

# The Effectiveness of Online Reading Programme on Improving Reading and Writing Proficiencies: A Case Study of First-Year English Second Language Students at a University in the Gauteng Province, South Africa



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## ABSTRACT

Rapid technological advancement has facilitated the onset of online reading programmes as useful tools for enhancing the academic writing and reading comprehension skills of English Second Language (ESL) students. This study examined the effectiveness of an online reading programme, Programmed English Reading and Language System (PERLS), on the academic writing and reading comprehension of first-level English Second Language students. The study adopted the Social Constructivist Theory and used a qualitative case study design based on the interpretive paradigm. Five student development support (SDS) practitioners who served as the programme's facilitators and 15 students who took part in the programme were purposively selected to participate in the study. Data was analysed using a qualitative content analysis. The results showed that PERLS can be used as a tool to assist ESL students enhance their reading and writing skills. The participants recommended that the PERLS's duration be extended and accessible through several browsers so that students can use any browser that works for them. To ensure that the students gain better knowledge of PERLS facilitators should provide the students with an overview and explanation of the programme before its commencement. The results showed that PERLS is an effective teaching and learning programme, and it should be offered to as many students as possible. The study seeks to enhance understanding of the use and benefits of internet-based reading programmes in enhancing the reading and writing proficiencies of ESL students in institutions of higher learning.

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### Publication History

Received:

1<sup>st</sup> May, 2025

Accepted:

29<sup>th</sup> May, 2025

Published:

18<sup>th</sup> June, 2025

**Keywords:** *Academic Writing, Reading Comprehension, On-Line Reading Programme, Secondary Data*

## INTRODUCTION

Rapid technological advancement has led to the development of online reading programmes which are now widely regarded as useful tools for enhancing academic writing and reading comprehension of English Second Language (ESL) students. In essence, technology has advanced rapidly in the past decades and is now so pervasive in everyday lives. People use computers, mobile phones, and tablets to perform daily functions, including but not limited to, communicating with friends and families, accessing information, and reading electronic books (e-books). In an educational context, schools and institutions

of higher learning use electronic learning (e-learning) systems and devices to distribute learning materials on online platforms to support teaching and learning.

A study by Al-Nuaimi and Al-Emran has demonstrated that institutions of higher learning in most countries use various well-known learning management systems (LMS) to create, manage, deliver, and distribute e-learning material, and execute other activities.<sup>1</sup> This type of technology is now so widespread to the point that today's students are less dependent on traditional sources of information such as newspapers, relying more on electronic sources such as tablets and mobile phones.<sup>2</sup> The LMS form the backbone of any online teaching and learning programmes, and many educational institutions employ LMS and related software to manage their online reading programmes.<sup>3</sup> Therefore, ESL university students risk being excluded from acquiring the relevant knowledge and skills and by extension their qualifications. English Second Language students without access to the requisite technological devices are also prone to being marginalised. Ultimately, these students frequently face challenges in academic writing and reading comprehension specifically because tertiary education programmes are offered and delivered in English.<sup>4</sup>

The study aimed to investigate the effectiveness of the Programmed English Reading and Language System (PERLS) in improving the reading and academic writing proficiencies of first-level ESL students at a South African University of Technology. The PERLS is a South African-developed vocabulary-based English Language and Reading Comprehension programme designed to assist learners improve their English language proficiency. In the context of this study, very little is known about the effectiveness of online reading programmes such as PERLS in delivering teaching and learning for ESL students. For this reason, this study sought to investigate the effectiveness of PERLS in contributing to an improvement in the reading and writing proficiencies of first-year students at a local South African university located in the Gauteng Province.

This research addressed the following research questions:

- What is the effectiveness of PERLS in improving ESL students' academic writing?
- What is the effectiveness of the PERLS online programme in improving ESL students' reading comprehension?

The findings from the study are presented subsequently in this paper.

## LITERATURE REVIEW

According to Ali et al., Malaysian students face challenges when reading English material.<sup>5</sup> They struggle to understand the reading material due to limited English language proficiency as well as poor reading comprehension and vocabulary skills coupled with a lack of reading strategy skills. Consequently, students only read at the surface level, or answer questions at the end of the text; many of them give up on reading written text with many complex words and phrases that are difficult to spell, pronounce, define and understand. In South Africa, reading is also a challenge for most first-year tertiary education students due to extensive reading loads (about six hundred 1200 pages) for various functions. Therefore, students are required to cope with huge quantities of material that need to be read within a short space of time.

Extensive reading (ER) aids in the consolidation of techniques that students have been taught or are aware of.<sup>6</sup> Students, for instance, learn the feeling of how language is constructed by frequent, continuous, and substantial exposure to texts. This includes the organisational of discourse and the usage of prepositions. Since it exposes the reader to a large amount of engaging, meaningful second-level (L2)

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<sup>1</sup> Maryam N Al-Nuaimi and Mostafa Al-Emran, "Learning Management Systems and Technology Acceptance Models: A Systematic Review," *Education and Information Technologies* 26, no. 5 (2021): 5499–5533.

<sup>2</sup> Juliana Pattermann et al., "Perceptions of Digital Device Use and Accompanying Digital Interruptions in Blended Learning," *Education Sciences* 12, no. 3 (2022): 215.

<sup>3</sup> Isyaku Hassan et al., "Challenges and Benefits of Web 2.0-Based Learning among International Students of English during the Covid-19 Pandemic in Cyprus," *Arab World English Journal*, 2021.

<sup>4</sup> Arina Anis Azlan et al., "Public Knowledge, Attitudes and Practices towards COVID-19: A Cross-Sectional Study in Malaysia," *Plos One* 15, no. 5 (2020): e0233668.

<sup>5</sup> Hind Al Ali et al., "The Muon Smasher's Guide," *Reports on Progress in Physics* 85, no. 8 (2022): 084201.

