

Analysis of ChatGPT Tool to Assess the Potential of its Utility for Academic Writing in Biomedical Domain

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ABSTRACT

Background: ChatGPT (Generative Pre-trained Transformer) is an artificial intelligence chatbot which is designed to generate detailed text response and/or articulate answers to any query. Widespread concerns are expressed that such tools can be misused for academic writing. Hence this study was designed to test the utility and merit of ChatGPT for academic writing in biomedical sciences. **Materials and Methods:** five randomly selected query topics were input into ChatGPT for a response. The ChatGPT response time, quality of the content and reliability were assessed. The ChatGPT response was transferred into a word file and the file was checked for originality using the Urkund software. **Results:** The response rate by ChatGPT was observed to be very quick i.e., less than 2 min to give a 300-500 words text output. Although the content of the response were systematic, precise and original, it lacked quality and depth of academic writing. Several shortcomings such as word count, referencing errors and lack of academic merit were observed. **Conclusion:** Despite its significant limitations, ChatGPT has enormous potential as training and upskilling resource for academic writing, which rather than replacing biological intelligence will help in refining it if used appropriately under academic mentoring.

Keywords: Universal design for learning, Artificial intelligence, Biological intelligence, Plagiarism, Academic writing.

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INTRODUCTION

ChatGPT (Generative Pre-trained Transformer) is an artificial intelligence chatbot recently launched by Open-AI (a for-profit AI research laboratory) that is designed to generate detailed text response and/or articulate answers to any query.¹⁻⁴ While the core feature of this chatbot is proposed to be for simulating human conversation, initial explorations by millions of users have suggest its much improvised utility for scholarly writing, generating computer programs, composing music, writing stories/lyrics/poems, developing algorithms and many more restricted only by your imagination.⁵⁻⁸ Among the academic community concerns are expressed about the misuse of ChatGPT for writing assignments, essay or reports leading to widespread cheating.^{1,2,6} Hence this study was initiated to assess the potential utility of ChatGPT for academic writing in biomedical domain.

MATERIALS AND METHODS

To assess the academic writing potential of ChatGPT the following random query topic were selected and the response received was documented into the Word file.

Title of the queries used:

1. Write a 5000 words report on Chocolate toxicity in dogs and cite references.
2. Write a 10K words article on lumpy skin disease virus infection in animals and cite references.
3. Write an essay on epidemiology of lumpy skin disease virus and cite references.
4. Write a 1000 words overview of Canine Coronavirus and cite references.
5. How to write H2020 research proposal on new Alzheimer drug development.

The query 5 was used to assess the systematic approach of ChatGPT.

The response received to each of the five queries were saved into a word file and tested for plagiarism using the Urkund software.⁹⁻¹²



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RESULTS

The response received from ChatGPT to each of the queries are shown below:

Title of query 1: Write a 5000 words report on Chocolate toxicity in dogs and cite references

Chocolate is a popular treat for humans, but it can be dangerous for dogs. The main concern with chocolate is theobromine, a compound found in cocoa beans that is toxic to dogs. In this article, we'll explore the dangers of chocolate for dogs, the symptoms of chocolate poisoning, and what to do if your dog ingests chocolate.

The Dangers of Chocolate for Dogs

Theobromine is a stimulant found in chocolate that is toxic to dogs. It is similar to caffeine and is found in higher concentrations in dark chocolate and cocoa powder. The amount of theobromine in chocolate can vary depending on the type of chocolate, with unsweetened baking chocolate having the highest concentration and white chocolate having the lowest.

The severity of chocolate poisoning in dogs depends on the amount of chocolate ingested and the size of the dog. A small amount of chocolate may only cause mild symptoms in a large dog, while the same amount could be deadly for a small dog.

Symptoms of Chocolate Poisoning in Dogs

Symptoms of chocolate poisoning in dogs can occur within a few hours of ingestion and may include vomiting, diarrhea, restlessness, rapid breathing, muscle tremors, and an irregular heartbeat. In severe cases, chocolate poisoning can lead to seizures, coma, and death.

What to Do if Your Dog Ingests Chocolate

If you suspect that your dog has ingested chocolate, it is important to act quickly. Remove any remaining chocolate from your dog's reach and call your veterinarian or the ASPCA Animal Poison Control Center (APCC) at (888) 426-4435.

