Physics Education, 37(2): 135-141.
- Sturm J 2002. Comics in the classroom. The Chronicle of Higher Education, 48.30 (5 April 2002): B14-15. 16
- Topuz H 1986. Iletisimde karikatur ve toplum. Eskisehir: Anadolu Universitesi Basimevi.
- Ugurel I, Morali S 2006. Karikaturler ve Matematik Ogretiminde Kullanimi. Milli Egitim Dergisi, 170.
- Uner I 2009. The Effects of Learning Cartoons on Students'
 Success and Attitude Levels in Primary Schools.
 Master Thesis, Unpublished. Istanbul: Marmara
- University Institute of Science.
 Uslu A 2007. Karikaturun Egitim Kaygisi", Bilim ve Aklin Aydinliginda Egitim Dergisi, 84: 35-38.
- Versaci R 2001. How comic books can change the way our students see literature: One teacher's perspective. English Journal, 91(2): 61-67.
- Yengin H 1996. Medyanin Dili. Istanbul: Der Yayinlari.
- Yoong W K 2001. "Mathematics Cartoons and Mathematics Attitudes". *Studies in Education*, 6: 69-80.