

Cardinal Stefan Wyszyński University in Warsaw
Institute of Philosophy
Center for Ecology and Ecophilosophy

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Raising Awareness of Environmental Ethics through Film Screening in Education

Kształtowanie świadomości etyki środowiskowej w edukacji poprzez projekcje filmowe

Evangelos N. Manolis^{1,2*}, Eleftheria N. Manoli¹, Evangelos S. Kafteranis², Nikoleta P. Retzepe³,
Aris Stilianou¹

¹ Aristotle University of Thessaloniki, Thessaloniki, Greece

² 1st Vocational Upper Secondary School (EPAL) of Grevena, Grevena, Greece

³ 6th Primary School of Grevena, Grevena, Greece

ORCID EvNM <https://orcid.org/0000-0002-7985-9891>; EINM <https://orcid.org/0009-0007-0195-4438>;

ESK <https://orcid.org/0009-0001-7334-0722>; NPR <https://orcid.org/0009-0006-8845-2731>; AS <https://orcid.org/0009-0002-5259-6048>

• emanolis@auth.gr

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Abstract: This study explores the role of cinema in raising awareness of environmental ethics and ecology for an education for sustainable development. It focuses on *The Beekeeper*, a philosophical masterpiece by Theo Angelopoulos. The research was carried out in a vocational upper secondary school (EPAL). The film was interpreted through the lens of environmental ethics, followed by the creation of a bee hotel. The impacts on participants were assessed through essays and questionnaire analysis. In short, the participants sufficiently realized the intrinsic value of the non-human world and expressed admiration for the species' diversity and the harmonious functioning of nature. They also recognized the vital role of pollination and reported increased motivation to engage in future awareness-raising activities concerning the benefits of wild pollinators. The participants demonstrated motivation to adopt attitudes of moral responsibility towards wildlife and acknowledged the primary causes of biodiversity loss. Participation in the project encouraged them to live in a more environmentally friendly way. Consequently, environmental ethics was engaged in educational practice by a philosophical, aesthetical and creative thinking framework.

Keywords: environmental ethics, education for sustainable development, environmental education, ecological education, environmental philosophy

Streszczenie: Niniejsze badanie podejmuje analizę roli kina w kształtowaniu świadomości etyki środowiskowej i ekologii w edukacji na rzecz zrównoważonego rozwoju. Przedmiotem analizy jest film „Pszczelarz” Theo Angelopoulosa uznawany za filozoficzne arcydzieło. Badania zrealizowano w szkole średniej zawodowej (EPAL). Uczestnicy dokonali interpretacji filmu w perspektywie etyki środowiskowej, a następnie opracowali projekt budowy hotelu dla pszczoł. Wpływ badania na uczestników oceniono na podstawie esejów oraz analizy ankiet. Wyniki wskazują, że uczestnicy dostrzegli wewnętrzną wartość świata pozaludzkiego oraz wyrazili uznanie dla różnorodności gatunkowej i harmonijnego funkcjonowania przyrody. Zwrócili oni również uwagę na kluczową rolę zapylania i deklarowali większą motywację do angażowania się w przyszłe działania edukacyjne dotyczące korzyści płynących z obecności dzikich zapylaczy. Badani wykazali ponadto gotowość do przyjęcia postawy moralnej odpowiedzialności wobec przyrody oraz zidentyfikowali główne przyczyny utraty bioróżnorodności. Udział w projekcie zachęcił ich do prowadzenia bardziej prośrodowiskowego stylu życia. Podsumowując, etyka

środowiskowa została skutecznie włączona do praktyki edukacyjnej poprzez wykorzystanie perspektywy filozoficznego, estetycznego i twórczego myślenia.

Słowa kluczowe: etyka środowiskowa, edukacja na rzecz zrównoważonego rozwoju, edukacja ekologiczna, edukacja środowiskowa, filozofia środowiskowa

Introduction

In recent years, a promising awakening of environmental ethics has been observed, particularly among younger generations, as demonstrated by the growing global movement of schoolchildren concerned with the ecological crisis. The more nature is integrated into society's moral standards, the more effectively the ecological crisis will be dealt with, through the dynamics of new social attitudes and values. Cinema, as an art form, has long focused on the intrinsic value of nature beyond its exchange value. In addition, film screenings can play their role in the recognition of the unique values of wildlife. According to Pelluchon (2021), ecology represents the political translation of a "scheme of consideration," where consideration refers to recognizing the unique values of things and beings. Kalsoom (2024) suggests that consistent opportunities to reflect on and question the mode of "having" and to transition into the mode of "being" will contribute to sustainability (Kalsoom 2024). The goal is to encourage people to abandon self-centred desires, acknowledge their relationship with nature, and assume responsibility for their impact on Earth (Pechočiaková Svitačová 2024). Globally coordinated actions are required to take into consideration not only mitigating greenhouse gas emissions and adapting to their impacts but also preserving natural systems before critical thresholds are crossed (Attfield 2023a).

Environmental problems are deeply embedded in the social fabric, and their resolution requires through changes of the lifestyle – especially in Western societies – rather than relying solely on technological solutions (Georgopoulos 2002).