Your veterinarian or the APCC will ask you for information about the type and amount of chocolate ingested and will provide treatment recommendations based on this information. Treatment may include inducing vomiting to remove the chocolate from the dog's system, administering activated charcoal to absorb the theobromine, and providing supportive care such as intravenous fluids.

Preventing Chocolate Poisoning in Dogs

The best way to prevent chocolate poisoning in dogs is to keep chocolate out of reach of your pets. This means storing chocolate in secure containers and disposing of chocolate wrappers in a trash can that is out of reach of your dog.

It is also important to be aware of other sources of chocolate in your home, such as chocolate-flavored coffee beans and chocolate-covered espresso beans, which can be attractive to dogs.

CONCLUSION

Chocolate is a common household item that can be dangerous for dogs. If you suspect that your dog has ingested chocolate, it is important to act quickly and contact your veterinarian or the ASPCA Animal Poison Control Center for treatment recommendations. By keeping chocolate out of reach and being aware of other sources of chocolate in your home, you can help prevent chocolate poisoning in your furry friends.

REFERENCES

1. ASPCA Animal Poison Control Center. Chocolate Poisoning in Dogs. Retrieved from <https://www.aspc.org/pet-care/animal-poison-control/chocolate-poisoning-dogs>
2. Duncan JR, et al. Theobromine Toxicosis in Dogs. *Journal of Veterinary Internal Medicine*. 2017;31(3):838-45. doi:10.1111/jvim.14706
3. Pet Poison Helpline. Chocolate Poisoning in Dogs. Retrieved from <https://www.petpoisonhelpline.com/poison/chocolate/>

Title of query 2: Write a 10 K worlds article on lumpy skin disease virus infection in animals and cite references

Lumpy Skin Disease Virus (LSDV) is a highly contagious and potentially fatal virus that affects cattle and other bovine species. It is caused by a member of the poxvirus family and is transmitted through direct contact with infected animals, as well as through biting insects and contaminated equipment. LSDV infection can cause severe skin lesions, fever, weight loss, and reduced milk production in affected animals. In severe cases, the virus can lead to death.

LSDV was first identified in Africa in the 1920s and has since spread to other parts of the world, including Europe, Asia, and the Middle East. It is considered a significant threat to the livestock industry, as it can significantly reduce the productivity and profitability of affected herds.

Symptoms of LSDV infection typically appear within 2-3 weeks of exposure and can vary in severity. Common symptoms include the development of skin lesions, which can range from small, raised bumps to large, ulcerated lesions. These lesions can occur anywhere on the body, but are most commonly found on the head, neck, and legs. In addition to skin lesions, infected animals may also experience fever, loss of appetite, and reduced milk production.

There are several methods for preventing and controlling the spread of LSDV. One of the most effective strategies is vaccination. Vaccines are available that can provide protection against the virus, although the level of protection may vary depending on the specific vaccine used. In addition to vaccination, other prevention measures include maintaining good biosecurity practices, such as limiting the movement of animals between herds and properly disinfecting equipment and facilities.

Treatment options for LSDV infection are limited, and the primary focus is on managing symptoms and preventing the spread of the virus to other animals. This may involve providing supportive care, such as administering anti-inflammatory drugs to reduce swelling and fever, and providing additional nutrition to support weight gain. In severe cases, euthanasia may be necessary to prevent further suffering.

Overall, LSDV is a serious threat to the livestock industry and requires careful management to prevent and control outbreaks. While vaccination and biosecurity practices can help reduce the risk of infection, it is important for farmers and veterinarians to remain vigilant and take steps to protect their herds from this potentially devastating virus.

REFERENCES

1. FAO. Lumpy Skin Disease. 2018. Retrieved from <http://www.fao.org/ag/againfo/programmes/en/empres/diseases/lumpy/index.html>
2. OIE. Lumpy skin disease. 2019. Retrieved from <https://www.oie.int/animal-health-in-the-world/technical-disease-cards/lumpy-skin-disease/>
3. World Animal Health Information Database. Lumpy skin disease. 2019. Retrieved from https://www.oie.int/wahis_2/public/wahid.php/Review?reportid=26503

Title of query 3: Write an essay on epidemiology of lumpy skin disease virus and cite references

Lumpy Skin Disease (LSD) is a viral disease that affects cattle and other bovine species, causing skin lesions, swelling, and reduced milk production (Bensaci et al., 2013). It is caused by the Lumpy Skin Disease Virus (LSDV), a member of the family Poxviridae, which is transmitted through insect vectors, particularly biting flies (Turell et al., 2005).

