Exploring the Efficacy of Online Synchronous Debate as a Tool for Teaching Ethics

Ethical dilemmas are multifaceted and complex, comprising a diverse set of viewpoints, values, beliefs, and attitudes. They rarely have a purely right or wrong answer. Not everyone will have the same answer to an ethical dilemma. Hence, teaching ethics is about helping students build critical thinking skills so that they can consider contradictory viewpoints to come out with the best course of action in the face of conflicting choices. Post pandemic, online teaching is now a norm. This study aims to explore the effectiveness of online debate in teaching ethics. Using Kialo Edu, a free argument mapping and debate web tool, a synchronous online workshop was conducted in an undergraduate Ethics and Laboratory Safety module, where students engaged in a collaborative and real-time debate on an ethical statement. Feedback was collected through an anonymous online survey to evaluate the impact on student learning. The results showed a positive impact on their learning experience. This study highlights the potential of online synchronous debate in promoting active student participation and critical thinking in ethical dilemmas.

Keywords: online learning, ethics, online debate, critical thinking, Kialo

Introduction

Ethics can be interpreted as the discipline of dealing with good and bad with commitment and moral duty. Ethics impacts the behavior and permit an individual to make the right options. The significance of ethics cannot be disregard in any level of life. Thus, ethics plays a very important role in the education of students, and learning ethics is often an important component in any undergraduate curriculum. For example, the American Chemical Society Committee on Professional Training recommends that instruction in professional ethics be part of the undergraduate chemistry curriculum (The American Chemical Society, 2016), while the degree programmes accredited by the Royal Society of Chemistry require ethics to be touched on in undergraduate chemistry courses under transferrable skills (The Royal Society of Chemistry, 2023).

However, ethical dilemmas are complex and multifaceted issues that require a deep understanding of various viewpoints, values, beliefs, and attitudes. They rarely have a straightforward answer, and individuals may have differing opinions on how to approach a particular ethical issue. Thus, the motive of ethics education is not directly learning ethics for its purpose. It's objective to deploy this body of knowledge for two motives. The first motive is to grow intellectual dimensions that will authorize students to recognize ethical dimensions of issues and address the ethical issues. The second purpose of ethics education is important to develop critical thinking skills that enable them to analyse and evaluate multiple perspectives, consider

1 contradictory viewpoints, and make sound decisions in the face of conflicting
2 choices.
3   In this regard, debate has been shown to be an effective method to teach
4 ethics (Hawkins et al., 2019). A debate can be defined as a thoughtful and
5 reasoned presentation of opposing persuasive arguments. These arguments
6 can be presented in situations such as a competition, a classroom, or a
7 legislative group attempting to make decisions (Wasilewsky, 2023). Recently,
8 the global pandemic has significantly changed the landscape of education,
9 leading to the widespread adoption of online teaching as a norm. Hence,
10 online debate may be a promising pedagogical tool in current times of ethics
11 education.
12   This study aims to investigate the effectiveness of using online
13 synchronous debate as a tool for ethics education. Specifically, this study
14 explored the use of Kialo Edu, a free web-based tool designed for argument
15 mapping and debate, in an undergraduate Ethics and Laboratory Safety
16 module. By conducting a synchronous online workshop, students engaged in
17 collaborative and real-time debate on an ethical statement. The impact on
18 students learning was evaluated though collection of feedback via an
19 anonymous survey. The results of this study will shed light on the positive
20 effects of online synchronous debate on student learning experiences and
21 highlight its potential as a pedagogical tool in ethics education.
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24   **Literature Review**
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26 **Debate as an Instructional Tool**
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28   Ethics education focused solely on knowledge transfer through lecture-based
29 approaches may be inadequate in developing students' ethical reasoning and
30 judgment, particularly in complex ethical dilemmas. Instead of relying on rote
31 memorization and mechanical learning, ethics education should prioritize the
32 cultivation of critical thinking and reflective skills that can be applied to real-life
33 scenarios. Therefore, a more multifaceted approach is required to achieve
34 meaningful and practical learning outcomes in ethics education.
35   One way to achieve this is through the use of debate, which has long been
36 recognized as an effective learning method in the classroom (Settlage, 2020).
37 Debate requires students to take a stance on a given topic, make judgments
38 according to their own values to defend their position, and persuade students with
39 opposite views. This process allows students to explore and gain understanding of
40 alternative viewpoints, thus developing critical thinking, communication, and
41 argumentation skills (Ait Hattani, 2021; Lampkin et al., 2015; Malone & Michael,
42 2018; Mimouni, 2022), which are essential for ethical decision-making. Engaging
43 in debate can also reduce students' fear of confrontation (Jouini, 2019), deepening
44 student knowledge (Gulnaz, 2020), and developing student empathy and open-
45 mindedness (Ait Hattani, 2021).