Encouraging participants to experience nature in its authentic condition contributes to reshaping the relationship of humans with nature (Ploskonka 2024). Ethical theory is essential for addressing the complex challenges faced by environmental ethics (Attfield 2023b). An education that sheds light on sustainability must therefore cultivate critical analysis, foster values, and strengthen ethical orientations.

Education is a specific way, among others, that society uses to transmit values. Schools are not the only places where children learn values, but they can play a highly influential role in shaping a child's moral development. Also, it appeared that transmission of knowledge, combined with emotional involvement, led to changes in individuals' values, attitudes and behaviours (Georgopoulos 2002). Education has its own value, and ecological education could affect a child's ethics, stances, behaviours and overall development towards a more environmental way of thinking and living.

Despite the fact that the scientific community generally regards pollinators as essential, public appreciation of the value of non-honeybee species remains limited (Penn, Hu, and Penn 2019). The EU Pollinators Initiative (European Commission 2018) sets three priorities. The third of them is substantially related to raising awareness. The present initiative will raise awareness throughout society as regards the pollinators' significance and the urgent necessity for action (European Commission 2018). In a study conducted on Mount Olympus in Greece, Blionis and Vokou (2001) found that the majority of *Campanula* pollinators were solitary bees, with Megachilidae species carrying pollen loads of particularly high

purity. To ensure the survival of native pollinator species, education must reach a wider audience (Penn, Hu, & Penn, 2019). Raising environmental awareness is a vital factor in addressing the ecological crisis (Sadowski 2025).

Cinematography, as an art form, could enrich and contribute to the education of values. According to Benjamin (1978), cinematic works are more precise than theatrical, or painting works, and they can be analysed from multiple perspectives. Compared to the theatre, the cinema, because of its greater ability to isolate, is a more analytical medium, promoting an exchange between science and art (Benjamin 1978). Furthermore, ethics inspired by culture may foster activities that are more environmentally positive than those derived from universal, totalising ethical systems (Bisong, Eba, and Nwogu, 2025). To fully grasp the nature of the ecological crisis, an interdisciplinary approach is essential (Sadowski, 2023).

1. Materials and Methods

1.1. Study Area

The study was conducted in the 1st vocational upper secondary school (EPAL) of Grevena, located in the city of Grevena in the region of Western Macedonia, Greece. The research was conducted within the framework of *Programs of School Activities* in the category of *Environmental Education*, with a specific focus on the themes of *Environmental Ethics* and *Environment and Art*. Ten individuals participated in the project (Program of School Activity of Environmental Education): one high school teacher and nine students. The project was designed to examine the impacts on these participants. It had accessible characteristics, including visual content due to film's projection and relatively approachable philosophical concepts. The students were selected from all the three high school classes (A, B, and C) and they had mostly mild learning difficulties. The group was kept small to ensure the suitable research conditions. A quiet viewing environment

was created to minimise distractions and encourage constructive discussion.

1.2. Film Analysis, Essay and Bee Hotel

The project focused on the film by Theo Angelopoulos titled *The Beekeeper*. The film was released in 1986 (Internet Movie Database 2022). The film follows a beekeeper as he travels across Greece, retracing a path of memories, encounters, and natural landscapes. It is one of the masterpieces of the award-winning director Theo Angelopoulos who focused on political, historical, social and existential themes through his poetic cinematography, revealing in parallel landscapes and scenes of Greece with his unique aesthetic. In this film, prefigured perspectives of environmental ethics can be discerned. An exceptional work of art allows for its interpretation from many perspectives. The present study attempts to reveal meanings of environmental ethics in the film's scenes and dialogues. In fact, for the time of film release (1986) such meanings were pioneering. Additionally, the film has a distinctive aesthetic that the participants were able to experience.

In summary, this film was chosen because of its unique aesthetic, beautiful natural landscapes, and novel environmental meanings, as well as because the legendary director frequently utilized the landscapes of Western Macedonia of Greece as the backdrop for a significant portion of his filmography. As the participants themselves live in the region of Western Macedonia in Greece, this study may also be seen as a tribute to the acclaimed Greek filmmaker Theo Angelopoulos.

During the first screening, the participants were familiarized with the director's vision and the film's plot. A second screening involved content analysis from the perspective of environmental ethics. After that, each participant wrote an essay. The essay was structured around specific questions focusing on film's dialogues, on values and on the non-human world through the prism of environmental ethics. This allowed

participants to be more concentrated and accurate so that the film's impact and their thoughts could be more clearly cultivated.

The construction and demonstration of the bee hotel (Fig.1) formed part of the study procedure. Bee hotels serve as small shelters for solitary bees, which do not provide humans with immediate or direct benefits (such as honey production), but play a crucial role in pollinating native plants and supporting biodiversity preservation. Appropriate adaptations to the activity were made in response to the limitations imposed by the coronavirus outbreak.

