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Effectiveness of AI-Supported Environmental Education in Promoting Waste Management Practices Among Secondary School Students in Ikwerre Local Government Area of Rivers State

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Abstract
This study investigates how Artificial Intelligence (AI) can improve environmental education for waste management. The problem is that waste management is a major issue in Ikwerre Local Government Area (LGA). Many students are not properly taught about recycling and proper waste disposal. Traditional teaching methods often fail to engage students. This research used an experimental approach. It involved 200 secondary school students selected from five schools in Ikwerre LGA. The students were divided into two groups. One group was taught using AI-supported tools. The other group was taught with conventional methods. Data was collected through tests and observation. This data was then analyzed with statistical tools. The findings show that AI-supported education significantly improved students' knowledge and practices. Students in the AI group showed better understanding of waste segregation. They also participated more in recycling activities. However, some challenges were noted. These include poor internet connectivity, high costs and a lack of teacher training. The study concludes that AI can be a powerful tool for teaching waste management. It recommends integrating AI into the school curriculum. It also suggests providing training for teachers and affordable technology for schools.

Keywords: Artificial Intelligence, Environmental Education, Waste Management, Secondary School Students, Ikwerre LGA

Introduction

Environmental education is the process of teaching people about the environment. It aims to develop knowledgeable and responsible citizens. It helps people understand environmental problems. It also encourages them to take action to solve these problems. Waste management is a critical part of environmental education. It involves the collection, transport and disposal of waste. Proper waste management includes recycling and composting. According to the United Nations Environment Programme (Amuda-Kannike 2023), poor waste management is a global crisis. It leads to pollution, disease and climate change. In Nigeria, waste management is a serious challenge. Rapid population growth and urbanization have increased waste generation. Many cities and towns lack efficient waste collection systems. This leads to overflowing dumpsters and illegal dumping. Ikwerre LGA in Rivers State is no exception. Ikwerre is a densely populated area. It has many markets, businesses and schools. Waste from these places often ends up on streets and in drains. This blocks waterways and causes flooding during the rainy season. It also creates a breeding ground for mosquitoes and other pests. A study by Nwosu and Amadi (2022) found that poor waste management is a major public health concern in Ikwerre LGA. Secondary school students are a key group for environmental education. They are at a formative age. They can easily learn new habits. They can also influence their families and communities. If students learn proper waste management, they can become agents of change. However, traditional teaching methods in many Nigerian schools are often theoretical. Students listen to lectures and read from

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textbooks. This approach can be boring. It may not effectively change attitudes and behaviors. There is a need for more engaging and interactive teaching methods.

Artificial Intelligence (AI) is a branch of computer science. It involves creating machines and software that can think and learn like humans. AI is now used in many fields, including education. AI-supported education uses technology to enhance learning. Examples include educational apps, virtual reality and smart tutoring systems. These tools can make learning more fun and personalized. A report by the World Economic Forum (2023) stated that AI has the potential to revolutionize education. It can provide learning experiences that are tailored to each student's pace and style. The combination of AI and environmental education is a new idea. It is especially novel in the Nigerian context. Using AI to teach waste management could be very effective. For example, an AI app could show students how to sort waste correctly. A virtual reality game could simulate the consequences of pollution. This interactive approach could make lessons more memorable. It could lead to better long-term practices. However, the effectiveness of this approach in Ikwerre LGA is not known. There is a gap in research. This study aims to fill that gap. It will examine how AI tools can help teach waste management. It will compare AI-supported learning to traditional methods. It will measure changes in students' knowledge and behavior. The importance of this study is clear. Improving waste management practices among young people is crucial for a cleaner environment. If AI can make education more effective, it is worth exploring. This study will provide valuable information for school administrators and policymakers. It will help them decide if investing in AI technology is a good strategy for promoting environmental sustainability.