1   Furthermore, there is evidence to suggest that debate can serve as an effective
2   instructional approach for ethics. Hogan et. al conducted a study in 2018 to assess
3   the impact of debating on the development of ethical reasoning skills in pharmacy
4   technician students. The results showed that students had an improved
5   understanding of ethical dilemmas after engaging in debate (Hogan & Dunne,
6   2018). Similarly, in an interprofessional education (IPE) debate on ethics and
7   professionalism as a teaching modality for first-year pharmacy and physiotherapy
8   students, students agreed that debating ethics through IPE was a valid teaching
9   modality. The students found the debates challenging and stimulating, and it
10   benefited them to work as a team (Strawbridge et al., 2014). Also in the field of
11   pharmacy, pharmacy students were able to enhance their teamwork, peer
12   assessment, communication, and critical evaluation skills through a series of
13   workshops that effectively delivered course content on ethical issues, using
14   debates as a teaching method (Hanna et al., 2014; Lampkin et al., 2015). Debate-
15   based ethics education has also shown to improve idealistic and realistic moral
16   judgement among undergraduate nursing students (Kim & Park, 2019).
17
18   **Online Debate**
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20   The coronavirus pandemic has significantly transformed the landscape of
21   education worldwide, necessitating a shift to online learning. Online classes have
22   become the cornerstone of modern higher education, prompting colleges and
23   universities to explore ways to expand their online programs. It is widely
24   recognized that online courses can be as effective as traditional instruction,
25   provided that appropriate methods and technologies are employed, student-to-
26   student interaction is present, and timely feedback is provided (Gray & Diloreto,
27   2016). The learning outcome is primarily dependent on the teaching methods,
28   rather than the media (Clark, 1994). Given these conditions, it stands to reason that
29   online debates can play a role in encouraging student participation and fostering
30   critical thinking skills in a manner similar to a face-to-face debates.
31   To assess the efficacy of online debates, Richardson and Ice (2010)
32   conducted a study comparing different types of online discussions. Their research
33   involved open-ended discussions, debates, and case-based discussions, utilizing
34   the Practical Inquiry Model (Garrison et al., 2001) to evaluate their impact on
35   students' critical thinking abilities. Findings revealed that debates were more
36   effective than open-ended discussions in improving students' critical thinking
37   achievement levels, although slightly less effective than case-based discussions.
38   These results suggest that online debates hold promise as a valuable instructional
39   tool for enhancing critical thinking skills in students.
40   Moreover, several studies have reported positive outcomes associated with
41   the use of online debates in higher education. Mitchell (Mitchell, 2019)
42   investigated the effectiveness of debates in an online asynchronous social policy
43   course. The study involved 36 participants, and a combination of qualitative and
44   quantitative data was collected to evaluate the impact of the debate assignment.
45   The majority of students reported that the debate assignment helped gained a better
46   understanding of course concepts, improve their critical thinking skills, and

1 enhance collaboration with fellow students. Similarly, in another study by
2 Mutiaraningrum et al. (Mutiaraningrum et al., 2015), asynchronous online debates
3 were found to have the potential to enhance critical thinking skills and promote
4 learning autonomy among Indonesian EFL students in an argumentative writing
5 course. Deliberate planning of debates, including assigned roles and clear
6 expectations, facilitated students in presenting thoughtful and critical arguments.
7 The flexibility of online debates allowed both students and instructors to engage
8 with the material and reflect upon it. However, it is important to note that these
9 studies also highlighted challenges in implementing online debates, such as
10 delayed responses, student confusion, and technical issues.

11   By considering the aforementioned studies, it becomes evident that online
12 debates offer valuable opportunities for enhancing critical thinking skills,
13 promoting collaboration, and improving student engagement in online learning
14 environments. However, there are limited studies examining the role of online
15 synchronous debate in ethics education. Hence, further research is needed to
16 explore the role of online synchronous debate in ethics education.

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18
19   **Methods**
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21   This study utilized a case study approach to explore the efficacy of online
22 synchronous debate as a tool for teaching ethics. The research was conducted
23 during a synchronous online workshop in the Ethics and Laboratory Safety
24 module with a class of 25 students.

