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How to Treat AI Teachers Virtuously

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Abstract

This paper addresses the ethical question of how to treat AI teachers virtuously. AI is increasingly taking on roles traditionally held by human educators. But should students respect, trust, or feel gratitude toward AI teachers in the same way as human teachers? By exploring concepts of respect, gratitude, and trust, I aim to initiate discussions on how to educate students on virtuous behaviour toward AI teachers, fostering meaningful learning without confusing ethical treatment with that of human instructors.

1. Introduction

Recently, artificial intelligence (AI) is having a great influence on various aspects of human life from personal assistants to diagnostic tools. We humans are now living in an unprecedented era in which inanimate objects (i.e., AI) talk and act like humans. Faced with this situation, we need to set up a new standard of treating such AI entities virtuously. On the one hand, it seems awkward to treat them as we treat other inanimate objects such as cars or dishwashers. On the other, it seems natural to treat them as we treat humans since they act and talk just like humans do.

This poses to us a new problem, which I call the problem of Virtuous AI Treatment (VAT). The problem of VAT is particularly significant in the field of education, where AI technology is being increasingly adopted. Within education, AI technologies have become more prominent, offering tools and systems that enhance learning experiences, streamline administrative tasks, and provide personalized instruction. Among these innovations, AI teachers have emerged as a hot potato, offering the potential to complement or even replace human teachers in certain contexts.

This paper explores how to treat AI teachers virtuously, focusing on ethical challenges that may arise in the classroom where AI-based education prevails. The complexity of interacting virtuously with AI entities is significant. Human interactions are guided by centuries of ethical and moral frameworks, but AI introduces a new dynamic. I aim to develop a comprehensive understanding of how virtue ethics can be applied to AI, specifically in the context of AI teachers.

I provide with a virtue ethics framework to guide interactions with AI teachers, emphasizing the importance of expressing virtuous character and practical wisdom in distinguishing between deserving and undeserving recipients of humane treatment. Given the increasing concern about the ethical and emotional development of young students in the age of AI, this project seeks to initiate theoretical investigation on human-AI relationships in education. I aim to enhance our understanding of how interactions with AI teachers will impact the practice and development of students' character and offer theoretical frameworks for future empirical studies on the relevant topics.

In this paper, I first introduce how the framework of virtue ethics can provide a distinctive approach to the ethics of artificial intelligence by analyzing the problem of VAT. Then I explore the complexity of VAT in education focusing on ethical and educational issues related to AI teachers. Next, I examine whether and in what way the students treat AI teachers with respect, gratitude, and trust. After exploring broader implications, I conclude that human teachers are not fully replaceable and that we need to take the problem of VAT in education more seriously.

2. Virtue Ethics and Artificial Intelligence

Virtue ethics prioritizes the cultivation of moral character over action-based ethical theories such as deontology or consequentialism. It focuses on the question, "What kind of person should I become?" rather than "What is the right thing to do?" Central to virtue ethics are the cultivation and exercise of virtues and practical wisdom (phronesis). Practical wisdom involves the ability to understand the context and find appropriate courses of action in the given situation. As AI entities fall under the intermediate category between persons and mere objects, their advent brings us with a new puzzle in answering the question of how to treat them virtuously.

There have been debates about how to make sense of virtues and vices in our relationship with AI entities (e.g., Sparrow 2021; Coeckelbergh 2021). How can we treat AI entities virtuously, given that they lack features like consciousness and intentionality but act as if they have them? This raises the problem of VAT. How would a virtuous person treat AI entities? Should we treat them just as we treat human beings or should we treat them as other inanimate objects such as tables and dolls? This is not an easy question.

On the one hand, there can be reasons to treat AI entities like we treat humans. First, the way the agent treats AI entities can *reflect* her character. Let us take the case of talking to Large Language Model (LLM) like ChatGPT. What kind of expressions would a virtuous person use when interacting with ChatGPT? Suppose that, to ChatGPT, Alicia says “Hey, *would you please* summarize this article for me?” while Ben says, “Hey, *stupid*! Summarize this article right now!” The way Alicia interacts with ChatGPT reflects polite and respectful character, while the way Ben interacts reflects his rude and disrespectful character. The way we spontaneously AI entities mimicking human behaviors can also reflect our character.

Second, we can *cultivate* our character by practicing virtuous responses and treating human-like AI entities as they treat humans can be an effective way to practice them. As AI entities become better at mimicking humans, it will become harder to tell apart actual human expressions and those of AI entities who mimic them. Thus, it can be argued, we should take interactions with AI entities like ChatGPT as opportunities to cultivate virtues such as politeness and respectfulness by practicing humane and kind responses.