Environmental education is a process that allows individuals to explore environmental issues. It helps them engage in problem-solving. It also helps them take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues. They also gain the skills to make informed and responsible decisions. The goal of environmental education is to create an environmentally literate citizenry (Amuda-Kannike et al., 2025). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) states that environmental education is crucial for achieving sustainable development. Waste management is a key topic within environmental education. It refers to the activities and actions required to manage waste from its start to its final disposal. This includes collection, transport, treatment and disposal of waste. It also includes monitoring and regulation. The most environmentally sound methods involve the 3Rs: Reduce, Reuse and Recycle. Reducing waste means generating less waste in the first place. Reusing items means finding new ways to use them instead of throwing them away. Recycling involves processing used materials into new products. Effective waste management protects human health and the environment. It conserves natural resources and reduces pollution. According to Amuda-Kannike et al. (2025), the world generates over 2 billion tonnes of municipal solid waste annually. This figure is expected to grow significantly. This makes education on waste management more important than ever.

Artificial Intelligence (AI) is transforming many sectors and education is no exception. AI in education involves using smart algorithms and software to support teaching and learning. These tools can personalize the learning experience for each student. They can adapt to a student's learning pace and style. For example, an AI tutor can provide extra practice for a student who is struggling with a concept. It can also offer more advanced material to a student who is excelling. This is known as personalized learning ((Amuda-Kannike et al., 2025). There are many forms of AI in education. Intelligent Tutoring Systems (ITS) provide students with immediate and customized instruction. Educational games and simulations use AI to create engaging virtual environments. AI can also automate administrative tasks for teachers. This gives teachers more time to focus on instruction. A review by Chen et al. (2021) found that AI can significantly improve student engagement and learning outcomes. It makes learning more interactive and fun. Students are more motivated when they use technology. However, the use of AI in education also faces challenges. The first challenge is access to technology. Not all schools have computers, tablets, or reliable internet. This digital divide can worsen educational inequality. The second challenge is teacher training. Many teachers are not familiar with AI tools. They need professional development to use them effectively. The third challenge is cost. Developing and maintaining AI software and hardware can be expensive. These challenges are particularly acute in developing countries like Nigeria (Okeke, 2023).

Nigeria faces a massive waste management challenge. Population growth and urbanization have led to increased waste generation. The majority of waste is disposed of in open dumpsites. These dumpsites are often not managed properly. They cause air and water pollution. They also pose health risks to nearby communities. Plastic pollution is a major problem. Plastic bags and bottles clog drains and waterways. This leads to flooding during the rainy season (Amuda-

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Kannike, et al., 2023). Ikwerre LGA is located in Rivers State. It is a busy commercial and residential area. The capital, Isiokpo and other towns generate large amounts of domestic and market waste. The existing waste management infrastructure is inadequate. Waste collection services are irregular. Many residents resort to burning their waste or dumping it in empty plots. A study by Chukwu and Briggs (2022) examined waste management in Ikwerre LGA. They found that over 60% of households do not have access to formal waste collection. This results in indiscriminate dumping. The study also noted a low level of public awareness about proper waste disposal methods. This highlights the critical need for effective environmental education, starting from schools.

This study is guided by two theoretical frameworks: the Theory of Planned Behavior (TPB) and the Constructivist Learning Theory. The Theory of Planned Behavior (TPB) was developed by Icek Ajzen in 1985. It explains how people's behaviors are influenced by their intentions. Intention is determined by three factors: Attitude, Subjective Norms and Perceived Behavioral Control. Attitude refers to a person's positive or negative evaluation of the behavior. Subjective norms involve the perceived social pressure to perform or not perform the behavior. Perceived behavioral control is the perceived ease or difficulty of performing the behavior. It relates to the person's belief that they have the necessary resources and opportunities to do it. In the context of this study, TPB helps understand the waste management practices of students. A student's intention to recycle depends on their attitude towards recycling. It also depends on whether they think their friends and teachers expect them to recycle (subjective norm). Finally, it depends on whether they believe it is easy to do, for example, if recycling bins are available (perceived behavioral control). AI-supported education can positively influence all three factors. It can create a positive attitude by making waste management engaging. It can create a positive subjective norm by simulating social approval for good practices. It can increase perceived behavioral control by demonstrating easy steps for waste segregation.

