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Students' Experiences of Using Online Mind Mapping as a Pre-Writing Strategy for Academic Essays

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Abstract

This study aimed to describe students' experiences of using online mind mapping as a pre-writing strategy for academic essays, including their perceptions, perceived benefits, and challenges, as well as the implications for writing instruction in higher education. It employed an exploratory qualitative approach. The participants were nine Bachelor of Nursing Science students of Universitas Bhamada Slawi, purposively selected from 48 students, who used the Coggle application in an Indonesian language course. Data were collected through observation, semi-structured interviews, and document analysis of mind maps and essay drafts, analyzed thematically, and checked through triangulation. The findings, which are drawn mainly from the interviews, yielded three themes. First, participants perceived online mind mapping positively because it helped them visualize ideas, keep their writing on track, and feel more confident when starting to write. Second, participants reported strategic benefits in the pre-writing stage, namely selecting and organizing ideas, flexibly rearranging the order of ideas, and finding it easier to start writing, which some of them associated with reduced writer's block. Third, participants encountered challenges, namely the limited features of free accounts, slow internet connections, and initial difficulty in using the application interface. In conclusion, online mind mapping was perceived as a useful pre-writing support, but the findings describe participants perceived experiences and do not show measured improvements in essay quality. Lecturers are advised to anticipate technical constraints and guide students through the initial adaptation period.

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INTRODUCTION

Writing is an important skill in communication in our daily personal and social interactions. Writing instruction is designed to develop skills that are needed to communicate ideas, thoughts and information in a clear and effective manner through written language. Connor (Budiharso, 2018) states that writing skill cannot be explicitly taught but should be developed through practice. However, there are several aspects of writing that can be taught such as content, organisation, language use and mechanics. Students can improve their writing by copying the techniques of better writers and learn new vocabulary, phrases and styles. In a similar way, reading such works or other research findings can help you generate ideas, word choices, and writing techniques.

An essay is a written work that contains the author's opinion on a topic that needs to be further studied, containing facts or events that occur in society and the author's view of the topic so that it is argumentative and subjective (Dalman, 2011; Wijayanti & Dhian, 2012). An essay is written to express opinions, but the process of writing also forces the writer to analyze and interpret critically and to explore further the subject in question. The process of writing is the process of moving ideas, thoughts or feelings into a series of words or sentences that are written (Yulisna, 2016). Essay writing requires critical thinking skills because arguments must be supported by evidence and logical ideas.

Writing is one of the activities to convey feelings, experiences, and thoughts in written form. Writing consists of several stages, including stages that emphasize linguistic aspects and stages that focus on idea development. The ability to think is closely related to the skill of writing essays as a scientific activity. Yundiani, et al. (2023) Mentoring and writing training are needed to improve writing skills especially in the setting of scientific writing. Students need to learn the academic essay writing skills for academic and non-academic purposes to express their thoughts and creativity (Kurniasih, et.al., 2024).

The ability to write essays is expected to support students in composing scientific works. However, many students still struggle to start because they do not yet have effective strategies to organize their ideas. Students often face obstacles in writing, not only in pouring their ideas into writing but also in constructing effective and coherent sentences, resulting in less cohesive paragraphs (Aghittara, 2016). The low reading ability also contributes to these difficulties (Anggraini & Solihatulmilah, 2020). The low interest in reading among teenagers and their limited understanding of essays and scientific works remain current issues (Arodhiskara, et.al., 2020). In accordance with Suwandi, (2015) research, writing is the most difficult language skill. The main causes of writing anxiety in students are language limitations, limited time and lack of writing experience (Kusumaningputri, et.al., 2018). This condition indicates that the writing skills of the students need serious attention from all parties (Khuzaemah, 2017).

Innovative learning activities may foster a dynamic, flexible and engaging atmosphere in the classroom. One of the strategies that can be useful is online mind mapping in the pre-writing phase. Mind mapping allows students to organize ideas visually and structurally, facilitating the development of paragraphs in academic essays (Buzan, 2013). Mind mapping is a method that is utilized to understand information by using some patterns and shapes that help to optimize the performance of the entire brain by incorporating the functions of the right and left-brain hemispheres (Salamah & Hesti, 2023). This technique is carried out by arranging interconnected idea patterns between the main topic and subtopics, accompanied by branching details, thus forming a flow of topic development based on the available information. Mind mapping is a form of diagram that can train the ability to develop ideas, themes, and information (Y. Saleh, 2020). This technique is also a way to map thoughts creatively in written form that contains certain meanings (Buzan, 2013).

