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Science and Religion in Death-Related Teacher Practice

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Abstract

To better understand how teachers navigate secularized educational landscapes when dealing with a topic that extend beyond the epistemological realm of science, this study examined US schoolteachers' practices when dealing with instructional activities on the topic of death and dying. As part of a contextualized research method, classroom cases were used to elicit teachers' death-related practices. Participating teachers were asked to comment on four pedagogical scenarios: a cemetery fieldtrip, a visit to a museum featuring an Egyptian exhibit with mummies followed by a discussion about embalming, an ecological project involving data collection and analysis of animal roadkill, and a lobster cookout lesson wherein a lobster is cooked alive. Rather than approaching these death activities in the same manner, teacher practice was highly nuanced, with considerable variation depending on the deceased's identity (whether human or not) and death's recency (how recent the dying took place). Teachers resorted to avoidance when dealing with the lobster cookout and the cemetery fieldtrip. Reflective of prevalent social representations of science and religion as separate and battling endeavors, teacher avoidance enforced epistemological singularity through preclusion of student exposure to non-scientific ways of knowing death. In contrast, teachers favored neutrality and experiential vicariousness (indirectness) when managing the discussion about mummies and the roadkill investigation. Consistent with social representations of science and religion as dialogic and interacting enterprises, these latter practices showed potential for creating holistic educational spaces for student exposure to epistemically diverse ways of knowing death beyond science. Implications for the pedagogical promotion of youth flourishing and prevention of death anxiety and fear in secularized educational contexts are considered.

Keywords: science and religion, social representations, elementary school, death education, youth flourishing.

Ciencia y religión en la práctica docente relacionada con la muerte

Resumen

Para comprender mejor cómo los maestros en sistemas educativos secularizados lidian con contenidos que se extienden más allá del campo epistemológico científico, este estudio examinó las prácticas pedagógicas de los maestros en las escuelas estadounidenses al considerar

actividades instruccionales sobre el tema de la muerte y el morir. Como parte de un método de investigación contextualizado, se utilizaron casos de aula para conocer las prácticas de los docentes relacionadas con la muerte. A los maestros participantes se les preguntó sobre cuatro escenarios pedagógicos: (1) una excursión a un cementerio, (2) una visita a un museo que contenía una exposición de momias egipcias seguida de una discusión sobre el embalsamamiento, (3) un proyecto ecológico que involucraba la recopilación y análisis de datos de animales atropellados, y (4) una clase que involucraba la cocción de una langosta viva. Se observó que, en lugar de abordar estas actividades sobre la muerte de la misma manera, la práctica docente era muy variada en función de la identidad del difunto (ya fuera humano o no) y de la actualidad de la muerte (lo reciente que era la muerte). Los profesores recurrieron a la evasión cuando se enfrentaron a la clase de cocina de langosta y a la excursión al cementerio. Reflejando las representaciones sociales prevalentes de la ciencia y la religión como empresas separadas y conflictivas, esta evitación promovió la separación epistemológica a través de la exclusión de la exposición de los estudiantes a formas no científicas de entender la muerte. En contraste, los profesores favorecieron la neutralidad y la experiencia indirecta con respecto a la discusión de las momias y la investigación de los atropellos. De acuerdo con las representaciones sociales de la ciencia y la religión como esfuerzos dialógicos e interactivos, estas prácticas han demostrado su potencial para crear espacios educativos holísticos para la exposición de los estudiantes a formas epistémicamente diversas que entienden la muerte más allá de la ciencia. Se considera la importancia para la promoción pedagógica del florecimiento juvenil y la prevención de la ansiedad y el miedo a la muerte en contextos educativos secularizados.

Palabras clave: la ciencia y la religión, las representaciones sociales, la escuela primaria, la enseñanza de la muerte, el florecimiento de la juventud.

Ciência e Religião na Prática Docente Relacionada à Morte

Resumo

Para melhor entender como professores em sistemas educacionais secularizados lidam com conteúdos que se estendem além do campo epistemológico científico, este estudo examinou as práticas pedagógicas de professores em escolas americanas ao considerarem atividades instrucionais sobre o tema da morte e do morrer. Como parte de um método de pesquisa

contextualizado, casos de sala de aula foram usados para elicitar as práticas dos professores relacionadas à morte. Os professores participantes foram questinados sobre quatro cenários pedagógicos: (1) uma excursão a um cemitério, (2) uma visita a um museu contendo uma exposição de múmias egípcias seguida de uma discussão sobre embalsamamento, (3) um projeto ecológico envolvendo coleta e análise de dados de animais atropelados e (4) uma aula involvemendo o cozimento de uma lagosta viva. Observou-se que, ao invés de abordarem essas atividades sobre a morte da mesma maneira, a prática docente foi altamente variada dependendo da identidade do falecido (se humano ou não) e da recência da morte (quão recente foi a morte). Os professores recorreram à evasão ao lidar com a aula de cozimento da lagosta e a excursão ao cemitério. Reflexo das representações sociais prevalentes da ciência e da religião como empreendimentos separados e em conflito, esta evasão promoveu separação epistemológica por meio da preclusão da exposição dos alunos a formas não científicas de se entender a morte. Em contraste, professores favoreceram a neutralidade e experiência indireta com relação a discussão das múmias e a investigação de animais atropelados. Consistente com as representações sociais da ciência e da religião como empreendimentos dialógicos e interativos, essas práticas mostraram potencial para criar espaços educacionais holísticos para a exposição dos alunos a formas epistemicamente diversas que entendem a morte além da ciência. As significancia para a promoção pedagógica do florescimento juvenil e a prevenção da ansiedade e do medo da morte em contextos educacionais secularizados são consideradas.

Palavras chave: ciência e religião, representações sociais, escola primária, ensino da morte, florescimento juvenil.

Introduction

Pedagogical decision-making and action-taking (i.e., teacher practice) are central to the teaching profession. School teachers are constantly faced with complex pedagogical tasks such as deciding what content to include in or exclude from the curriculum (e.g., sensitive/ controversial topics like evolution, miracles, death, faith), socializing students into particular ways of knowing (scientific, religious, artistic, etc.), setting and pursuing instructional objectives (e.g., providing academic knowledge, helping students flourish as human beings), taking effective instructional approaches, selecting classroom activities to implement as part of a lesson

or unit plan, sequencing their selected activities, and deciding how assess student learning outcomes (Leggo, 1998; Wiggins & McTighe, 2005). These practices are inevitably shaped by teachers' epistemological views, which can in turn be influenced or biased by *social representations* (Moscovici, 2000), that is, culturally shared knowledge used by members of a society to construct meaning and collectively understand reality (e.g., collective perceptions of the relationship between science and religion) (Figure 1). As Johnson et al. (2023) emphasize, "Religion and Science are two cultural systems that have each played a critical role in shaping human thought, feelings, and behavior" (p. 1). Teachers are no exception. Yet, research that can illuminate how teacher practice may be shaped by and reinforce existing social representations of science and religion remains scarce.