<sup>6</sup> Achmad Hufad and John Pahamzah, "Pengembangan Model Pembelajaran Bahasa Inggris Berbasis Audio Visual Content Pada Perkuliahan Speaking for General Communication," *LINGUA: Jurnal Bahasa, Sastra, Dan Pengajarannya* 20, no. 1 (2023): 208–24.

reading material on a regular basis, extensive reading is consequently considered one of the best strategies to improve reading comprehension, vocabulary and speed.<sup>7</sup>

As far as Sinaga and Simanullang are concerned, students require an understanding of the context of what they are reading, skimming, scanning, questioning, and analysing to search for assumptions and intentions.<sup>8</sup> Research indicates that many first-year students begin their studies with limited reading comprehension and reading strategy skills.<sup>9</sup> Therefore, most students enter university without the necessary skills to meet the expectations of higher education.<sup>10</sup> In response to the reading and writing challenges experienced by ESL students in institutions of higher learning, developers have embarked on a journey to design digital platforms such as online programmes which strive to enhance the reading comprehension and academic writing of these students. Online reading programmes such as Word Champ.com, which are meant to improve reading, comprehension and vocabulary, are widely used by ESL students in institutions of higher learning, especially in East Asia. This online programme enhances the students' vocabulary by enabling them to understand and comprehend material read online using pre-reading or after-reading vocabulary improvement exercises or to acquire and store bilingual glosses whilst reading any online document.

In South Africa, where this study was conducted, PERLS was introduced as an intervention to enhance the reading techniques of students, increase their reading speed, and improve their comprehension in a natural reading environment. However, the effect of this online programme on the academic writing and reading comprehension of ESL students in universities is not known. This has prompted the researchers, who are also staff members of the student development support (SDS) unit in a local university, to conduct this study. The SDS unit is responsible for developing students in this regard.

Similar studies on online reading programmes in other contexts, which provide insights into the impact of the various online reading programmes on the reading proficiencies of ESL students both in higher and basic education institutions, have been conducted. For example, Ansari reported that the reading behaviour of online readers is in transition as Internet surfing has increased non-sequential reading, interactive reading, superficial reading, and extensive reading and is, at the same rate, responsible for decreasing concentrated and in-depth reading.<sup>11</sup> Although Internet surfing has increased reading of the news, general knowledge, selected fields, sexual content, and spiritual/religious text, it has also decreased the reading of literature.<sup>12</sup>

Ansari also investigated the impact of an online reading programme on South American ESL university students and some professionals (i.e., teachers and doctors).<sup>13</sup> Apart from improving the student language skills, vocabulary, pronunciation and translation skills, the programme improved life-long learning and professional skills such as pedagogical content knowledge of the studied professionals.<sup>14</sup>

In Conklin Country (pseudonym) New England, three literacy training and assessment programmes, namely, Razkids, TumbleBooks and Bookflix, were implemented by Schott.<sup>15</sup> For every reading, these programmes offer literacy and guidance to primary-grade learners. The online reading programme offers an extensive variety of additives to evaluate and train learners in terms of learning. The purpose and motive of the three reading packages are to offer scholar readers further engagements and interactive stories that assess their reading and the knowledge of the scholars. The participants were

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<sup>7</sup> Hufad and Pahamzah, "Pengembangan Model Pembelajaran Bahasa Inggris Berbasis Audio Visual Content Pada Perkuliahan Speaking for General Communication."

<sup>8</sup> Roganda Tua Sinaga and Musrafidin Simanullang, "The Effect of Applying Scanning and Skimming Strategy on the Students' Reading Comprehension of Grade Eight at Smpnegeri 3 Muara in Academic Year 2017/2018.," *Tapanuli Journals* 1, no. 2 (2019): 332–42.

<sup>9</sup> Noelle E Carlozzi et al., "Caring for an Individual with Mild Cognitive Impairment: A Qualitative Perspective of Health-Related Quality of Life from Caregivers," *Aging & Mental Health* 22, no. 9 (2018): 1196–1204.

<sup>10</sup> Fei Victor Lim and Weimin Toh, "Children's Digital Multimodal Composing: Implications for Learning and Teaching," *Learning, Media and Technology* 45, no. 4 (2020): 422–32.

<sup>11</sup> Munira Nasreen Ansari, "Impact of Online Reading on Skills of Professionals," *Library Philosophy and Practice (e-Journal)*. Pakistan: University of Karachi, 2018.

<sup>12</sup> Fayaz Ahmad Loan, "Impact of the Internet Surfing on Reading Practices and Choices," *Webology* 9, no. 1 (2012): 1–10.

<sup>13</sup> Ansari, "Impact of Online Reading on Skills of Professionals."

<sup>14</sup> Ansari, "Impact of Online Reading on Skills of Professionals."

<sup>15</sup> Meghan C Schott, "Technology Reading Programs and Their Impact on Listening Comprehension," *Technology*, 2017.

all second-grade students of mixed race, religion, and ethnicity during the 2016-2017 school year. The outcome was that the three programmes (i.e., Razkids, Tumbleboks and Bookflix) assisted educators in determining and understanding the supportive functions, and tests that can help students understand comprehension better. Additionally, the findings demonstrated the significance of scholar-focused studying where students are offered a preference of ebook and programme; this is in addition to the desire to analyse an aspect of their lecture to promote engagement with the textual content that affects the students' listening comprehension.<sup>16</sup>

In the United States, Jones investigated the effect “of a reading intervention Program, Read 180/System 44, on students in a Behaviour Disabilities class, with students in a Learning and/or Language disabilities class and “at risk” students from the general education population.”<sup>17</sup> The results of the programme revealed that most students demonstrated good reading levels in all groups. The “at risk” Popular Training Programme displayed the maximum sizeable growth. The students within the Behaviour Disabilities class in addition to the Learning and/or Language group appreciated the reading intervention programme. The results from this study, in addition to the preceding studies, recommended that the 180/System44 Programme may be effective in assisting struggling readers.<sup>18</sup>