LSD is a significant problem in the livestock industry, as it can lead to economic losses due to reduced productivity and trade restrictions (Bensaci et al., 2013). It is also zoonotic, meaning it can be transmitted to humans through contact with infected animals or their tissues (Turell et al., 2005).

The epidemiology of LSDV infection in animals is complex and varies depending on the region and climate. In Africa, where LSD is endemic, the disease tends to occur in outbreaks during the rainy season when insect vectors are more active (Turell et al., 2005). In contrast, in Europe and Asia, where LSD is not endemic, the disease tends to occur in sporadic cases due to importation of infected animals or their products (Bensaci et al., 2013).

The risk of LSDV infection in animals is influenced by various factors, including the presence of susceptible host species, the presence of competent vectors, and the presence of the virus in the environment (Turell et al., 2005). In addition, the movement of infected animals or their products can facilitate the spread of the disease to new areas (Bensaci et al., 2013).

Control and prevention of LSDV infection in animals is crucial to mitigate its impact on the livestock industry and public health. Measures include vaccination, vector control, quarantine, and biosecurity measures such as the restriction of animal movement and the proper disposal of infected animal products (Turell et al., 2005).

In conclusion, LSDV infection in animals is a significant disease that can lead to economic losses and public health concerns. The epidemiology of LSDV infection is complex and varies depending on the region and climate. Control and prevention measures, such as vaccination and biosecurity measures, are crucial to mitigate its impact.

REFERENCES

1. Bensaci, M, Dufour B, Grosbois V. Lumpy skin disease. *Revue Scientifique et Technique - Office International des Epizooties*. 2013;32(2):423-35.
2. Turell MJ, Dohm DJ, Hribar LJ. Arthropod vectors of viral diseases of livestock. *Annual Review of Entomology*. 2005;50:293-319.

Title of query 4: Write a 1000 words overview of Canine Coronavirus and cite references

I can certainly help you get started on a report about coronavirus infection in dogs. However, it is important to note that I am a machine learning model and do not have access to real-time information or the ability to browse the web, so my knowledge is limited to what was available at the time my training data was collected (2021). With that said, here is some information about coronavirus infection in dogs that you could use as a starting point for your report:

Coronaviruses are a family of viruses that can cause respiratory, enteric, and neurologic diseases in animals and humans. In dogs, coronavirus infection most commonly causes gastrointestinal illness. However, there have also been reports of respiratory and neurologic disease in dogs caused by Coronaviruses.

There are two types of canine coronaviruses: Canine respiratory coronavirus (CRCoV) and canine enteric coronavirus (CECoV). CRCoV primarily affects the respiratory tract and can cause symptoms such as coughing, sneezing, and nasal discharge. CECoV primarily affects the gastrointestinal tract and can cause symptoms such as vomiting, diarrhea, and abdominal pain.

In most cases, dogs with coronavirus infection will recover without treatment. However, in severe cases, supportive care such as fluid therapy and nutrition support may be needed. There is no specific treatment for Coronavirus infection in dogs, but symptoms can be managed with supportive care and medications to control vomiting and diarrhea. It is important to practice good hygiene to prevent the spread of Coronavirus infection in dogs. This includes washing hands after handling animals, cleaning and disinfecting surfaces that have come into contact with infected animals, and avoiding contact with infected animals if possible.

There are several vaccines available to protect against Coronavirus infection in dogs. These vaccines are typically given as part of a dog's regular vaccination schedule and may be required for entry into certain events or facilities.

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1. Canine Coronavirus. (<https://vcahospitals.com/know-your-pet/canine-coronavirus>)
2. Canine Coronavirus. (<https://www.avma.org/resources-tools/pet-owners/petcare/canine-coronavirus>)
3. Canine Coronavirus: An Update" (<https://www.vin.com/apputil/content/defaultadv1.aspx?pId=11359&id=3875019>)

Title of query 5: How to write H2020 research proposal on new Alzheimer drug development

Start by introducing the problem of Alzheimer's disease, including statistics on its prevalence and the impact it has on individuals and society.

Explain the current treatments available for Alzheimer's, including their limitations and the need for new and more effective therapies.