Mind mapping helps learners connect the main topic with subtopics and supporting details so that the relationships between ideas can be seen before the drafting begins (Buzan, 2013; Saleh, 2008). From the perspective of the writing process, the prewriting stage is related to planning, which involves generating and organizing ideas before they are put into text (Zhang & Badger, 2024). As technology progresses, the online mind mapping tools like MindMeister and Coggle are becoming more flexible. Easily add, move, and delete branches and share maps for collaboration. Research on the use of mind mapping in writing education in Indonesia has mostly been about whether this technique improves writing skills. Yusrumaida, (2021) used the mind mapping technique in teaching writing skills to junior high school students and found that the technique was useful for students to organize their ideas and to write texts. Armariena, (2020) found that mind mapping significantly affected students' writing skills on paper in the Indonesian Language course. Salamah & Hesti, (2023), reported the increase in the results of the posttest of students of Indonesian Language Education who learned to write essays using the mind mapping retention technique. Studies in higher education outside Indonesia regarding digital mind mapping also show the same trend, which is outcome- and attitude-oriented. Tay & Phang, (2022) reported that the use of mind mapping software improved the academic writing of prospective teacher students, and the interviewed students generally felt that the software was helpful. Alqasham & Al-Ahdal, (2021), found that free digital mind mapping tools enhanced the writing interest of EFL learners in Saudi Arabia, and Abd Karim & Mustapha, (2020) studied students' perceptions of digital mind maps in ESL writing courses on creativity and critical thinking. Duong, (2024) who specifically studied online mind mapping at the pre-writing stage, found no statistically significant difference in the elaboration and organization of ideas between the treatment group and the control group, although most of the interviewed students had a positive attitude toward it.

There are still two gaps in those studies. First, the studies above mostly report measurable results or attitudes in aggregate and do not explain how students themselves experience online mind mapping when preparing academic essays, specifically what they find helpful at certain points in the pre-writing stage and what obstacles they encounter. Second, to the best of the author's knowledge, such descriptions are still limited in Indonesian higher education, especially for non-language major students, such as nursing students, who take Indonesian Language as a general course and are required to write academic essays outside their professional field. Therefore, this research differs from general studies on mind mapping in two ways: this study examines students' experiences, rather than the influence of the technique, and focuses on the pre-writing stage using an online tool (Coggle) among nursing students.

Based on these considerations, this study aims to describe students' experiences in using online mind mapping as a pre-writing strategy for academic essays, including perceptions, perceived benefits, and challenges faced, as well as its implications for writing education in higher education. This research is guided by three research questions: (1) How do students perceive online mind mapping as a pre-writing strategy? (2) What benefits do they perceive at the pre-writing stage of academic essays? (3) What challenges are they facing?

METHOD

This research used qualitative approach with exploratory design in an effort to describe the students' experience, perception, perceived benefit and challenge in using online mind mapping as pre-writing strategy for academic essay. The exploratory design is appropriate for the phenomena that have not been widely studied (Creswell, 2018) and the qualitative approach enables investigators to interpret meanings

from the participants' point of view (Moleong, 2017). This study therefore focused on experiences and perceived benefits rather than the impact of the strategy on the quality of the essays.

The research was conducted from May to July 2025 in the Bachelor of Nursing Study Program at Universitas Bhamada Slawi during the second semester of the 2024/2025 academic year. The research was conducted in "Bahasa Indonesia" course in which second semester students are taught to write academic essays by using online mind mapping through Coggle application as a pre-writing strategy. Nine students were purposefully selected from 48 students in the class for in-depth interview (Creswell, 2018; Sugiyono, 2019). The selection criteria include activity in learning, participation in online mind mapping activities using Coggle in class, diverse writing processes, and willingness to become participants. These criteria are intended to obtain in-depth and varied information, not to represent all 48 students. Nine participants are considered sufficient for this exploratory purpose; this study does not claim data saturation or generalizability. Since activity is one of the criteria, the experiences of less active students may be underrepresented, and this is acknowledged as a limitation.