On the other hand, some might also argue that AI entities, being ‘mindless’ objects, do not warrant kind or benevolent treatment. Since AI does not feel pain or possess consciousness, treating them as inanimate objects is deemed appropriate. Examples include kicking a robot dog. Suppose that the agent kicks a robot dog just to text its reflexive ability, rather than to vent her anger on it, knowing that such treatment does not actually cause any pain in the dog. The robot-kicker can say, “I kicked it because I knew that it does not feel any pain. I would

never do the same to real dogs, since they can actually feel pain!" If so, it would be inappropriate to attribute the vice of cruelty to her just because what she did *would have been* cruel if it had been done to a real dog.

This perspective highlights the practical wisdom of recognizing the differences between sentient beings and artificial entities. Understanding the nature of AI as inanimate and incapable of experiencing pain can justify treating them differently from sentient beings. From this perspective, it is inappropriate and goes against what the virtuous person's practical wisdom tells us to do.

As shown above, the problem of VAT is complicated. It explores the ethical dilemmas associated with treating AI entities that simulate human behaviors as if they were sentient or morally significant. Both sides seem to have their own reasonable grounds. A truly virtuous person would have both the disposition to feel appropriate emotions and actions in the given situation and practical wisdom to discern what the situation calls for.

3. VAT in Education

VAT is particularly relevant in education, as AI teachers increasingly assume educational roles.[1] In education, virtue ethics is particularly relevant because schools and classrooms are not only places of knowledge acquisition but also of character development. It is essential to determine how to treat AI teachers virtuously, ensuring that the integration of AI in education enhances learning without compromising ethical standards.

In the near future, AI teachers are expected to be able to deliver lessons, assess student performance, and even engage in interactive dialogues. However, these advancements come with ethical complexities. AI teachers, as inanimate robots, lack the consciousness and intentionality of human teachers. This raises critical questions: How should students interact with AI teachers? Should attitudes such as respect, gratitude, and trust apply to such non-person entities?

In the context of AI teachers, students' interactions should be guided by how they offer the opportunities to cultivate and exercise virtues in them. For example, treating AI teachers with politeness and respectfulness, even though they are not conscious beings, can reflect the students' commitment to virtue. On the other hand, when interacting with AI teachers, practical wisdom should also help students distinguish between actions that are virtuous and those that are not, considering the unique nature of AI as 'mindless' objects. Practical wisdom also requires recognizing the limitations and capabilities of AI, ensuring that interactions are effective but ethically appropriate.

Traditionally, teachers are seen as more than mere 'information deliverers.' In the classroom, they are supposed to be authority figures, role models, and facilitators of learning. They are mentors who facilitate education through personal interactions that deserve respect, gratitude, and trust. Students learn not only factual knowledge but also values, habits, and dispositions

[1] For studies on ethical issues in adopting robot teachers, see, for example, Sharkey (2016) and (Zeide 2020).

that shape their moral character. This situation underscores the ethical dimensions of the teacher-student relationship, which must be reconsidered in the context of AI teachers.

Mentorship provided by human teachers involves personal guidance and interaction, which AI may not fully replicate. The ethical dimensions of respect, gratitude, and trust traditionally given to human teachers must be critically evaluated when applied to AI teachers. This re-evaluation is crucial for understanding how to ethically integrate AI into educational settings.

In the context of AI teachers, virtue ethics shifts the focus from the moral status of the AI to the virtuous way of the students to interact with them.[2] The key question becomes: How can interactions with AI teachers promote the cultivation of virtues in students? This question underscores the importance of practical wisdom, as students must navigate the ethical complexities of treating non-sentient entities in ways that reflect their moral values.

Previous virtue-ethical approaches have focused on virtues such as kindness or benevolence. This is partly because they have focused on whether we should treat AI entities—especially social robots—as mere tools or as our fellow creatures. In contrast, here I focus on the case of AI teachers, who are, unlike caretakers or companions, supposed to be in an authoritative position in relation to their students. This raises novel questions about virtuous AI treatment, including whether students should respect, thank, and trust their AI teachers. By exploring such questions, we can initiate studies on significant ethical questions with deep implications for education and character development.

