



Benefits and Challenges to Develop Academic Writing Skill Using Open Educational Resource (Oer): Students' Perspectives

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Abstract

Open educational resources (OER) can be used by English as a foreign language (EFL) students to improve their language skills, such as writing skills. The purpose of this study was to explore the student's perceptions on the benefits and challenges faced in using OER to develop their writing skills. To collect the data, researchers involved two main methods used a modified questionnaire and semi-structured interviews with qualitative approach. The study was conducted in one of senior high school in Medan, with eight EFL students as the participants. The data was analyzed in two different ways: content analysis to analyze the questionnaire and thematic analysis of interviews with the participants. The findings revealed that most students had positive perceptions on using OER to develop their writing skills; namely, developing academic writing, better understanding, increased vocabulary, reduce cost, accessible, independent and flexible were the benefits that mentioned by the students. The findings also revealed several challenges that students faced, while using OER to develop their academic writing; namely, lack of feedback, language barrier, and limited internet connection. Our findings suggested in maximizing the use of OER in English language skills, especially improving their understanding of how OER can develop their academic writing skills.

Keywords: *Benefits; Challenges; Open educational resources; academic writing skill*

Introduction

Writing skills are essential for success in many field including academic, business, and communication (AlMarwani, 2020). However not everyone has access to high quality educational resource that can help them improve their writing skills. In the English teaching and learning process, writing is a crucial skill alongside listening, speaking, and reading. Writing involves various stages such as generating ideas, organizing thoughts, and revising content to effectively communicate with readers. A survey from Cooney, 2017 said that Developing writing abilities is essential for students as it enhances their communication skills and overall language proficiency (Cooney, 2017). Another survey from Madjid et al.,2017 states that writing is one of the productive skills that may be difficult for teachers and students because it requires mastery of several elements(Madjid et al., 2017).

This means that writing ability is part of the four main skills in learning English. In the academic field, writing is thought to be a means of knowing the knowledge of students. They are expected to be able to transform the idea they already had by constructing any information from their schemas. Students, especially those learning English as a second language, face several challenge in developing their writing skills. (Harliansyah, 2020) stated that writing skills are complex and difficult to learn because they include conceptual and judgmental aspects as well as grammatical and rhetorical elements needed to write well. Because they do not have any ideas, writing becomes difficult.

Two indicators of writing failure are students' lack of enthusiasm and concentration in writing and their inability to express themselves using appropriate language, vocabulary, and punctuation (Febriana, 2018). Some of these challenges include difficulties in starting writing assignment, easy distractibility during writing tasks and tiredness while writing. Other common problems that students face while writing assignment include irrelevant thesis statement, lack of evidence, and poor time management. This is where Open Educational resource (OER) come in.

OER are documents, media and tools which are freely accessible for use in teaching, learning and even research. OER are teaching and learning materials that are freely accessible and can be used and reused without any cost or permission (Kutlu, 2013). OER includes complete online courses, course materials, modules, textbooks, streaming video, tests, assessment tools, and software. OER are changing the way knowledge is being produced and disseminated. Education is a humane process, which is known as humanizing human beings. Over the centuries, many experts attempt to renew the concept of education in the world, finally a new concept that has recently emerged in the world of education called is Open

Educational Resource (OER). Education is a humane process, which is known as humanizing human beings. Over the centuries, many experts are trying to renew the concept of education in the world, finally a new concept that has recently emerged in the world of education called is Open Educational Resource (OER).

Open educational resources have revolutionized the way we access and share knowledge. Now, students and educators have unlimited access to a vast array of high-quality learning materials, all at no cost (Hettige et al., 2022). Furthermore, the use of open educational resources has been shown to enhance student engagement and improve learning outcomes (Baron, 2017), Open Educational Resources play a crucial role in academic writing by providing accessible and cost-free resources for teachers and students (Navarrete & Luján-Mora, 2018).

They enable students and researchers to access a wide range of materials, such as textbooks, articles, videos, and interactive learning tools, that can enhance their knowledge and understanding of a particular subject. OER also promote collaboration and the sharing of knowledge, as anyone can create and share OER, leading to a diverse range of perspectives and resources available for academic writers. Overall, the function of Open Educational Resources in academic writing is to support and enhance learning, promote collaboration and knowledge sharing, provide access to diverse perspectives and resources, and reduce financial barriers to education.

Students often face challenges in writing, including linguistic and cognitive issues, lack of practice, and negative perceptions, impacting their motivation and skills. Utilizing open educational resources (OER) can provide students with additional tools and resources to enhance their writing skills. The importance of writing skills in communication and education, highlighting challenges students face in writing, such as linguistic and cognitive issues. To address these challenges, utilizing open educational resources (OER) is suggested as a solution to enhance writing skills by providing access to digital resources for students, teachers, and researchers in the education sector. OER offers opportunities to support education by facilitating learning through various modes and improving knowledge acquisition, especially in higher education.