In the activity, students created online mind maps about the essay topic using Coggle as a pre-writing step, wrote initial drafts, and then compiled the final essay. Data were collected through participant observation, semi-structured interviews with nine participants, and document analysis in the form of online mind maps, initial drafts, and final essays of the participants. Interviews became the main source of data, while observations and document analysis were used as supporting data for triangulation and interpretation. The main instrument is the researcher themselves, assisted by observation guidelines, interview guidelines, and document analysis guidelines (Moleong, 2017). Participation in the interviews is voluntary based on the willingness of the participants. To maintain confidentiality, participants in this article are only referred to as Student 1 to Student 9.

Data were analyzed thematically by following the stages of data reduction, data presentation, and conclusion drawing (Miles, et.al., 2014). Interview excerpts were coded, similar codes were grouped into categories, and these categories were developed into three themes: students' perceptions of online mind mapping, strategic benefits at the pre-writing stage of academic essays, and challenges in using online mind mapping. Table 1 illustrates how quotes are coded and categorized into themes; the codes displayed are merely examples, not a complete list of codes.

Table 1. Example of Quotes, Codes, and Themes

Quote	Code	Theme
"Saya bisa langsung melihat hubungan antargagasan sehingga lebih mudah menyusun kerangka tulisan." (Mahasiswa 5)	Making connections between ideas	1. Perception
"I can instantly see the relationships between ideas, making it easier to outline my writing." (Student 5)		
"Saya lebih percaya diri dan tidak terlalu sering menghapus tulisan." (Mahasiswa 8)	Confidence in starting to write	1. Perception
"I feel more confident and I don't cross out what I write as much." (Student 8)		
"Saya bisa melihat gagasan mana yang penting dan mana yang kurang relevan." (Mahasiswa 5)	Choosing the right ideas	2. Strategic Benefits
"I can see which ideas are important and which are less important." (Student 5)		

“Saya bisa memindahkan posisi gagasan, jadi kalau urutannya terasa kurang tepat, tinggal dipindahkan.” (Mahasiswa 2)	Flexible ordering of ideas	2. Strategic Benefits
“I can move the ideas around so if the order feels wrong, I can just change it.” (Student 2)		
“Hanya bisa membuat tiga <i>mind map</i> .” (Mahasiswa 7)	Limitation of free account features	3. Challenge
“I can only create three mind maps.” (Student 7)		
“Saya bingung dengan navigasinya.” (Mahasiswa 4)	Interface is difficult to navigate	3. Challenge
“I got lost in navigation. (Student 4)		

The validity of the data was examined through source and technique triangulation, namely by comparing the results of observations, interviews, and document analysis.

RESULT AND DISCUSSION

This research aims to describe students' experiences in using online mind mapping as a pre-writing strategy for academic essays, including perceptions, perceived benefits, and challenges faced, as well as its implications for writing education in higher education. Data were obtained through observations, semi-structured interviews with nine students, and documentation of mind maps and essay drafts. The analysis revealed three major themes related to the first, second, and third research questions. These themes include (1) students' perceptions of online mind mapping, (2) the strategic benefits of online mind mapping in the pre-writing stage of academic essays, and (3) the challenges of using online mind mapping in a digital learning environment. The first and second themes are related and are distinguished as follows. Theme 1 concerns the participants' overall evaluation and perception of this tool, including the visual aspect, the tool's help in keeping their writing on track, and their confidence. Theme 2 included aspects that participants felt were supported by this tool at some points in the pre-writing stage such as choosing ideas, changing the order of ideas on Coggle, and starting the first draft. Interview quotes are the primary evidence presented below. Observation data and documents were used in the interpretation, but they are not reported in detail in this article, and this is noted as a limitation.

1. Perception of Students toward Online Mind Mapping

Participants' descriptions of online mind mapping are generally positive. They described it as a visual aid for organizing ideas and composing writing. The following quotes are illustrative choices, and the number of participants with similar views is not reported. Before using mind mapping, Student 1 often wrote directly without a framework and Student 8 was unsure where to start; after using online mind mapping, both described the flow of their writing as clearer and their writing plans as more certain. This is evident in the following quote.

