

Comparison of the Effectiveness of Narrative and Non-Narrative Documentary Films on Learning and Retention of Environmental Concepts

*Saeed Shahhosseini¹, Tooraj Sepahvand²

1. Assistant Professor, Department of Educational Sciences and Psychology, Arak University, Arak, Iran

2. Assistant Professor, Department of Educational Sciences and Psychology, Arak University, Arak, Iran

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مقایسه اثربخشی فیلم مستند با شکل روایی و غیرروایی بر یادگیری و یادآوری مفاهیم محیط زیست

*سعید شاه حسینی^۱، تورج سپهوند^۲

۱. استادیار گروه علوم تربیتی و روانشناسی، دانشکده علوم انسانی، دانشگاه اراک

۲. استادیار گروه علوم تربیتی و روانشناسی، دانشکده علوم انسانی، دانشگاه اراک

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Abstract:

The environmental crisis is increasing today and this makes it imperative for people more than ever to expand their understanding of the environmental concepts. Accordingly, films can be an effective tool to do that, but finding the right medium is a matter of debate. Needless to say, different forms of films have different effects. Within the same line, the current paper aims to test out the effectiveness of narrative and non-narrative documentary films on the learning and retention of the environmental concepts. The research method was quasi-experimental, administering a pre-test and a post-test on 20 male and 20 female participants between 20-27 years old. The samples were randomly categorized into two groups. Both groups had an equal number of participants who did not have any earlier environmental activities and their majors were not related to environment and natural resources studies. They were from a variety of educational backgrounds. The groups were homogenous in terms of GPA, too. Firstly, the pre-test was administered to both groups. One group watched a narrative documentary on environmental and natural resources for 8 weeks, while the other group watched the non-narrative version of the same film for the same period. Then, a learning and retention test was given to both groups. The MANCOVA test was administered on the data and the findings showed a significant difference between the two groups in terms of learning and retention. It was concluded that narrative films can have a more significant effect on the learning and retention of the variables.

Keywords: Narrative Films, Non-Narrative Films, Environment, Learning, Retention.

چکیده:

اکنون که بحران‌های زیست محیطی رو به افزایش است، نیاز به آموزش مردم به منظور رشد درک آن‌ها از مفاهیم محیط زیست بیشتر از گذشته احساس می‌شود. رسانه‌ها به‌ویژه فیلم می‌توانند در این آموزش مؤثر باشند اما یافتن روش‌های بهتر برای ارتباط رسانه‌ای با مردم، خود مسئله‌ای است. بدون شک شکل‌های گوناگون فیلم تأثیری یکسان بر جای نمی‌گذارند. هدف این پژوهش شناخت تفاوت تأثیر شکل روایی با شکل غیرروایی مقوله‌ای در فیلم‌های مستند بر یادگیری و یادآوری مفاهیم محیط زیست بوده است. روش پژوهش شبه‌تجربی و دارای طرح پیش‌آزمون - پس‌آزمون بوده و شرکت‌کنندگان ۲۰ پسر و ۲۰ دختر بین ۲۰ تا ۲۷ سال بودند که به‌صورت تصادفی در دو گروه گمارده شدند. هر گروه به‌اندازه‌ی مساوی شامل شرکت‌کنندگان دختر و پسر بود که هیچ‌کدام از افراد سابقه‌ای در فعالیت‌های محیط‌زیستی نداشتند و نیز رشته‌ی تحصیلی آن‌ها ربطی به مطالعات محیط‌زیست و منابع طبیعی نداشت. افراد از رشته‌های مختلف تحصیلی گردآوری شدند. گروه‌ها با توجه به معدل‌های تحصیلی در وضعیت همگن قرار داشتند. در ابتدا از هر دو گروه پیش‌آزمون یادگیری به عمل آمد. برای یک گروه به مدت ۸ جلسه فیلم مستند روایی با موضوع منابع طبیعی و محیط‌زیست نمایش داده شد و برای گروه دیگر همان فیلم درحالی‌که فاقد ساختار روایی بود به نمایش درآمد. درنهایت از دو گروه آزمون یادگیری و یادآوری به عمل آمد. داده‌ها به‌وسیله‌ی آزمون مانکوا مورد بررسی قرار گرفتند. یافته‌های حاکی از تفاوت معنادار بین دو نوع فیلم در تقویت یادگیری و یادآوری بود. در نتیجه فیلم‌هایی که شکل روایی داشتند تأثیری بیشتر بر متغیرهای یادگیری و یادآوری بر جای گذاشتند.

واژه‌های کلیدی: فیلم‌های روایی، فیلم‌های غیرروایی، محیط‌زیست، یادگیری، یادآوری.