1.3. Questionnaires and Statistical Analysis

At the end of the project, each of the ten participants completed a questionnaire consisting of two parts. In the first part, participants provided basic demographic information (e.g., age). The main section contained 30 Likert-scale questions. During the reliability analysis procedure, questions that did not satisfy necessary conditions were excluded. Statistical analysis was then carried out using frequency distributions. All questions consisted of the same 5-point Likert scale responses ("Not at all" is 1, "A little" is 2, "Moderately" is 3, "Sufficiently" is 4, and "A lot" is 5). For each question, the percentage distribution of responses was calculated. In addition, the median was used as a measure of central tendency. This procedure supported the drawing of conclusions.

2. Environmental Ethics in Film Analysis and Outcomes

2.1. Detected Perspectives of Environmental Ethics in The Film Analysis

The film starts with a scene outside a house. A long white table covered with fallen flowers and petals; the falling rain and the soft music creates a cinematic landscape that focuses on natural elements. In addition, according to O'Grady (n.d.), this long white table is almost an extension of several other frames in the film, such as the final scene when the panoramic shot of the camera focuses on the sky.

The audience then hears the voice of a man describing to a child the dance of the queen bee. He tells the child that he is fortunate to hear this sound, which resembles a song. The child wonders what it is, and the man explains that the sound comes from the virgin bees who would like to be the queens, and they knock on the doors of their waxen prison in order to break free. The other ones, the guardians stay awake, and they fill up the openings again. The child's voice asks the man why they do not let them out. The man's voice explains that only one of these, the one that they chose for queen bee is allowed to go out. The man continues and describes that the rest are guarded in case something happens to that first one. The man goes on to describe how the drone bees move to the water to await the queen. When she appears, they will rise high into the air, dancing, and she will choose one. When the child asks if this is the queen bee's dance, the man confirms it. This opening scene, focusing on a unique moment of animal reproduction, introduces the viewer to the subsequent human parallels: the wedding of Spyros's daughter and, in retrospect, Spyros's own past union with his wife. The memorable dialogue establishes a symbolic connection between human relationships and ecological systems.

Angelopoulos thus creates a "beehive" of layered meanings. The next scene is the wedding of Spyros's daughter, and the audience is transferred inside the house in Florina, a town in mountainous Western Macedonia. O'Grady (n.d.) notes that the house, with its staircases and rooms through which Spyros and his wife move, resembles a "honeycomb." This interpretation of domestic space as a honeycomb invites the audience to reimagine human life by metaphorically entering the role of non-human beings within a beehive.

Inside the house, an older man addresses Spyros and says that the weather has ruined the wedding feast, yet whatever it does it feels like spring. This remark from the older man introduces a note of optimism which



Figure 1. The construction and demonstration of the Bee Hotel assisted in the process of the study. The photography was taken by the authors of the article

is connected with nature, light, biodiversity and their intrinsic value. The dialogue continues as the older man asks whether Spyros is leaving that day to which Spyros (the beekeeper) replies that the spring starts sooner in the south. This phrase foreshadows that Spyros will follow the path of the bees. Also, the audience can observe that the conversation underscores the symbolic role of spring, the season of natural flourishing. According to Sabouraud (1987), Spyros abandons his family and his job as teacher in order to rediscover the road of the bees and to follow the traces of his ancestors. This film put flesh and bones to the symbolic journey of the bees, enabling the audience to visualize and follow it from northern to southern Greece.

Next, around the 3rd minute of the film, a meaningful scene emerges from the perspective of environmental ethics. Spyros's daughter (actress Vasia Panagopolou) standing before the guests inside the house suddenly looks up, raises her hands and exclaims, "A bird! A bird!" One of the guests responds, "Do not scare it. Open a window." Although no bird appears

on camera, the guests are following her gaze and gestures. According to Sabouraud (1987), the theatricality complements the slowness of the bodies and the extended duration of the shots. A subtle deviation from reality is achieved through symbolic gestures. In this way, Angelopoulos weaves poetic elements and meticulous details into the main plot, employing allegory and environmental symbolism. For its time, such conceptual schemes relating to ecology and environmental ethics were pioneering.

Around the 7th minute, three of Spyros's former students arrive at the house with their new teacher to offer wedding wishes. After a brief exchange of greetings, Spyros asks one of them, "How are you, Nick?" The child replies, "Well, sir!" Spyros then asks, "Are you still setting lime-twigs?" Lime-twigs (Greek: ξόβεργες) are sticks coated with a sticky substance used to trap birds. At this question, the child bowed his head in embarrassment. This could be an influential moment for the film audience. Spyros recalls his pedagogical role and invests his final words in the conversation with his former student emphasizing such unethical habits.

Although Spyros is experiencing the unique moments of his daughter's marriage, he does not forget the values of nature. As a mentor he tries to educate indirectly his former student and future citizen too, keeping in mind preservation of wildlife.

Next, around the 9th minute, the camera follows Spyros as he crosses a bridge. The river flows nearby, and Spyros is shown standing near a tree. The director focuses on this image for almost twenty seconds, emphasising the symbolic connection between Spyros and the natural world. Through such imagery, Angelopoulos indirectly sheds light on incalculable values of nature, including its capacity to offer consolation to human beings. One frame from this sequence – combining the tree, the river, and Spyros crossing the bridge – was later featured on a poster for the film.