4. How to Treat AI Teachers Virtuously?

In educational contexts, VAT raises questions about how students should interact with AI teachers. For instance: Should students show respect to AI teachers that lack consciousness? Can gratitude be meaningful when directed toward an entity incapable of intentionality? Is trust misplaced when the object of trust is a machine rather than a person? These questions are not merely theoretical but have practical implications for how AI is integrated into classrooms, how students should develop character, and how society understands the role of AI in human relationships. To explore how to treat AI teachers virtuously, let us analyze the concepts of respect, gratitude, and trust and examine whether students should have and express such attitudes towards AI teachers.

(1) Respect

Respect has been regarded as a crucial attitude for students to have in education. It fosters positive relationships with the teacher, promotes the teacher's authority, and creates an effective learning environment. Across various cultures, students have been told to respect their teachers as those who are superior to them in their experience, knowledge, and wisdom.

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[2] For discussions on the moral status of AI entities, see, for example, Liao (2020), Mosakas (2021), Müller (2021), Gunkel, Gerdes, and Coeckelbergh (2022), Gordon and Gunkel (2022), DeGrazia (2022), and Showler (2024).

The East Asian saying, "One should not even step on the shadow of one's teacher," shows the spirit of respect for the teachers.

However, should the students respect AI teachers as they do human teachers? This is a more complex question than when it first appears. While AI teachers may take up many of the human teachers' educational roles, it may not directly render them respectable. Let us consider reasons for and against respecting AI teachers.

Consider possible reasons *for* respect. First, AI teachers perform important functions, such as delivering instruction, monitoring student progress, and providing real-time feedback. These contributions may justify respect, acknowledging the valuable educational roles they play.

Moreover, treating AI teachers with respect—by addressing them politely, following their instructions, and valuing their contributions—may help students develop habits of respect that extend to relationships with humans. Such practice may help them develop the virtue of respectfulness.

Respecting AI teachers may also enhance the overall learning environment by reinforcing norms of civility and cooperation. Even if AI teachers, as non-persons, may not 'deserve' respect in a strict sense, the act of showing respect may contribute to a positive classroom atmosphere.

There can be reasons *against* respecting AI teachers, however. Respect is traditionally reserved for persons or entities who possess autonomy, intentionality, or moral agency. Since AI teachers lack these qualities, they do not deserve respect in the same way as human teachers. It might be appropriate just to *value highly* the qualities that AI teachers have as some helpful qualities, but they do not render them respectable.

Encouraging students to respect AI teachers as if they were human teachers can also risk cultivating attitudes towards unfitting targets. If the students are told to show respect to AI teachers as a mere practice of respecting, then they might become less able to discern those who do deserve respect from those who are not. This may lead to confusion about the nature of AI and its functionality in education.

Furthermore, overemphasizing respect for AI teachers could undermine the respect students show to human teachers. If AI is treated as equivalent to humans, the unique value of human teachers may be diminished. Especially for young students, it can be hard to distinguish between those who deserve respect and those who are not after blind habituation.

(2) Gratitude

Gratitude is another important attitude for students to have towards their teachers. Although 'teacher' is also the name of a job, being a good teacher is more than just doing one's job. It is often said that what teachers do for their students makes them deserve gratitude. Many countries, including the United States, China, and South Korea, celebrate some forms of 'Teacher Appreciation Day' as a reminder to show gratitude for teachers. In traditional student-teacher relationships, gratitude plays a significant role in fostering positive

interactions and promoting mutual appreciation.

Our question is whether students should extend their gratitude toward AI teachers. Should students feel and express gratitude towards AI teachers? To answer this question, we need first to understand what gratitude is. Gratitude is roughly an appropriate attitude to some benefit others have offered. It can be divided into two different conceptions. The first is *personal* (or targeted) gratitude, which is directed toward a specific target for intentional activities of care. For example, in saying "I am grateful *to* my mother *for* raising me," the speaker is expressing personal gratitude to her mother. The other is *impersonal* (or propositional) gratitude, which is general sense of appreciation or gladness for favorable states of affairs or outcomes. When we say, "I am grateful *that* the weather is fine today," we express impersonal gratitude about the fact that the weather is good. (Um 2019)[3]

There seems to be no problem with students' feeling impersonal gratitude *that* AI teachers have helped them learn many things. But the fitting target of personal gratitude is an entity who can *care about* someone else. The tricky question here is whether it is fitting for students to feel and express *personal* gratitude *to* AI teachers, given that they are inanimate entities who cannot care about something in a strict sense. There can be reasons for and against gratitude toward AI teachers.