Outline the research objectives of the proposal, including the development of a new Alzheimer's drug and its potential benefits.

Describe the innovative approach that will be taken in the development of the new drug, including any novel technologies or techniques that will be used.

Detail the specific research activities that will be undertaken, including any in vitro or in vivo testing that will be conducted.

Discuss the potential impact of the new drug on patients and the healthcare system, including any expected cost savings or increased quality of life.

Outline the timeline for the proposed research, including any milestones or key dates that will be reached. Discuss the expected outcomes of the research, including any publications or patents that may result.

Provide details on the research team, including their expertise and experience in the field of Alzheimer's drug development.

Finally, include a budget breakdown for the proposed research, including any equipment or other resources that will be needed.

Analysis of the response from ChatGPT

While the responses to all the queries from ChatGPT were systematic, there were several deficiencies which in an academic writing context can be used to identify it as being written by an artificial intelligence rather than biological intelligence. Some of the gross deficiencies were that ChatGPT didn't follow the instructions correctly. For instance when asked to write a report of specific word count it always returned the response significantly to a suboptimal level. The first four queries got a response ranging from 300 to 500 words despite specifically asking to write 1K to 10K words report, hence showing a consistent shortcoming of over 70 percent. Such shortcomings are easily identifiable under academic writing context. The ChatGPT also failed to cite in-text references (except for query no 3), which is always a common feature of academic writing. For all the queries the references cited were grossly inappropriate or inaccurate. Although citing of inappropriate or inaccurate references is also an observed feature of biological intelligence, especially the lower end of academic tier due to lack of knowledge or engagement or interest in the subject reflecting the lack of passion. A similar response from the artificial intelligence tools like ChatGPT is not surprising as passion and curiosity are typically biological traits. Besides the quality of the references cited the quantity of references cited was also of concern, which is often seen in academic writing context from an audience who are not committed to the topic being worked on. Traits such as commitment cannot be expected from artificial intelligence. Another major deficiency in the response from ChatGPT were lack of practical examples or highlighting personal experiences with the topic of the query, which again is a typical feature of biological intelligence.

Despite these shortcomings the response from ChatGPT did have an aspect of academic writing which can be appreciated. The response although superficial were precise and accurate to the topic and most important of all was original. The response from ChatGPT was subjected to assessment by the plagiarism assessment software which showed 9 percent similarity (Figure 1). Within the academic writing context considering the limitations of the plagiarism assessment software and nature of general statements a less than 15 percent similarity is acceptable. However most of the statements which were identified to be similar were from sources which were not cited in the text and

Document Information

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Similarity	9%
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Sources included in the report

W	URL: https://dogell.com/en/dog-chocolate-toxicity-calculator Fetched: 12/1/2022 12:23:33 AM	2
W	URL: https://www.smartcityvaranasi.in/what-happens-if-your-dog-eats-chocolate/ Fetched: 1/9/2023 4:20:09 PM	5
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Chocolate toxicity in

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dogs Chocolate is a popular treat for humans, but it can be dangerous for dogs. The

main concern with chocolate is theobromine, a compound found in cocoa beans that is toxic to dogs. In this article, we'll explore the dangers of chocolate for dogs, the symptoms of chocolate poisoning, and what to do if your dog ingests chocolate.

The Dangers of Chocolate for Dogs

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Overall, LSDV is a serious threat to the livestock industry and requires careful management to prevent and control outbreaks. While vaccination and biosecurity practices can help reduce the risk of infection, it is important for farmers and veterinarians to remain vigilant and take steps to protect their herds from this potentially devastating virus.

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World Animal Health Information Database. (2019). Lumpy skin disease. Retrieved from <https://www.oie.int/whis/2/public/whid.php?Review/en/Review?reportid=26503>

Epidemiology of LSDV

Lumpy skin disease (LSD) is a viral disease that affects cattle and other bovine species, causing skin lesions, swelling, and reduced milk production (Bensaci et al., 2013). It

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is caused by the lumpy skin disease virus (LSDV), a member of the

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Poviridae,

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In conclusion, LSDV infection in animals is a significant disease that can lead to economic losses and public health concerns. The epidemiology of LSDV infection is complex and varies depending on the region and climate. Control and prevention measures, such as vaccination and biosecurity measures, are crucial to mitigate its impact.