Teacher practices are situated in complex sociopolitical and legal contexts. Adoption of the doctrine of "Separation of Church and State" and narratives of conflict between science and religion (Aechtner, 2020; Fitz Herbert et al., 2023) have created the impression that science and religion can be easily separated and that classrooms are public spaces that can be unproblematically "sanitized" (Segall & Burke, 2013) by sweeping out all religious understandings and influences, hence leading to the emergence of a pedagogic world that is by and large secularized or laic (i.e., free of indoctrination). Exactly how schoolteachers navigate this complicated political landscape when dealing with multifaceted topics that extend beyond the epistemological realm of science (e.g., dying) is not well understood.

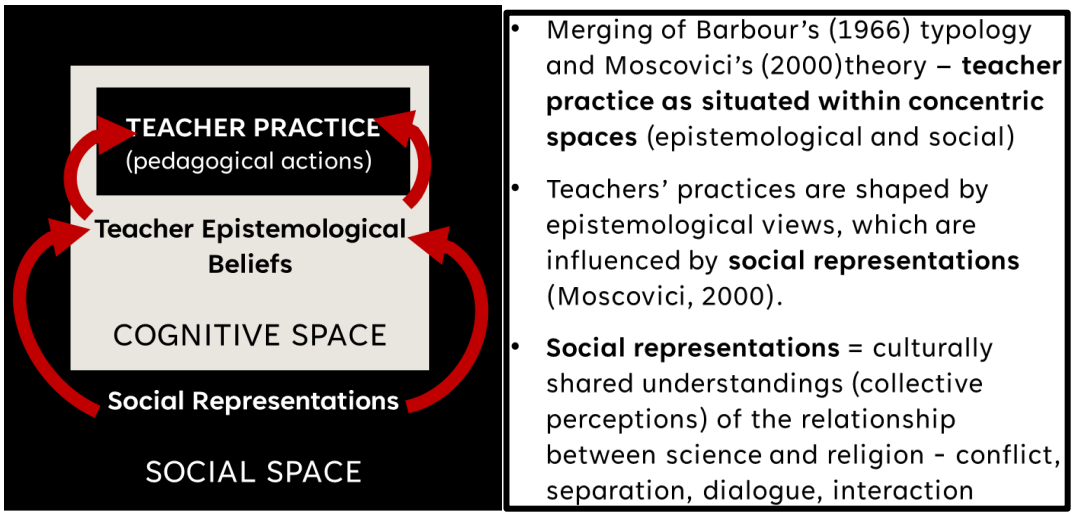

Figure 1. Theoretical perspective on death-related teacher practice (Original Figure).

To advance our understanding in this area, we conducted an empirical examination of teacher practice related to death, a multifaceted topic that sits at the epistemic border between science and religion and can be approached from multiple epistemological perspectives. More specifically, we asked US schoolteachers to pedagogically assess a set of classroom activities focused on death and dying: a cemetery fieldtrip, a discussion about Egyptian mummies and embalming, an investigation of animal roadkill, and a lobster cookout lesson. Our study was framed by the following research questions: (1) What pedagogical practices do elementary teachers adopt when dealing the topic of death and dying? (2) What social representations of science and religion (conflict, separation, dialogue, interaction) underpin teachers' death-related instructional practices?

Literature Review

We now review the literature that informed the present study.

Death in School

Despite being part of the school curriculum, death is a topic that teachers tend to avoid (Oliveira et al., 2014; Schafer & Scharmann, 2022). Like other segments of modern Western society, classrooms are characterized by a "death-denial cultural orientation" (Kearl, 1989) wherein death is no longer treated as a 'natural part of life' but an event from which children must be shielded and protected (Longbottom & Slaughter, 2018). In the few instances when it does come up in instruction (e.g., biology lessons on life cycles, food chains, food webs), death is approached as just another topic within the confines of a techno-scientific cannon. Children are taught that, with death (i.e., cessation of energy input), plants and animals are rapidly disintegrated by decomposers (bacteria and fungi), becoming food for new organisms. Grasping the biological significance of death to other living beings and the environment is prioritized to the exclusion of other ways of knowing (religious, philosophical, artistic, etc.). Moreover, students are encouraged to view death as a mere inconvenience and intrusion on the normalized reality of modern-day technology and advanced medical treatment (Goodwin & Davidson, 1991). Despite compelling evidence of their developmental ability (Fauske, 2023; Olsson, 2013; Ristiniemi et al., 2018; Zanetti, 2020), young students are rarely encouraged to ponder about grand existential questions, look for meaning beyond life itself, think more abstractly about ones'

choices, or consider ones' actions more critically (morally, ethically, etc.). Science is presented as the best and often the only way of knowing death, and students are expected to simply acquire the scientific facts about dying.

At the elementary school level (kindergarten thru sixth grade), a concerted effort is usually made to shield students from death at the lower-grade levels. If not completely avoided, death is a topic that students experience indirectly and abstractly through symbolic representations such as statistics, texts, and drawings (Barnes & Oliveira, 2018); metaphors (death is departure, death is a final destination, and death is at the end of a life's journey) (Lakoff & Johnson, 1999); and euphemisms such as "passing away", "going to a better place", "getting lost", "leaving us", "crossing to the other side", or simply "falling asleep" (Lakoff & Turner, 1989). Steeped in taboo and stigma, direct encounters with death are deemed inappropriate (both developmentally and emotionally) and usually limited to infrequent and accidental occasions (e.g., the unexpected passing of a pet, classmate, or family member) (Oliveira et al., 2022). This is particularly true if the deceased is a human being, and his/her death is recent.

Ways of Knowing Death

As a universal and defining feature of life, death can be understood within a multitude of epistemological paradigms, ranging from religious notions of spiritual transcendence to secularized conceptions of biological finitude. Death and dying have been the subjects of countless fields of scholarship. Emphasizing its multifaceted nature as a powerful driver of societal change, Kearl (1989) writes, "death is the muse of our religions, philosophies, political ideologies, arts, and medical technologies" (p. 3). As such it is possible to know death in numerous ways (e.g., sociologically, psychologically, artistically, spiritually, culturally, cognitively, emotionally) through epistemological means as varied as sensorial perception (empirical observation), revelation (faith), reason, intuition, logic, inspiration, imagination, etc. Depending on one's values and views (e.g., perceptions of the relation between science and religion), distinct ways of knowing death can be seen as (in)compatible, (in)appropriate, coexisting in dialogue, being separate, or as having varied levels of importance. Furthermore, particular ways of knowing can be taught and learned by youth (Eisner, 1985). In the context of secularized public education, the preferred way of knowing death prioritized by teachers is the scientific one, often to the exclusion of alternative epistemological perspectives.