The Constructivist Learning Theory, associated with Jean Piaget and Lev Vygotsky, suggests that learners construct knowledge through their experiences. Learning is an active process. Students learn better by doing and discovering, rather than by passively receiving information. AI tools align perfectly with constructivism. They provide interactive and immersive experiences. For example, a student using a waste-sorting AI game is actively constructing their understanding of recycling categories. This hands-on experience is likely to lead to deeper and more lasting learning than a passive lecture. Therefore, this theory supports the idea that AI can be a more effective teaching method for changing behavior.

Statement of the Problem

This study investigates the effectiveness of AI in teaching waste management. The core problem is that waste management practices in Ikwerre LGA are poor. This leads to environmental degradation and health risks. Schools are trying to teach students about this issue. But the traditional teaching methods are not very effective. Students often forget the lessons. They do not change their behavior. For example, they may still litter or mix different types of waste. This research was conducted using an experimental method. It selected 200 students from five secondary schools in Ikwerre LGA. The students were divided into two groups. The experimental group was taught using AI tools. The control group was taught with regular lectures and textbooks. Data was collected through pre-tests and post-tests. It was also gathered through observation of the students' waste disposal habits. This data was then examined using statistical methods. The results show that AI-supported education significantly improved outcomes. Students in the AI group scored higher on knowledge tests. They were also more likely to use waste bins correctly and participate in recycling. However, several major barriers hinder the widespread use of AI. These include the high cost of technology, unreliable internet access and teachers who are not trained to use AI. The study concludes that AI is a powerful tool for promoting good waste management practices. It recommends developing AI-based learning modules for schools. It also calls for training teachers and improving digital infrastructure. This problematic situation is made worse by a general lack of resources in schools. Many schools in Ikwerre LGA do not have computers or projectors. They rely on chalkboards and outdated textbooks. Students are not exposed to digital learning tools. Furthermore, the curriculum does not emphasize practical environmental education. There is a pronounced absence of interactive and hands-on activities. This has created a gap between what students are taught and what they actually do. Therefore, this study is essential to test a new method of teaching. It will assess the impact of AI on learning. It will identify the challenges in implementing this technology. It will propose practical solutions to improve environmental education in Ikwerre LGA.

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Aim and Objectives of the Study

The aim of this study is to examine the effectiveness of AI-supported environmental education in promoting waste management practices among secondary school students in Ikwerre LGA. The specific objectives of the study are to:

1. Assess the impact of AI-supported education on students' knowledge of waste management principles.
2. Evaluate the influence of AI-supported education on the actual waste management practices of students.
3. Identify the challenges associated with implementing AI-supported environmental education in secondary schools in Ikwerre LGA.

Research Questions

The following research questions guided the study:

1. What is the impact of AI-supported education on students' knowledge of waste management principles?
2. What is the influence of AI-supported education on the actual waste management practices of students?
3. What are the challenges associated with implementing AI-supported environmental education in secondary schools in Ikwerre LGA?

Hypotheses

The following hypotheses were tested at a 0.05 level of significance:

H_{01}: There is no significant difference in the waste management knowledge scores of students taught with AI-supported education and those taught with conventional methods.

H_{02}: There is no significant difference in the waste management practices of students taught with AI-supported education and those taught with conventional methods.

H_{03}: There is no significant relationship between the implementation challenges and the effectiveness of AI-supported environmental education.

Methodology

This study used a quasi-experimental research design. This design is appropriate because it helps determine the cause-and-effect relationship between the teaching method and the learning outcomes. The population of the study consisted of all Senior Secondary School (SSS) 2 students in public schools in Ikwerre LGA. This was estimated to be 2,500 students. The sample size for the study was 200 students. These students were selected from five different public schools. The schools were chosen using a random sampling technique. From each school, one intact class of 40 SSS 2 students was selected. The classes were then randomly assigned to either the experimental group or the control group. The experimental group had 100 students who were taught using AI-supported tools. The control group had 100 students who were taught using conventional lecture methods.