25   The online focused debate was selected as the teaching methodology for this
26 study. The students were presented with a statement to debate: "Society is obliged
27 to fund or provide medical care for individuals born with defects and disabilities,
28 or those with special needs, regardless of cost." To facilitate the debate, we utilized
29 Kialo Edu, a custom version of Kialo (kialo.com), which is a widely used
30 argument mapping and debate platform specifically designed for classroom use.
31 This platform is accessible for free and can be accessed from any internet-
32 connected device.

33   In the same session prior to the debate, the students were given a briefing on
34 how to navigate the debate site and were provided with instructions on how to
35 contribute their arguments in real-time. The students were allowed to support or
36 challenge the statement by contributing their pro and con claims without any
37 limitations on the number of posts. The Kialo Edu platform also facilitated
38 collaboration, allowing students to write counterarguments, comment on each
39 other's claims, ask questions, give feedback, and vote on the impact of each other's
40 contributions.

41   Following the online synchronous debate, a debriefing session was conducted
42 by the facilitator to discuss the debate thread with the students. This session
43 provided an opportunity for reflection and clarification on the arguments presented
44 during the debate.

45   To evaluate the impact of the online synchronous debate on student learning,
46 an anonymous online survey was administered using Google Forms. The survey

1   consisted of nine questions, including two yes or no questions, five Likert scale
2   questions, and two open-ended questions. The survey aimed to gather feedback
3   from the students on their experience with the debate and to assess the
4   achievement of the project objectives. The students were given a week to complete
5   the online survey. Table 1 presents the questions included in the survey, along with
6   the corresponding question number, question type, and response options. The
7   collected survey data was analyzed to gain insights into the effectiveness of the
8   online synchronous debate as a teaching tool and its impact on student learning in
9   the Ethics and Laboratory Safety module.
10
11 *Table 1.* The Questions posted to the Students in the Survey

Question no	Question	Type of Question
Q1	Did you find the online debate site easy to use and navigate.	Yes/No
Q2	The online debate format was interesting.	Likert scale
Q3	The use of the tool encouraged my participation in the online discussion	Likert scale
Q4	Participating in the online debate sharpened my critical reasoning skills.	Likert scale
Q5	The debate tool allowed me the space to explore the arguments at my own pace.	Likert scale
Q6	Following the debate, I have better understanding of the ethical dilemma in this workshop.	Likert scale
Q7	Would you recommend the use of this method to teach science ethics again?	Yes/No
Q8	What is the best aspect of the online debate?	Open ended
Q9	Please give any other feedback/comment here (if any).	Open ended

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14   **Results**
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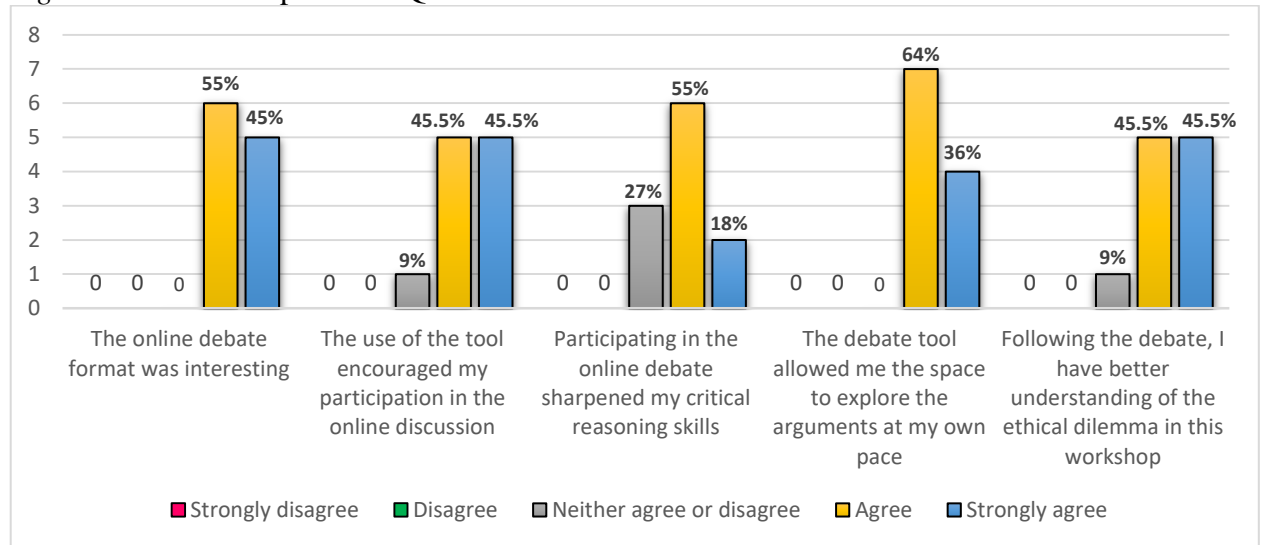16   Out of the 25 number of students in the class, 11 students responded to the
17 survey. To ensure unbiased feedback, the identity of the students remained
18 anonymous. This anonymity was intended to encourage the students to provide
19 honest and candid feedback without any fear of repercussions or judgment.
20   Based on the survey results, it can be concluded that the use of online debate
21 in this study to teach ethics was well received by the students. In the yes and no
22 questions (Q1- Did you find the online debate site easy to use and navigate, and
23 Q7- Would you recommend the use of this method to teach science ethics again?),
24 100% of the respondents replied yes for both questions. In the likert scale
25 questions (Q2-6), 100% of respondents either agreed or strongly agreed that the
26 online debate format was interesting, 91% of respondents either agreed or strongly
27 agreed that the use of the tool encouraged their participation in the online
28 discussion, 73% of respondents either agreed or strongly agreed that participating
29 in the online debate sharpened their critical reasoning skill, 100% of respondents