Around the 12th minute, when Spyros bids his daughter farewell, there is another meaningful scene of the film. Spyros's daughter in her wedding dress is hugged and lifted by her father, while he sings a traditional children's song. This song tells of someone who was injured while trying to cut a pepper from the pepper plant, which then broke. This song vividly portrays the interaction between human beings and nature but also the regrettable consequences that arise for both when nature is carelessly treated. Spyros sings this song again in the 50th minute, while sitting in a traditional *caffe* on a misty day. Near the end of Spyros's journey, around the 87th minute, as he visits an old traditional Greek house with a small yard, the same song is heard once more, this time as an invisible child's voice, evoking Spyros's memories.

According to Rafailidis (1986), the protagonist no longer feels a sense of belonging to his place and longs to leave. The place is the one he knew as a child, and it does not exist anymore. His place survives only in his memory (Rafailidis 1986). After bidding farewell to his wife and home, at the 18th minute Spyros walks slowly toward his truck and lays his hands on the hives it

carries. By resting his head and hands on them, he reveals his intimate bond with the hives. The scene interestingly suggests to the viewer the value of a deep connection between early life memories and experiences of nature.

In the 19th minute, Spyros recalls the "Flower Road" as his father used to call it and begins reading aloud the names of various beekeeping flora such as *Erica arborea*, *Vicia cracca*, and *Thymus vulgaris*. According to O'Grady (n.d.), as Spyros travels across Greece from north to south, returning to the city where he was born and first learned beekeeping, his journey resembles that of a bee returning to its hive. Along the way, he revisits his parental home and reconnects with old friends in an attempt to revive his life in memory.

At the 21st minute, Spyros delivers a monologue about the state of his beehives: *"Beginning like every Spring. It has been raining since the day before yesterday. The bee hives are in good condition. Only the 3, 4, 9, 20, 31 need change. There is tendency for depopulation. Aged queens."* In contrast, in the 61st minute he records: *"30 March. Condition of bee hives. 1 to 30, good. 31 to 40, sparse population. 41 to 45, empty bee hives."* Later, reflecting on his constant travels, he adds: *"There is irritation in bees. Continuous journeys. I do not have time for the orange trees. The last days I am constantly losing populations."* The film assigns value to the non-human beings. The reactions of the bees and their companions to Spyros during the journey from North to South reflect common human characteristics that are attributed to these non-human beings. Throughout the film, Spyros' emotional connection and concern about non-human beings enable viewers to identify with them. Earlier, on a rainy day in a village *café*, in the 21st minute of the film, a downward trend in beekeeping is revealed during the discussion between Spyros and five beekeepers. This is expressed in phrases such as: *"So many years running behind the flowers"* as well as in a parallel monologue by Spyros during

the same conversation: "*We looked to be counted. Last year we had started ten. Now, George declares to be tired too.*" The description of this downward trend may be perceived by the viewer as symbolic of humanity's withdrawal from the activities of nature and, more broadly, from nature itself.

There is a prescribed path laid out by nature to the south, one that excludes both adventure and wandering (Rafailidis 1986). The hero feels discomfort with highways full of fast-food restaurants and looming power plants (Sabouraud 1987). Spyros starts the journey from the north to the south of Greece. In the 27th minute of the film, he enters a bar, and in the background the smoky chimneys of the power plants appear. In the 28th minute, a symbolic scene emerges that is closely linked to environmental ethics: Spyros exits the bar to cool the bee hives in the truck by pouring water on them by hand from a bucket, while at the same time a gas station attendant fills the truck with gasoline. This juxtaposition conveys a valuable message about caring for non-human beings for their intrinsic value, beyond their tangible economic utility.

Spyros meets a girl, who travels by hitchhiking and who leaves and finds him again at various points of his journey (O'Grady n.d.). The girl has no name during the film. This girl, whom the beekeeper meets on the flower road, can be seen as a symbolic queen bee. Unlike the bees, however, her instinct does not serve productive purposes but merely survival (Rafailidis 1986). In 39th minute of the film, the girl (actress Nadia Mourouzi) asks Spyros, "*I found a map of yours and a route. Will you go to all these places?*" Spyros answers, "*It depends.*" The girl asks again, "*On what?*" and Spyros replies, "*On the weather and more.*" The exchange highlights the protagonist's focus on natural elements, such as the weather, and his respect for natural elements' pivotal role in his future plans. The protagonist's concern for the non-human beings and natural elements is detected in the 51st minute of the film. At

a hotel, Spyros pays the receptionist for his room. While the receptionist calculates the bill and complains about the extra person who had stayed the previous night, Spyros's thoughts remain fixed on his apiaries, and he quietly notes to himself that the wind is blowing.