Many previous studies explored the use of OER application on English writing skill. (Rowell, 2015) conducted a study on how students viewed the use of OER in teaching and learning. Comparing OER dimensions with demographic characteristics, he found that time duration affected students' cognitive

understanding of OER use in the classroom. Another survey, conducted by Fine and Read (2020), found that a variety of factors can influence students' perceptions of OER use (Fine & Read, 2020).

There is a lack of research examining of using open educational resource in a specific skill, such as in a writing class. Therefore, this study explores the use of OER in writing skills. The researchers particularly assessed the students' perception of the use of OER and the factors influencing their perceptions of the use OER. It is expected that this study can offer an objective and valid analysis.

Open Educational Resource

According to (Bissell, 2009), Open Educational Resources (OER) is the culmination of global efforts to help ensure that everyone has equitable access to knowledge and educational opportunities. OER refers to educational materials and research materials that are either in the public domain or made available to the public under an intellectual property license, allowing others to use or modify them for free. Bissel also states that OER is digital resources that are made available to educators, students, and self-learners for free and open usage in teaching, learning, and research (Bissell, 2009). OER also has a number of benefits they consist of educational materials, software tools for creating, utilizing, and sharing materials, and implementation resources (such the open licenses themselves). First of all, they can increase learning accessibility for all students, including nontraditional students and those from underprivileged backgrounds, which will increase the number of people pursuing higher education. They can also serve as a tool to improve education in developing countries. In short, they offer a new and significant way to share information that can help people, communities, companies, and ultimately countries (McDowell, 2010).

There are numerous definitions of open education resources (OER), although most people simply associate OER with freely accessible resources, primarily found online (Wiley & Hilton, 2018). The Open Educational Resources is a collection of teaching and learning materials that have been made available to the general public under an intellectual property license that allows anyone to reprint them for free. Open Educational Resources (OER) encompass a variety of resources, including software, textbooks, streaming videos, assessments, and other materials, tools, and methods that facilitate knowledge access. On the other hand, OER is an important resource that has to be expanded upon and preserved. OER has the potential to be a real educational balancer at last (Olcott, 2022). The widely accepted definition of open educational resources (Downes, 2007) Open educational resources are materials used to support education that may be freely accessed, reused, modified,

and shared by anyone.” In another word OER can be reused, modified to better suit specific educational needs, and shared widely, making them a flexible and cost-effective option for educators and students alike.

From the above definition, it can be concluded that OER are learning, teaching and research resources in digital form that are offered openly and freely that can be used by educators, learners and anyone. OER includes learning materials, modules, textbooks, streaming videos, tests, software, and other tools, materials and techniques used to access knowledge. UNESCO further added that OER is an open learning resource, free to modify or change and openly licensed (Harliansyah, 2020). Therefore, anyone can utilize OER by copying, modifying and disseminating legally and freely. Initially, OER was formed by focusing on materials related to teaching and learning.

The Benefits of OER

The use of OER, in fact, allows people to get advantages from free materials. A study in higher education proved that lecturers might only use online learning resources that are interesting to the students (McBride & Abramovich, 2022). Many students are happy to say that OER can help them in many ways (Menzli et al., 2022). They can learn inside or outside the classroom with useful virtual tools. In addition, there are fourteen factors that can influence students' perceptions about using OER to improve their writing skills. These include age, gender, semester, parental income, type of writing activity, type of writing learning delivered using OER, monthly income, financial benefits, writing course fees, university support, faculty satisfaction, and tuition fees (Fine & Read, 2020).

OERs help enhance the teaching and learning across the globe immensely. (Birhan & Nurie, 2024) Revealed that OER could build fun activities in class. Developing countries have a wealth of OER learning materials available under the concept of “free and open,” which is a huge advantage. This is because many students may not be able to afford textbooks, classroom space may be limited, and teacher training programs may be lacking. In developed and industrialized countries, OER materials are essential because integrated learning with OER is very cost-effective.

In adult education, most OER materials are freely available to students, giving them access to the best courses and degree programs in the world (Sandanayake, 2019). Learners do not have to spend a lot of money on textbooks and learning materials, making it cost-effective. In addition, OER offers free and legal access to some of the world's best courses to instructors who have the ability to produce outstanding innovations. OER blended learning is very beneficial for students who face financial problems in purchasing textbooks. On the other hand, students are given the freedom to learn whenever and wherever they want. The introduction of

OER blended learning is done in the form of an Action Research study to conduct a comprehensive analysis of the area. The open learning method eliminates unnecessary barriers, especially for adult learning (Marina, 2011). At the same time, the aim is to foster and encourage learners to participate in educational and training opportunities that enable a wide range of learning areas to be opened up.

The challenges of using OER

Open Educational Resources have gained popularity in recent years as a means of providing accessible and affordable educational materials (Teplitzky et al., n.d.). Open Educational Resources (OER) may not be widely used and adopted, nonetheless, due to a number of obstacles and challenges. First off, a major technical hurdle is that OER may require specialized technological knowledge and infrastructure in order to access, utilize, and edit. Secondly, a lack of awareness and comprehension is evident in the fact that many instructors are either ignorant of OER or have little experience locating, assessing, and integrating them into their lesson plans. Thirdly, the issue of scarce resources and finance is brought to light by the requirement for significant time, effort, and financial investment in the creation and upkeep of high-quality OER (De Carvalho et al., 2016).