1 either agreed or strongly agreed that the debate tool allowed them the space to
2 explore the arguments at their own pace, and 91% of respondents either agreed or
3 strongly agreed that following the debate, they had a better understanding of the
4 ethical dilemma (Figure 1).
5
6 *Figure 1.* Student Responses to Q1-7

7
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9 The responses to the open-ended questions (Q8-9) are as follow:
10

Question	Responses
What is the best aspect of the online debate (Q8)	Easy and no one will be getting mad about it. We can agree or disagree any statement given. It stimulates critical thinking and reasoning skills as well as provides a clearer picture regarding the arguments as it's displayed on the board simultaneously meanwhile it also allows multi-user. I dont have to voice out, i can type it out instead and i think everyone can take part in it as we don't need to voice out fast like real debate. Can speak out own opinion. Able to understand and learn different aspects of the same topic from other students. It opens up different perspectives for opposing teams to give them new ideas on what could be possible. It covers the overall learning outcome which made understanding the information faster and better.

	We can see each other opinion.
	Students can post up their opinions and everyone can participate in the discussion.
	Everyone was given the platform to express their opinion in a situation thats comfortable for them.
Please give any other feedback/comment here (if any) (Q9)	Better if don't share our names and opinion on screen.
	It's good to use.
	None, everything was great!!
	The name can be anonymous.

Discussion

Kialo.edu Online Debate Site

The efficacy of online synchronous debate as a teaching tool for ethics was explored in this research study. One of the survey questions asked students about their experience with the online debate site, Kialo.edu, specifically focusing on its ease of use and navigation. All students who responded to the survey answered positively, indicating that they found the platform easy to use and navigate. This suggests that students quickly adapted to the site's features and functionality, positively contributing to their overall learning experience. However, it is important to note that this question only covers one aspect of the site's usability, and there are other areas, such as accessibility and user satisfaction, that could be further explored.

Accessibility plays a critical role in ensuring that the online debate platform is inclusive and can accommodate users with disabilities or special needs. Evaluating accessibility provides insights into meeting diverse student needs. User satisfaction is also important, indicating that students find the platform enjoyable, intuitive, and user-friendly. It also suggests that the platform meets their expectations and enhances their overall learning experience. Factors such as the platform's interface, functionality, responsiveness, and ease of interaction contribute to user satisfaction. Improving accessibility and user satisfaction enhances equal access and positive learning experiences. While this study focused primarily on the ease of use and navigation of Kialo.edu, future research could expand on these findings by conducting more comprehensive evaluations that explore the platform's accessibility and user satisfaction. By considering these important aspects, educators can make informed decisions about selection of online debate tools for effective ethics education.