Spyros meets his old comrades from the Greek Civil War to reminisce about past events. In the 54th minute of the film, he speaks with one of them who lies in a hospital bed. The sick man (actor Serge Reggiani) says in French to Spyros, "*I was waiting for you. I was looking at the tree outside the window. Spring came. And I said, they will come at any time to drink with me.*" This conveys a sense of hope and inspiration drawn from natural elements, such as the tree. Spring, the season of renewal and blooming, is here identified with anticipation and optimism for the best possible outcome. Additionally, in the 55th minute, the same man says to Spyros in French, "*I would like to see the sea for one more time.*" In the 57th and 58th minute of the film they sit near the sea. He says in French to Spyros, "*Let's go to see the sea. I have been dreaming of seeing it for two months.*" Shortly afterwards, he stands in front of the sea, shouting in French, "*The sea!*" while moving to the rhythm of a waltz played in the background. This poetic scene puts the natural element in the foreground. The constant invocation of the sea and the moving in the rhythm of waltz in front of the sea, somewhat between him and the sea, attributes in some way human characteristics to the natural environment.

Around the 66th and 67th minute of the film, the girl meets Spyros again. She names several locations and asks him if he remembers the map. She tells him that she was wandering, sometimes here and sometimes there. Additionally, she tells him that he is the only one who treated her so well. Nobody else did. According to Rafailidis (1986), the instinct of survival governs the girl, which is why she repeatedly intersects Spyros's path, seeing him as the only man who did not wish

to harm her. Thus, the girl is portrayed as a bee in search of a hive (Rafailidis 1986). The viewer might imagine that this nameless girl resembles a solitary bee: not part of a community, guided by the instinct of survival, detached from a production chain, and continuously searching. Symbolism appears again around the 90th and 91st minutes, in a scene which takes place in front of a canteen. There the girl feels dizzy and bites Spyros's hand. As noted by Rafailidis (1986), the first "bee" that stings Spyros is the girl herself – an insect separated from its swarm.

After that, in 92nd minute the scene shifts to a large, mature oak tree beside a railway track, where Spyros and the girl arrive after a train, near an old, disused cinema named Πάνθεον (Pantheon). Inside the cinema, between 93rd and 94th minute, Spyros encounters a friend (actor Dinos Iliopoulos), who says, "You came back, like the old dog eh! Did you see what has become of the 'Pantheon'? My brothers want to sell it. Anyway, they say, it is closed. But I do not let them. I come every day and maintain it here, at the old oak." The viewer can perceive the inestimable value of objects, which have sentimental value, and which are connected with memories. The old oak, moreover, functions as a reference point, symbolising timeless value.

In the final scene, around the 113th and the 116th minutes, Spyros overturns the beehives until he collapses, fatally stung by the bees. As Rafailidis (1986) observes, Spyros does not commit suicide in a conventional way but instead surrenders himself to be claimed by nature (Rafailidis 1986). In this closing scene, the director focuses Spyros's fingers as they move up and down against the ground. According to O'Grady (n.d.), his hand strikes the earth rhythmically, as though attempting to communicate through a pulsing dance akin to that of his bees.

2.2. Impacts on the Participants

2.2.1. Essay

The participants by responding to specific points (Table 1 – see the Appendix to this article) expressed their interesting thoughts, which are summarized below.

Regarding point 1a (Table 1), the interest for the life of the non-human natural world is evident. In this section the importance of biodiversity's protection is highlighted too. Also, the shift in interest from the anthropocentric point of view to the inclusion of the non-human beings was mentioned. Finally, it is referred to that the bird's flying symbolizes the freedom and the beginning of a new path by the protagonist, leaving behind the life he led.

As for the next point 1b (Table 1), respect and protection of nature are cultivated. With the moral questions that the teacher (the protagonist named Spyros) asks, respect for the environment is cultivated. The attitude that is cultivated is related to environmental ethics. Also, the correct attitude towards the natural world, i.e. protecting the life of the environment is cultivated. Nature also has the way of protecting and warning us as the teacher does with the student. Finally, the birds are captured by the lime-twigs and deprived of their freedom. Behaviours should not cross the line that disturbs the others.

As to the point 2 (Table 1), the feelings evoked were mainly admiration for the function of nature and bees, happiness for the nature's beauty, the life and the way bees work and organize as well as for the rarity of such moments. The charm evoked by nature's harmony and the world is also mentioned. The feeling of sadness for the bees that cannot get out of prison was also stated. Our desire that may not come true due to obstacles. But it is enough not to give up and to try for the best.

Regarding the point 3 (Table 1), the need to protect and preserve natural resources and culture is mentioned. The values that ecosystems and cultural goods offer us are very important as they concern our lives

and are far more important than money. The memories, experiences, calm, oxygen, tackling climate change, shade, wildlife sanctuaries are priceless for the present and the future. At a time when valuations on the basis of money prevail, moral values should come to the fore again and respect for the environment and culture should exist.

As for point 4 (Table 1), participants expressed their interest in wild bees. They highlighted their role in the process of plant reproduction and noted that solitary bees, in particular, are vital to sustaining life on the planet. The role of pollination as an ecosystem service that supports life around the planet was also underlined. Additionally, participants noted the lack of greenery in big cities to support pollinators. They further observed that every organism is a link with its own role in the functioning of the environment. Finally, they stressed that value lies not only in immediate profit but also in those benefits that are not evident at first glance yet play a crucial role in human development.