In Canada, Ciampa “explored the effect of online digital storybooks (e-books) on the reading motivation and listening comprehension of six grade 1 students (aged 7 years).”<sup>19</sup> The online digital storybooks programme was used as an intervention strategy to promote a high-quality mindset in the direction of online reading and enhancing listening comprehension. The findings of this study indicate that every participant increased their comprehension ratings from pre-test to post-test after the use of an online e-book reading programme and liked the e-books at home and during their free time.<sup>20</sup>

The Repeated Reading Programme (ARR) was applied in Burkina Faso. Like many other growing nations, the ability to read is essential since it contributes to poverty reduction in Burkina Faso. The purpose of this Programme was to increase the reading fluency of students and to “read more with accuracy.”<sup>21</sup> The outcomes emanating from the programme confirmed “that this program had a positive effect on the fluency development of bad and really negative readers”. A preliminary review of the literature has revealed that there is still limited evidence on the effectiveness of an online reading programme for first-year tertiary education students. Several national and international studies have been conducted on reading and online reading. However, these studies did not focus on the effectiveness of an online reading programme on the reading comprehension and vocabulary of the students. Hence, the researchers deemed it imperative to focus on PERLS and determine its effectiveness in improving the reading proficiency of students.

## THEORETICAL FRAMEWORK

Constructivism and sociocultural procedures to learning have been hailed because of the maximum beneficial studying theories for networked environments that are derived from them, giving learners an increasing number of prominent roles for deciphering meaning. Constructivist approaches to gaining knowledge have been gaining ground in technology paradigms in higher education contexts to the demands of the environment and the changing organism.<sup>22</sup>

Gul has reported that scientists and philosophers such as Dewey, Piaget, and Vygotsky have separately and independently expressed different perspectives and ideas about constructivism, especially

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<sup>16</sup> Ian D Scott, *Factors Influencing the Academic Performance of African American Student-Athletes in Historically Black Colleges and Universities* (Union University, 2017).

<sup>17</sup> Stephanie M Jones, Joshua L Brown, and J Lawrence Aber, “Two-year Impacts of a Universal School-based Social-emotional and Literacy Intervention: An Experiment in Translational Developmental Research,” *Child Development* 82, no. 2 (2011): 533–54.

<sup>18</sup> Jones, Brown, and Lawrence Aber, “Two-year Impacts of a Universal School-based Social-emotional and Literacy Intervention: An Experiment in Translational Developmental Research.”

<sup>19</sup> Katia Ciampa, “ICANREAD: The Effects of an Online Reading Program on Grade 1 Students' Engagement and Comprehension Strategy Use,” *Journal of Research on Technology in Education* 45, no. 1 (2012): 27–59.

<sup>20</sup> Elçin Ölmezer Öztürk, “Developing Language Assessment Literacy of EFL Pre-Service Teachers through Classroom Assessment Course,” *International Journal of Contemporary Educational Research* 8, no. 3 (2021): 13–22.

<sup>21</sup> Richard L Allington, “If They Don't Read Much,” *Reading More, Reading Better*, 2009, 30.

<sup>22</sup> Roya Jafari Aminah and Hanieh Davatgari Asl, “Review of Constructivism and Social Constructivism,” *Journal of Social Sciences, Literature and Languages* 1, no. 1 (2015): 9–16.

in relation to epistemology and ontology.<sup>23</sup> As a result, they have interpreted constructivism based on their own experience. In relation to this, the learner's knowledge is their own life, style and the life experience they acquire. Therefore, the teaching and learning process must be related to the practical real world so that the classroom is designed and shaped in such a way that the teacher and the students can share their knowledge and experience actively.

Learning is shifting dramatically, with a greater emphasis now being placed on how a person interacts with the outside world rather than on their internal processes of information acquisition. Students must take the lead in the learning process by actively engaging with the material and adhering to their own ideas and objectives.<sup>24</sup> Through the process of continuously reconstructing their expertise, students in constructivist online learning manipulate new knowledge and shape their own assessments. The role of students in the flipped learning model is to use self-directed learning methods to retrieve the lessons at home or outside the school through flipped education tools such as Edmodo, YouTube, Google Apps, Dropbox, Educreation, GlogsterEdu Screencast, Socrative, Teaching Channel, and Twitter. The assessments to be carried on in a flipped education shall be varied with the intention of assessing and measuring the students' accomplishment of each lesson's objective.<sup>25</sup>

Constructivist online task design informs the assignment of duties within contexts that facilitate the acquisition of knowledge and its comprehension.<sup>26</sup> Lin et al have reported that students are likely to have higher self-efficacy, a representative feature of motivation, when they have levels of teaching and social presence stemming from well-organised course design and timely feedback and interaction.<sup>27</sup> In the study conducted by Lin, it was determined that E-books have a positive influence on the reading attitudes of students.<sup>28</sup> These must be learning-rich environments that offer a multifaceted and complex world, even when the knowledge may seem conflicting. Tasks that encourage research and present a variety of sources and resources are necessary to do this. Today's teachers and students need to be adept in the language of technology, only then will they be able to stay abreast with the modern time.<sup>29</sup>

Apart from being aware of their own personal learning processes, students also need to go beyond themselves and collaborate with other students, a mentor who provides guidance, or through the relationships formed between the various texts that the reader visits in a "to and from" manner.<sup>30</sup> Thus, the goal of this study is to highlight the usefulness of online reading programs as well as the information that readers should be aware of and how to use them when reading online informational texts. Readers must pay attention to and draw conclusions from challenges about hierarchical text structures that are unfamiliar to them. Reading processes can be described as skills (automatic once learnt, such as decoding) and strategies (techniques deliberately employed to support comprehension, such as summarising).<sup>31</sup> Reading instruction beyond the early years has traditionally focused on encouraging children to use generic reading comprehension "strategies" such as finding the main idea of a text. To ascertain what they already know, it is necessary to deliberately examine their textual inferences.