“Sebelumnya, saya sering langsung menulis tanpa membuat kerangka. Namun, setelah mencoba *mind mapping*, saya dapat melihat alurnya dengan lebih jelas. Cara ini membantu tulisan saya tetap berada di jalur yang benar.” (Mahasiswa 1)

“I used to write directly, without preparing an outline, in the past. But now I've tried mind mapping and I see the flow much clearer. This way I can keep my writing on track.” (Student 1)

“Dengan *mind mapping* daring, saya bisa langsung melihat hubungan antargagasan sehingga lebih mudah menyusun kerangka tulisan.” (Mahasiswa 5)

"It helps me to see the relationships between ideas and to outline my writing using online mind mapping." (Student 5)

“Saya tipe visual, jadi saya lebih suka melihat gambar gagasan daripada menulis daftar poin. *Mind mapping* membantu saya melihat hubungan antargagasan sebelum mulai menulis.” (Mahasiswa 6)

“I’m a visual person. I’d rather look at concept maps than write bullet points.” I use mind mapping to see how the ideas relate to each other before I start writing.” (Student 6)

“Biasanya saya bingung harus mulai dari mana, tetapi dengan *mind mapping* saya sudah punya rencana. Jadi, saya lebih percaya diri dan tidak terlalu sering menghapus tulisan.” (Mahasiswa 8)

“Usually, I’m confused about where to start, but with mind mapping I have a plan already. “So I am more confident and don’t need to erase my writing as often.” (Student 8)

“Tampilannya menarik sehingga saya tidak cepat bosan dan merasa lebih percaya diri.” (Mahasiswa 2)

“The appearance is appealing so I don’t get bored easily and I feel more confident.” (Student 2)

If read together, the quotes show how the participants themselves connect several experiences. The ideas presented visually made them see the relationships between concepts before writing (Students 5 and 6), and this provided some of them with a clearer plan or direction (Students 1 and 8). Student 8 associates having a plan with greater confidence and fewer deletions, while Student 2 links the appealing appearance of the tool with less boredom and increased confidence. Student 6’s statement that he prefers images over lists illustrates how the participant works; this statement is not treated here as evidence that a visual learning style makes mind mapping effective in general. Also, Student 8’s comment on the decrease in erasure was noted as a personal experience because it was not verified against the student’s draft writing. This description is consistent with Buzan, (2013) view of mind mapping helping students to visually organize ideas, but the data only reports this as described by the participants.

2. Strategic Benefits at the Pre-Writing Stage of Academic Essays

Participants stated that online mind mapping supports the pre-writing stage in three ways. First, this tool helps them sort and select relevant ideas. Second, Coggle allows them to rearrange the order of ideas by moving branches. Third, this tool makes it easier for them to start writing, which some participants associated with a reduction in writer's block. The second benefit is related to the features of the digital tool, while the other two benefits are not necessarily unique to Coggle.

“Ketika membuat *mind map*, saya bisa melihat gagasan mana yang penting dan mana yang kurang relevan. Itu membuat tulisan saya lebih fokus.” (Mahasiswa 5)

“When I make a mind map, I understand what ideas are important and what ideas are not important. It helps me to focus my writing.” (Student 5)

“Di *mind map*, saya bisa memindahkan posisi gagasan, jadi kalau urutannya terasa kurang tepat, tinggal dipindahkan. Lebih fleksibel daripada menulis manual.” (Mahasiswa 2)

“I can move the ideas around in a mind map, so if the order is wrong, I can just move them.
“It’s more flexible than writing by hand.” (Student 2)

The quote illustrates two ways in which participants understand the benefits of online mind mapping. First, Student 5 reported that seeing the entire map helps separate important ideas from less relevant ones, making the writing more focused. Second, Student 2 reported that ideas on Coggle can be moved when their order feels off, and he positively compared this to writing manually. This comparison comes from one participant and is not considered to indicate that online mind mapping is better than all forms of manual note-taking. Thus, participants reported that online mind mapping helped them select and organize ideas. This is in line with Saleh, (2008) opinion that mind mapping trains the ability to organize ideas hierarchically. This finding can be understood through the cognitive writing process model, which views planning, namely generating and organizing ideas as well as setting writing goals, as part of the iterative writing process (Zhang & Badger, 2024). In this framework, online mind maps can be interpreted as a visible form of the planning stage, allowing participants to sort and organize ideas before writing a draft. This interpretation is conceptual and was not tested in this research. Whether mind mapping also strengthens cohesion between paragraphs was not directly examined in this study.