2.2.2. Questionnaire

As described in the *Materials and Methods* section, to assure reliability, 19 questions were ultimately included in the questionnaire. These are presented in Table 2 (see the Appendix to this article) and discussed below. The nineteen questions (Table 2), which constitute the final version of the questionnaire as a measurement tool, successfully passed the necessary checks during the reliability analysis. The Cronbach's alpha coefficient was 0.942, indicating high internal consistency. Based on the literature (Tavakol and Dennick 2011), acceptable values of Cronbach's alpha typically range from 0.70 to 0.95.

The general profile of the 10 participants involved in this Program of School Activities, after they completed the anonymous questionnaire, is provided below. This information was obtained from the questionnaire's introductory part, which, in addition to presenting the scope of the survey,

included closed-ended questions regarding the participants' basic characteristics (e.g., age). As regards their identity, 90% (9 participants) were students of the school and 10% (1 participant) was High School teacher. The age of the students ranged between 15 and 20 years, with the median age being 16. These ages mark a formative period in the lives of young students, during which during which they are especially receptive to acquiring new skills and scientific knowledge that can shape their perspectives.

As regards Question Q1 the median, which measures the central tendency of the responses was 4, which stands for "Sufficiently". Specifically, 40% selected "A lot", 40% "Sufficiently", 20% "Moderately", while no participant selected "A little" or "Not at all". These results indicate that the program contributed to participants' recognition of the inherent value of non-human beings and natural ecosystems.

For Question Q2, the median value was again 4 ("Sufficiently"), and this value represented the central tendency of the responses. In detail, 50% of respondents selected "Sufficiently", 30% "A lot", 10% "Moderately", 10% "A little", while no student selected "Not at all". These results suggest that the project stimulated participants' interest in seeking additional information related to the program.

For Question Q3, the median score of 4 ("Sufficiently") indicated the central tendency of the responses. Specifically, 70% selected "Sufficiently", 20% "Moderately", 10% "A little", while no student declared "A lot" or "Not at all." This indicates that this Program of School Activities sufficiently encouraged participants to search for films with environmental themes, paving the way for further exploration in this direction.

As regards Question Q4, the median, representing the central tendency of the responses was 3.5 and that value stands between the responses "Moderately" and "Sufficiently". Specifically, 40% selected "Sufficiently", 30% "Moderately", 20% "A little", 10% "A lot", while no student selected "Not at all." These results suggest that the symbolism

and scenes of such films can stimulate a sense of connection between participants, non-human beings, and natural ecosystems.

For Question Q5, the median of 4 ("Sufficiently") represented the central tendency of the responses. In detail, 50% selected "Sufficiently," 30% "Moderately," 20% "A lot," while no student declared "A little" or "Not at all." These results indicate that the dialogues of the film play a vital role in drawing attention to issues of environmental ethics.

For Question Q6, the median of 4 ("Sufficiently") represented the central tendency of the responses. Specifically, 40% selected "Sufficiently," 30% "Moderately," 20% "A lot," 10% "A little," while no student declared "Not at all." Such prefired perspectives of environmental ethics are incorporated into the director's ecumenical vision, and these scenes contribute to cultivating a sense of moral responsibility for protecting the living organisms of the natural environment.

As regards Question Q7, the median, which measures the central tendency of the responses was 4 which stands for "Sufficiently." Specifically, 40% selected "Sufficiently," 30% "A lot," 20% "Moderately," 10% "A little," while no participant selected "Not at all." These results show that such scenes convey aspects of environmental ethics that help foster constant vigilance in preserving the natural environment.

For Question Q8, the median was 4 ("Sufficiently") representing the central tendency of the responses. In detail, 50% selected "Sufficiently," 30% "A lot," 20% "Moderately," while no student selected "A little" or "Not at all." These results show that such scenes play a key role in inspiring admiration for the harmonious functioning of nature.

For Question Q9, the median was 4 ("Sufficiently"). Specifically, 40% responded "A lot," 40% "Sufficiently," and 20% "Moderately," while none selected "A little" or "Not at all." These results suggest that this practical application contributed meaningfully to participants' awareness of the program's content. The practical application employed an experiential approach.

For Question Q10, the median, which measures the central tendency of the responses was 3 ("Moderately"). In detail, 40% selected "Moderately," 30% "A lot," 10% "Sufficiently," 10% "A little," and 10% "Not at all." The installation of a bee hotel in a personal space indicates an expression of sensitivity in practical, tangible ways.

For Question Q11, the median was 4 ("Sufficiently"), which denotes the central tendency of the responses. Specifically, 50% selected "Sufficiently," 30% "Moderately," 10% "A lot," and 10% "A little," while none selected "Not at all." This effect of the program is significant, as future actions could further strengthen participants' environmental awareness of wild pollinators.

For Question Q12, the median was 4 ("Sufficiently"). In detail, 60% selected "Sufficiently" and 40% "A lot," while none selected "Moderately," "A little," or "Not at all." This finding is encouraging, as it reflects participants' recognition of the inherent value of ecosystem services.