<sup>23</sup> Arzu Gul, "Constructivism as a New Notion in English Language Education in Turkey" (Kent State University, 2016); John Dewey, "Nationalizing Education," *Journal of Education* 84, no. 16 (1916): 425–28; Jean Piaget, *The Child and Reality: Problems of Genetic Psychology*. (Trans. Arnold Rosin). (Grossman, 1973); L S Vygotsky, "The Role of Play in Development," *Mind in Society/Harvard University Press*, 1978.

<sup>24</sup> Gul, "Constructivism as a New Notion in English Language Education in Turkey."

<sup>25</sup> Nipada Trairut and Namon Jeerungsuwan, "Synthesize Essential Elements for Virtual Flipped Classroom Environment with Scaffolding System Using Active Learning to Develop Creative Thinking and ICT Literacy," in *The Twelfth International Conference on ELearning for Knowledge-Based Society*, 2015.

<sup>26</sup> Tsung-Yu Lin, Aruni RoyChowdhury, and Subhransu Maji, "Bilinear CNN Models for Fine-Grained Visual Recognition," in *Proceedings of the IEEE International Conference on Computer Vision*, 2015, 1449–57.

<sup>27</sup> Yankai Lin et al., "Modeling Relation Paths for Representation Learning of Knowledge Bases," *ArXiv Preprint ArXiv:1506.00379*, 2015.

<sup>28</sup> Chieh-Peng Lin and Anol Bhattacharjee, "Extending Technology Usage Models to Interactive Hedonic Technologies: A Theoretical Model and Empirical Test," *Information Systems Journal* 20, no. 2 (2010): 163–81.

<sup>29</sup> Ilyas Husain and Nisha Nair, "Disposition of Teachers and Students towards the Use of E-Learning in Schools," *Jamia Journal of Education* 3, no. 1 (2016): 44–53.

<sup>30</sup> Yen-Hui Wang, "Integrating Self-Paced Mobile Learning into Language Instruction: Impact on Reading Comprehension and Learner Satisfaction," *Interactive Learning Environments* 25, no. 3 (2017): 397–411.

<sup>31</sup> Edward J O'Brien and Anne E Cook, "Models of Discourse Comprehension," *Handbook on Reading*, 2015, 217–31.

In addition to the selection of strategies that change over time, shifts also occur in how the same (or different) strategies might be employed by a learner across time. After conducting a systematic review, Dinsmore identified three aspects of strategy use that influence learning outcomes, such as task achievement or problem-solving.<sup>32</sup> These aspects are quantity, quality, and conditional use of strategies. When one strategy does not work, flexibility is encouraged with a view to adopting another. Constructivism has also contributed to this study's comprehension of the efficacy of the online reading and writing curriculum.

## METHODOLOGY

A qualitative case study based on the interpretivist paradigm was found to be relevant to this study because it validates the accuracy of findings and brings personal values into the study. Simon defines a case study as a comprehensive investigation, conducted from several angles, of the intricacy distinctiveness of a specific project, policy, institution, programme or system in a 'real life' setting.; in this case, it is the effectiveness of PERLS online programme on improving reading and academic writing of ESL first-year students.<sup>33</sup>

### Sampling

In this study, purposive sampling was used to select the participants. Both research sites and research participants were selected using purposive sampling. This means that the research sites and participants were selected specifically to collect the most suitable data to answer the research questions. The sample of this study included 15 ESL students from the Science Faculty who have gone through the PERLS online reading programme. In addition, three facilitators of the online reading programme with an in-depth understanding of the PERLS were selected. The student participants were coded as follows: S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, and S15. Similarly, the facilitator participants were coded as F1, F2, and F3. Permission was obtained in writing from the university where the researchers conducted their research granted ethical clearance for the study. All participants, including the parents of the students who took part in the study, gave their written consent. The study also safeguarded the privacy, confidentiality, and individual rights of students, teachers, principals, and parents who took part in it.

### Data Collection Instruments and Procedures

The who, what, and where of the phenomena are to be ascertained through a variety of data collection techniques used in qualitative descriptive research.<sup>34</sup> Although focus groups, telephone interviews, and internet methods are also utilised, semi-structured individual face-to-face interviews remain the most popular method of gathering data. In this research study, semi-structured interviews were adopted as a data collection instrument.<sup>35</sup>

The use of semi-structured interviews in this study enabled the ESL facilitators and students to describe their experiences on the effectiveness of the programme in improving their reading and writing proficiencies. This method enabled the researchers to probe for a deeper meaning when required.<sup>36</sup>

### Data Analysis

In this study, the researcher analysed data, as prescribed by Creswell et al.,:

- Reading through the transcripts of the interviews (to assess for accuracy),
- reading through the transcripts several times while highlighting comments or phrases that were representative of the participants' attitudes and thoughts, and

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<sup>32</sup> Daniel L Dinsmore, "Toward a Dynamic, Multidimensional Research Framework for Strategic Processing," *Educational Psychology Review* 29, no. 2 (2017): 235–68.

<sup>33</sup> William H Simon, *The Practice of Justice: A Theory of Lawyers' Ethics* (Harvard University Press, 2009).

<sup>34</sup> Margarete Sandelowski, "Whatever Happened to Qualitative Description?," *Research in Nursing & Health* 23, no. 4 (2000): 334–40.

<sup>35</sup> Hyun Kim, Jong-Hyeok Lee, and Seung-Hoon Na, "Predictor-Estimator Using Multilevel Task Learning with Stack Propagation for Neural Quality Estimation," in *Proceedings of the Second Conference on Machine Translation*, 2017, 562–68.

<sup>36</sup> David C Rubin et al., "Participant, Rater, and Computer Measures of Coherence in Posttraumatic Stress Disorder.," *Journal of Abnormal Psychology* 125, no. 1 (2016): 11.

- clustering or categorizing highlighted statements.<sup>37</sup>

Participants were interviewed and recorded individually at their time of convenience. The student participants were coded as follows: S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, and S15. The facilitators participants were coded as F1, F2, and F3. The university where the researchers were conducting their research provided written approval and ethical clearance for the study in response to written requests. All participants, including students and facilitators, gave written consent to take part in this study. The study safeguarded the privacy, confidentiality, and individual rights of both the facilitator and students involved.