From the point of view of religion, death is a topic of paramount importance. In most religious expressions, divinity is considered the origin and owner of life (Tiso & O'Callaghan, 2010). It is divinity who can decipher the meaning of life and therefore death. The belief in a life after death influences the way we perceive death. Death is not simply the inevitable end of life; it is the passage to a life similar to that of the divinities. This step has an evaluative dimension of one's own life. The next life will be marked by the way of having lived an earthly life. The transmission of faith requires talking about death. In Christianity the theme of death is present in basic points of faith: (a) through sin death has entered; b) Jesus Christ, true God and true man, died on a Cross to pay the ransom for the sin of men; (c) Christ rises from the dead; and d) all the dead will be resurrected with their bodies at the end of time. The theme of death is always approached with hope as suggested by the fact that the term *cemetery* comes from the Greek *koimeterion* (κοιμητήριον), which means bedroom (O'Callaghan, 2004). This Greek word replaced another Greek word that designated the burial place of the dead: *necropolis*, which means city of the dead. For Christians, death is not the end of existence, we sleep and then wake up in eternal life (O'Callaghan, 2009; Pieper, 1999). In the Catholic Church, the topic of death is touched upon at various points in the explanation of faith to children, young people, and adults. A point of reference is the catechism of the Catholic Church for children which is disseminated in the five continents. The latest catechism that has been translated into several languages and whose use has been encouraged by Pope Francis is *YOUCAT for Kids* (YOUCAT Foundation, 2018). Among the different questions to death are: Question 18 - What am I in the world for? Question 40 - Is there also a life after death for us? and Question 58 - What will happen to me when I die? There are other questions that talk about life after death (# 59-62) and about respect for one's own life and that of others (124-125).

Another way of knowing death is philosophically. Death is a recurring theme in philosophy, from logic, which uses a syllogism as a paradigm: "All men must die/Socrates is a man/Socrates must die," to metaphysics, as can be seen in Heidegger and his being-toward-death. Philosophical conceptions of death are largely influenced by how one views the human being (García Cuadrado, p. 253). If man is viewed from a materialistic perspective, death is considered the end of man. In this sense, man's death would be the same as that of any living being: plant or animal (Yepes Stock, p. 451). From a spiritualistic point of view, death would

mean the liberation of the soul trapped or limited by the material. Therefore, man would begin a new and better life after death. Dying would be a liberation and a positive moment for the soul (García Cuadrado, 2019, p. 258). There is a third perspective, which is the one held by philosophers such as Aristotle and Thomas Aquinas, in which man is a being composed of something immortal (the soul) and something mortal (his body) and both dimensions of his being are equally important. For this way of understanding the human being (known as the substantial union), death is a tearing of that essential union between its two components. Leonardo Polo describes it as follows: "Death in us is not a total extinction; it is precisely a splitting. Man as such dies; something in man does not die: his soul. However, the soul is not the whole man, or man in general, but only a part of man. Moreover, the death of man is a very special death" (Polo, 1993, p. 200). From a philosophical stance, how one teaches what death is inevitably conveys an idea of what man is. And depending on that idea of what man is, interpretations can also be made about how to live and die. Death is a subject of extreme importance for man.

In sum, despite being commonly viewed as the preferred way of knowing death in the context of secularized public education, multiple alternative epistemological perspectives to science exist, raising questions about teacher practices (how teachers react to curricular situations that involve dying) as well as their implications for students' development (cognitive, emotional, moral, etc.). Our methodological approach to empirically addressing these questions is described next.

Methodology

For the present investigation, teachers' death-related instructional practices were systematically examined through open-ended research methods (written responses to open-ended prompts). Faced with the impossibility of direct classroom observation death-related instructional activities (due to their infrequent nature) and the highly abstract and complex nature of the topics at hand (death, science and religion), we opted for a contextualized research method wherein participants were provided with *open-ended, written classroom cases* (Koballa & Tippins, 2004; Tippins, Koballa, & Payne, 2002; Schulman, 1992), that is short and realistic scenarios focused on instructional activities related to death and dying. Classroom cases provide teachers with rich, authentic, and realistic classroom scenarios to reflect about content pedagogy

and propose informed and carefully considered courses of actions in response to an ill-structured problem. This case-based approach allowed us to conduct an in-depth exploration of teachers' pedagogical choices in dealing with varied nuances of a contentious and sensitive issue in a safe environment where risk of negative professional repercussion for participants was minimal.

Data Collection

A total of twenty elementary teachers (kindergarten thru sixth grade) in the United States participated in this study. These participants were experienced practicing teachers who held a teaching certification and taught in upstate New York' secularized public school system. In this educational context, teaching religion would constitute a violation of students' constitutional rights (an illegal practice) and could be met with backlash from parents and administrators, with repercussions as serious as losing one's job. As part of a professional development program, participating teachers reflected about their classroom practices and larger educational issues by reading and commenting and proposing solutions to complex teaching cases involving death.

To elicit their death-related practices, participating teachers were provided with four distinct scenarios: a cemetery fieldtrip, a visit to a museum featuring an Egyptian exhibit with mummies followed by a discussion about embalming, an ecological project involving data collection and analysis of animal roadkill, and a lobster cookout lesson wherein a lobster is cooked alive. These teaching scenarios involved distinct types of dying (human, nonhuman, recent, and ancient) as well as various forms of death exposure in and outside of the classroom (in-class activity, museum, fieldwork) (Table 1). More specifically, teachers were emailed an online survey. In it, each case was followed by prompts such as the following:

- Cemetery fieldtrip: Is a field trip to a local cemetery appropriate for elementary students? Why or why not? Do you think elementary students can indeed learn science by visiting a cemetery? Would you take your students to visit a local cemetery? Would you have any concerns? What measures would you take to address these concerns? How would you prepare your students for a cemetery field trip?
- Mumification: Was Amanda right to encourage a discussion of ancient embalming techniques with children in first grade? Were Amanda's responses to the religious questions and children's ideas appropriate?

- Lobster cookout: Should Stan continue with the lobster cookout? How might the lesson be changed to avoid or soften the issues raised by the children's unexpected behavior? How should animals be treated in a science classroom? Should fifth graders be protected from such life experiences?
- Roadkill: What is your evaluation of this roadkill activity as means to promote student engagement in science? Would you implement in your classroom? Why?