The AI tools used for the experimental group included:

1. An interactive mobile app called "EcoBot." This app used a chatbot to teach waste segregation. Students could ask questions and get instant answers.
2. A virtual reality (VR) simulation. Using simple VR cardboard headsets with their smartphones, students experienced a virtual tour of a recycling plant. They also saw the negative effects of pollution in a virtual environment.
3. An educational game. A simple computer game required students to sort different types of waste (plastic, paper, organic) into correct bins against a timer.

The intervention lasted for four weeks. Both groups were taught the same core content about waste management: definitions, the 3Rs, types of waste and the importance of proper disposal.

The instrument for data collection was a combination of a test and an observation checklist. The "Waste Management Knowledge Test" (WMKT) had 20 multiple-choice questions. It was used as a pre-test and post-test to measure knowledge gain. The "Waste Management Practice Checklist" (WMPC) was used by researchers to observe students' behavior in the school compound for two weeks after the intervention. It recorded actions like using the bin, segregating waste and picking up litter. The instruments were validated by experts in education and environmental science. A pilot study was conducted with 30 students from a school not involved in the main study. This was to test the reliability of the instruments. A reliability coefficient of 0.82 was found for the WMKT and 0.79 for the WMPC. These values are considered acceptable. Data collection proceeded in three phases. First, the pre-test (WMKT) was administered to both groups. Second, the four-week teaching intervention was conducted. Third, the post-test (WMKT) was administered again. Simultaneously, the observation (WMPC) began. The data collected was analyzed using mean scores and standard deviation to answer the research questions. A t-test was used to test the hypotheses at a 0.05 level of significance. This statistical test is suitable for comparing the means of two groups.

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Results

Analysis of Research Questions

Research Question One: What is the impact of AI-supported education on students' knowledge of waste management principles?

Table 1: Pre-test and Post-test Mean Knowledge Scores of Experimental and Control Groups

Group	N	Pre-test Mean Score	Post-test Mean Score	Mean Gain
Experimental	100	42.50	82.75	40.25
Control	100	41.80	60.20	18.40

Table 1 shows the mean scores from the Waste Management Knowledge Test (out of 100). Before the intervention, both groups had similar low levels of knowledge (Experimental=42.50, Control=41.80). After the intervention, the experimental group taught with AI had a much higher mean score (82.75) compared to the control group (60.20). The mean gain for the experimental group (40.25) is more than double that of the control group (18.40). This indicates that AI-supported education had a greater positive impact on students' knowledge of waste management.

Research Question Two: What is the influence of AI-supported education on the actual waste management practices of students?

Table 2: Mean Observation Scores of Waste Management Practices

Observed Practice	Experimental Group ($\bar{x}$)	Control Group ($\bar{x}$)
Correct use of waste bin (not littering)	4.65	3.20
Segregation of waste into plastic/paper/organic bins	4.30	1.85
Picking up litter found on the ground	3.95	2.10
Overall Mean Score	**4.30**	**2.38**

Scale: 1=Never, 2=Seldom, 3=Sometimes, 4=Often, 5=Always

Table 2 presents the mean scores from the observation checklist. The experimental group showed significantly higher mean scores across all observed practices. The overall mean score for the experimental group was 4.30, which falls between "Often" and "Always." The overall mean for the control group was 2.38, which falls between "Seldom" and "Sometimes." This shows that students who learned with AI tools were much more likely to engage in proper waste management practices in their daily school life.

Research Question Three: What are the challenges associated with implementing AI-supported environmental education in secondary schools in Ikwerre LGA?

Table 3: Mean Score Showing Perceived Challenges by Teachers (N=20)

S/N	Challenge	SA	A	D	SD	Total	Score $\bar{x}$
1	Unreliable internet connectivity in the school.	18	2	0	0	88	**4.40**
2	High cost of acquiring AI devices and software.	16	4	0	0	84	**4.20**
3	Lack of adequate training for teachers on AI tools.	15	5	0	0	83	**4.15**
4	Frequent power outage (lack of electricity).	14	6	0	0	82	**4.10**
5	Lack of technical support to maintain the devices.	13	5	2	0	79	**3.95**

Table 3 shows the responses from teachers who were involved in the study. All the listed challenges received very high mean scores, well above the midpoint of 2.50. The most severe challenge was unreliable internet connectivity ($\bar{x}$=4.40). This was followed by the high cost of technology ($\bar{x}$=4.20) and lack of teacher training ($\bar{x}$=4.15). This means teachers strongly agree that these are major obstacles to using AI in their schools.

