

Optimization of SAMR model scaffolding for the development of descriptive writing skills

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ABSTRACT

This research presents an investigation of how the application of the digital substitution, augmentation, modification, redefinition (SAMR)-based scaffolding might be used to support first-semester basic writing students in overcoming challenges related to grammar proficiency and descriptive writing. A mixed-methods sequential explanatory design was used with 40 students enrolled in English language courses. Quantitative data were obtained through a 14-item Likert-type questionnaire measuring SAMR integration and challenges faced, while qualitative analysis was conducted on semi-structured interview data using NVivo to code thematically. The scores for all implementation indicators indicate that high average values were obtained (global $M=3.37$), indicating that SAMR-based activities and scaffolding were viewed as useful and engaging for supporting descriptive writing. The level of challenges was perceived as low to moderate (mean= 2.59 overall). The key issues were that lecturers needed to offer more consistent support, access to devices was restricted, and students had uneven digital skills. Thematic results identified growth in grammatical consciousness, development of short texts, and creativity as projects that resulted in multimodal outcomes and student involvement. The research also underscores the importance of strong institutional structures and continued support for teaching. It concludes that employing SAMR-informed digital scaffolding is a strategy with the potential to support writing instruction through technology.

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1. INTRODUCTION

There is no question that good grammar is essential if someone want to develop the “four competences” of a language: listening, speaking, reading and writing. Students in basic writing need to learn rudimentary rules of grammar in order to produce sentences that are correct. However, many English language education students are still facing grammar problems that hamper their writing performance, namely in terms of descriptive production. This has implications for new ways of teaching grammar at schools to ensure successful writing outcomes for students [1], [2].

Basic writing students often struggle deficiencies in vocabulary, verb tenses, and sentence structure and coherence. This is why they usually write description simply, repetitively and even incorrectly. Classroom instruction fails to motivate many students [3], [4]. Many just commit the rules of grammar to their memory and never employ them in their composition. This suggests a need for more applied, interactive, and technologically enhanced methods of teaching.

Fortunately, there is new hope courtesy of today's digital tools. Technology can also provide a more engaging and authentic setting for grammar and writing practice to students [5], [6]. But people often do not know how to do more than type in a Word doc or use Google Translate. Technology could be exploited better in order to aid learners in the acquisition of grammar and composition skills [7], [8]. The point is to direct the way technology is used so it actually aids and enhances learning.

The substitution, augmentation, modification, redefinition (SAMR) model introduced by Hamilton *et al.* [9], is a model that describes the process towards developing an enrich use of technology in learning [10]–[14]. In basic writing, instructors may employ SAMR model to progress from utilizing basic digital grammar resources to assisting students develop interactive, multimedia descriptive texts. Students are guided through a series of step-by-step lessons and quizzes as they advance to higher-level grammar and writing activities. This method is better for students to learn grammar and it foments creativity and the development of critical thought. The fact that it helps students learn grammar in the context of real writing instead of memorizing rules.

The application of the SAMR model in writing courses has obviously enhanced English language teaching. For example, recent study by Lestari and Chasanatun [15] reported that tools such as Padlet, Animoto, and Sway proved to be helpful in teaching at various SAMR levels of complexity, yet the majority of students operated on a basic level according to the Common European Framework of References (CEFR). Binangbang [16] also revealed that when SAMR model was used through the quasi-experimental, it contributed to students' responses in terms of ideas, organization and grammar improvement. Moreover, reported that the integration of SAMR model with artificial intelligence (AI) tools (in this study was Cami AI) could lead to an improvement in English as a foreign language (EFL) student writing ability together with their attitude towards technology-based learning. These findings indicate that SAMR model is a robust model for creating engaging, modern, and digital writing classrooms.