Table 1. Death-focused classroom activities

Activity	Description
Cemetery fieldtrip	A fieldtrip wherein a group of middle-school students is taken to a local cemetery to investigate the weathering of tombstones and other monuments as part of a science unit on chemical and physical erosion of rocks (Easley, 2005). Students learn to identify different materials (marble, granite, concrete, and metal), make tombstone rubbings, and copy symbols and epitaphs found.
Mummies and Mumification	Following a recent visit to a local museum featuring an Egyptian exhibit, a first-grade teacher called Amanda facilitates a whole-class discussion about ancient embalming techniques. This follow-up takes an unexpected turn when students start to bring up gruesome details about the mumification process (e.g., pulling brains through noses with a hanger) and asking questions about the religious beliefs of ancient Egyptians (e.g., their views of the afterlife).
Lobster Cookout	A fifth-grade teacher named Stan decides to end an oceanography unit with a lobster cookout wherein a live specimen is to be placed in a pot full of boiling water and be cooked alive in front of students prior to being eaten (i.e., students were expected to witness its dying and then consuming it).
Roadkill	An inquiry-based ecology unit in which middle-school students (grades 6-8) are asked to collect and analyze data on the type and number of animals killed (squirrels, deer, etc.) in a variety of road sections (urban, suburban rural) (Moore & Huber, 2009). The goal of the investigation is to identify locations where particular animals are killed more frequently ("hotspots") and to propose possible safety measures (e.g., fences, tunnels, bridges) to protect animals from the highway carnage. Teachers have the option of using an online dataset previously assembled and/or have students collect their own data in the local roads.

Data Analysis

Teachers' death-related practices and associated social representations of science and religion were obtained through a grounded-theory analytical approach (Glaser & Strauss, 1967). This approach called for the iterative and combined use of interpretative and flexible methods of analysis such as close reading, inductive or open coding, and memoing (Emerson, Fretz & Shaw, 1995; Bernard, 2002). There were no *a priori* hypotheses or codes. Instead, analytical categories

emerged and were gradually refined based on close examination of recurrent patterns in the collected data. Teacher's written responses to our prompts were systematically read to generate coding categories. These emergent coding categories were revised until four main patterns or themes became discernible.

Our first analytical step was to systematically characterize *teachers' instructional practices* related to death (i.e., identify the pedagogical actions taken by teachers when presented with end-of-life classroom activities). Among the emergent teacher practices were avoidance (refraining from implementing activities considered to be inappropriate or problematic), neutrality (seeking to implement activities in a religiously neutral fashion), and experiential vicariousness (resorting to indirect representations of death devoid of details). This characterization was then followed by an in-depth analysis of the extent to which teachers' death-related practices were underpinned by social representations of the relationship between science and religion. This latter analysis was informed by theoretical/philosophical scholarship emphasizing the possibility of science and religion existing in a spectrum of different types of relationship, including dialogue and collaboration, conflict, separation or independence, and interaction (Barbour, 1966; Catto et al., 2019; Elsdon-Baker et al., 2017; Stenmark, 2004).

Peer debriefing sessions were held to triangulate emerging interpretations of the data. In these sessions, teachers' comments on teaching cases were examined collectively, individual analyses shared, and interpretations discussed extensively. The emergent account was gradually adjusted to include any variation that surfaced from this reflective group interpretation of the data. These debriefing sessions were especially important during the interpretative analysis of episodes as they contributed significantly to guarding against individual researcher biases (Robson, 2002).

Findings

We now describe and illustrate the instructional practices adopted by teachers when dealing with each death-focused classroom case.

Overall Trends

Rather than approaching classroom scenarios focused on dying in a fixed manner, teacher death-related instructional practice was highly nuanced, with considerable variation depending

on the deceased's identity (whether human or not) and death's recency (how recent the dying took place). Teachers resorted to avoidance when dealing with the lobster cookout and the cemetery fieldtrip (Figure 2). Reflective of prevalent social representations of science and religion as separate and battling endeavors, avoidance imposed epistemic singularity through preclusion of student exposure to non-scientific ways of knowing death. In contrast, teachers favored neutrality and experiential vicariousness (indirectness) when handling the discussion about mummies and the roadkill investigation. Consistent with social representations of science and religion as dialogic and interacting enterprises, these practices showed potential making space in the school curriculum for holistic student exposure to epistemically diverse ways of knowing death beyond science.

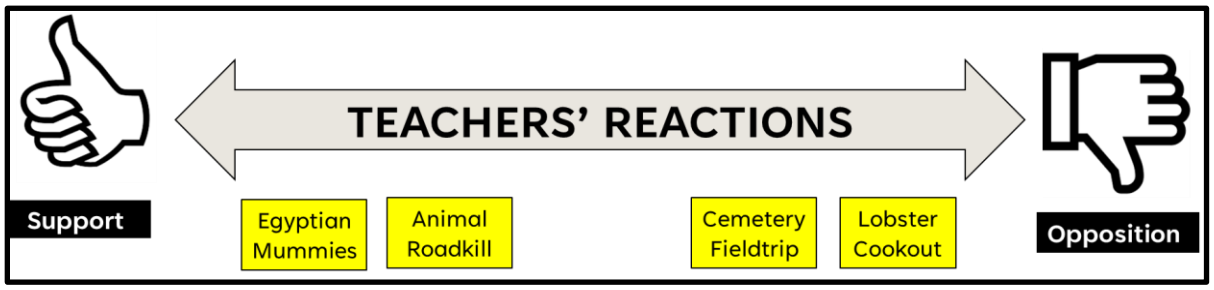

Figure 2. Overall trends.

Cemetery Fieldtrip

Overall, reactions to the notion of taking elementary students on a fieldtrip at local cemetery were mixed depending on whether teachers viewed cemeteries as religious sites ("sacred"). Teachers who viewed cemeteries as "neutral community spaces" were supportive whereas others had psychological/emotional reservations.

Most teachers (16 out 20) preferred to avoid such learning experience, expressing concerns about repercussions and negative effects of direct exposure to recent human death (Table 2). Some teachers' avoidance stemmed from concerns over students' developmental readiness for this type of death exposure (e.g., "looking at tombstones", "facing their own mortality"), with several raising the possibility of negative emotions (discomfort, fear, grief), inappropriate behavior (acting out, joking, running around), and even trauma. These teachers viewed graveyards as morbid and spooky places that would more likely distract students rather than facilitate their learning. Other teachers worried about the impact that the presence of children

might have on mourners who happen to be at the cemetery at the time of the visit ("*Imagine you are going to visit a loved one and you see a bus load of students come off*"). Some teachers considered this fieldtrip to be inconsistent with their views of cemeteries as "sacred places" where people are laid to rest and spend time with loved ones who were recently lost (not for students to be "running around graves"). For these teachers, the presence of children in a cemetery constituted an act of desecration of a "sacred place." Lastly, several teachers suggested what they considered to be better alternatives for a school field trip, including a beach, museum, cave, park or simply a walk around the neighborhood or the school building.