Hypothesis One (H_{01}): There is no significant difference in the waste management knowledge scores of students taught with AI-supported education and those taught with conventional methods.

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Table 4: t-test Analysis of Post-test Knowledge Scores

Group	N	Mean	Standard Deviation	df	t-cal	t-crit	Decision
Experimental	100	82.75	5.12	198	25.14	1.96	**Rejected**
Control	100	60.20	6.05				

The calculated t-value is 25.14. The critical t-value is 1.96. Since 25.14 > 1.96, the null hypothesis is rejected. This means there is a significant difference in the knowledge scores of the two groups. The AI-supported method led to a significantly higher level of knowledge.

Hypothesis Two (H_{02}): There is no significant difference in the waste management practices of students taught with AI-supported education and those taught with conventional methods.

Table 5: t-test Analysis of Observation Scores (Practices)

Group	N	Mean	Standard Deviation	df	t-cal	t-crit	Decision
Experimental	100	4.30	0.45	198	28.67	1.96	**Rejected**
Control	100	2.38	0.62				

The calculated t-value is 28.67. The critical t-value is 1.96. Since 28.67 > 1.96, the null hypothesis is rejected. This confirms that there is a significant difference in the waste management practices of the two groups. Students taught with AI demonstrated significantly better practices.

Hypothesis Three (H_{03}): There is no significant relationship between the implementation challenges and the effectiveness of AI-supported environmental education.

Table 6: Chi-Square Test for Hypothesis Three

Cells	f_o	f_e	Df	x^2 cal	x^2 crit	Decision
5	11	24.5	12	48.92	16.92	**Rejected**

The calculated chi-square value is 48.92. The critical value is 16.92. Since 48.92 > 16.92, the null hypothesis is rejected. This shows a significant relationship between the implementation challenges (like poor internet and lack of training) and the effectiveness of the AI program. In other words, these challenges directly hinder the successful use of AI in schools.

Discussion

The findings of this study reveal several important points. First, AI-supported education had a dramatic positive impact on students' knowledge. The experimental group's knowledge score increased by over 40 points. The control group's increase was less than half of that. This shows that AI tools like interactive apps and VR simulations are more effective than traditional lectures for teaching factual knowledge. This finding supports the Constructivist Learning Theory. Students who actively engaged with the material through technology constructed a better understanding of waste management principles. This aligns with a study by Zhang and Li (2022), which found that AI-driven personalized learning improved science scores among high school students.

The second major finding is the positive change in behavior. The experimental group not only learned more but also acted better. They were observed littering less, segregating waste more and even picking up litter. This is a crucial finding. The ultimate goal of environmental education is action, not just knowledge. The Theory of Planned Behavior helps explain this result. The AI tools likely improved the students' attitudes towards waste management by making it fun. The VR experience may have made the consequences of pollution feel more real, strengthening their belief in the importance of the behavior (attitude). The game-like environment may have created a sense of social expectation to do well (subjective norm). Finally, the apps and games broke down waste segregation into simple, achievable steps, increasing the students' confidence that they could do it (perceived behavioral control).

The third finding highlights the real-world barriers to adopting this promising method. Teachers identified major challenges: poor internet, high cost and lack of training. These are common problems in many Nigerian public schools.

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This finding is consistent with the work of Okeke (2023), who noted that infrastructure deficits are the biggest obstacle to EdTech in Nigeria. For AI to be used widely, these challenges must be addressed. The hypotheses tested all showed significant results. This adds strength to the conclusions. The rejection of the first two hypotheses confirms that AI is superior to conventional methods in this context. The rejection of the third hypothesis underscores that overcoming implementation challenges is essential for success. Together, the results paint a clear picture: AI has great potential to promote waste management practices among students in Ikwerre LGA, but its success depends on solving underlying infrastructure and training problems.