For Question Q13, the median, which measures the central tendency of the responses was 4 ("Sufficiently"). Specifically, 60% selected "Sufficiently," 30% "A lot," and 10% "Moderately," while none selected "A little" or "Not at all." The results show admiration for species diversity. This admiration could lead to respect for the existence of biodiversity, which is valuable for its conservation.

For Question Q14, the median of 4 ("Sufficiently") indicated the central tendency of the responses. In detail, 50% selected "Sufficiently," 30% "A lot," and 20% "Moderately," while none selected "A little" or "Not at all." Awareness of the threats to biodiversity is essential and the answers to this question indicate that participants sufficiently recognized some of the key reasons for biodiversity loss.

For Question Q15, the median of 4.5, representing a response between "Sufficiently" and "A lot," indicated the central tendency of the responses. Specifically, 50% selected "A lot," 30% "Sufficiently," and 20%

“Moderately,” while none selected “A little” or “Not at all.” These results suggest that the project encouraged participants to adopt a more environmentally friendly lifestyle.

For Question Q16, the median, which measures the central tendency of the responses was 4 (“Sufficiently”). Specifically, 60% selected “Sufficiently” and 40% “A lot,” while none selected “Moderately,” “A little,” or “Not at all.” Interest in nature conservation is essential for ensuring a safe and healthy environment.

For Question Q17, the median of 4 (“Sufficiently”) indicated the central tendency of the responses. In detail, 40% selected “Sufficiently,” 30% “Moderately,” 20% “A lot,” and 10% “A little,” while none selected “Not at all.” The cooperation and communication fostered through this program helped participants to get to know each other better, highlighting the importance of training in soft skills in contemporary education.

For Question Q18, the median of 4 (“Sufficiently”) indicated the central tendency of the responses. Specifically, 60% selected “Sufficiently,” 30% “Moderately,” and 10% “A little,” while none selected “A lot” or “Not at all.” These findings suggest that the project sufficiently stimulated participants’ interest in seeking further information.

For Question Q19, the median, which measures the central tendency of the responses was 4 (“Sufficiently”). In detail, 60% selected “Sufficiently,” 30% “A lot,” and 10% “Moderately,” while none selected “A little” or “Not at all.” Such projects, by emphasising environmental ethics, can influence participants to cultivate a better relationship with nature, while recognising the complexity of natural mechanisms, ecosystem interactions, and their invaluable services.

Conclusions

The impacts on the participants, based on the central tendency of their responses to each question, are summarised below. During the program the participants sufficiently realized the inherent value

of non-human beings and natural ecosystems. Their involvement in the project sufficiently motivated them to seek information about professions related to the project’s subject. Film analysis also sufficiently inspired participants to watch films with environmental themes. The film’s scenes and the symbolism moderately to sufficiently encouraged the participants to develop a sense of connection with non-human beings and natural ecosystems. The dialogues sufficiently led the participants to consider that the non-human world has intrinsic value. Also, the film’s dialogue immediately after the wedding photo – regarding the bird and the suggestion to open the window so it would not be frightened – sufficiently motivated the participants to adopt an attitude of moral responsibility in similar situations. Spyros’s question to his former student regarding the lime-twigs sufficiently inspired participants to maintain constant vigilance in protecting the environment.

The description of the dance of the queen bee at the beginning of the film sufficiently inspired admiration among the participants for the harmonious functioning of nature. The construction of the bee hotel sufficiently enhanced the participants’ awareness of the program’s content, although they would only be moderately likely to install a bee hotel in their outdoor spaces. The knowledge gained from the project sufficiently motivated them to participate in or organize future awareness-raising activities about the benefits of wild pollinators. Moreover, during the project, the participants sufficiently recognized pollination as a vital ecosystem service. They also expressed sufficient admiration for the diversity of species in nature and sufficiently acknowledged the primary causes of biodiversity loss. Engagement in the project affected the participants – ranging from sufficiently to a lot – in motivating them to live in a more environmentally friendly way. They also indicated that solidarity with nature should be sufficiently cultivated to ensure a safe and

healthy environment for future generations. Participation in the program sufficiently helped them to build closer relationships with one another. In addition, the project sufficiently motivated them to search for further information through various sources. Overall, such projects in environmental ethics can sufficiently contribute to shaping human understanding of how nature functions.

In general, film screenings in education provide an effective way to introduce multiple perspectives and a wide range of information in an engaging and accessible format. By discussing selected scenes and asking appropriate questions, many values can be identified and a broad array of topics explored. This approach may serve as a valuable method for introducing many scientific subjects in an interdisciplinary manner, while promoting both creative and critical thinking. Finally, the relatively low cost of the equipment and the accessibility of online streaming platforms, make such initiatives easier to implement in educational setting.