Table 2. Teacher avoidance of cemetery fieldtrips

I do not think a field trip to the cemetery is appropriate. The cemetery is a sacred place for people to lay to rest and this is nowhere for elementary students to be running around. I do not believe that this is an appropriate place for students to be because the death of actual humans is a big deal. Students may be very uncomfortable, scared, and act out. A cemetery just seems a little too intense and spooky. I think looking at tombstones would foster too much imagination in students' minds. This may result in trauma for students who have ever or recently lost a loved one.
A fieldtrip to a local cemetery would be inappropriate for elementary students due to its morbid nature and possibly being too confronting for young students in dealing with death.
I do not think that a field trip to the local cemetery is appropriate at all. I personally believe that a cemetery is a sacred place and is not where children should be running around.
The cemetery just seems like an unreasonable place for an elementary field trip. I understand that you can try to prepare students for things like this, but many of them will be scared, make jokes, and have uneasy feelings when taken to a place like this.
A trip to a cemetery would be a little weird and inappropriate for elementary aged students.
I do not believe a field trip to the cemetery is an appropriate fieldtrip. It is a sacred place that should not be taken lightly. If students were to go there, some students may be triggered or feel upset about someone they may have lost. Also, people may be grieving in that moment while the field trip is going on and it would not be appropriate for the students to watch a funeral happen or for the family grieving to have to see kids running around the grave site. I think it is a very scary and eerie place to bring kids. It is also not appropriate because some cultures or religions do not use cemeteries and although we want to expose our children to all cultures and religions, we should not bring them to a place that their parents do not want them to be.

> I don't think students should have a fieldtrip to a cemetery. The cemetery is a place where people go to visit their loved ones and spend time with them. Imagine you are going to visit a loved one and you see a bus load of students come off. What would you be thinking? Some students would get spooked easily, might be joking and running around, or not learning because their mind is elsewhere.
>
> A trip to a cemetery is not at all appropriate for elementary school students. Not only are most young kids easily startled, immature, and usually believe in ghosts.. . While I believe students should be exposed to the world, and grow and learn, they should be kept from directly facing their own morality or seeing headstones of people, thinking their lives amount to 2 dates and a plot of land.
>
> Some students may not be ready to visit a cemetery for any number of reasons, especially if they have recently lost a family member.

In contrast, the only four teachers who were willing to take students on a cemetery field trip saw varied pedagogical benefits (e.g., providing students with a real-life experience, opportunity for interdisciplinary learning, etc.) as well as financial benefits (no cost):

> I think taking a trip to the town or community cemetery could be a beneficial real-life experience.
>
> A cemetery is free, which may help some schools that do not have a lot of money allocated to field trips in their budget.
>
> I would take my students to visit a local cemetery. It can be tied to a lot of important subjects that students will learn about and can be a great extension for them.
>
> I think that a field trip to a local cemetery is appropriate…I would send a letter home with students explaining where we would be going and why. That way if any students or parents were not comfortable with it, I could know in advance and accommodate. I would also make sure to set clear expectations on how the students should act so that there is no damage or disrespect done by my students.

Although the above teachers acknowledged the possibility of there being complications associated with such a fieldtrip, they considered them to be manageable. Among their management suggestions were (1) helping students develop social skills like respect, maturity, and responsibility prior to visiting the cemetery (deemed required for such a "sacred trip"); (2) clear communication with parents and students (e.g., asking parents for input and providing them with a reason as to why this would be a beneficial fieldtrip); (3) being aware and mindful of diverse family's cultural values and history (e.g., the recent passing of a loved one); (4) carefully assessing students' comfort level and considering the possibility of trauma.

Mummies and Mumification

Viewing museums as secular/scientific sites, most teachers (17/20) were willing to take their students to see mummies and to engage their students in a discussion about the embalming techniques utilized by ancient Egyptian to preserve the bodies of the deceased. As can be seen on Table 3, there was considerable agreement among these teachers that mummies (a topic seen as "rich", "authentic", and "real-world") would spark student curiosity/interest, could effectively motivate their learning of new information (historical, cultural, etc.), and could help students develop improved understandings of fairly complex concepts such cultural plurality, religious differences, and even the relation between science and religion ("*Religion and science go hand in hand*"). Not only did teachers agreed that first-grade students were developmentally ready for discussion of ancient death and dying, but they also considered such classroom activity to be offer an invaluable opportunity for exposure and celebration of diversity and lifelong preparation (for future death encounters and the real world).

Table 3. Teacher reserved willingness to address mummies and mumification

Yes, I believe it is a good decision to encourage discussion about ancient embalming techniques with a first-grade class. This could lead to rich and authentic class discussion about death, engaging students through interesting techniques used to preserve bodies.
It is alright to encourage a discussion of ancient embalming techniques with children in first grade. This concept can come across as extremely interesting and unfamiliar for young students… students often learn about different religions and cultures at this age… students are simply learning new and interesting information about a new culture.
I think it is right to encourage this discussion because it is clear that students are interested… exposing students to information that is relevant to them at that time sparks conversation and prepares them to learn more about death in the future.
Allowing this conversation to happen with the students can validate their thoughts and probably make learning more fun! This was a perfect way to approach a topic that many students are interested in.
We currently live in a very diverse society where these types of conversations are occurring more often and less taboo than they were before…I feel as though it's important for us as teachers to discuss different religions, races, and heritages so we can prepare our students for the real world.

> Death is a natural part of life and students should learn about it especially when some unfortunately experience death and loss of loved ones at young ages.
>
> I believe that as a society, we need to become more open to discussing differences among individuals regarding religion and faith. Discussing multiple views allows us to generalize the ideas associated with different faiths without calling out individuals.
>
> It is so important for teachers to discuss with their students differences among their classmates such as race, gender, religion, etc. I try to celebrate as many cultures as possible in the classroom…
>
> It is important to be exposed to other people's cultures at a young age that way when these students go into the world they are better people that do not have as many conflicts with others.
>
> Religion and science go hand in hand even though somethings conflict. There is curiosity in both where people wonder whether there are facts that can prove it or of their faith is working. The two are sometimes hard to discuss together in class but it is important for others to realize that there are other opinions out their besides their own. One good example is miracles… scientists believe there is a reason behind the miracle where religious people turn to their faith and thank God.

Despite their overall willingness to take students to see mummies and discuss mumification, there was general concern among the teachers about parents' reactions, in particular complaints about possible religious biases. A couple of teachers offered advice on how to deal with such issue ("*The teacher should explain to parents that the class is not supposed to brainwash their children*" and "*Teachers need to respect the parent's way of handling how children understand death*"). Other teachers suggested discursive strategies to help ensure a productive and smooth discussion:

Teachers should frame discussion as sharing factual information about the embalming techniques without sensationalizing or going too far into the *nitty-gritty*. It should also be framed as a discussion about the cultural norms of the time.

> The correct way would be to facilitate a discussion while ensuring that students are respectful of peers' views on the afterlife and explaining that students in the class may have a completely different viewpoint and that is ok.
>
> I believe that teachers need to give a blanket statement of "we may have different views than some of our friends and that's ok, but what's important is that we're respectful."

> Educators should guide the conversations and model how to successfully participate in these conversations, showing students how the proper language and respectful tone allows for a comfortable environment.
>
> I think it would be important to have a conversation with the children about religion and how there may be differences in people's religious beliefs. Not everyone has to agree, and that is okay.
>
> The teacher should guide students with questions but not reveal to the students her own beliefs… students could share what they believe and discuss the differences in a respectful way… it is important to learn about your students and show them they are valued and accepted.