Furthermore, because OER may entail intricate licensing and copyright issues that educators must handle, intellectual property concerns also arise. Language and cultural boundaries can provide difficulties because Open Educational Resources (OER) may not be available in some languages or may not be culturally relevant, which makes it challenging for teachers and students to locate relevant materials.

Moreover, teachers may find it difficult to locate and choose reliable, current, and high-quality resources due to the deluge of open educational resources (OER), hence proper curation and quality control are necessary ((Adil et al., 2024)). Lastly, OER frequently need to be modified and customized in order to fit certain learning goals or pedagogical approaches. This might take time and necessitate the acquisition of new technological skills ((Schultz & Azadbakht, 2021)). All of these difficulties highlight how difficult it is to implement OER more widely in educational contexts.

Open Educational Resources (OER) refer to educational materials that are freely available for use, modification, and sharing. The OER movement aims to provide cost-effective and accessible learning resources to educators and students globally (Richter & McPherson, 2012). While the benefits of OER are widely recognized, several challenges need to be overcome to successfully leverage these resources in higher education settings. One of the primary challenges in adopting OER is the lack of awareness and understanding among educators and institutional

leaders. Many faculty members may not be familiar with OER or may have misconceptions about their quality and relevance. Educating stakeholders about the benefits of OER is essential to encourage their adoption (Hylén et al., 2019). Additionally, ensuring the quality and relevance of OER can be difficult, as these resources are created by a diverse range of contributors. Faculty members need to assess the appropriateness of OER for their courses, considering factors such as accuracy, currency, and pedagogical effectiveness (Schultz & Azadbakht, 2021). Establishing quality assurance processes and guidelines can help address this issue.

Academic Writing

Writing is a crucial skill that plays a significant role in education, professional settings, and everyday life. According to various sources, including Harmer, the ability to write effectively is essential for effective communication (Parwati & Sugesti, 2023). It allows individuals to express their ideas, thoughts, and emotions clearly and concisely. Additionally, writing is a fundamental component of language learning. According to the sources mentioned above, writing skills are a critical aspect of language learning, and students must develop their writing abilities along with reading and experiencing the language. The sources also highlight the importance of teaching writing skills in a supportive environment, taking into account learner motivation. Furthermore, strong writing skills are a crucial component of academic success, as they demonstrate critical thinking, organization, and the ability to articulate complex ideas.

Additionally, writing skills play a vital role in professional settings, where clear and concise written communication is necessary for success (Kutlu, 2013). English writing skill is an essential component of language proficiency, both for native speakers and foreign/second language learners ((Manowaluilou, 2020)). It plays a crucial role in communication, academic success, and professional development. Good writing skills are necessary to effectively convey ideas, express thoughts, and engage readers (Nurhardiyanti et al., 2021). Furthermore, strong writing skills demonstrate mastery of grammar, vocabulary, and sentence structure, showcasing the writer's ability to produce clear and coherent prose. Academic writing is a crucial skill that every student should possess. It is not only required for academic success but also essential for professional success. This paper aims to discuss the development of academic writing skills and highlight some of the current and most cited references on this topic.

Another experts mention that Academic Writing (AW) is an essential component of academic achievement, and it has numerous benefits (Nur, 2023). Meanwhile, another survey indicates that academic writing allows students to demonstrate their understanding of a subject and communicate it clearly and concisely (Riski & Ahmad, 2021). They also stated that academic

writing helps students organize their thoughts and ideas, communicate their ideas effectively, and provide evidence to support their beliefs. This is very important in the academic world because academic success depends on good writing skills ((Badger & White, 2000)). Writers need to be aware of their readers' expectations and knowledge level, which can significantly impact the language, style, and structure of the academic genre ((Hylén et al., 2019). Effective academic writing requires a systematic approach to planning, drafting, and revising the genre. This involves identifying the main ideas, outlining the structure, and revising for clarity, coherence, and precision ((Badger & White, 2000). The writer should also be aware of the ethical considerations in academic writing, such as plagiarism, self-plagiarism, and responsible authorship ((Hewings et al., 2020)). Students gradually become experienced members of the academic discourse community by practicing academic writing conventions such as paraphrasing, synthesizing, summarizing, and citing sources to integrate new knowledge into the lessons they are learning.

Therefore, the purpose of this study is to evaluate the use of OER to improve students' English writing skills. The results are expected to have an impact on how OER is used by students during the learning process. In addition, it is expected that OER can influence the creation of original learning materials that are relevant to current conditions, so that students can gain better skills. As the guideline for this study, the researchers formulated the following research questions:

1. What are the benefits that OER give for developing academic writing skills?
2. How many challenges that participants find while using Open Educational Resource in developing academic writing skill?