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Appendix 1: Supporting Data for Raising Awareness of Environmental Ethics through Film Screening in Education

Table 1. Essay structured in questions focused on Environmental Ethics

1. Which stance is cultivated in the following dialogues in relation to the natural word:
 - a. Dialogue of Spyros' daughter and her wedding guests immediately after the wedding photo shoot inside the house in Florina:

"A bird! A bird!"
(Spyros's daughter in her wedding dress walks, looking up and raising her hands.
The guests also follow, walking and looking up.)
"Do not scare it. Open a window."
 - b. Dialogue of Spyros with his former student Nick on the steps, at the entrance of the house:

"How are you Nick?"
"Well sir!"
"Are you still setting lime-twigs*?"
(Nick lowers his gaze bowing his head.)
* Lime-twig (In Greek: ξόβεργα) = Stick coated with a sticky substance used to trap birds.
2. What feelings does the following dialogue evoke in you:
In the first scene of the film, the description of the queen's dance through the dialogue of the man and the child:

"You're lucky, listen! listen! Doesn't it sound like a song?"
"What is this?"
"They are the virgins, the ones that would like to be queens and they knock on the doors of their waxen prison. They try to break them. But the other ones, the guards, stay awake and fill up the openings again."

“Why don’t they let them out?”
“Because they allow only one, the one they chose as queen, to go out. They keep the other ones in case something happens to this first one. Soon the drone bees will leave for the water. They caught up with us. Can you see them?”
“What are they doing?”
“They are waiting for the queen. She will come and together with the drone bees, they will rise high in the air dancing, to choose one.”
“Is this the dance of the queen bee?”
“This is the dance of the queen bee.”

3. What is the importance of the effort to the preserve of the natural resources and intellectual values in a time where immediate profit is the main pursuit? Rely on the scene below.

The wider symbolism of the mature oak tree both in the shot outside the “Πάνθεον” (*Pantheon*) cinema and in the following dialogue inside the “Πάνθεον” cinema:

“Who is it? Spyro!”
“Yes.”
“You came back, like the old dog eh! Did you see what has become of the ‘Pantheon’? My brothers want to sell it. Anyway, they say, it is closed. But I do not let them. I come every day and maintain it here, at the old oak. ”

4. Should we care to protect and promote the wild bees and more specifically the solitary bees (e.g. Family *Megachilidae*) as we care for the bees *Apis mellifera* intended for bee-keeping? Justify your answer.

Table 2. The questions that establish the questionnaire as a measurement tool in its final form

- Q1. During the program, did you realize the inherent value of non-human beings and natural ecosystems, namely the value of their existence?
- Q2. Has your involvement with the project as a whole motivated you to seek information about professions related to the subject of the project or to deal with them in the future (e.g. Environmental Ethics, Environment, Art, etc.)?
- Q3. Have both the screening and the analysis of the film caused you the desire to look for and watch films with environmental themes?
- Q4. To what extent have the scenes and symbolism of the film *The Beekeeper* as a whole allowed you to feel a form of connection with non-human beings and natural ecosystems?
- Q5. To what extent have the dialogues of the film *The Beekeeper* made you think that the non-human world has an intrinsic value and not just a utilitarian one?
- Q6. To what extent has the dialogue between Spyros’s daughter and the guests immediately after the wedding photo regarding the bird and the urge for opening the window so as not to be scared, motivated you to keep in a similar case, an attitude of moral responsibility in favour of the protection of living organisms of the natural environment?
- Q7. To what extent does Spyros’s question to his former student—about whether he always sets up lime-twigs—inspire you to maintain constant vigilance in protecting the environment?

- Q8. To what extent does the description of the queen's dance in the dialogue between the child and the man at the beginning of the film, inspire your admiration for the harmonious functioning of nature?
- Q9. Did the construction of the bee hotel contribute to your better awareness of the content of the program you participated in?
- Q10. Would you install a bee hotel in your own outdoor area (e.g. yard, garden, etc.) in order to help in the protection of wild bees, such as solitary bees (e.g. *Megachilidae* family)?
- Q11. Has the knowledge you gained during the program as a whole influenced you to the extent that it could lead you to participate in, or organize, future awareness-raising activities about the benefits of wild pollinators – such as solitary bees (e.g. Family *Megachilidae*) – in environment?
- Q12. To what extent did you realize during your engagement with the project as a whole that pollination is a vital service that the ecosystems offer free of charge supporting the human life and the economies?
- Q13. Did you feel during the program great admiration for the species diversity that exist in nature?
- Q14. Have you realized some of the main reasons for the reduction of biodiversity, such as the degradation and loss of habitats (sites of breeding, food, etc.), overexploitation (e.g. logging, hunting, etc.), pollution, climate change?
- Q15. To what extent has your involvement with the project affect you so that from now on you to live in a more environmentally friendly way?
- Q16. During a time when solidarity among people has become necessary due to the pandemic, do you think it should also be cultivated more systematically towards nature, so that future generations can live in a safe and healthy environment?
- Q17. Has your overall participation in the program help you to get to know and been familiarized better with the other participants of the program?
- Q18. Did the project create in you the need to search for related information (e.g., about the director, films, environmental ethics, solitary bees, pollination, etc.) in various sources, such as the internet (websites, social networks, etc.) or print media?
- Q19. Could the development of such projects, which focus on Environmental Ethics, contribute to shaping human perception of nature's functioning and of people's role in relation to it?