As underlined above, teachers' suggestions included neutrality and non-disclosure on the facilitator's part, offering guidance to students (e.g., Socratic questioning), modeling how to discuss a sensitive topic (e.g., use of proper language and tone), and emphasizing the need for respecting, accepting, and valuing differences in religious beliefs.

Only three teachers preferred to avoid addressing the topics mummies and mumification in first grade. Their avoidance was based on concerns over the students' developmental readiness to discuss the topic. For them, first-graders are just too young for such learning experience, which should not take place until they reach higher grade levels:

> In my opinion, it is a little early to be discussing this in school. When I was in elementary school, I don't remember learning about this until 5th or 6th grade.
>
> I just think it might be too early to expose children to this information, specifically the topic of death.
>
> It is a little early to discuss in school, especially death… I don't think that was an appropriate topic to share.

It should be noted that teachers focused their criticism exclusively on the religious beliefs behind the mumification practices of ancient Egyptians. Not a single teacher expressed reservation about students staring at mummified corpses in museums. As Day (2014) writes, "Mummies are the first dead bodies that many people see… the visceral elements of death might produce extreme discomfort when museum visitors encounter mummies… shock at seeing death" (p. 34). Additionally, teachers did not express any ethical/moral concerns over the public display of human remains in exhibits despite recent controversy over this Western cultural tradition, considered by many as reminiscent of colonialism (e.g., Jenkins, 2011; Sayer, 2010).

Lobster Cookout

Despite viewing classrooms as secular spaces, all teachers preferred to avoid the lobster cookout activity, a practice justified in terms of a variety of concerns (ethical, emotional, religious, and health-related) over the killing of a live animal in front of students for pedagogical ends such as fostering engagement and sparking their interest/curiosity. Among the many issues raised by teachers were animal rights, sanitary policies, culture shock and the emotional toll of having students witness the killing of an animal for their personal consumption (Table 4). Several teachers mentioned the possibility of some students being allergic to shellfish or holding beliefs (ethical and religious) inconsistent such pedagogical experience with nonhuman dying. There was also widespread unease over the prospect of parent backlash and administrative fallout. Lastly, teachers offered numerous alternatives to killing and eating a lobster they considered to be more appropriate, including bringing in a live lobster for observation (rather than harm or consumption), visiting an aquarium (in person or virtually), going on a fishing trip, have a fisherman come to the classroom, watching movie on oceanography, having the lobster pre-prepared by a local restaurant, having a whole-class discussion (about the value of life in the grand scheme of food chains, the ethnics omnivores vs veganism in modern society, etc.), and having a sea-themed party with snacks such as goldfish or octopus-shaped cupcakes.

Table 4. Teacher avoidance of the lobster cookout activity

No, Stan should definitely not continue with the lobster cookout…some subcultures may believe it is inhumane to kill a lobster, particularly if some families identify as being vegetarian/vegan.
Students can become distressed about the killing of an animal that perhaps they perceive is going to be a classroom pet... students can have an emotional tie to the animal due to animated movies about sea creatures and crustations.
I do not think Stan should continue… anything regarding life in a classroom can be extremely touchy with students.
This would be so very bad and traumatizing for many students… they should have a choice to participate in this activity seeing as it involves the life of an animal. This is a personal belief issue. Students have a right to what they think is right and wrong.
I think it would be a bad idea for Stan to continue on behalf of the emotional well-being of his students.

I do not think that Stan should continue… [shellfish is] a food that is very common for severe allergic reactions.
Shellfish is a very common allergy… parents could get upset over something like this.
Lobster isn't a regular snack like potato chips or cookies, it is a live animal cookout happening in school.
He did not account for religion or allergies as reasons that cooking and eating this lobster as a class would be bad.

Roadkill

Most teachers (18/20) were willing to implement the roadkill activity, emphasizing its pedagogical value as an alternative to empirical activities (science experiments) traditionally encountered by students in classroom settings. Because roads were seen as neutral spaces, teachers did not express religious reservations about this activity. As can be seen in Table 5, having students investigate roadkill was consistently considered a potentially powerful source of engagement that could be strategically used by teachers to trigger student curiosity and motivate their learning. Such pedagogical potential was attributed to the novelty of a topic traditionally absent from the school curriculum, the "real-life" nature of this issue under study, and its personal relevance as a phenomenon sadly too familiar to most students, particularly those living in rural areas. Roadkill was expected to figure prominently in students' lived experiences, hence constituting an appealing topic.

Table 5. Teachers' reserved willingness to implement the roadkill activity

I think the roadkill activity is an interesting technique to engage students in an alternative hands-on science experience… the manipulation of test tubes and beakers is not the only way scientists perform their work.
I thought the roadkill activity was a unique idea to engage students in science. Topics like roadkill aren't typically discussed let alone investigated in science classrooms. The frequency of roadkill and the high likelihood that students have experienced roadkill at some point in their lives make the topic familiar and engaging… students would love this activity… students crave new, unique topics and are often curious about unusual things.
I wonder if urban students or a more rural population would be more engaged. For more rural populations they would probably be more engaged, not just because they see this [roadkill] as a part of their lives and where they live, but from the costs involved if your own car (or your family's car) were involved.

I probably would implement this activity into my classroom, especially if I were teaching in a rural school where roadkill or animal related car accidents are more common.

Since the activity is macabre, you have to consider your audience and how it relates to your student. Even within NYC, two classes in different boroughs may have a different relation to the material. If I taught this lesson in the middle of Brooklyn, then a roadkill analysis may not be as relatable or be far more depressing since the chance of roadkill being a neighborhood cat is more like than a deer roaming the streets. However, if I taught this lesson on the south shore of Staten Island, roadkill is a far more common occurrence, especially with bigger animals.

While the topic is very unique, students may find it more interesting than typical topics because it provides examples of real-life occurrences that students are exposed to.

My opinion is that the "macabre" theme of the lesson plays to the advantage of engagement… partially because it is smelly, messy and (literally) visceral.

I say this with love when I say middle school students are weird, I think any middle school teacher will agree. The weirder the topic, the more engaged and excited middle-schoolers are to learn about it… In my experience, students love all things macabre and I do not think that analyzing the data of roadkill would be traumatizing. In fact, it could lead to a good discussion about why it is important to drive carefully and be aware of your surroundings at all times when operating a vehicle.

It could be a good thing for students to actually assist in preventing the loss of animal life…that is the point of the activity.

Students would be able to relate their findings (deer information) to precautionary measures that should be taken on the road.

I feel that some of these students who feel strongly about animals and the environment will be very passionate about this assignment, and use it as a means to spread awareness about the staggering roadkilled animals seen in their local community over a period of time.