This study was firstly aimed to explore what are the benefits of OER (Open Educational Resource) as a learning tool in developing their academic writing skill. Many students are happy to say that OER can help them in many ways (Menzli et al., 2022). They can explore learning inside and outside the classroom with useful virtual tools, OER utilization can give better benefits. Second, this study was aimed to explore and the challenges that faced by students while using Open Educational Resource to develop their academic writing skill. It is hoped that the findings of this study can offer an objective and valid analysis on developing students' academic writing skill and experiences during learning process.

Method

To investigate this case, a qualitative approach was used. It was considered most suitable to investigate the perceptions of high school students on this issue and their learning methods related to the development of their academic writing skills. Since the purpose of this study was to analyze the results of the questionnaires and interviews conducted, this study used qualitative data through the use of questionnaires and interviews. In the study the authors used a questionnaire as an instrument in conducting research. Questionnaires are number of written questions and statements which are then submitted by the researcher to the respondent, namely to find out someone's perception of something. In this case, the questionnaire was used to collect students' perceptions of the benefits and difficulties of using OER to develop scientific writing skills in one of the junior high school in Medan. The questionnaire submitted is open-ended, so that respondents can provide answers according to the actual situation. It should be noted that Questionnaire is a method used to collect data by asking several questions in writing and answered by respondents in accordance with the instructions provided. Questionnaire is a number of written questions that are used to obtain information from respondents in the sense of reports about themselves or other things that they know ((Haas et al., 2018). Based on the above understanding, it can be concluded that a questionnaire is a data collection technique that uses a list of written questions that will be answered by respondents.

The interview process involved semi structured interviews to investigate how students were using OER to develop their English academic writing. According to Bryman (2008), semi-structured interviews allow respondents to project their way of seeing the world, allow for a variety of discussions, and allow participants to discuss issues that may not have been included in the previously planned schedule. The data were collected employing face to face interviews. The interview was carried out by inviting 10 students aged 16-18 years who are senior high school students. This investigation involved three classes from one of senior high school in Medan, Indonesia.

The interview questions were basic questions about students' perceptions regarding the use, benefits and difficulties in using OER to develop their English academic writing skills. The analysis of this research data used thematic analysis, a method that examines data to find patterns or themes in the data collected by researchers. This method can be illustrated in the diagram below:

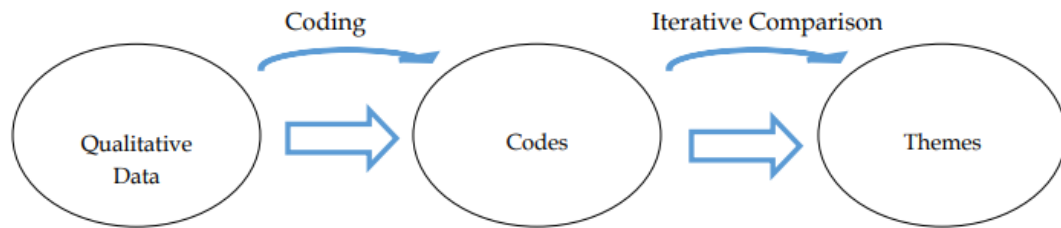


Figure procedure of data analysis interview

As the authors found several benefits and challenges related to the issue of using OER in developing students' scientific writing skills, the participants in this study were randomly selected consisting of three students from first grade, three students from second grade and two students from third grade of the senior high school in Medan, Indonesia. Three criteria were used to select the participants. (1) frequently participating in scientific writing competition, (2) attending English courses outside of school, (3) actively seeking information about online educational materials on the internet. According to the authors, the majority of students believe that there are many benefits of using OER in writing academic papers, but students also find some challenges in using OER as learning media.

In addition, the researchers found that the word choice and writing format of students who did not use OER facilities properly tended to be limited and not in accordance with the rules of scientific writing format. It seems that OER plays a significant role in the development of a student's scientific writing. Therefore, the author selected these students to investigate the benefits of using OER and the difficulties students experience when using it, in addition to ascertaining their views on the real meaning of using OER in learning media. The main source of information for this study was students' perceptions, so the authors used a questionnaire to find out how they thought about the benefits and difficulties of using OER based on the students directly affected and the need for the development of their scientific writing skills. To understand students' opinions on the benefits and difficulties of using OER based on those involved and their need for academic writing skill development, a questionnaire with open-ended questions was distributed.

Results

Benefits of OER to develop students' academic writing skill

This study investigated the benefits and challenges of using open educational resources to develop academic writing skill in English class. All students in the study admitted that the class was their first experience of using open educational

resources. The data showed that 90% of the students enjoyed and were happy with the materials in the open educational resources, while 10% of them said they were not. Most of them felt that their academic writing skills improved when including OER materials in their essays. However, some of them thought that the OER materials did not help them, and they even found some challenges through this tool.

Data analysis from two sources - questionnaires and interviews shows that there are eight benefits perceived by students when using OER to improve scientific writing skills. Through questionnaire distribution activities and direct interviews with 8 interviewees, the author can categorize the eight benefits of OER to improve a student's scientific writing skills, namely: easy-to-understand materials, improved scientific writing skills, increased knowledge and new vocabulary, reduced education costs, easily accessible materials, training student independence, and flexibility. The details will be discussed in Table 1.