Others said that using online mind maps helped to overcome writer's block especially when they were starting to write.

“Biasanya saya macet di paragraf pembuka. Namun, ketika memakai *mind map*, paragraf pembuka menjadi lebih mudah karena saya sudah tahu poin-poin pentingnya.” (Mahasiswa 3)
“I usually get stuck on the opening paragraph. However, when using a mind map, the opening paragraph becomes easier because I already know the key points.” (Student 3)

“Dulu saya butuh waktu lama untuk mulai menulis, tetapi sekarang lebih cepat karena saya tinggal mengembangkan poin-poin yang sudah ada di *mind map*.” (Mahasiswa 9)
“I used to spend a long time getting started on the writing but it’s quicker now because I just have to expand on the points already on the mind map.” (Student 9)

Participants reported that online mind mapping facilitated the initiation of their writing. Student 3 said they found the opening paragraph difficult but it became easier once the important points were mapped out. Student 9 said that the start was quicker because they only needed to develop the points already on the map. This statement indicates an easier starting experience and a perceived speed. The statement does not indicate that the entire writing process became faster because the time taken to complete the essay was not measured in the data reported here. Student 2 shared an experience similar to Student 8 in the previous quote, initially confused about where to start and then feeling that the flow of their writing became clear after making a map:

“... setelah membuat *mind map*, alurnya menjadi jelas.” (Mahasiswa 2)
“...after making a mind map, the flow became clear.” (student 2)

Student 8's statement in the previous quote relates to knowing the starting point of writing: the map replaces the confusion about the starting point with a visible plan, and he associates this with greater confidence. Student 2's statement relates to what happens after the map is created, namely, the

essay's flow becomes clear. Together with the statements of Student 3 and 9, this quote shows that the benefits perceived by the participants are centered on the early stages of writing, namely determining where to start and in what order to proceed. Because the description is sourced from self-reports, it is presented as the participants' experiences, not as evidence of better essay quality or shorter writing time. The experience of overcoming a blockage in the opening paragraph can also be linked to Rose, (1980) finding that students who experience writing blockages tend to adhere to rigid rules and inflexible plans, whereas students who do not experience them use more flexible rules. The ability to move branches in Coggle is consistent with the idea of a flexible plan, but this was not tested in this study.

3. Challenges and Barriers to the Use of Online Mind Mapping

Participants mostly reported benefits but some of them reported technical challenges and difficulty to adapt at the beginning of using the application. Some of the challenges stated were limited features in the free version, slow internet connection and difficulties in using the interface of the application including navigation and management of branches.

“Saya memakai aplikasi *Coggle*, tetapi hanya bisa membuat tiga *mind map*. Jadi, kalau mau membuat yang baru, saya harus menghapus yang lama terlebih dahulu.” (Mahasiswa 7)

"I use the Coggle app, but I can only create three mind maps. So, if I want to make a new one, I have to delete the old one first." (Student 7)

“Waktu pertama kali disuruh memakai *Coggle*, saya bingung dengan navigasinya. Saya harus mengeklik sana-sini dan kadang salah klik.” (Mahasiswa 4)

"When I was first asked to use Coggle, I was confused with the navigation. I have to click here and there and sometimes click the wrong thing." (Student 4)

“Ini pertama kalinya saya memakai *Coggle* dan saya merasa agak sulit menyusun serta menghapus cabang yang salah.” (Mahasiswa 1)

"This is my first time using Coggle and I find it a bit difficult to arrange and delete the wrong branches." (Student 1)

“Saya agak bingung saat menambahkan cabang, dan koneksi internet yang lambat bisa menghambat proses pembuatan.” (Mahasiswa 6)

"I'm a bit confused when adding branches, and a slow internet connection can hinder the creation process." (Student 6)

