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The effect of nature documentaries on students’ environmental sensitivity: a case study

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Despite the potential educational value of nature documentaries, the contribution of such films to environmental education is largely unknown. In the present study, we attempt to delineate the role of nature documentaries to the environmental sensitivity of students when the films are simply introduced to the class. More specifically, the present study experimentally checks whether students who have been exposed to a nature documentary on insects develop a greater level of environmental sensitivity towards those animals compared to students who have not. Moreover, we explore whether nature documentaries of a distinct type (i.e., verbal vs. non-verbal) have a different effect on the students’ sensitivity. The results suggest that traditional nature documentaries have a positive effect on students’ sensitivity, while the non-verbal, less conventional documentary is more effective in the development of environmental knowledge and feelings about insects. However, the non-conventional approach is equally effective in the change in attitudes and beliefs as the verbal, ‘traditional’ one. Finally, the study discloses that students in general report more positive emotional reactions to insects than perceived knowledge and understanding. Although nature documentaries seem to improve all components of environmental sensitivity, they do not subvert the predominance of emotion over knowledge about insects.

\textbf{Keywords:} nature documentaries; educational television; environmental sensitivity; attitude change

Introduction

Nature documentaries constitute the main medium through which a series of pictures, sounds, sources and information about the natural environment are transformed into pedagogic discourse (Paschalidis 2006). Most of them have a set of features appropriate for the educational process, while if combined with the technological opportunities offered by the contemporary audiovisual means, they could become a precious educational material – being easily adapted to the particular teaching needs – and thus serving as a tool for the development of students’ environmental awareness and science education.

Several studies have accounted for the positive effect educational films and documentaries have on learning (e.g., Kelley, Gunter, and Buckle 1987; Owes 1987). There is also an important strand of studies considering their educational value for
conceptual and attitude change in specific areas such as history (e.g., Bage 1997; Lavelle 1992), biological anthropology (e.g., Durham 1993), science (e.g., Dinhgra 2003), but also in particular social issues such as disability (e.g., Donaldson 1976). In contrast, we ignore what the contribution of such films to the field of environmental education would be, with the study of Fortner (1985) standing as a notable exception. Fortner compared the learning on the topic of marine mammals gained by students who watched a Cousteau documentary on the subject with the learning acquired by students who received the same content message via classroom instruction. She found that both groups had significant knowledge increases, but only those who viewed the film showed significant attitude change.

In light of this, the present study is a small-scale attempt to investigate the contribution of nature documentaries to the environmental sensitivity of students in the context of their simple introduction to teaching, that is, without the teacher’s interventions and the students’ preparation. More specifically, the aim of the present study is to check experimentally whether students who have watched a nature documentary on insects have developed greater environmental sensitivity towards those animals compared to students who have not. Moreover, we explore whether nature documentaries with a different style (i.e., verbal vs. non-verbal) have a different effect on the students’ environmental sensitivity.

Environmental sensitivity, defined as ‘an empathetic perspective towards the environment’, has been regarded as one of the variables contributing to responsible environmental citizenship, since a tight connection between environmental sensitivity and the development of pro-environmental behaviour has been identified (Hungerford and Volk 1990, 11). Although Peterson (1982) has attributed only affective aspects to environmental sensitivity, later works have included cognitive elements as well (Metzger and McEwen 1999; Sivek 2002; Sivek and Hungerford 1989–1990). Thus, environmental sensitivity consists of a complex blend of feelings, attitudes, beliefs and elements of environmental knowledge that lead people to refuse ‘to litter highways and natural areas’, to protect ‘natural resources’, to work to ‘preserve ecologically important natural areas’, to respect ‘hunting and fishing laws’ and to insist ‘on rational zoning requirements’ (Hungerford et al. 1992, 83). There are several studies exploring the possible influential sources of environmental sensitivity, by investigating ‘environmentally sensitive’ citizens such as members of environmental organizations and environmental professionals (e.g., Palmer 1993; Peterson 1982; Sward 1999; Tanner 1980). Respondents tend to identify outdoor experiences and adult role models (e.g., parents, relatives, teachers) as the most important factors for the development of their environmental sensitivity, while the media are reported as a less influential source (Chawla 1998). Therefore, most research has been directed to investigate the effect of natural experiences on environmental sensitivity (e.g., Emmons 1997; Metzger and McEwen 1999). In contrast, with the exception of one study suggesting a positive effect on pro-environmental attitude change (Fortner 1985), to our knowledge there is no other research with the aim to explore the role of the media (in any form) in developing environmental sensitivity. Nevertheless, making inferences only from respondents’ estimations, it has been supported that ‘educators should not rely on media as a major means to develop ES [environmental sensitivity]’ (Sivek 2002, 167). By studying the effect of a particular media form (nature documentaries) on students’ environmental sensitivity, our work also aims at being one of the first few attempts towards the delineation of the role of the media in this process.
Methodology

Sample and experimental design

The research was conducted in May and June 2006 on students of Grade 6 (12 years old) in primary schools of Thessaloniki, Greece. Children of this age are more receptive to new attitudes and behaviours, and due to their youth they have more time to dedicate to the benefit of the environment (Ballantyne, Fien, and Packer 2001). 678 students (46% boys and 54% girls) participated in the study through a randomly stratified sampling.