Let us begin with reasons *for* gratitude. AI teachers can provide various benefits, such as personalized learning experiences, prompt feedback, and increased accessibility to education. Expressing gratitude for these benefits acknowledges their value and reinforces positive attitudes toward education.

Practicing gratitude, even toward entities who do not have intentionality or ability to care such as AI teachers, may also help students cultivate the virtue of gratitude. For example, thanking an AI teacher for assistance may encourage students to develop a habit of gratitude that extends to human benefactors.

Moreover, gratitude toward AI teachers may serve an educational purpose, modeling appreciative attitudes that contribute to a desirable learning environment. Saying 'thank you' to those who benefit us, even without knowing whether they actually care about us, is what we have learned from our childhood.

However, there are reasons *against* gratitude as well. Gratitude presupposes intentionality on the part of the benefactor, since it does not make sense for a non-intentional entity to care about anyone. AI teachers lack intentionality, and thus gratitude directed toward them may not be fitting in a strict sense.

This may lead to the risk of anthropomorphism as well. Expressing gratitude toward AI teachers risks anthropomorphizing them, attributing human-like qualities to inanimate machines and distorting students' understanding of AI entities and our relationships with them.

The misunderstanding may ultimately lead to inappropriate treatment of AI entities. Since

[3] For more on the different kinds of gratitude, see, for example, McAleer (2012), Carr (2013), and Manela (2015).

directing gratitude toward AI teachers may confuse students about the nature of moral agency and the distinction between human and non-human entities.

(3) Trust

Now let us examine the case of trust. Trust, roughly put, is a firm belief in the reliability, truth, and ability of what is trusted. It is a crucial element of effective educational relationships. Unless the students trust teachers for their knowledge, skills, and benevolence, they will hardly learn anything no matter how hard the teachers try. That is, to learn from someone, we should trust that she knows what we want to learn, has the skillset required to teach it to us, and is willing to deliver it to us.

However, the concept of trust must be carefully examined when applied to AI teachers. Let me first distinguish personal *trust* from mere *reliance*. (McLeod 2023) Personal trust involves trusting someone as a being capable of free choice, while mere reliance involves depending on the target just based on its predictable functioning. When I trust you, I'm aware of the possibility that you may use your free will so that You can act as, you may act not as you are trusted, but I just commit myself to the free choice. But that's what we do to persons, who are capable of free choice.

Thus, while one can rely on an alarm clock in waking up in the morning for its predictable functioning, one cannot *trust* it since it does not function based on its own free choice. One feels merely disappointed or frustrated when the alarm clock fails, but one would feel *betrayed* if a trusted friend intentionally did not wake up one.

Students can *rely* on AI teachers as predictable educational tools (provided that they do not malfunction). Our question here is whether it is fitting or desirable for students to *trust* AI teachers as they do human teachers. In the context of AI teachers, students may rely on AI for accurate information and consistent teaching methods (mere reliance), but personal trust, which involves deeper moral and ethical expectations, might be more challenging to justify. There are reasons for and against trusting AI teachers.

Consider reasons for trust first. AI teachers are designed to execute specific tasks with high precision and consistency. For example, they can grade assessments, deliver tailored lessons, and adapt to individual learning needs. Students can at least rely on their educational abilities, and such reliance is essential for a productive educational environment. Students who find AI teachers reliable are likely to engage more fully with their instruction, maximizing learning outcomes.

There are reasons against trusting AI teachers, too. Trust traditionally involves confidence in an entity's free agency the possibility of betrayal. Since AI teachers lack autonomy and the capacity for ethical decision-making, trusting them in the interpersonal sense may be unfitting. For instance, students might mistakenly ascribe free choice and moral judgment to an AI when its actions are merely programmed responses.

Promoting trust in AI teachers may also lead to unrealistic expectations about their capabilities. Students may assume that AI teachers possess empathy, judgment, or the ability to account for nuanced human contexts, which could lead to disillusionment when these expectations

are unmet.

Finally, excessive reliance on AI teachers might reduce opportunities for students to develop trust-based relationships with human educators. These relationships are crucial for fostering emotional growth, mentorship, and interpersonal skills, which AI cannot replicate.

6. AI Teachers and Human Teachers

So far, I have examined the reasons for and against respecting, thanking, and trusting AI teachers. The discussion of VAT in education compels us to rethink the status of 'teachers' in the age of AI. It involves close analysis of the concepts of relevant attitudes, balancing human values with the practical benefits of AI in education, and ensuring that AI teachers are treated with appropriate attitudes without losing the efficacy of learning. This balance is crucial for maintaining ethical standards while embracing the technological advancements AI brings to education.