Table 1. The benefits of using Open Educational Resource in developing academic writing skill

No.	statement	n	%
1.	a better understanding while using OER	16	20,6%
2.	Develop academic writing skill	14	18,8%
3.	Increased knowledge and vocabulary	13	16,3 %
4.	Reducing education cost	10	14,8 %
5.	Accessible	8	11,2 %
6.	Independent	7	9,8 %
7.	flexible	6	8,5 %
	total	74	100%

Theme One: Understandable materials

The data showed that students were easier to understand the course material through Open Educational Resource (20,6%). Open Educational Resources (OERs) have become increasingly prevalent in educational settings, offering a wealth of freely available, openly licensed educational materials.

"The benefits I feel that the material contained in OER is easy for me to understand. I have become better able to construct logical arguments, use relevant references and follow the correct writing format" [student 1, excerpt 1].

The benefits that students experienced from using Open Educational Resources (OER) are significant. First, the material contained in OER is easy to understand. Through these resources, students have learned to build logical arguments more effectively, present writing ideas clearly and become more

proficient in using relevant references (as seen in student 1, excerpt 1). This statement was reinforced by student 2 who confirmed that:

“Yes, I think the materials available in OER are easy to understand. many OER are equipped with various types of learning media, such as videos, infographics and interactive exercises. This is very helpful in clarifying difficult concepts and making learning more interesting. this factor makes OER materials very easy to understand.” [student 2, excerpt 2].

Based on that respond, student 2 confirmed that, OER plays an important role in clarifying difficult concepts and making learning more interesting, as well as improving a student's writing skills. Videos can provide both visual and auditory explanations, infographics can simplify complex information into easily digestible visuals, and interactive exercises allow hands-on practice. These diverse formats cater to different learning styles and help reinforce understanding (as seen in student 2, excerpt 2).

Theme Two: Develop academic writing skill

Developing academic writing skills is the next key benefit that students feel when using OER in school learning. Open Educational Resources (OERs) are a necessary tool for developing academic writing skills. The participants made the following statement.

Yes, Open Educational Resources (OER) can contribute significantly to the development of my scientific writing skills. OER provide access to a wide range of scholarly materials, including research articles, academic papers and writing guides, which offer valuable examples and insights into effective scientific writing techniques. (student 2, excerpt 3)

Student 2 highlights how Open Educational Resources (OER) are instrumental in enhancing scientific writing skills. OER offer diverse scholarly materials such as research articles, academic papers, and writing guides. These resources serve as invaluable tools for individuals looking to improve their scientific writing proficiency by providing concrete examples and insights into effective writing techniques. By accessing and studying these materials, individuals can learn how to structure their arguments logically, cite sources accurately, and effectively communicate complex scientific ideas. They can observe different writing styles and formats used in academic literature, which helps them develop their own writing skills through emulation and practice (as seen in student 2, excerpt 3). Another student state that:

Of course, Open Educational Resources (OER) offer a wealth of scholarly materials, including research articles, academic papers, and writing guides, which served as valuable resources to hone my scientific writing skills. In essence, OER played an important role in encouraging the development of my scientific writing skills through accessible and interactive learning opportunities. (student 4, excerpt 4)

Student 3 underscores the important role of Open Educational Resources (OER) to play promoting the development of scientific writing skills. These resources serve as invaluable tools for individuals who wish to improve their scientific writing proficiency. By utilizing OER, individuals gain access to various examples and insights on effective scientific writing techniques. They can learn how arguments are structured, how sources are cited accurately, and how complex scientific concepts are communicated clearly and persuasively (as seen in excerpt student 4, excerpt 4).

Theme Three: Increased students' knowledge and vocabulary acquisition

In spite of the easy-to-understand materials, the students also reported the increase of knowledge and new vocabulary acquisition as one of the benefits of using OER in developing their scientific writing skills. The participant made the following statement.

"Open educational resources have played a significant role in improving my vocabulary in learning a language and honing my scientific writing skills. With access to a variety of reading materials such as articles, journals and learning modules, I can discover and learn new words" [student 5, excerpt 5].

By utilizing OER, everyone has access to a variety of educational materials, including articles, journals and learning modules. This diversity not only facilitates the discovery of new vocabulary, but also provides an opportunity to improve scientific writing skills. As such, OER not only enriches vocabulary acquisition, but also encourages the development of critical skills necessary for scientific and scholarly communication. Thus, students will gain knowledge or insights from other fields (as seen in Excerpt 5). Open Educational Resources (OER) have been shown to improve vocabulary acquisition among students.

Another student said, " *Yes, the materials available in OER have greatly improved my scientific knowledge as well as my vocabulary. OER provides a wide range of resources that increase my scientific knowledge and help me understand scientific concepts better. by reading these materials, I often find new words that add to my vocabulary.* " [Student 4, excerpt 6].