References:

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Canine Coronavirus

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and death. What to Do if Your Dog Ingests Chocolate If you suspect that your dog has ingested chocolate, it is important to act quickly.

Remove any remaining chocolate from your dog's reach and

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call your veterinarian or the ASPCA Animal Poison Control Center (APCC) at (888) 426-4435.

Your veterinarian or the APCC will ask you for information about the type and amount of chocolate ingested and will provide treatment recommendations based on this information.

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Treatment may include inducing vomiting to remove the chocolate from the dog's

stomach, administering activated charcoal to absorb the theobromine, and providing supportive care such as intravenous fluids.

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Preventing Chocolate Poisoning in Dogs The best way to prevent chocolate poisoning in dogs is to keep chocolate out of reach of your pets. This means storing chocolate in secure

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It is also important to be aware of other sources of chocolate in your home, such as chocolate-flavored coffee beans and chocolate-covered espresso beans, which can be attractive to dogs.

Conclusion
Chocolate is a common household item that can be dangerous for dogs.

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If you suspect that your dog has ingested chocolate, it is important to act quickly and contact your veterinarian or the ASPCA Animal Poison Control Center

for treatment recommendations. By keeping chocolate out of reach and being aware of other sources of chocolate in your home, you can help prevent chocolate poisoning in your furry friends.

References:

ASPCA Animal Poison Control Center. (n.d.). Chocolate Poisoning in Dogs. Retrieved from <https://www.aspcapet-care/animal-poison-control/chocolate-poisoning-dogs>

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In most cases, dogs with coronavirus infection will recover without treatment. However, in severe cases, supportive care such as fluid therapy and nutrition support may be needed. There is no specific treatment for coronavirus infection in dogs, but symptoms can be managed with supportive care and medications to control vomiting and diarrhea.

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There are several vaccines available to protect against coronavirus infection in dogs. These vaccines are typically given as part of a dog's regular vaccination schedule and may be required for entry into certain events or facilities.

References:

"Canine Coronavirus" (<https://vcahospitals.com/know-your-pet/canine-coronavirus/>) "Canine Coronavirus"

(<https://www.ama.org/resources-tools/pet-owners/petcare/canine-coronavirus/>) "Canine Coronavirus: An Update"

(<https://www.vin.com/appull/content/defaultadv1.aspx?id=1135996id=3875039>)

How to write H2020 research proposal on new Alzheimer drug development

Start by introducing the problem of Alzheimer's disease, including statistics on its prevalence and the impact it has on individuals and society.

Outline the current treatments available for Alzheimer's, including their limitations and the need for new and more effective therapies.

Describe the innovative approach that will be taken in the development of the new drug, including any novel technologies or techniques that will be used.

Detail the specific research activities that will be undertaken, including any in vitro or in vivo testing that will be conducted.

Discuss the potential impact of the new drug on patients and the healthcare system, including any expected cost savings or increased quality of life.

Outline the timeline for the proposed research, including any milestones or key dates that will be reached.

Discuss the expected outcomes of the research, including any publications or patents that may result.

Provide details on the research team, including their expertise and experience in the field of Alzheimer's drug development.

Finally, include a budget breakdown for the proposed research, including any equipment or other resources that will be needed.

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Matching text As the text appears in the source.

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dogs Chocolate is a popular treat for humans, but it can be dangerous for dogs. The
dogs? Chocolate is a popular treat for people, but it can be poisonous for dogs. The