The participants' descriptions indicate three types of difficulties in using Coggle. The first difficulty is the limit on the number of maps. Student 7 can only create three maps and must delete old maps before creating new ones. This is in accordance with the published free Coggle package, which allows three private diagrams and an unlimited number of public diagrams. This article does not report whether the participants' maps are private or public, so the limit is reported as a condition described by Student 7 in the free version, rather than as a general characteristic of the application. The second difficulty is the use of the interface: Student 4 was confused navigating the application when first asked to use it and occasionally misclicked, Student 1 found

it difficult to arrange and delete the wrong branches, and Student 6 was confused when adding branches. The third difficulty is connectivity: Student 6 stated that a slow internet connection could hinder map creation. Student 4 and 1 explicitly linked their difficulties to their first-time use of Coggle. Overall, participants described Coggle as a tool that helps organize ideas, but technical constraints and access limitations affected how they used it.

Participants' reports are generally consistent with research on mind mapping in higher education writing. According to Tay & Phang, (2022), prospective teacher students who employed mind mapping software showed better academic writing and considered the software to be useful. Duong, (2024) discovered that most of the students interviewed showed a positive attitude toward online mind mapping in the pre-writing stage. Also, discovered that free digital mind mapping tools increase the learners' interest in writing by (Alqasham & Al-Ahdal, 2021). Overall, the studies show that the positive attitude toward digital mind mapping is relatively stable, but the evidence on the effectiveness of the technique in improving the quality of writing is more heterogeneous: Duong, (2024) did not find statistically significant differences between groups in the elaboration and organization of ideas. This research contributes a description of the pre-writing phase that participants found to be useful, which is choosing ideas, reordering ideas on Coggle, and beginning the opening paragraph. However, this comparison is limited because most of the studies used quasi-experimental or mixed designs, whereas this research does not measure writing outcomes.

The technical difficulties reported by the participants (limited features, connectivity, and unfamiliar interfaces) are related to the conditions of utilizing digital tools, not with mind mapping itself. Azizah & Jemain, (2023) also added that barriers to technology-based interactive learning are lack of resources and technical skills. Students 4 and 1 attributed their difficulties to the initial use of the application, indicating that instructors need to consider a brief orientation on the application before it is used for graded essay assignments. Whether participants became more comfortable after repeated use was not documented in the quotes or observation notes reported here, so it remains a question for further research. The learning implications of these findings are further elaborated in the conclusion section.

CONCLUSION

The study reports students' experience of using online mind mapping as a pre-writing strategy for academic essay. The study reports students' perceptions, perceived benefits and challenges. Participants felt that the online mind mapping on Coggle helped them to organize their ideas visually, to begin writing and to structure the flow of the essay. Some participants felt more confident and that they experienced less writer's block at the beginning of writing. They also viewed the digital format as a flexible medium for rearranging ideas. Meanwhile, they ran into technical problems, such as the limitations of the features of free accounts, slow internet connection and initial problems with the interface. These findings describe the experiences and benefits perceived by the participants; these findings do not prove that online mind mapping improves the efficiency or quality of academic essay writing.

There are several limitations to this study which the findings should be read with regard to. The study was conducted at one university and one study program. Nine participants were selected purposefully, partly because of their activity, so the experiences of less active students may be underrepresented. Most of the data used are from participants' self-reports. The study does not provide direct evidence of

improvement of the quality of the essays such as essay scores. Observational and document data are not presented in detail, and the process of students adapting to the application is not documented. The reported experiences may also be influenced by the training received by students and the guidance of lecturers, so the contribution of online mind mapping alone cannot be separated from these factors.

In practice, lecturers introducing online mind mapping can prepare students to use the application interface, check account limitations before assigning tasks, and provide alternatives when internet access is unstable. Further research could be done on less active students and multiple locations, comparing online mind mapping with manual mind mapping, and combining student experiences with rubric based essay assessment to see if the perceived benefits are reflected in the quality of the essays.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest related to the research, authorship, or publication of this article.

AUTHOR CONTRIBUTIONS

Dwi Atmoko contributed to the conceptualization of the study, research design, data collection, data analysis, and manuscript preparation. Fiqih Kartika Murti contributed to data collection, data interpretation, and manuscript review. Agung Tyas Subekti contributed to the review and editing of the manuscript, as well as providing critical feedback on the interpretation of the findings. All authors reviewed and approved the final version of the manuscript.

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