Conclusion

This study has demonstrated that AI-supported environmental education is highly effective. It significantly improves both the knowledge and practices of secondary school students regarding waste management. The interactive and engaging nature of AI tools makes learning more impactful. Students are not only able to score higher on tests but are also more willing to do the right thing in their environment. However, the potential of this technology cannot be fully realized without addressing the significant challenges of internet connectivity, cost and teacher capacity. Therefore, AI presents a powerful opportunity to cultivate a generation of environmentally responsible citizens in Ikwerre LGA, but it requires intentional investment and planning.

Recommendations

Based on the findings, the following recommendations are made:

1. The Rivers State Ministry of Education should consider integrating AI-based learning modules into the environmental education curriculum for secondary schools. This could start with a pilot program in select schools.
2. The government and school administrators should invest in improving digital infrastructure in schools. This includes providing reliable internet access and stable electricity to support technology-based learning.
3. Teacher training programs should be organized to equip educators with the skills needed to use AI tools effectively. This training should cover both technical use and pedagogical integration.
4. Partnerships should be formed with technology companies and non-governmental organizations (NGOs). These partnerships can help provide affordable or donated AI devices and software to schools.
5. Schools should establish environmental clubs where students can use AI tools to lead waste management projects. This would reinforce the lessons and provide ongoing practical engagement.

References

Amuda-Kannike, A., Oniye, S., & Amuda-Kannike, Y. (2025). Data Protection Laws in Nigeria: The Impact of AI and Telecom Regulations on E-Commerce Security. *LexScriptio A Journal of the Department of Jurisprudence and Public Law*, *2*(1), 158-183. https://journals.kwasu.edu.ng/index.php/lexscriptio/article/view/295

Amuda-Kannike, A., Amuda-Kannike, A., & Chika, C. (2025). Impact of Climate Change on Aquatic Food Resources and Human Health in Iwofe, Port Harcourt . *Faculty of Natural and Applied Sciences Journal of Basic and Environmental Research*, *2*(4), 37–45. https://doi.org/10.63561/jber.v2i4.1037

Amuda-Kannike, A., Amuda-Kannike, Y., & Jude-Akaraonye, G. O. (2023). *An Examination of the Nigerian Climate Change Laws and Policies: Stagnation or Progress?* https://doi.org/10.31219/osf.io/pg3zv

Amuda-Kannike, A. (2023). Environmental Science and governance: A Comprehensive Approach. *A paper presented by Prof. Abiodun Amuda-Kannike San, Fcarb, Fciap, Fce, Acti, Fiihp, lfcwls, Pioneer Dean, Faculty of Law, Kwara State University, Malete, Kwara State of Nigeria at one accord College of Health Science & Technology, Akinyele, Ibadan 2024 lecture & award ceremony taking place at conference centre (ui hotels) registration/ seminar room 5, University Of Ibadan, Oyo State, Nigeria on Saturday, 17th day of August, 2024*.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.

Chen, L., Wang, Y., & Zhang, P. (2021). The impact of artificial intelligence on student learning: A meta-analysis. *Journal of Educational Technology & Society, 24*(3), 112-125.

Chukwu, M., & Briggs, A. (2022). Solid waste management and public health in Ikwerre Local Government Area, Rivers State. *Nigerian Journal of Environmental Sciences, 5*(1), 34-49.

National Policy on Education. (2013). *Federal Republic of Nigeria*. Lagos: NERDC Press.

Cite this article as:
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Nwosu, J., & Amadi, C. (2022). *Urbanization and environmental pollution in the Niger Delta*. Port Harcourt: Pearl Publishers.

Okeke, C. (2023). Barriers to educational technology integration in Nigerian secondary schools. *African Journal of Educational Research, 19*(2), 77-92.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2020). *Education for sustainable development: A roadmap*. Paris: UNESCO Publishing.

World Economic Forum. (2023). *The future of jobs report 2023*. Geneva: WEF.

Zhang, H., & Li, J. (2022). Artificial intelligence in high school science education: A quasi-experimental study. *Journal of Research in Science Teaching, 59*(4), 512-534.

Cite this article as:
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