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of chocolate poisoning in dogs depends on the amount of chocolate ingested and the size of the dog. A small
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3/9 SUBMITTED TEXT 24 WORDS **82% MATCHING TEXT** 24 WORDS
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3/9 SUBMITTED TEXT 24 WORDS **82% MATCHING TEXT** 24 WORDS
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3/9 SUBMITTED TEXT 24 WORDS **82% MATCHING TEXT** 24 WORDS
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Treatment may include inducing vomiting to remove the chocolate from the dog		treatment may involve inducing vomiting to remove the chocolate from the dog.		
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5/9	SUBMITTED TEXT	30 WORDS	86% MATCHING TEXT	30 WORDS
Preventing Chocolate Poisoning in Dogs The best way to prevent chocolate poisoning in dogs is to keep chocolate out of reach of your pets. This means storing chocolate in secure		Preventing Chocolate Poisoning in Dogs The best way to prevent chocolate poisoning in dogs is to keep chocolate out of reach of your furry friend. This means keeping chocolate in a secure		
W		https://www.smartcityvaranasi.in/what-happens-if-your-dog-eats-chocolate/		
6/9	SUBMITTED TEXT	27 WORDS	76% MATCHING TEXT	27 WORDS
If you suspect that your dog has ingested chocolate, it is important to act quickly and contact your veterinarian or the ASPCA Animal Poison Control Center		If you suspect that your dog has eaten chocolate it is important to act quickly and seek the advice of a veterinarian or the ASPCA Animal Poison Control Center.		
W		https://www.smartcityvaranasi.in/what-happens-if-your-dog-eats-chocolate/		
7/9	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
call your veterinarian or the ASPCA Animal Poison Control Center (APCC) at (888) 426-4435.		call your veterinarian or the ASPCA Animal Poison Control Center (APCC) at (888) 426-4435.		
W		https://www.smartcityvaranasi.in/what-happens-if-your-dog-eats-chocolate/		
8/9	SUBMITTED TEXT	6 WORDS	65% MATCHING TEXT	6 WORDS
Lumpy skin disease. Retrieved from https://www.oie.int/animal-health-in-the-world/technical-disease-cards/lumpy-skin-disease/		Lumpy Skin Disease in Bangladesh Background. 2019. https://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Disease_cards/LUMPY_SKIN_DISEASE_		
W		https://bmcvetres.biomedcentral.com/articles/10.1186/s12917-021-02751-x		
9/9	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
is caused by the lumpy skin disease virus (LSDV), a member of the				
SA		Dr. Karika Bhalla, docx (D149206281)		

Figure 1: Output file from the originality checker software (Urkund). The output file as PDF is shown with the text detected as being similar to other sources highlighted in yellow.

this feature can be helpful in detecting cheating in academic writing. The systematic approach of response from ChatGPT was further evident from the response to query number 5, which seem to be a significant merit of such artificial intelligence tools. Such systematic approach can be helpful in academic writing context for training and improving clarity on the topic being investigated. Another merit of such tools can be in judicious use of time and promoting motivation to write about a topic. Often for early stage academic writers a detailed literature review will be significantly

time consuming and with the extensive amount of digital resources available, framing a clear outline can be confusing leading to lack of motivation to progress on the topic. In this study the response rate of ChatGPT to compose a 300-500 words report was under 2 min, which for me was impressive. The ability of tools like ChatGPT to give rapid precise response to a clearly articulated question will not only be efficient time management but will also be motivating by framing the foundations for targeted input of biological intelligence for optimal learning.

DISCUSSION

This study examined the utility and merit of ChatGPT for academic writing and observed that although this tool is helpful with academic writing, it does suffer significantly in the area of quality of academic writing. Hence rather than to concern over its potential misuse for academic writing we should foresee how this new technology can help in training and improving academic writing skills by adopting the classical principles of universal design for learning.¹³⁻¹⁵ Rather than being worried than students will outrightly use such tools to plagiarise academic writing,^{1,5,7} we should look at using such tools to train students on academic writing skills by specifically highlighting the shortcoming of such tools. For examples if you give an assignment to write on a topic, supply with such assignment a typical response from ChatGPT on that topic and highlight the limitations and give recommendations on how to improve upon those limitations. In my view such an approach will not only reflect an academic trait but will also encourage students towards optimal engagement and reflection for metacognitive learning.^{11,16-18}

The response from ChatGPT to all the queries used in this study was minimal in word count, while I am assuming with advancement in technology this shortcoming will be overcome and ChatGPT will indeed be able to write a 10K words response. Based on the observation from this study I am also assuming that with increase in the quantity of response from ChatGPT, the nature of errors observed in this study will also increase, which in my view again will be inadequate to supersede a response from well trained and knowledgeable biological intelligence. Several gross errors such as with referencing, lack of depth in knowledge, contextualisation of the topic and several other humane traits which are inherent to biological intelligence will always be lacking in a response from tools such as ChatGPT. Hence the worries about potential misuse of such tools should be set aside and approaches to progress by embracing such technologies should be looked at to promote universal design for learning. I do feel tools such as ChatGPT has

enormous potential as training and upskilling resource, which rather than replacing biological intelligence will help in refining it if used appropriately under academic mentoring.

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