Introduction

The environmental crisis is more related to people's understanding of their exploitation of the resources. This is because the preservation of the environment has a cultural basis. Therefore, one needs to cater for the relationship between the culture, values, and the consequent attitudes toward the policies, and plans raised and put into practice by the authorities (Karami & Keshavarz, 2015)

Filmmakers have been concerned about people's understanding of the environment for a long time. In the 1950s, a TV series, called *The Living Earth*, was produced in the U.S. sponsored by Association of Environment. Mark Lewis, an Australian filmmaker, showed ironically the environmental effects of human error in his film *Cane Toads* (1988). *An Inconvenient Truth* (2006), produced by Davis Guggenheim, shows the effect of global warming. This is a lecture type documentary that addresses environmental crisis, over-release of Co₂, and global warming. In *Mad Max: Fury Road* (2015), a dystopia is depicted when empires are formed based on their access to water. *Koyaanisqatsi* (1982) is a documentary that suggests that the earth was once in harmony, and its nature was clean and untouched, but it is now distorted as humans have corrupted it for their technological goals. A 13-episode TV series called, *Water and Soil*, was released between 2015 – 2018 in Markazi province, Iran and it was one of the first professional attempts in the region to increase people's understanding of the environmental crisis to change their attitudes about the environmental preservation.

This study was inspired when the *Water and Soil* series were produced, and it tries to investigate if a narrative documentary can have a better effect on increasing people's understanding of the environmental preservation in comparison with a non-narrative documentary.

Bordwell and Thomson (2012) have generally categorized films into the narrative and non-narrative forms. They analyze the element of

narrative in fiction movies and indicate that even documentary and experiential works can have narration and plot. They define narrative in films as a sequence of connected events that have a causal relationship, as well as specific time and place.

The narrative is a concept that is often labeled as a story. A narrative begins in a particular setting and follows a series of cause and effect events, and ends in a new situation. The idea of narrative in such a conception is related to the events, their causes, time, and space. However, an accidental series of events cannot be taken as a narrative (ibid).

Narrative systems are generally based on a story that could be narrated in different forms, while non-narrative systems could be found in educational, commercial, documentary and experiential films that are manifested as categorical, rhetorical, abstract, and associational. In the categorical form, the documentary only tries to categorize and convey information. However, as it has a simple pattern and merely conveys repetitive information, it might bore viewer.

Educational films have mostly been released in a non-narrative form. They generally employ a formal topic and scientific discourse, but narrative forms which include plot, characterization, identification and emotional contact have not been employed in educational films very much. In other words, not many attempts have been made to engage the viewers in the narrative elements in educational films.

Asa Berger (1997) believes that narrative is even prevalent in conversations and stories people tell each other about their daily routines. Most narratives have a linear and sequential format, the main features of which are: s/he said/I said/we said/they said. Asa Berger also links the concepts of narrative to movies. He believes that although Vladimir Propp considers "the action" as the most basic component of a story, meaning the character's action in the story, one can also consider "shot" as the most basic component in a film.

The narrative form of a film means the organization of its components based on a series of causes in a particular time and place (Bordwell and Thomson, 2008). A film can employ speech, composition, shot angle, (the main features of shot), editing, and the other narrative elements to present a variety of views. It can structure the situation of the observer and the observed in different forms and refer to the objective and subjective conceptualization (Branigan, 1984).

Genette (1993) maintains that the narration of a story mostly depends on the point of view. Accordingly, each point of view has a particular effect on films. For instance, since the first-person point of view is narrated through the narrator's mind, it can delve into the character's mind more and make us have identification with them (Bordwell and Thomson, 2012). Therefore, a positive consequence of narrative is the representation of concepts in the mind; in other words, a series of events that have a causal relationship with each other and form a logical pattern. As a result, the understanding that is formed through a narrative film can easily represent the concepts in the viewer's mind. This is because as noted by Shank and Abelson (1997), memory can remember the events more easily than individual concepts.

Nonetheless, there is another form of film that is not concerned with a series of interconnected events and narration, but presents the concepts non-narratively and raises individual topics. Educational and documentary films are mostly included in the categorical films. Since they are presented in a simple form, viewers' attraction toward the film should be much considered. In other words, as the viewers' expectations are simply met, they might seem boring to them (Bordwell and Thomson, 2012). Viewers may lose interest and motivation in such films. As Bandura (1986) indicates, attracting the viewer's attention can help them to remember concepts better. In fact, without attraction, no significant learning and retention would happen.

On the effect of the narrative, Murphy et al.