1   Additionally, a comparison with other online debate tools was not made.
2 Despite these limitations, the positive response to Kialo.edu supports its use as an
3 online debate platform for teaching ethics. This finding aligns with previous
4 research that has highlighted the positive outcomes of using Kialo.edu in teaching
5 and learning (Mahoney, 2022; Mora-López, 2019). Therefore, the platform's ease
6 of use and navigation make it an attractive option for educators looking to
7 incorporate online debates into their teaching practices.
8   While Kialo.edu offers several benefits for online debates, it is important to
9 note that there are other online tools for conducting debates. Online platforms like
10 Zoom, Google Docs, Debategraph, and Slack also be used in teaching and learning
11 for conducting online debates. When selecting an online tool for debates, factors
12 such as ease of use, accessibility, and the ability to support collaborative and
13 structured debate should be considered.
14
15 **Online Debate as a Learning Tool**
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17   Online debate has proven to be an effective learning tool in promoting student
18 engagement and interaction in the online learning environment. By utilizing online
19 synchronous debates, peer-to-peer interaction is encouraged, and platforms for
20 dialogue are created, sparking interest among students.
21   Compared to traditional face-to-face debates, online debate offers several
22 advantages, including increased flexibility in scheduling and location. Students can
23 participate in debates from anywhere with an internet connection, making it
24 particularly beneficial for those with conflicting schedules or residing in different
25 time zones. Additionally, online debate enhances student engagement by
26 providing an inclusive platform where all students can actively participate,
27 regardless of class size, eliminating the passive spectator role often observed in
28 face-to-face debates. Moreover, the recorded history of online debate discussions
29 can be shared with those who were not present during the debate, allowing for
30 further engagement and learning. Finally, online debate is more accessible for
31 students with disabilities or those who may feel uncomfortable participating in
32 traditional face-to-face debates, fostering a more inclusive learning environment
33 and providing equal opportunities for all students to contribute.
34   The survey results from our study indicate that the use of online debate to
35 teach ethics in this study was well received by the students. A majority of
36 respondents agreed or strongly agreed that the online debate format was
37 interesting, encouraged their participation in the online discussion, allowed them
38 to explore arguments at their own pace, and helped them gain a better
39 understanding of the ethical dilemma presented in the workshop. It is worth noting
40 that online teaching often faces challenges in engaging students and promoting
41 active participation, particularly in larger class sizes (Na & Jung, 2021). However,
42 the implementation of online debate appears to address this problem by fostering
43 student engagement and encouraging active involvement in the learning process.
44   These findings are consistent with previous studies that have explored the
45 effectiveness of incorporating online debate into classroom learning (Tur & Marín,
46 2014). For example, Tur et al. conducted a study investigating the impact of using

1   Twitter in debate activities on students' educational experience. The findings
2   revealed that 71.7% of students reported being motivated to participate in debates
3   due to the use of Twitter, and almost 80% of them believed that the activity aided
4   their comprehension of the debate topics. Additionally, 84.9% of students
5   expressed enjoyment and learning from the activity.

6   Regarding the impact of participating in online debate on critical reasoning
7   skills, the survey results showed some divergence among the participants. While a
8   considerable percentage of participants agreed or strongly agreed that participating
9   in the online debate sharpened their critical reasoning skills, 27% neither agreed
10 nor disagreed. This suggests that the impact of online debate on critical reasoning
11 skills may vary among individual students. Further research is necessary to gain a
12 comprehensive understanding of this aspect. Additionally, the lack of consensus
13 among participants may be attributed to the use of only one scenario for the
14 debate, with the complexity of this scenario potentially not stimulating critical
15 thinking for all students.

16   In response to the open survey question (Q9), where students were asked for
17 additional feedback or comments, several students expressed a preference for
18 anonymity in online debates. Several possible reasons may explain this preference.
19 Some students may feel uncomfortable sharing their honest opinions due to fear of
20 judgment or retaliation, particularly if their opinions or beliefs differ from their
21 peers. Furthermore, students may choose to remain anonymous to avoid potential
22 consequences in professional settings, where their opinions expressed in a public
23 forum could be seen by future employers or colleagues. Additionally, personal
24 preference or comfort may drive some students to prefer anonymity, as they feel
25 more at ease expressing themselves online without revealing their identity.

26   However, while anonymity provides students with a sense of comfort and
27 safety to express their honest opinions, it can also have drawbacks. Allowing
28 students to participate anonymously may lead some to hide behind their
29 keyboards, inhibiting constructive dialogue and resulting in a lack of engagement
30 and missed opportunities for learning and growth. Anonymity may also enable the
31 posting of inappropriate or offensive content without accountability. To address
32 this issue, it is crucial to establish clear guidelines and expectations for online
33 behavior and etiquette. Instructors should emphasize the importance of respectful
34 and professional communication and set standards for appropriate language and
35 conduct during the debate. The teacher also plays an important moderating role
36 during these discussions, and to oversee the content. By establishing these
37 guidelines, students will be aware of the expectations and the potential
38 consequences for violating them, thereby fostering a constructive and inclusive
39 online debate environment.