## PRESENTATION OF FINDINGS

### Effectiveness of the Online Programme in Improving Academic Writing

According to 71% of responders, the PERLS online reading programme greatly enhanced students' academic writing abilities. Sentence structure, typing speed, expanding vocabulary, learning new things, comprehending expectations, and motivation were among the major themes. Because of the programme's many attempts and well-structured, controlled, and tailored approach, ESL students considered it to be effective.

Regarding the first theme (Sentence construction), the ESL students were of the view that the programme was effective as it assisted them in improving their sentence construction and spelling because it was programmed to allow students multiple attempts to work on the activities. In addition, the programme was well structured, organised, and designed. S2 commented as follows:

*“OK, I think that my perception of the programme is that it's very effective and it assists because it gives you multiple attempts to improve on sentence construction and spelling. So, I think that the programme is very well structured and well organised.” (S2).*

In the same vein, S14 added that the programme assisted in spelling because it was well-designed.

*“The online programme was useful in spelling because it was well designed for ESL speakers like me.”*

For the second theme (Typing skills increase), students' typing speed increased because of the training, improving their typing abilities. The reading speed did not, however, increase. While reading remained slow, students said that typing more quickly and with less difficulty helped them write better. Their typing skills increased because of the programme's emphasis on typing and flashing words. This is what one of the responding students (S3) had to say:

*“Yeah, it did improve my writing because I remember we did typing and reading so then it increased most. Then it gets harder and faster. That increased my skill to type faster because that is quite nice to get things done quickly and reading for the reading part, I feel like I have always been a slow reader, but that remained the same. The thing that increased my skill was the typing. I remember typing the way the word flashed and you typed it again. I remember that. So that increased my typing skills.”*

With regards to the third theme (Innovative ways to improve writing skills), the respondents indicated that the programme did help in allowing them as second language speakers to develop innovative ways to improve their academic writing. This is evidenced by the following comment from S5:

*“Uh, in my opinion. I think it's a good start to help students who English is their additional language because it assists students to come up with ways in which they can improve their reading and their academic writing.”*

Regarding the fourth theme (Improvement of vocabulary) students indicated that the online programme helped students to develop knowledge and skills in multiple aspects of language and literacy.

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<sup>37</sup> J David Creswell et al., “Mindfulness-Based Stress Reduction Training Reduces Loneliness and pro-Inflammatory Gene Expression in Older Adults: A Small Randomized Controlled Trial,” *Brain, Behavior, and Immunity* 26, no. 7 (2012): 1095–1101.

The following comment was noted from S6:

*"It's very effective in a way that it also improves vocabulary."*

In the fifth theme (Efficiency and improvement in essay writing), students mentioned that the online programme provided students with the opportunity to learn new things which can be beneficial to ESL students when writing their assignments or essays and to improve academic writing.

This is what S5 had to say:

*"I learnt things that I never knew before from the programme and I improved how I write essays and assignments."*

For the sixth theme (Broaden students' knowledge of academic writing), four respondents indicated that the programme assisted them in broadening their knowledge of academic writing. Furthermore, the programme was informative and assisted in the understanding of the expectations required from students as second language speakers (sixth theme). The programme was also inspiring and motivational (seventh theme). For example, this was articulated by S12 as follows:

*"So, my perception of PERLS reading is that it really helped me broaden my reading skills and I moved quite fast because it's my first language but it really helped me rethink my English; what I don't know, what is crucial and what is expected from my English as I go on to the course umm it was informative, it was nice and motivated our class as well."*

While the PERLS online programme was effective in improving students' writing skills, 30% of participants disagreed with this notion. Thematic categories identified included the need for a computer module, the programme not designed for academic writing improvement, and its limited scope. Students suggested the introduction of a computer module in the Pharmacy Department for the benefit of all students.

The following comment was noted from S1 and S3:

S1: *"I honestly do not know why we do PERLS. And I feel like instead of PERLS, maybe they could be doing a computer literacy module, because in the Department of Pharmacy, there is no module that has computer literacy that would benefit everyone."*

S3: *"It did improve my writing because I remember we did typing and reading so then it mostly increased my reading and writing skills. Then it gets harder and faster and that increased my skill to type faster because that's quite nice to get things done quickly and reading for the reading part. I feel like I've always been a slow reader, but that remained the same."*

It is clear from the above analysis that the programme was effective as evidenced by 70% of the student respondents. In response to the research questions, facilitators expressed a consensus regarding the efficacy of the online programme in raising the academic writing proficiency of first-level ESL students. They identified themes such as programme appropriateness for all students, enhancement of sentence construction and vocabulary, speaking of formal language and learning of basic computer skills, improvement of students' assignment writing, and enhancement of students' pass marks.

The respondents thought the online reading programme was appropriate for everyone, based on the first theme (**Programme appropriate for all students**). Prior to the training, those who experienced difficulties with academic writing observed some progress in both their general knowledge and academic writing abilities. According to the respondents, the programme was beneficial and offered value, especially considering the varied range of students the university was admitting. Students are examined in a single session on a variety of topics related to grammar, writing comprehension, and sentence structure covered throughout the programme. The following comment was received from F1:

*"Writing was good and for some it was bad. For some, we saw that it was good from their prior knowledge because they managed to improve on what they already know and for those who it was bad, they also improved."*

With regards to the second theme (**Improvement of construction of sentences, vocabulary; speaking of formal language and learning of the basic computer skills**), the facilitators stated that the programme was helpful to the students. The programme enabled the students to construct sentences, improve their vocabulary; and helped them to speak the formal language while improving their basic computer literacy skills; all of which helped the students with essay writing skills. This is what F3 had to say:

*“I would say the programme helped students because they were not able to construct sentences. It also helped them with their vocabulary because they knew words and the spelling, when they have to write the assignments they have to write the correct spelling. It also helped them to speak the formal language and for those who were not computer literate it also helped them with the basics of the computer because when they write the assignment they have to type, so it helped them with that they were able to type very fast than they used to do, it helped them with regard to that.”*