Student 4 confirmed that materials available in Open Educational Resources (OER) have significantly improved students' scientific knowledge and vocabulary. OER offers a wide array of resources, such as articles, journals and learning modules, which contribute to a deeper understanding of scientific concepts. By engaging with these materials, students gain access to latest and accurate information provided by experts in the field. Explanations found in OER help students understand distant complex scientific ideas more effectively. (as seen in excerpt students 4, excerpt 6).

Theme Four: Reducing education costs

OER allows educational institutions to reduce the cost of procuring learning materials as they can use and share these materials freely at no extra cost. Open educational resources are very effective in reducing education costs because they provide free or very affordable access to quality learning materials (as seen in excerpt student 3, excerpt 7).

“I can access textbooks, modules and other educational resources without having to pay license fees or buy expensive books, moreover with OER, I can download or access such materials for free” [student 3, excerpt 7].

OER includes resources such as textbooks, lecture notes, and multimedia content that are usually released under an open license, allowing legal and free access. This accessibility promotes equitable education by reducing financial barriers, enabling wider participation in learning. The use of OER has decrease the cost of public education. (as seen in student 3, Excerpt 7). Overall, OER adoption can significantly reduce students' financial burden and improve their academic writing skills.

Theme Five: Materials accessed easily

Another benefit that students mentioned regarding OER for developing academic writing skills is that OER materials can be accessed easily. Based on the interview, the participant argued that

“by using OER, I can easily access the latest articles that may have previously only been available through paid subscriptions. This gives me the opportunity to review the latest studies, enriching my knowledge and helping me to write more weighty scientific papers” [student 6, excerpt 8].

The use of Open Educational Resources (OER) allows the students to easily access the latest research articles. This accessibility allows students to review the latest studies, thus enriching their knowledge and improving their ability to write more comprehensive and engaging scientific papers. By utilizing OER, students are able to keep up with the latest developments in the field, deepen their

understanding of the subject matter, and write more weighty and authoritative scholarly works (as seen in excerpt student 6, excerpt 8). OER provides free and openly accessible educational content, including up-to-date research articles.

Theme Six: Time Flexibility

Another benefit that research participants perceive when using OER to develop their scientific writing skills is flexibility. Flexibility is one of the main advantages of open educational resources. With OER, students can access learning materials anytime and anywhere, allowing them to learn according to their own schedule and pace. The participants made the following statement.

"The flexibility of OER allows me to access a variety of reference sources and writing guides anytime and anywhere. [student 5, excerpt 9].

Student 5 report that Open Educational Resources (OER) provides significant flexibility in education. OER provides access to a variety of learning resources that are accessible anytime and anywhere, enabling more independent and personalized learning. This makes OER a very flexible tool to support education, especially in distance and hybrid learning environments (as seen in excerpt student 5, excerpt 9).

Theme Seven: Improving learning independence

Based on the interview the participant mentions that OER improving their learning independent. This data is evidenced by one of the explanation of students who argued that:

Absolutely OER improve my learning independence, because it is flexible, easy to understand and also helps me to develop my scientific writing (Student 8, excerpt 10).

Student 5 addresses the use of Open Educational Resources (OER) in the context of an educational environment could improve learning independence. OER enhance learning independence by offering flexibility, clarity, and support in developing academic skills. Being accessible online and often free, OER allow you to learn at your own schedule, which fosters self-directed learning. Additionally, engaging OER can improve students' academic writing skill. (as seen in student 5, excerpt 10).

Challenges of OER to developing students' academic writing skill

The students not only mentioned the benefits but also the challenges that they experienced in open educational resources on their scientific writing. This study found four main challenges in using open educational resources in developing scientific writing skills according to the students.

Through questionnaire distribution activities and direct interviews with 8 interviewees, the author can categorize four challenges of OER to develop a student's scientific writing skills, namely: lack of feedback, language barrier, difficult in defining specific material and poor internet connection. "*lack of feedback*" and "*language barrier*" were the most frequent answers given by the students when asked about the benefits of OER. The details will be discussed in Table 2.

Table 2 *The challenges of Open Educational Resource in developing academic*

No.	statement	n	%
1.	Lack of feedback	20	37.5 %
2.	Language barrier	19	35.9 %
3.	Limited internet connection	4	6.4 %
		43	100%

Theme eight: Lack of feedback

The challenge most frequently mentioned by the students was the lack of feedback (33.4%). Some students said that the lack of feedback made it difficult for them to complete their writing accurately, they argued that:

"It is difficult because of the lack of feedback, I need more feedback or checking on my writing as soon as possible" [Student 8, excerpt 11].

The lack of feedback can hinder student's progress and development, particularly in the realm of scientific writing. Without timely and constructive feedback, it becomes challenging to identify areas that need improvement, refine student's skills, and build confidence (as seen in excerpt student 8, excerpt 11).

Student participant even stated that there were students who asked the AI to check their writing, *"some friends in my class asked the AI to check their scientific writing on the spot, because they thought it was the fastest way to get feedback on their writing"* [Student 6, excerpt 12].