On the one hand, showing respect, gratitude, and trust to AI teachers might not be appropriate because they lack the minds that make those attitudes fitting. Additionally, encouraging students to exhibit these attitudes toward AI teachers could lead to confusion or even deception, making them believe that these inanimate objects are actually sentient and possess minds. Excessive reliance on AI may diminish students' opportunities to develop meaningful relationships with human teachers. If we encourage students to show respect, gratitude, and trust to AI teachers, we risk failing to foster their sound judgment or practical wisdom in discerning the appropriate responses to the right objects.

On the other hand, AI teachers are supposed to appear similar to human teachers, since the former mimics the latter. Thus, allowing students to treat such human-like AI teachers disrespectful, ungrateful, and distrustful attitude may habituate them into treating human teachers inappropriately as well. Relatedly, it might be said that interactions with human-like AI teachers may offer good opportunities to *practice* these valuable attitudes toward the human teachers.

However, all things considered, I believe it is undesirable to encourage students to feel and express attitudes such as respect, gratitude, and trust towards AI teachers. While it would be appropriate for students to *highly value*, *appreciate*, and *rely on* well-functioning AI teachers, it would be unfitting and inappropriate for them to *respect*, *thank*, and *trust* AI teachers as they do human teachers.

Most importantly, treating AI teachers as if they were 'persons' would go against practical wisdom, which tells us to treat the objects we face as they the facts about them require. Encouraging the students to treat AI teachers just like they treat human teachers may blunt the edge of practical wisdom by blurring the distinction between AI entities and persons.

One might argue that having students to pretend to respect, thank and trust AI teachers would be an effective educational means to develop virtuous characters such as respectfulness, gratitude, and trustfulness. It might be argued that, just like the classes in which students develop their skills by practicing in a mock situation. For example, novice surgeons practice their surgical techniques with chicken flesh and apply thus acquired skills in actual surgeries

of human patients.

However, I believe this is not analogous to the case of treating AI teachers virtuously. Unlike skills, virtues are such that we cannot simply choose or not choose to exercise them whenever we want to. For example, if the situation demands taking a risk for something worthwhile, then one who has the virtue of courage would be bound to exercise that virtue in that particular situation. Suppose that someone finds a girl being bullied by someone and says, "I am a courageous person, but I'll skip this case because I'm too tired today." If so, we would be reluctant to call this person courageous. A virtue is different from skills such as basketball skills. While one can choose when to and when not to exercise one's basketball skills, a virtue makes demands on us to exercise it according to the situation.

The process of character development is more analogous to the actual surgery rather than mock surgery. Suppose that our novice surgeon is conducting an operation on a human patient for the first time. Of course, this particular case of surgery will likely enhance her surgical techniques, but that does not mean that it is mere practice. Rather, it is practice *and* real medical activity at the same time. This is why a surgeon should not treat any patient as a mere means to practice her own skills. Similarly, living virtuously means treating all situations in an ethically appropriate way.

It might also be inappropriate to treat AI teachers as if they were human teachers. The students should not be encouraged to show genuine respect, gratitude, and trust toward AI teachers, since they lack the qualities that merit such attitude. To horn their practical wisdom, they should learn how to distinguish the fitting targets of such attitudes from the unfitting ones. Nor should they be encouraged to just pretend to express such attitudes, since it may practice ingenuine pretense, rather than exercise of virtue. Such a pretension would also be different from the genuine striving to become more virtuous by practicing virtuous acts to a fitting target, since pretension involves not believing that the target is fitting.

All in all, it may be impossible or at least inappropriate to completely substitute human teachers with AI teachers. It is crucial for us to reflect on which aspects of education can be suitably handled by AI and which require the irreplaceable human touch. Thus, for example, while AI teachers take up various educational roles such as delivering information, clarifying concepts and theories, and offering particularized feedback, human teachers should also present in the classroom for students' genuine human interactions with their teachers.

Human teachers' existence and role as the main actors in the classroom enable students to cultivate and exercise genuine virtues. They should be in the position supervise the AI teachers as the ultimate authority and the chief operator of the classroom. Then, AI teachers would not be more than mere educational tools human teachers use for more effective education. When human teachers play authoritative and primary roles in the classroom and AI teachers play only auxiliary and instrumental roles, the act of teaching would still be genuine human actions. If the students' excellent learning experiences ultimately come from the human teachers' goodwill and genuine care, the students' respect, gratitude, and trust toward them would find fitting targets.