The experiment included two Experimental Groups, A and B, and a Control Group, C. Specifically, Experimental Groups watched a nature documentary on insects. Group A watched Microcosmos (a non-verbal film) and Group B watched Insects (a verbal film). In order to be able to record their direct impressions about the films with minimal interference from other factors (e.g., memory), both groups completed a questionnaire immediately after the showing. The Control Group C did not watch any documentary film prior to the completion of the research questionnaire (see Figure 1). While carrying out the research, all groups of students were given minimal instructions on the procedure (i.e., film showing about the insects and questionnaire completion afterwards for Groups A and B, simple questionnaire completion for Group C). They were not informed about the particular aims of the study and the variables meant to be calculated so that the deceptive answers to the questionnaire would be avoided as much as possible.

The research questionnaire

The questionnaire used was identical for all groups and was designed in order to be suitable for the participants’ age and the objective aims of the research. To check its content validity it was presented to a panel of three experts. Following the comments made by the three experts, some questions were rejected and some altered in order to be more easily manageable by students. Next, the questionnaire was pilot tested on 80 sixth graders and checked for reliability. From the results of statistical analyses, it

![Figure 1. Diagram of the experimental design of the study.](image-url)
was also established that the questionnaire has internal consistency (Cronbach’s $\alpha > 0.79$).

The final form of the questionnaire given to the subjects of the study consisted of 10 questions: one category question (about the participants’ gender) and nine Likert scale questions (scale from 1 to 5, where ‘1’ is used for the minimum of agreement and ‘5’ for the maximum of agreement), by which the students were asked to respond. Since environmental sensitivity – as emerging from the literature – is comprised of both cognitive and affective components, the questionnaire included items involving the students’ feelings (Q10), attitudes and beliefs (Q2–Q6), as well as elements of knowledge (Q7–Q9) about insects (see Table 1). Specifically, Q2 explores the intention of students to spend some time on enriching their knowledge about these animals, offering information about the development of positive attitude through their personal involvement. Q3 aims at disclosing whether students espouse stereotypical beliefs about insects or not, usually due to lack of knowledge. Q4 investigates the students’ ideas about the role and necessity of insects’ existence for natural balance, while Q5 explores pre-existing positive attitudes towards (some) insects. The last question of this group (Q6) studies students’ attitudes towards issues of environmental policy (taking responsibilities for the environment), but in an abstract and general sense, since it does not necessarily concern their personal commitment. Questions of environmental knowledge (Q7–Q9) were general, but crucial and elementary, since they give us information about the students’ level of knowledge and understanding about the role, necessity and contribution of these particular animals to the natural world and humans. In particular, Q7 explores whether students possess a basic and required knowledge about insects, namely, whether they recognize which animals belong to the category of ‘insects’, and thus they consider them to be visible in their everyday life. Q8 investigates students’ knowledge about the life of insects in the environment, while Q9 about their role in natural balance. Finally, Q10 focuses on the students’ feelings towards insects against the established biased ideas.

**The nature documentaries**

The distinct feature between the two documentaries employed in the study was the different style used for treating the topic of insects. More specifically, the documentary *Insects* (1994), a production by Dorling Kindersley Ltd and BBC Lionheart Television International Inc. and with duration of approximately 35 minutes, is a typical educational nature documentary with a voice-over (verbal) accompanying the fast montage. For supporting its educational aims, computer graphics were employed. Thus, the viewer watches blown up and often three-dimensional pictures of various insects, simulations, and to a lesser degree, film clips of insects during their activities in their natural environment. In contrast, the documentary *Microcosmos* (1996) by Claude Nuridsany and Marie Pérennou, with a duration of 44 minutes after adaptation, does not make use of narration at all (except for two minutes at the beginning of the film) and is based on impressive and emotional pictures and music. In more details, the main aspiration of the movie is to lead the viewer to the unknown and impressive world of insect, raising awareness. Using special filming machinery which has been invented literally for the documentary filming needs:

...(…) the filming takes place on another scale and it is like being on another planet. Inaccessible due to its size, which opens the gates and invites people to escape their
usual scale in order to discover another planet. Different, but with common elements with our own, no matter how weird its inhabitants may be (…). (Nuridsany and Pérennou 1996)