Student 6 has turned to AI to get instant feedback on their scientific writing, as they believe that this is the fastest method to get constructive criticism. They realize that AI can provide immediate and objective assessments, helping them identify errors, improve clarity, and enhance the overall quality of their work.(as seen in student 6, excerpt 12). As a result, they can refine their skills and produce more polished and effective scientific documents.

Theme nine: language barrier

Language barriers become one of obstacle in using OER to develop scientific writing skills. This can make it difficult for students to understand and apply the concepts taught, which is crucial in scientific writing.

"I have encountered some difficulties due to the different language levels in OER. Some materials may use very academic language, this constraint can make it a little difficult for me to improve my scientific writing." [student 4, excerpt 13].

Students 4 experienced difficulties due to the different language levels in Open Educational Resources (OER). Some materials are written in very academic language and are difficult to understand. As a result, students find it a little difficult to use these resources to develop their scientific writing. Further, scientific language can be a barrier to learning, preventing students from gaining the full benefit of the information and hindering their progress in developing more effective and quality scientific writing skills

Theme Ten: Unstable Internet connection

Other barriers shared by students in this study in using OERs are poor of the internet connection. This challenge impacts students' ability to access, download, and engage with the educational materials necessary for their studies.

"Yes, internet connection is indeed one of my main obstacles in using open educational resources (OER) to improve my scientific writing skills. I often face problems due to unstable internet connection, which hinders my ability to download and interact with OER content effectively." [student 7, excerpt 14].

One of the obstacles students face in using open educational resources (OER) to develop their scientific writing skills is an unreliable internet connection. Internet instability often prevents students from effectively downloading and interacting with OER content. This not only interferes with students' opportunity to access necessary materials, but also hinders the overall learning experience. (as seen in student 7, excerpt 14).

This means that without a good internet connection, there are frequent disruptions in accessing the necessary online resources, tools, and feedback, which are crucial for writing an academic paper. So, the data proof that bad internet connection tends to interfere students in the scientific writing process and accessing course material.

Discussion

The benefits of using OER in developing Academic writing skills

Based on the interview, the data showed that most of students were easy to understand the materials while using OER. This is supported by McGreal et al who explained that OERs often include various formats such as videos, infographics, and interactive exercises that break down complex concepts into simpler, more digestible parts (McGreal et al., 2012). Videos provide visual and auditory explanations, making it easier to understand abstract ideas. Infographics simplify information by highlighting key points and showing relationships in a clear, visual way. Interactive material engages learners by allowing them to apply concepts in real-time and receive immediate feedback, reinforcing their understanding. The next proof mentioned by Harsasi (2015) who explained that the diverse formats of videos, infographics, and interactive exercises cater to different learning styles and reinforce understanding (Harsasi, 2015). These elements make OER materials highly comprehensible to learners from any various backgrounds.

This study has proven that Open Educational Resources (OERs) are crucial tools for developing academic writing skills. This is supported by Werth and Williams who explained that OER offer a wide range of scholarly materials, such as research articles, academic papers, and writing guides, which help students build logical arguments, present ideas clearly, and use relevant references (Werth & Williams, 2022). OER provides credible sources for students to cite, enhancing the quality of their writing. These resources offer diverse scholarly materials like research articles, academic papers, and writing guides, providing examples and insights into effective writing techniques (Nugraha & Listyani, 2022). In short, OER helps students develop academic writing skills by providing quality resources and encouraging an interactive learning environment. Overall, OERs play a vital role in promoting scientific writing proficiency.

Based on the interviews, the participants stated that Open Educational Resources (OER) improved students' scientific knowledge of scientific writing techniques. By providing access to various educational materials such as articles, journals, and learning modules, their scientific and scientific knowledge is indirectly increased. This diversity not only helps in vocabulary acquisition, but also enhances their knowledge and scientific writing skills. This finding is in line with (Cronin, 2017) who mentioned that OER enriches language acquisition and encourages the development of critical skills for scientific and scholarly communication. Students gain knowledge and insights from various fields, enhance their scientific writing abilities. The abundance of quality resources allows students to practice and hone their writing skills, so that they become more proficient in scientific language and communication.

The present study also mentions that Open Educational Resources (OER) is a new approach in education that enables educational institutions to reduce the cost of procuring learning materials by sharing them freely. This allows schools and colleges to allocate funds to areas that require more resources, such as infrastructure or academic support. (Grimaldi et al., 2019)) also mentioned that OER includes resources like textbooks, lecture notes, and multimedia content, which are released under an open license, promoting equitable education and reducing financial barriers. This is consistent with (Mtebe & Raisamo, 2014) who also found The adoption of OER has led to significant cost savings for students, allowing them to allocate resources more effectively. It also improves academic writing skills, providing more flexibility for students and institutions to use existing resources without additional costs. Overall, OER has a positive impact on student financial well-being and overall educational outcomes.