Despite their overall willingness to have students investigate roadkill, there was considerable reservation about the emotional impact that direct observation and experience with roadkill might have on students, including the possibility of trauma and depression:

It [roadkill activity] might cause some discomfort in students because of its morbid nature…

I also worry about the morbidity component of this [activity].

> I thought that having students to go "look for and record" actual roadkill was rather macabre… appropriate preparation and accommodations should be made for students who find the topic extremely off putting.
>
> Having to go out and collect data from actual roadkill that they would observe on the road would be way too inappropriate and possibly traumatizing for students… my students would be analyzing data that was already in a database and would not have to observe any dead animals on the road.
>
> Proper emphasis should be placed on the respect for living and dead animals in science; it is reassuring for some students to hear that this somewhat grisly work is in the interest of scientific understanding and ecological preservation.

Only three teachers preferred to completely avoid classroom implementation of the roadkill activity. These teachers were adamant about the inappropriateness of roadkill as a topic of instruction and were opposed to its teaching in middle school:

> I would not implement this activity… discussing roadkill with middle school students can be somewhat traumatic. Of course, they know the concept and meaning of roadkill, but focusing on this topic and analyzing a significant amount of data can be disheartening for students. Some students have personal connections to their domesticated pets or simply enjoy being around animals…what is the point of completing the activity when students are not able to connect to it on a positive note?
>
> My answer is "no." For more than one reason, including the rather macabre setting or subject… to require all of the students to study animals killed on the road is not really a good setting for learning.
>
> In middle school I would not include this roadkill data into my curriculum… this lesson may be more appropriate for high school students.

As can be seen above, teachers' avoidance stemmed from concerns about student developmental readiness to deal with a topic they considered too "macabre," "morbid," "grisly" and just plain "weird" for young learners. For these teachers, youth should be protected (shielded) from staring directly at bloody and flattened animal carcasses along local roads, and classroom instruction should be limited to topics and experiences to which students could "*connect to on a positive note*." Animal death as a result of roadkill was just too negative a topic for middle-schoolers to make sense out of, hence being inconsistent with their developmental levels.

Teachers' preference for experiential vicariousness is consistent with recent research in ecological anthropology, underscoring the problematic social phenomenon of roadkill invisibility and disregard rather than memorializing and mourning. As Desmond (2013) writes,

> The deer lying by the side of the tarmac; the raccoon on his back grotesquely bloated as if about to burst; the flattened gray-black wing feathers of a starling, eerily fluttering in the breeze on a highway… The haunting ears of a rabbit, still visible though smashed onto the cement, the rest of her undecipherable in a blotted mess of fur and tissue; or the twisted spine, and the small, almost beseeching handlike paws and surprising red entrails of the common gray squirrel… These are some of the everyday images that our glance evades as we hurtle along highways… the conventions of our roadkilling calls for nothing at all except the learned obliviousness or an active turning away from these tiny, often gruesome and grotesque spectacles of death (pp. 46-49).

Teachers' adoption of the practice of indirectness suggests that socialization into such problematic habit of not looking at dead animal carcasses or even acknowledging their dying on roadways may begin at childhood and be reinforced as early as elementary school.

Discussion

The significance of the reported findings is now discussed.

Media and Parents

Given the silence that often surrounds death and dying in schools, one might wonder how children come to learn about these topics growing up. Previous research identifies two main sources of information about death and dying for children, namely depictions of death and dying in the media and parental communication about death (Longbottom & Slaughter, 2018). With children watching three to four hours of television daily, it is unsurprising that the media plays a major role in shaping children's conceptions and attitudes toward death, dying and the afterlife. Tenzek & Nickels (2017) report that at least one death occurred in 84.2% of Disney and Pixar movies. The American Psychological Association estimates that US children will have seen as many as 8,000 murders on TV by the time they finish elementary school (APA, 2004). However, these depictions of death and grief in the mainstream media are often unrealistic and contain inaccurate, confusing, and potentially harmful information about death and bereavement (e.g., banalization of death). Without guidance, exposure to such death depictions comes with a risk of a variety of cognitive problems, including difficulty distinguishing between real death and fake

death and grasping conceptual aspects of death such as finality/cessation of life, irreversibility, universality, inevitability, and causality (Fernández-Alcántara et al., 2021; Kronaizl, 2019). There can also be emotional problems such as a lack of vocabulary to express personal feelings of loss, fluctuating grieving stages, and unexpected bereavement responses (Westmoreland, 1996); lack of emotional self-regulation, emotional awareness, and competencies needed for effectively coping with death; and, fear of facing death (Ketchel, 1986).

There is also widespread consensus that parents are another important source of knowledge about death and dying for children. Parental communication has been shown to be a significant factor in children's development of a mature understanding of death (Longbottom & Slaughter 2018). Nonetheless, evidence also exists that many parents have an attitude of trying to shield children from the reality of death, are uncomfortable talking about death, underestimate what their children know about death, and avoid discussions about death until their children get older (Renaud et al., 2013; Renaud et al., 2015; Su-Russell et al., 2021). Reluctant parents do not have more in-depth discussions about with their children until the issue is forced by media representations of death or the passing of a close relative or pet, often using euphemisms that can generate confusion.

The above trends underscore the critical need for a more rounded death education in schools. Modern children have limited access to realistic information and, as the above research shows, media, and parents are not always reliable sources of knowledge about the end of life. Therefore, it behooves school educators to ensure that young children have access to pedagogical experiences that can promote learning (conceptual and emotional) about life endings and the afterlife. However, simply providing children with the "facts of death" (i.e., biological information about the end of life) may not suffice given the multifaceted nature topic that sits at the epistemic border between science and religion. Instead, children need access to more holistic educational spaces that are epistemically diverse and that allow for student exposure to multiple ways of knowing death. This recommended holistic approach is discussed next.

Holistic Education

There is widespread recognition among educators and parents of the critical need for holistic education. Part of a growing movement in the US and the world (Miller, 1986), advocates of holistic education believe that the moral, aesthetic, and spiritual sides of a young

person need to be pedagogically fostered and developed together with his/her intellectual, affective, and social sides. Even when learning science, children and adolescents should be engaged in a way that involves them as whole person, including spiritually (Witz & McGregor, 2003). The goal of holistic education is not to bring religion back to the secular classroom, but to "create a more compassionate, democratic, life-affirming, ecologically sustainable society" (Miller, 1997, p. vi) by embracing an educational perspective that is open to more interpretations and welcoming of a wider range of ways of knowing. It leaves room for spiritual interpretations without assuming *a priori* a supernatural divinity whose existence shall be realized. As Miller (1997) states, "bringing spirituality into education does not mean injecting religious teachings into the curriculum; rather it means encouraging students to engage their world with a sense of wonder through exploration, dialog and creativity" (p. 80). Teaching holistically means being inclusive of as many perspectives as possible, attending to the inner lives of students, inviting, and facilitating deep and meaningful connections on multiple levels, and choosing to believe that there is room in education for all sorts of understandings of life's "profound truths." This is how students should learn about death and dying in schools.