On the third theme (**Improvement of students’ writing of assignments**), the facilitators stated that the students were not entirely competent in writing their assignments before participating in the programme, since they found the assignments difficult to work on. Students who could not understand the meaning of the words experienced challenges in writing assignments. Before participating in the programme, the respondents added that they really struggled with basic writing skills when writing assignments. Aspects such as writing an introduction, a conclusion, and a summary were identified as the main problems being experienced by students. However, the students improved on the writing of assignments after participating in the programme. The following comments were noted from F1 and F2, respectively:

F1: *“Their assignment writing was difficult and below standard but after participating in the program it was better and improved a lot. I could say the program helped them a lot as we as the facilitators saw a lot of improvement from where they started with the intervention up to where they were. There was a lot of improvement.”*

F2: *“They struggled with just the basic meaning and understanding of how an essay flows. For instance, you would find that an introduction is just going to be generally one line, one sentence and then they start discussing what they want to talk about in a space where it is supposed to be an introduction, and then you come to the second paragraph. They are talking about something very different from what you've actually been waiting to see them expand on going down. So no, it was not that good but there is a lot of improvement after they attended the programme.”*

The findings described in the preceding paragraphs show that facilitators of the programme view the online reading programme as effective because it is appropriate for all and diverse students, it improves students’ construction of sentences, vocabulary, speaking of formal language, and learning of basic computer skills. Additionally, it improved the ease with which students can write assignments as well as the students’ average pass marks. Students were of the same view as the facilitators to say that the programme was effective as it assisted most of them in improving their sentence construction and spelling because it was programmed to allow students multiple attempts to work on the activities. The programme was well structured, organised, and designed. Furthermore, the students indicated that the programme improved their writing skills and typing skills. The programme was effective in improving the academic writing skills of ESL students.

### **Effectiveness of Programmed English and Reading Language System in Improving Reading Comprehension**

Students were asked to indicate their views on the effectiveness of the PERLS online programme in improving their reading comprehension. Eighty percent of the respondents agreed that the online programme contributed towards an improvement of their reading comprehension. From the respondents’ responses, it was possible to identify several themes, namely: efficiency and improvement in essay

writing; improvement in reading skills; an important tool to help students with the content, simple English that students can understand and more advanced to help students understand better; improvement in spelling and vocabulary and help in using proper language.

For the first theme (efficiency and improvement in essay writing), ESL students indicated that the programme was effective and improved their reading comprehension as it assisted them in writing their essays in a proper way and with better understanding. The respondents mentioned that the programme improved their writing skills. Students were able to comprehend after working on the programme.

To this end, S2 and S3 commented respectively :

S2: *"It has improved my comprehension a lot because I found it easier to write my essays. I found it easier to write my assignments because of the program itself, so I think it's very efficient."*

S3: *"It did improve my writing because I remember we did typing and reading so then it increased most. Then it gets harder and faster and that increased my skill to type faster because that's quite nice to get things done quickly and reading for the reading part. I feel like I've always been a slow reader, but that remained the same."*

S13: *"PERLS has been quite helpful in developing my reading speed as well as my ability to skim through the texts."*

In terms of the second theme (Improvement in reading skills), the participants mentioned that the online programme was an important tool to improve their reading skills for the students to cover more work in a short period to reduce high workload and meet deadlines.

The following comments were made by S3 and S12 respectively:

S3: *"It did improve my reading so then my reading speed has increased most. Then it gets harder and faster. So that increased my skill to type faster because that's quite nice to get things done quickly and for the reading part, I feel like I've always been a slow reader, but that remained the same. The thing that increased my skill was the typing. I remember the typing the way the word flashed and you typed."*

Furthermore, S12 said:

*"I feel like PERLS reading was 100% effective, it does help one to understand and comprehend more when you read. It also improves your pace as you read. When you study, you do need to have sort of a faster pace like considering the work that we get at school, PERLS reading is a very effective tool and very helpful."*

On the third theme (Important tool to help students with the content), participants felt the programme was an important tool that could be helpful to the students to improve their subjects' content. The following comment was noted from S5:

S5: *"Yes it did improve my comprehension as I said before, but I really do believe that the PERLS reading program was a very important instrument that helped me to write my academic writings."*

On the fourth theme (Simple English that students can understand), respondents stated that the English language that was used was not difficult and it made students understand the content better. S6 mentioned that:

S6: *"PERLS programme was actually using a simpler simplified but more advanced English."*

For the fifth theme (**More advanced to help students understand better and use proper language**), the student respondents indicated that they were able to construct sentences and had improved their language proficiency. Students were able to use proper language and have a better understanding when writing their essays, which resulted in them performing well in their assignments. S9 had this to say:

S9: *"It has helped me improve my language from being informal to being a bit more formal and to teach me the way I should construct sentences, it helps a lot in that."*

Despite all the positive responses, three participants believed the programme did not help improve their comprehension.

Herewith S1, S4, and S10 comments respectively:

S1: *“For me, it really does not work like I said initially, it does not work. Maybe for other students, it is helpful, but it did not help me in any way.”*

S4 continued to say that:

*“I felt like the programme was designed for high school learners the younger ones, therefore it was not helpful, as the comprehension was not improved.”*

Additionally, S10 said:

*“It did not improve anything.”*

With respect to theme 3 (**Important tool to help students with the content**), one respondent indicated that the programme had made a small contribution in terms of closing the English proficiency gap because he was a first English language speaker and did not struggle with the spoken language and could thus complete the programme very quickly. Furthermore, the respondents recommended the programme to ESL students because of its effectiveness.

S14 said:

*“Ok, It was like I went through it so fast so my level of English was quite high from the beginning stages I felt like a waste of time but for other people, it was not a waste of time because they struggled quite a lot so I think the level of English possibly which can be seen from your matric results.”*

The findings indicate that 70% of the respondents believed that the PERLS reading programme improved their reading comprehension. Thirty percent did not notice any improvement in their reading comprehension.