The students also mentioned that Open Educational Resources (OER) enhances academic writing skills by providing easy access to a wide range of academic materials, including journals, books, and scholarly articles. This data supported by (Dutta, 2016) who explained that accessibility allow students from diverse backgrounds to access information and references needed to develop their scientific writing skills without financial barriers. That statement, in line with (Van Allen & Katz, 2020) who explained that OER also allowed researchers to review the latest studies, enriching their knowledge and improving their ability to write comprehensive and engaging scientific papers. This accessibility has improved the understanding and application of scientific writing standards, contributing to the advancement of knowledge in various fields.

Another perception that students mentioned was Independent learning. It is crucial for students' growth and success, as it fosters essential skills and attitudes. In line with that statement (AlMarwani, 2020) who explained that Open Educational Resources (OER) could improve learning independence by providing students with a variety of resources that suit with their interests and needs. However, OER sources from international sources may not align with the national curriculum framework, requiring educators to make adjustments or adaptations. This is consistent with (Birhan & Nurie, 2024)who also found that despite these differences, OER offers valuable resources and flexibility in teaching, but educators must critically evaluate and adapt these materials to maintain alignment with local education standards. OER also allows individuals to practice and refine their scientific writing skills through online examples and instructional guides. This allows them to take charge of their learning process and develop proficiency in scientific writing through self-study and exploration of online resources.

The least benefits that mentioned by participant is Flexibility. This flexibility is crucial in developing scientific writing skills, as it allows students to customize their learning process according to their individual needs and preferences, leading to improved understanding and academic writing abilities (Muluk et al., 2022). In line with that statement (Sandanayake, 2019) who explained that Open Educational Resources (OER) offers students significant flexibility in developing scientific writing skills. By providing access to a wide range of learning materials, OER enables independent and personalized learning, making it a valuable tool for distance and hybrid learning environments. Through OER, students can also customize their time to maximize diverse learning needs, in order to produce a more personalized learning experience.

Our findings not only mentioned the benefits that participants got from Open Educational resource but also the challenges. Although most of them found the beneficial, they admitted that they also found some challenges in using OER to develop academic writing skill. The present study found four major challenges of using OER to develop academic writing skill based on the interview.

The challenges of using OER in developing Academic writing skill

The most frequent challenges that participant mentioned was Lack of feedback. This is supported by (Cooney, 2017) who explained that Feedback helps identify strengths and weaknesses, thus allowing students to focus on improvement by providing valuable insights into the structure, flow, and organization of the essay. Without feedback, students struggle to complete their writing accurately and build confidence. To reduce this, some students have turned to AI to get instant feedback on scientific writing, AI provides immediate and objective assessment, to improve the writing clarity and overall quality. In line with students statement (Anderson et al., 2023) mentioned that AI can significantly enhance the development of academic writing skills by providing personalized, real-time feedback on structure, grammar, and citation accuracy, helping students refine their arguments and communicate complex ideas more effectively. This helps to refine skills and produce more polished scientific documents.

Another significant challenge that students faced was language barrier. Apart from the lack of feedback students also mentioned that some materials are written in very academic language, making them difficult to understand and apply. In line with that statement (Hu et al., 2015) who explained that this complexity can impede learning, preventing students from getting the full benefit of the information and hindering their progress in developing effective scientific writing skills. This is consistent with (Terras et al., 2013) who also found This issue is especially problematic for students who do not have an academic background, as

the complicated language becomes a barrier to understanding the content and concepts presented. In short, students face challenges due to varying language levels in Open Educational Resources (OERs), and academic language in materials, which can hinder learning and development of scientific writing skills, particularly for those without academic backgrounds.

This problem is compounded by the lack of internet access. This data supported by (Shams et al., 2020) who explained that unreliable internet connections hinder students' ability to access and engage with OER content, affecting their overall learning experience. Frequent disconnections and slow loading times disrupted the essay writing process, affecting the continuity and coherence of the writing. Together, these barriers create significant challenges for students trying to use OER to improve their scientific writing skills.

Conclusion

Open Educational Resources (OER) plays an important role in education by improving learning understanding through a variety of formats such as video, infographics, and interactive exercises, which serve different learning styles. They also contribute significantly to academic writing skills by providing access to scientific material such as research articles and writing guides, promoting clear arguments and the effective use of references. In addition, OER expands students' scientific knowledge by offering access to educational resources such as articles and journals, thereby enhancing the acquisition of passwords and critical writing skills. Economically, OER reduces the cost of education by freely sharing textbooks and multimedia content, promoting equitable access to education. This study also proves that having an OER helps students learn more independently and students can easily access material anywhere and anytime. However, students face challenges in developing strong academic writing skills with OERs, mainly due to the lack of timely feedback on their writing, the obstacles posed by the various levels of language in the material, and difficulties in navigating an unorganized platform. In addition, problems such as unreliable internet access and inadequate technical skills are increasingly hampering the effective use of OERs to develop scientific writing skills. Overcoming these challenges requires improved feedback mechanisms, simplifying language complexity in the material, improving the organization of the platform, and ensuring better access to supporting resources, thereby optimizing the educational impact of OER.

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