(2015) found that narrative films had a better impact in conveying the hygienic information in comparison with the common non-narrative ones. Their study confirms, all in all, the positive effect of the narrative, but maintains that it has not been much used in the health-related issues. Also, narrative films could have more effect on cultures enriched with a story-telling background and help them reduce their problems. Morgan, Movius, and Cody (2009) conducted a study on the effect of narrative on the knowledge, attitude, and behavior of the viewers. The findings suggested that the viewers could recall the content of the films even months before the final survey. Lisa et al. (2016) conducted an experimental study on the difference between the viewer's sympathy and their engagement in the first person and third-person narrations. The results showed that the viewers trusted the third person viewpoint more than the first person since they believed that the first person can lie, too. They believed that the third person's reliability was indirectly dependent on the reaction of the other characters. It was also found that effective and cognitive sympathy can put the viewers in the character's shoes.

Learning means to acquire information, behaviors, and skills after going through practice, observation, and other experiences so that a change could be observed in the behaviors, knowledge or performance of the person. Conscious or subconscious learning happens when the input is logically categorized in the mind and merges with the previous knowledge, and finally get stored in the long-term memory (VandenBos, 2015). Some others define learning as a process through which knowledge and experience are acquired and resulted in a behavioral change (Reeber, 1995).

The films we watch can be transformed into a source of knowledge for our daily decisions. Some films teach us points to which we could never have the first-hand experience, such as war, faraway places and imaginary creatures. Some other films show the experiences people have gone through, such as school rules and

sports activities. Still, some others collect information about the issues which have been directly experienced (Resnich, 2018, p. 3). Silberman (as cited in Hauff and Laaser, 1996) emphasizes on the representative function of the films, which are not accessible directly.

Learning and retention of skills are much easier than that of the mental concepts. The new input can harness the old data and even make them difficult to remember, but the new coding of the input can help them be retrieved (Senemoglu, 2016). Accordingly, the narrative elements can encode the concepts in a particular manner, as it is widely known that remembering the scenes of a film, watched many years ago, is possible for many. Films can be used to diminish the similarities and increase the retrieval codes considering that the viewers are attracted and engaged. Thus, attraction and engagement are the two important conditions of retention. Presenting information through a story can increase the possibility of these two conditions. Fardanesh (2016) also emphasizes the idea of attraction in his study about films and learning.

Since people's knowledge and understanding of the environmental concepts can play a role in their decision toward the environment on the one hand, and films, particularly narrative ones, have the potential of increasing this understanding, the current study aimed to compare the effectiveness of narrative and non-narrative films on the learning and retention of the environmental concepts.

Method

This study employs a quasi-experimental research method. 40 young male and female participants from Arak, Iran, were randomly selected. Two groups of 20 were formed. Their age ranged from 20 to 27. None of them had any experience in environmental activities and their majors were not related to natural resources and environmental studies. They studied a variety of majors and their GPA was homogenous.

Procedure

The study used a pre-test /post-test design. Firstly, the pre-test was administered to both groups. In the next four weeks, participants watched a 10-minute film two times a week. The first group watched a non-narrative documentary about the issues of preserving the environment in which a third-person narrator (omniscient) presented some scientific information. The second group, however, watched a narrative documentary in which the third-person narrator was omitted, and elements of the environment such as plants presented the same scientific information to the viewers through the first-person monologue or a dramatic dialogue with some edition of the pictures.

These films were made from the rushes of two episodes of the *Water and Soil* TV documentary previously produced by the researchers between 2015-2018. The titles of the two episodes were *Watershed* and *The Damages*.

After the eight sessions of presenting the concepts, a questionnaire was given to both groups. A retention test was also administered via telephone calls one month after the post-test.

The learning and retention assessment tools

The learning assessment tool was an 80 open and close question researcher-made test, 10 of which were given to the participants each session. The items were based on the content of the film confirmed by the authorities of the environmental organization in the Markazi province, Iran.

The reliability of the test was checked through the split-half method, meaning that the test was administered once and the answers were split. The calculated correlation was 0.85, which shows a high-reliability index.

Data analysis

Descriptive statistics (Mean, SD) were extracted from the data. The covariance

analysis was administered at the level of inferential statistics.

Findings

In this section, the measures of central tendency and dispersion of each variable in the pre-test and post-test (learning/retention) are presented. Table 1 demonstrates the descriptive statistics. The findings show that the mean of the learning and retention tests for the environmental concepts in the narrative group is more than the non-narrative group.

Table 1. Frequency, Mean, and SD of the pre-test and post-test for learning and retention of the environmental concepts

		No.	Mean	SD
Learning Environ. concepts	Pre-test	20	8.01	1.62
	Learning	20	17.11	1.41
	Retention	20	15.91	1.70
Retention of envir. concepts	Pre-test	20	7.86	1.63
	Learning	20	15.17	1.48
	Retention	20	12.59	1.90

Testing hypotheses

H1: There is a significant difference between the effect of narrative and non-narrative documentary films on the learning of environmental concepts.

H2: There is a significant difference between the effect of narrative and non-narrative documentary films on the retention of environmental concepts.