6. Conclusion

In conclusion, while we should treat AI teachers differently from human teachers, it is essential to maintain a respectful, grateful, and trustful attitude in a fitting way. The rise of AI teachers brings with us both opportunities and challenges for education. We are now just taking a first step towards finding out the virtuous ways to treat AI entities including AI teachers. By addressing the ethical and educational dimensions of VAT, we can develop a more nuanced understanding of how to treat AI teachers virtuously in an increasingly AI-driven educational landscape.

While AI teachers can enhance educational outcomes through their features such as efficiency and personalization, human teachers remain irreplaceable in roles such as fostering genuine interactions and character development. Thus, the integration of AI teachers into education should only complement, not replace, the human teachers. Future education must balance the merits of AI with the unique contributions of human teachers.

I hope this paper can make the following contributions. First, it can deepen our understanding of ethics related to social robots with various functions such as care robots or companion robots. Previous discussions on virtue and AI robots have focused on whether we should treat social robots as mere tools (or slaves) or as social entities that deserve moral considerations such as humans and other animals. It will hopefully enlarge the discussion to cover the robots that may take up higher roles such as those of teachers and judges.

Second, it can lead us to re-examine the roles that teachers are supposed to play in classroom settings. By examining the impact of adopting AI teachers on the students, this project can help us better distinguish the roles AI teachers can play better and those that should be reserved for human teachers.

Finally, it can provide future empirical research projects with conceptual tools useful for examining the impact of the various ways to interact with AI robots on our character development. The questions raised by this paper will both be corroborated by and theoretically inform studies in empirical fields such as psychology and education.

By applying the virtue ethics approach, I have provided a framework for addressing the ethical complexities of treating AI teachers. I have emphasized the importance of cultivating and expressing respect, gratitude, and trust while acknowledging the limitations of AI teachers as non-persons. AI is now at every corner of human life, and classroom is no exception. It is time to take AI teachers' fitting roles seriously.

References

Carr, David. 2013. "Varieties of Gratitude." *The Journal of Value Inquiry* 47 (1-2):17-28.

Coeckelbergh, Mark. 2021. "Does kindness towards robots lead to virtue? A reply to Sparrow's asymmetry argument." *Ethics and Information Technology* 23 (4):649-656.

DeGrazia, David. 2022. "Robots with moral status?" *Perspectives in Biology and Medicine* 65 (1):73-88.

Gordon, John-Stewart, and David J Gunkel. 2022. "Moral status and intelligent robots." *The Southern journal of philosophy* 60 (1):88-117.

Gunkel, David J, Anne Gerdes, and Mark Coeckelbergh. 2022. Should robots have standing? The moral and legal status of social robots. Frontiers Media SA.

Liao, S Matthew. 2020. "The moral status and rights of artificial intelligence." *Ethics of artificial intelligence*:480-503.

Manela, Tony. 2015. "Gratitude." *Stanford Encyclopedia of Philosophy* 2015 (Spring).

McAleer, Sean. 2012. "Propositional Gratitude." *American Philosophical Quarterly* 49 (1):55-66.

McLeod, Carolyn. 2023. Trust. In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta & Uri Nodelman.

Mosakas, Kestutis. 2021. "On the moral status of social robots: considering the consciousness criterion." *ai & Society* 36 (2):429-443.

Müller, Vincent C. 2021. "Is it time for robot rights? Moral status in artificial entities." *Ethics and Information Technology* 23 (4):579-587.

Sharkey, Amanda JC. 2016. "Should we welcome robot teachers?" *Ethics and Information Technology* 18:283-297.

Showler, Paul. 2024. "The moral status of social robots: A pragmatic approach." *Philosophy & Technology* 37 (2):51.

Sparrow, Robert. 2021. "Virtue and vice in our relationships with robots: Is there an asymmetry and how might it be explained?" *International Journal of Social Robotics* 13 (1):23-29.

Um, Sungwoo. 2019. "Gratitude for Being." *Australasian Journal of Philosophy*:1-12. doi: 10.1080/00048402.2019.1640259.

Zeide, Elana, ed. 2020. *Robot Teaching, Pedagogy, and Policy*. Edited by Frank Pasquale Markus D. Dubber, Sunit Das, *The Oxford Handbook of Ethics of AI*: Oxford University Press.