Watching Microcosmos, one can easily realize that it is not a typical nature documentary. After all, and as the creators themselves state, their goal has not been simply to present the insects through a teaching story, but they have tried to present:

(…) the vision of a world that will make us dream. (Nuridsany and Pérennou 1996)

Results
Reliability analyses showed that Cronbach’s $\alpha$ was at acceptable levels for both attitudes-beliefs ($\alpha = 0.79$) and knowledge about insects ($\alpha = 0.83$). Descriptive statistics and reliability scores of the total of students are displayed in Table 1. Results indicate that the students’ sensitivity was mainly manifested as an emotional reaction to (Q10 and Q5 in part), rather than as knowledge and understanding (Q7, Q8, Q9 and Q4 in part) of insects. On the other hand, their sensitivity did not concern much of a commitment on a personal level (Q2) but rather on an abstract level (Q6). Finally, students as a whole seemed to hold widely accepted biased thoughts about insects (Q3).

Analysis of variance (ANOVA) was used to examine whether differences in attitudes-beliefs, knowledge and feelings between the control and the experimental groups were statistically significant (see Table 2). Students in the control group held statistically significantly more strongly negative attitudes and beliefs about insects than students in both experimental groups ($F(2, 677) = 41.19, p < 0.001, \eta^2 = 0.11$). Post-hoc analyses showed that differences in attitudes and beliefs between Group A and Group B were not statistically significant ($p > 0.05$). Thus, the use of documentaries significantly influenced students’ attitudes and beliefs about insects as compared

Table 1. Descriptive statistics and reliability scores of the total of students.

<table>
<thead>
<tr>
<th>Questions</th>
<th>$M$</th>
<th>$SD$</th>
<th>Cronbach’s $\alpha$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitudes-beliefs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2. Would you ever spend time to observe an insect’s activities?</td>
<td>4.05</td>
<td>0.50</td>
<td>0.79</td>
</tr>
<tr>
<td>Q3. Do you think insects are disgusting?</td>
<td>3.12</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>Q4. Do you think that insects are necessary for natural balance?</td>
<td>4.14</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Q5. Are there any insects that you enjoy watching?</td>
<td>4.30</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Q6. Do you think that human beings should show greater interest in insects?</td>
<td>4.48</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td><strong>Elements of knowledge</strong></td>
<td></td>
<td></td>
<td>0.83</td>
</tr>
<tr>
<td>Q7. Do you see insects in your day-to-day life?</td>
<td>3.51</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Q8. Do you know any details about the insects’ life in the environment?</td>
<td>3.68</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>Q9. Do you know any details about the role the insects play in natural balance?</td>
<td>3.45</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td><strong>Feelings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10. Would you feel bad if you stepped on some ants?</td>
<td>4.61</td>
<td>0.65</td>
<td></td>
</tr>
</tbody>
</table>

$^a$For this question, lower scores denote greater sensitivity.
to students in the control group, yet there was no differential effect of the type of documentary shown when the two experimental conditions were compared to each other. Accordingly, the results showed that students in the control group scored significantly lower in the assessment of their knowledge about insects as compared to students in both experimental conditions \(F(2, 677) = 255.01, p < 0.001, \eta^2 = 0.43\). Post-hoc analyses indicated that students in Group A had significantly higher knowledge scores than students in Group B \(p < 0.05\). This suggests that although the type of documentary does not seem to significantly influence students’ attitudes and beliefs about insects, there was a significant differential effect on knowledge about insects. In a similar vein, students in the control group reported that they felt less emotional about insects, as compared to students in the experimental conditions \(F(2, 677) = 97.85, p < 0.001, \eta^2 = 0.22\). Post-hoc analyses revealed that students in Group A gave significantly higher feelings scores than students in Group B \(p < 0.05\). Hence, these findings suggest that the showing of nature documentaries had a positive effect on students’ sensitivity, while the documentary *Microcosmos* was more effective for the development of environmental sensitivity compared with the film *Insects*. Moreover, as it becomes evident from Table 2, students’ sensitivity was mainly manifested as a more positive emotional reaction to insects rather than as a perceived better understanding of insects, while the showing of nature documentaries did not subvert this imbalance. In other words, it seemed that nature documentaries reinforced pre-existing tendencies.