ANCOVA test was employed to omit the effect of the pre-test. Before using the analysis of covariance, the normalization test of data dispersion and homogeneity of variances were administered for both groups.

The results show that the dispersion of the variables in each group was normal at $p < 0.05$. Also, the variance of each variable for both groups was the same at $p < 0.05$. Therefore, the assumptions for employing the analysis of covariance were met.

Table 2. Kolmogorov-Smirnov test of data for the two groups

Narrative films		K.S	Sig.
	Pre-test	.461	.984
Non-narrative films	Learning	.529	.942
	Retention	.986	.285
	Pre-test	.619	.839
Non-narrative films	Learning	.511	.956
	Retention	.935	.346

Table 3. Levene’s test of equality of error variances

	Sig	DF2	DF1	F
Learning the concepts	.648	38	1	.212
Retention of concepts	.089	38	1	3.54

The results for the analysis of covariance for comparing the two groups in terms of learning and retention of the environmental concepts are presented in table 4.

As the hypotheses for the learning and retention of the environmental concepts have been presented separately, about the hypothesis of learning the environmental concepts, the data of the post-test (learning) group were considered as the pre-test of this hypothesis, and the data of the retention were considered as its post-test so that the conditions for the analysis of covariance could be met.

The results of the analysis of covariance in the pre-test of both groups indicate that the F for the learning and retention pre-tests was significant, showing its effect. After controlling the effect of the post-test, it was revealed that the narrative documentary was effective in the learning and retention of the environmental concepts and there was a significant difference between the two groups. Therefore, it could be argued that the first hypothesis concerning the different effects of the narrative and non-narrative forms was

confirmed ($P=0.001$ and $F_{1,37}=66.329$). This means that the two groups were different in their performance on the post-test, and the narrative documentary films had more effect on the learning of the environmental concepts. Also, the second hypothesis regarding the effect of the narrative documentary films on the retention of the environmental concepts was confirmed as well ($P=0.001$ and $F_{1,49}=15.160$).

Conclusion

The findings of this study showed that the narrative documentary films improved learning more than the non-narrative form. The narrative form is based on storytelling and characterization. Even when the objects are alive and able to move and speak, they can form a narrative. As Marcus et al. (2010) maintain, a film can increase sympathy with

its subject matter. The viewers, in this regard, are concerned about the characters of the Story, and this can increase their motivation for watching the film. The first person's point of view can help us explore the characters' minds and sympathize with them since it is narrated from the narrator's mind. Moreover, the dramatic elements through narrative can make viewers follow the storyline. Encouraging interest and motivation can have a positive impact on learning.

Since narrative films have a storyline, they can engage the viewers in the characters, suggesting that the viewers are ready to make contact with the film. The viewer follows the hints in the film and contributes to it. A film raises curiosity, suspense, surprise, and certain expectations in the viewers and engages them in a process.

Table 4. Covariance test for comparing the two groups in terms of learning and retention of the environmental concepts

	Variable	Sum	DF	Mean	F	Sig	Partial Eta squared
Learning Environ. concepts	Pre-test	61.259	1	61.259	122.9360	.001	.769
	groups	33.053	1	33.035	66.329	.001	.642
	Error	18.438	37	.498			
Retention of envir. concepts	Sum	10542.063	40				
	Pre-test	97.410	1	97.410	140.038	.001	.791
	Groups	10.545	1	10545	15.160	.0001	.291
	Error	2	37	.696			

As Bordwell and Thompson (2012) indicate, a narrative can generally help us get closer to the characters and sympathize with them.

watching a film puts us in the same context of the scenes, thus, the pictures can help us perceive the realities as they are depicted in a scientific adventure. Reviewing the studies related to films, Fardanesh believes that one of the main pre-requirements of this medium for educational success is an element of attraction, which can be achieved through

narrative and story. Silbermann's representative function of films is a crucial point in the detailed representation of realities that cannot be experienced by the viewers. Although it could be claimed that films, in general, have a positive effect on learning, the narrative forms have a more significant effect in this regard.

Retention is related to memory, though interest and attention can play a key role here. looked from this perspective, narrative can

increase the level of interest and attention. Based on Shank and Abelson's theory (1997), it could be argued that human's memory can perform better in a series of causal events and retention happens more effectively in this regard.

Fardanesh indicates that the narrative elements of a film can do the encoding and make a particular distinction between the concepts they represent. As it is generally known, remembering scenes of an old-viewed film is possible if it is attractive. Narrative form,

therefore, is more attractive than the non-narrative form of representation, as storytelling is an attractive action in its account. The findings of this study also show that a narrative film can have a better effect than the non-narrative version on the retention of environmental concepts.

The findings of this study can be contributive for the filmmakers and broadcasters who are seeking an effective way to influence the viewers, particularly those who write and make films about the environment.

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