Facilitators were requested to give their opinions regarding the PERLS online programme on improving students' reading comprehension. Facilitators that participated in the study shared their different views and two themes such as lack of understanding of the content subject and improvement of understanding of the content subjects emerged. In the first theme (Students' lack of understanding of the content subjects), participating facilitators indicated that ESL first-level students were struggling with understanding the meaning of the words in their content subjects before participating in the programme. To this end, the students were allowed to consult dictionaries to understand the meaning of words and thus be able to comprehend aspects of their content subjects.

In relation to the participants, students lacked a basic understanding of the subject matter, especially scientific terminologies. Students generally struggle with terminologies, and this is even worse if a student is not used to speaking English on a daily basis.

This is what F1 had to say:

*“They have difficulties, as they did not know the meaning of most of the words, which is vocabulary, we had to allow them to use dictionaries for the difficult words in order for them to understand.”*

F2 further highlighted that:

*“They lack basic understanding especially scientific terminologies related to their content subjects.”*

F1 and F2 respectively indicated the following:

F1: *“They have difficulties because they do not know the meaning of most of the words, which is vocabulary. We have to allow them to use dictionaries for difficult words in order for them to understand.”*

F2: *“They lacked basic understanding especially, the scientific terminologies.”*

Furthermore, F2 stated that:

*“...within science, students generally struggle with terminologies, and it’s even worse if one is not used to English. If you are not used to pronouncing the terminologies because now most of these technologies are in English.”*

Participants added that students found it very difficult to understand subject matter content as they did not understand the language itself. They had challenges with English grammar; however, these challenges were minimised as they continued with the programme.

F3 said:

*“I would say yes, students found it very difficult to understand the subject content before participating in the programme. They had a problem with the understanding of the subject content because of a deficiency in the English language therefore, the programme addressed the gap. They started doing well and understanding the content and improved marks after they had gone through the programme.”*

With reference to the second theme (**Improvement in the understanding of the content subjects**), participants stated that the programme helped the students to understand the content after participating in the programme, where necessary, the facilitators also played their role by assisting students through teaching them how to use the dictionaries, construct sentences, and other aspects. Despite the positive feedback being received from the facilitators, it was also agreed that there were instances where the programme did not make a significant contribution in assisting the students to understand the content. Furthermore, the facilitators acknowledged that some students were still struggling, and such students should be afforded another opportunity in the following year.

F1 said:

*“They understood it very well because we, as facilitators, have been helping them by explaining what they don't understand, and by explaining the difficult words that they don't understand. Even when using the dictionary, some of them didn't understand because using the dictionary needs somebody who understands how the dictionary works. So, most of them mentioned that, so we had to take them step by step in showing them how to use the dictionary.”*

F2 added:

*“Though there was some, some slight improvement would not say that it was something that was just that drastic. There was a slight improvement, but now it's also individually dependent. There are those who did relatively well thereafter and there are those who still struggled and felt as though maybe they could have gone on with the post-program after the following years if it continued, but it was meant for foundation purposes and it did not have a second level or third level so that students can get used to the reading and also reading in English and getting used to it. So there were significant improvements. But there are those that obviously struggled, but not a lot, And then others, well it was just an additional development for them.”*

The facilitators highlighted the fact that students understood the contents after participating in the programme as it filled the gap (grammar) that students were experiencing.

F3 said:

*“Before, they had a problem with the grammar part they needed to understand the proper language and how to use the language before getting into the content therefore the programme addressed that part and felt in that gap. They started doing well and understanding the content and improved marks after they have gone through the programme.”*

Students shared the same perspectives with the facilitators that the programme was an important tool that can be helpful to the students in terms of improving their content subjects.

The following comment was noted from S5:

*“Yes, it did improve my comprehension as I said before, but I really do believe that the PERLS reading program was a very important instrument that helped my academic writing.”*

The findings described above indicate a lack of understanding of the content subjects amongst the students, however, improvements were noticed after participating in the programme. Students were also of the same opinion that there was an improvement in their comprehension.

## DISCUSSION

In studying the effectiveness of the PERLS online reading programme in the attainment of reading proficiencies by ESL students, the first research objective was to investigate the effectiveness of the PERLS online programme in improving the academic writing skills of ESL students.

In this regard, the findings indicated that the online reading programme enhanced the academic writing of ESL students. Both ESL students and facilitators agreed that the programme improved students' sentence construction, skills to type faster, and students' vocabulary. Furthermore, the programme offered students an opportunity to learn new things and was motivational and inspirational to the students. This was corroborated by the facilitators who indicated that the online reading programme was appropriate for all diverse students; hence, students improved their writing skills, usage of the formal English language and learning of basic computer skills. Additionally, the programme improved the students' skills in writing assignments thus leading to an improvement in students' average pass marks. These findings are consistent with studies by Alsamadani and Azari who established an online programme in the form of blogging and weblogs to improve students' writing skills in terms of content, word choice, style, language mechanics and overall better writing performance.<sup>38</sup>

The implications of the findings above indicate that academic writing in institutions of higher learning can be enhanced by online programmes that are specific and familiar to students' contexts. This is affirmed by the constructivist theory whose central tenet is that learning develops from previously acquired real-life experiences, and that instruction in environments that are familiar to students may facilitate their ability to connect new material to those experiences.<sup>39</sup> In the case of this study, students had no prior experience regarding online reading but improved their academic writing after participating in the PERLS online programme. This shows the potential of online programmes in improving students' academic writing after participating in the programme.