### Discussion

The present study suggests that nature documentaries have a positive effect on students’ environmental sensitivity. This means that irrespective of what respondents actually report as important influences on their environmental sensitivity (media, including documentaries, are not commonly cited in prior relevant research), more experimental studies like this should be conducted in order to delineate which variables, and to what degree, eventually develop sensitivity. Moreover, the results indicate that the non-verbal, less conventional documentary is more effective in the development of environmental knowledge and feelings about insects than, but equally effective in the change in attitudes and beliefs as, the verbal, ‘traditional’ one. Thus, educators should probably choose the former kind of documentary if they wish to alter knowledge and feelings, while they could opt for either type of documentary when they wish to develop environmental attitudes and beliefs. This assumption, however, remains to be established by further research on this topic. The effectiveness of the documentary type might also depend on the environmental topic. Would the effect of verbal and non-verbal documentary on environmental attitudes and beliefs be the same when discussing global warming for instance?

<table>
<thead>
<tr>
<th>Groups of questions</th>
<th>Control group</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
<td>( M )</td>
</tr>
<tr>
<td>Attitudes-beliefs (Q2–Q6)</td>
<td>3.76</td>
<td>0.49</td>
<td>4.17</td>
</tr>
<tr>
<td>Elements of knowledge (Q7–Q9)</td>
<td>2.77</td>
<td>0.49</td>
<td>4.01</td>
</tr>
<tr>
<td>Feelings (Q10)</td>
<td>4.21</td>
<td>0.81</td>
<td>4.97</td>
</tr>
</tbody>
</table>

Table 2. Descriptive statistics scores of students into groups.
On the other hand, the present study shows that students in general have stronger emotional reactions to insects than perceived understanding and knowledge. Although nature documentaries seem to improve all components of environmental sensitivity, they do not subvert the predominance of emotion over knowledge about insects. This cognition-affection divide seems to be sharpened by educational films and documentaries in general (Lavelle 1992). Furthermore, students tend not to show their personal commitment to environmental issues but they limit themselves to make more general (and without personal cost) statements of the type ‘people should be more interested in the environment’.

**Implications for future research**

The above findings have important implications for future research, and especially for the educational exploitation and use of documentaries in the school classroom. Specifically, the teacher should give a greater focus on the elements of environmental knowledge emerging from the documentary. Although an increase in knowledge does not lead necessarily to more environmentally responsible behaviour (Hungerford and Volk 1990; Marcinkowski 1998), the environmental knowledge students receive is considered indispensable for the development of their sensitivity (Dimopoulos and Pantis 2003; Morrone, Mancl, and Carr 2001). Moreover, environmental texts, such as school textbooks (Schleppreggell 1997) and advertisements (Alexander 1996), tend to contain generic expressions (e.g., ‘humans’, ‘people’) in order to diffuse human responsibility for the environment, while personal agency in the environment is not often undertaken by individuals as well, as this study and other ones (Stamou and Paraskevopoulos 2008) have shown. Therefore, relevant discussions in the classroom could probably focus on this direction.

The change in knowledge, attitudes, beliefs and feelings about any environmental issue is certainly a complex and longitudinal process and is not achieved through the showing of a single nature documentary. However, in the context of scant research about the role of nature documentaries in environmental education and the development of environmental sensitivity, the findings of this small-scale research attempt, albeit indicative, lead to interesting conclusions, and thus make suggestions about the direction that could be taken by future research, not only on environmental education but also on other areas. Thus, if we cast the net a little wider, the findings of the present study would be particularly useful for the raising of sensitivity via educational films and documentaries in other fields also concerning emotional engagement, and for which other media of educational technology have been already proposed. Such areas could include the teaching of historically sensitive events such as the Holocaust (Hammer and Kellner 2001), the promotion of active citizenship and the raising of sensitivity to cultural difference in multicultural education projects (Marri 2005), or the development of political engagement and socialization in civic education classes (Dunsmore and Lagos 2008).

**Note**

1. Microcosmos is divided into 21 chapters. From these, the chapters that have been omitted are Chapter 6 (snails in love), Chapter 7 (the birth of a hairy caterpillar), Chapter 8 (the spider’s trap), Chapter 9 (the march of the hairy caterpillars), Chapter 13 (the attack of pleasure), Chapter 14 (the water spider and its bubble nest), Chapter 17 (the carnivorous plant) and Chapter 19 (the feast [junketing] of the hairy caterpillars).
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Anastasia G. Stamou is a lecturer in the Department of Early Childhood Education at the University of Western Macedonia (Greece), where she teaches courses on social linguistics, discourse analysis and critical literacy. She holds a Master’s degree in social linguistics from the University of East Anglia (UK) and a PhD from Aristotle University of Thessaloniki (Greece). Her research interests concern the role of language in the representation of social reality and the shaping of social identities, the relationship of language and ideology and issues of critical language awareness. She has published her work in the journals of Discourse and Society, Critical Discourse Studies, Sociologia Ruralis, Science Education and International Journal of Tourism Research.

References