40   Apart from the privacy and anonymity highlighted by some students, one of
41 the prominent themes that emerged from Q9 was the flexibility and ease of
42 participation. Students appreciated the convenience of expressing their opinions
43 through typing rather than voicing them out in real-time, allowing them to
44 contribute at their own pace. They also valued the inclusive nature of the online
45 debate, where everyone had the opportunity to participate and share their thoughts.
46 Another key theme was that the online debate format stimulated critical thinking

1   and reasoning skills. Students mentioned that the visual display of arguments on
2   the board simultaneously provided a clearer understanding of the topic and
3   encouraged them to analyze different perspectives. They also appreciated the
4   collaborative nature of the platform, as it allowed them to learn from other
5   students and gain new ideas from opposing teams.
6
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8   **Limitation and Future Study**
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10   The present study has several limitations that should be acknowledged,
11 highlighting the need for further research to enhance our understanding of the
12 efficacy of online synchronous debate as a tool for teaching ethics. Firstly, the
13 study's small sample size limited the consideration of demographic differences
14 among participants, potentially impacting the generalizability of the findings to
15 other populations or contexts. Therefore, future research should aim to include
16 larger and more diverse samples, considering demographic factors such as gender.
17   Secondly, the study solely relied on self-reported feedback from students
18 through an online survey, introducing potential subjectivity and response biases.
19 The Likert scale used in the survey may not fully capture the complexity of
20 students' learning outcomes, and the limited scope of the survey with only two
21 open-ended questions restricted students from providing in-depth feedback.
22 Students may have also answered in a way they thought would please the
23 facilitator. To overcome these limitations, future studies could adopt a mixed-
24 methods approach, incorporating qualitative interviews or focus groups, to gather
25 more nuanced and comprehensive insights into students' experiences and
26 perceptions of online debate as a teaching tool for ethics.
27   Furthermore, the study did not assess the long-term impact of online debate
28 on students' learning outcomes beyond the immediate workshop. It is essential to
29 examine whether the effects of online debate are sustained over time and whether
30 they lead to significant changes in students' attitudes and behaviors towards ethical
31 issues. Future research should employ longitudinal designs and evaluate learning
32 outcomes at multiple time points to gain a better understanding of the sustained
33 impact of online debate as a teaching methodology for ethics.
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35
36   **Conclusion**
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38   The findings of this study suggest that online synchronous debate can be an
39 effective teaching tool for ethics education. The survey results indicate that the use
40 of online debate was well received by the students, with 100% of the respondents
41 finding the online debate site easy to use and navigate and recommending the use
42 of this method to teach science ethics again. The majority of the students agreed or
43 strongly agreed that the online debate format was interesting, encouraged their
44 participation, sharpened their critical reasoning skills, allowed them to explore
45 arguments at their own pace, and helped them gain a better understanding of the
46 ethical dilemma.

1   The open-ended responses further support the positive aspects of online
2 debate, highlighting the opportunities for students to express their opinions
3 comfortably, engage in critical thinking and reasoning, and learn from different
4 perspectives. However, it is worth noting that some students expressed a
5 preference for anonymity during the online debate, emphasizing the need for a safe
6 and judgment-free environment for open discussions. While anonymity can
7 provide students with a sense of safety and comfort, it is important to balance this
8 with the need for responsibility to take ownership of their comments.

9   While this study provides valuable insights into the effectiveness of online
10 debate in teaching ethics, there are limitations that need to be addressed. The small
11 sample size and reliance on subjective feedback through an online survey limit the
12 generalizability of the findings. Additionally, the study did not assess the long-
13 term impact of online debate on students' learning outcomes and attitudes towards
14 ethical issues.

15   In conclusion, while this study highlights the positive reception and benefits
16 of online synchronous debate for ethics education, further research is warranted to
17 fully explore its potential and address the limitations identified. By continuing to
18 investigate and refine the use of online debate, educators can leverage this
19 interactive and inclusive tool to foster critical thinking, enhance student
20 engagement, and promote a deeper understanding of ethical dilemmas.

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