Previous research has revealed several features of what can be considered effective death education for children, including tactful, honest, reflective, open, developmentally appropriate, and emotionally supportive (Kronaizl, 2019; Longbottom & Slaughter, 2018). Educational efforts in this area, we would add, should be philosophically informed and oriented. Scholarly work in the field of philosophy emphasizes how understanding life and understanding death are closely intertwined as well as the power of death to prompt deep reflection about dramatic philosophical questions such as: What is the purpose of life? When does life end? What happens when we die? Why do we die? Being faced with the inevitability of one's mortality can be a powerful motivator for philosophical reflection. In such moment, one becomes naturally inclined to ponder about grand existential questions, look for meaning beyond life itself (e.g., wondering about afterlife and the existence of God), think more abstractly about ones' choices, and consider ones' actions more critically. As Solomon & Higgins (2006) posit,

> Our philosophical awareness begins in disappointment or tragedy… [when] we have a quick brush with death (a near car wreck, a sudden dive in an airplane), and we start thinking about the value and

> meaning of life. In such moments, philosophy takes hold of us, and we see and think beyond the details of everyday life. (p. 27)

As such, instruction about death and dying can be strategically capitalized upon by teachers to philosophically engages students and promote in-depth, reflective philosophizing in the classroom.

If approached philosophically, death-focused instructional activities can also serve as a springboard for virtue acquisition, cultivation of character and development of death-related phronesis (practical wisdom to appropriately respond to situations involving permanent cessation of life). A similar argument can be found in the literary tradition of *Ars Moriendi* (the art of dying well), "preparation for dying could never begin early enough and involved visiting the sick to remind us of our own mortality… and regular examination of conscience (Donnelly, 2006; p. 208)." Books such as *Dying and the Virtues* (Levering, 2021) and *Patience, Compassion, Hope and the Christian Art of Dying Well* (Vogt, 2004) draw philosophical connections between death and the cultivation of virtues (e.g., love, hope, gratitude, solidarity, courage, compassion, and patience), emphasizing how death encounters can play a critical role in one's development of virtuosity.

Philosophically oriented death education can also promote student flourishing as the knowing that life has an end (that death comes to us all) can foster a desire to live better and more fully. Human flourishing depends more on how we see death and include it in our lives than previously thought (Las Heras, Grau-Grau, & Rofcanin, 2023). Awareness and acceptance of our death helps us recognize not only the importance of living meaningfully until the very end but also our capacity to be happy despite inescapable mortality. When experienced as having deep meaning, death can be a source of flourishing and purpose, facilitating subjective well-being (Aghababaei, 2016). Yet, despite its potential to promote achievement of an eudaimonic engagement with life, death remains taboo in many societal sectors such as education, instead giving rise to death fear, denial, and anxiety (Kearl, 1989). This problematic situation became particularly evident during the COVID pandemic, a period of mortality salience that proved to be challenging for children to comprehend and cope with (Paryente & Gez-Langerman, 2023; Pompele et al., 2022). Preparing our young students to live through these periods of increased

uncertainty and vulnerability when blind reliance on technology and medical science to save us from death is not a feasible option, is essential to ensure their future well-being.

Conclusions

In his seminal book *We Have Never Been Modern*, Latour (1993) links modernity to the concept of purity. Through metaphysical abstractions like science/religion, modern thinking attempts to separate a world abounding with hybrids into pure and discrete categories (abstracted purifications). Attempts are made to purify/de-hybridize things and events. Death, we believe, is one such event. Secularization of the modern school curriculum had the effect of promoting the purification of death and dying in classrooms, giving rise to modernist conceptions of the end of life that are strictly situated in the scientific realm and at the same time denying students access to a more epistemologically diverse pedagogical space in which to learn a topic as complex life ending. This was particularly evident in the fact that death-related practices were influenced by teachers' epistemological views of the "learning space." Teachers tended to be more open to student exposure to death in spaces seen as epistemically hybrid (roads and museums) than in epistemically pure spaces (science classroom and cemetery). The place of learning constituted a critical factor behind teachers' death-related practices (though not in a deterministic manner).

As a phenomenon that transcends epistemic borders, death inevitably requires an educational approach that is more divergent and open to multiple ways of knowing. Also required is emancipation from the epistemological bonds of social representations that insist on unreflectively separating science and religion. scientific spirit. Rather than being guided by a strictly rational *scientific mindset* (Johnson et al., 2023) blind to alternative ways of knowing, death education might be more productively approached with a *scientific spirit* (Snowden, 1917) that begins with a philosophical sense of wonder, considers bigger meanings, and embraces pluralistic thinking (i.e., is open to multiple truths). Lastly, transcendental exploration of death may require epistemically neutral spaces not seen as being strictly scientific nor religious. The potential of such an approach to death education was recently made clear to us in the artwork produced by an eleventh-grade student for whom cemeteries served as a source of inspiration, awe, and beauty (Figure 3). It is our hope that the present study can help more schoolteachers recognize and realize such pedagogical potential.

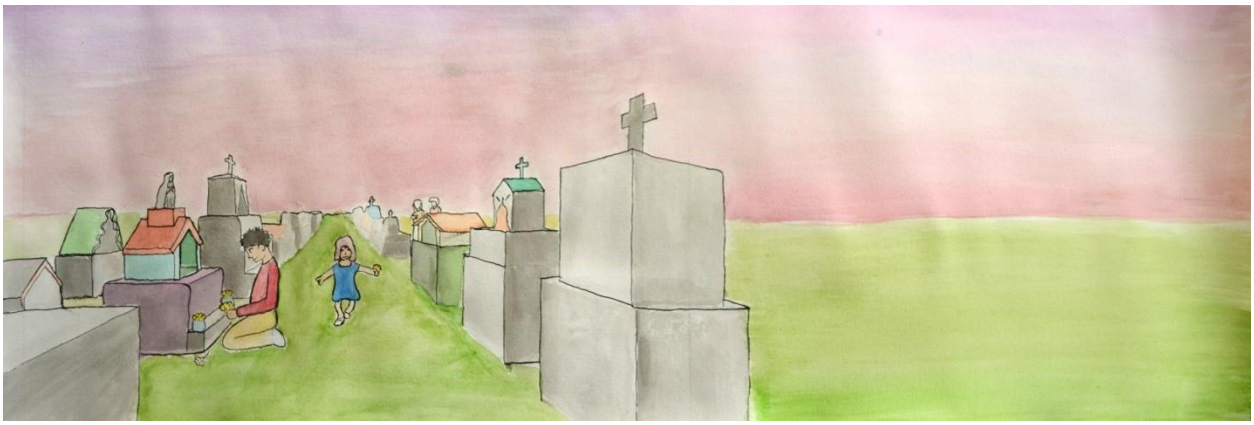

Figure 3. Artwork by Sanford Fels, a high-school student in upstate New York.

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