In the second objective, it was discovered that the online programme was beneficial to ESL students in improving their reading comprehension. Both students and facilitators concurred that the programme was of major assistance to the students with regard to efficiency and improvement factors in essay writing and improvement in reading skills. Furthermore, the feedback indicated that the programme assisted with understanding the content. Lastly, the programme used simple English that the students could easily comprehend. On the correlation between reading habits and comprehension, it was revealed that students with good reading habits had better reading comprehension. Rustania et al. have also established a positive correlation and significant contribution of students' reading towards their reading comprehension, thus supporting this finding.<sup>40</sup>

The findings further confirm that of Sudirman, who listed several benefits of Internet-based reading, namely motivating students, improving the quality of learning processes, reducing misunderstanding among students, increasing the students' curiosity, and increasing the students' competitiveness to achieve their goals.<sup>41</sup>

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<sup>38</sup> Hashem A Alsamadani, "The Effectiveness of Using Online Blogging for Students' Individual and Group Writing.," *International Education Studies* 11, no. 1 (2018): 44–51; Amin Azari et al., "Grant-Free Radio Access for Short-Packet Communications over 5G Networks," in *GLOBECOM 2017-2017 IEEE Global Communications Conference (IEEE, 2017)*, 1–7.

<sup>39</sup> Jiwei Li, Will Monroe, and Dan Jurafsky, "Understanding Neural Networks through Representation Erasure," *ArXiv Preprint ArXiv:1612.08220*, 2016.

<sup>40</sup> Rustania Farmawati and M A Maryadi, "The Contribution of Students' Reading Habit, Students' Reading Strategy, and Students' Motivation toward Reading Achievement" (Universitas Muhammadiyah Surakarta, 2019).

<sup>41</sup> Acai Sudirman et al., "Determinants of Teacher Performance: Exploring the Role of Satisfaction and Motivation as Mediation," *Jurnal Pendidikan Dan Pengajaran* 54, no. 1 (2021): 68–79.

The findings imply that online programmes should be implemented in schools and universities to assist students in improving comprehension and instil good reading habits. The findings were supported by several studies on learning to read. For instance, Nelson as well as Auliya posit that the constructivism approach proposes that learning to read is a basic cognitive process in understanding other disciplines.<sup>42</sup> With constructivism, students can enhance their understanding of the text. In this study, after the students worked on the online programme, they were able to understand the content and this implanted in good reading habits.

When Murphy and Leu separately and independently examined how a computer-assisted Extensive Reading Programme (ERP) mapping learning strategy affected the English reading comprehension of English Second Language (ESL) college students, they also looked into whether the use of computer-assisted concept mapping strategies affected students' use of the strategies. What they found was that students' reading comprehension improved more significantly for poor readers than for above-average readers as a result of computer-assisted concept mapping.<sup>43</sup> Additionally, there was a higher likelihood of listing, reinforcing and revising reading techniques among students who utilised computer-assisted concept mapping. Similarly, Mangel, Walgermo, and Brønnick investigated the impact of technology interface on reading comprehension in a Norwegian educational setting.<sup>44</sup> The primary results demonstrated that students who read printed materials performed noticeably better on the reading comprehension test than those who read digital texts.

Finally, Mahdi investigated whether computer-mediated feedback for a web-based reading comprehension exercise improved reading comprehension and promoted quality interaction. The results showed that students in the module with computer-mediated elaborated feedback achieved better reading comprehension. Thus, the results from the previous studies are in support of the findings of this study.<sup>45</sup>

The implications of the findings described above are that reading comprehension in institutions of higher learning can be improved if electronic dictionaries and multimedia annotations can be commonly employed in teaching and learning since they aid students in various ways with the aim of encouraging students to use these technologies. This is confirmed by constructivism, which implies that learning is an active process in which students construct new ideas based on their current and previous knowledge (including personal interest, context, opportunities for application and others).<sup>46</sup> The learning space and tools used should therefore permit learner control. In this study, students constructed new ideas based on their current and previous knowledge to improve their reading comprehension.

## RECOMMENDATIONS

Based on the findings and discussion, the following recommendations are vital and should have a positive impact on the students if they are implemented:

- **Students** – students need to be encouraged and motivated to have a positive attitude towards online learning, especially during unforeseen circumstances such as COVID-19.
- **Facilitators** – facilitators must ensure that they motivate students to work on online programmes by explaining the purpose of online programmes and their benefits right when students enrol for the programme.
- **Institutions of higher learning** – more computer laboratories should be built so that students can have enough computers to work on online programmes. Subjects such as computer literacy and text referencing should also be included in online programmes.

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<sup>42</sup> Camille A Nelson, "Welcome Remarks," *U. Haw. L. Rev.* 45 (2022): 262; Maya Auliya and Nurhafni Siregar, "The Effect of Digital Storytelling Usage on Students' Speaking Ability at Grade Xi Of SMA Negeri 1 Aek Songsongan Academic Year 2021/2022," *Education & Learning* 2, no. 2 (2022): 130–33.

<sup>43</sup> Gregory L Murphy, "What Are Categories and Concepts," *The Making of Human Concepts*, 2010, 11–28.

<sup>44</sup> Anne Mangel, Bente R Walgermo, and Kolbjørn Brønnick, "Reading Linear Texts on Paper versus Computer Screen: Effects on Reading Comprehension," *International Journal of Educational Research* 58 (2013): 61–68.

<sup>45</sup> Hassan Saleh Mahdi, "The Impact of Computer-Mediated Communication Environments on Foreign Language Learning: A Review of the Literature," *Teaching English with Technology* 14, no. 2 (2014): 67–86.

<sup>46</sup> Jerome Bruner, "Learning About Learning, A Conference Report," 1966.

The study has enhanced understanding of the use and benefits of internet-based reading programmes in enhancing the reading and writing proficiencies of ESL students in institutions of higher learning. Scientific data provided by the study could assist decision-makers in the institutions of higher learning to act on issues identified.

## CONCLUSION

This study investigated the effectiveness of the PERLS online programme in improving the reading and academic writing of ESL students in one of the universities in South Africa. According to the findings of the research, the online programme was effective because it improved the ESL students' vocabulary, sentence construction, writing of assignments, marks, and basic computer skills. In addition, institutions of higher learning must consider providing resources to the students to enable the smooth running of teaching and learning. Training sessions must also be organised for facilitators to assist them in gaining more information about online learning.

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