Several international studies have highlighted the growing importance of SAMR model for technology-enhanced language learning [17]–[19]. The researches proved that the implementation of SAMR model enables students to improve their writing skills through digital tools and AI; however, most focused on student overall writing skills or simply using technology instead of how to apply scaffolding. Lestari and Chasanatun [15] emphasized mobile apps, Muslimin *et al.* [20] experimented with SAMR model using quasi-experimental design, and other research [16], [21] focused on the incorporation of AI in SAMR model for Korean college EFL learners. However, the means of how scaffolding could be used at each SAMR level and how it supports learners to move from substitution to redefinition was not a subject of these research. Moreover, there is a noticeable gap in research regarding the use of scaffolding in conjunction with SAMR model, especially for basic writing courses focusing on descriptive writing. Furthermore, very few studies have specifically addressed grammar-focused scaffolding in enhancing descriptive writing for tech-based learning.

This article aims to fill these gaps by investigating how SAMR-based digital scaffolding might be used in basic writing classes. It also talks about the biggest problems that come up while helping children with descriptive writing and looks at possible ways to fix them. The goal is to show how technology and scaffolding tactics can help students improve their grammar and writing skills at higher SAMR levels. This study presents a novel methodology for SAMR-based training and scaffolding, concentrating on grammatical proficiency and descriptive writing, an area that has not been extensively explored in technology-enhanced education.

2. METHOD

The mixed methods design of the study is sequential explanatory [21], [22]. For it is possible with this method to integrate quantitative and qualitative data such that these types of information complement each other. Quantitative data were first collected and analyzed to examine the effect and the relationship among research variables. Qualitative method was then used to further understand the quantitative findings. In so doing the study provides statistical evidence and more profound answers on student's experiences and perceptions. The study was conducted in the basic writing course over three sessions. Scaffolding each one of them scaffolds on a different level using the SAMR model:

- Session one is entitled substitution and augmentation, the use of technology to serve as a direct replacement for traditional practices and to improve upon them. The purpose of this session is to assist students in comprehending the ways in which technology can facilitate the enhancement in basic grammar and sentence structure.

- The second class employs modification, with the students collaborating on digital toolkits to edit and enhance descriptive writings. This level pushes students to use technology in more complex ways, which improves the depth of their writing.
- Redefinition is the theme of session number three. This is where students write technology-infused, interactive descriptive texts and get to write like no other writing product that exists. The objective of this session is to develop students' higher-order thinking skills and innovation.

The respondents of the research were the students of English Language Education Study Program Faculty of Teacher Training and Education, Universitas Halu Oleo. The population for the research was basic writing students taking odd semester 2025/2026 academic year. In the quantitative phase, a purposeful sampling strategy was adopted to select the first-semester students taking the course. For the qualitative study, informants were recruited in an incremental manner based on emerging data from the interviews without a specific number of students in mind to capture the range observed among the sample.

Three types of survey instruments were employed. Initial perspective, challenge and SAMR-based scaffolding buddies the first part covered a closed-ended questionnaire with Likert scale to determine perception, challenge and impact towards the scaffolding through SAMR model towards descriptive writing skills. Second, students' experiences were explored further using a semi-structured interview guide. Third, student documents including descriptive writing, reflection notes and digital learning products were gathered.

There were three significant methods of data collection: first, respondents completed the surveys on-line and off-line. Second, qualitative in-depth interviews were done with students selected to complement the quantitative findings and give more depth. Third is documentation. The documentation included the collection of students' descriptive writing and digital artifacts related to the implementation of idea based SAMR scaffolding. All data were participant-driven with prior consent, in line with research ethical guidelines.

For data interpretation, two concurrent mixed-methods were conducted. Quantitative information from the questionnaires was processed with descriptive statistics through Statistical Package for the Social Sciences (SPSS). As for qualitative data, the thematic analysis was conducted in line with the approach described by [15], [22]. These steps were reading and noting initial ideas, coding the data, searching for key themes, reviewing and checking those themes against data set, defining and naming finalized themes and generating a narrative report.

3. RESULTS AND DISCUSSION

3.1. Quantitative result

The research included 40 students enrolled in the basic writing course who underwent a learning process based on the SAMR paradigm. The research instrument used a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). The questionnaire was divided into two main constructs:

- SAMR model implementation consists of 7 items measuring students' perceptions of the effectiveness of applying the SAMR model in writing.
- SAMR implementation challenges consist of 7 items measuring technical, pedagogical, and psychological barriers to implementing the model.

Descriptive statistics, including the computation of mean scores and standard deviations, were used to evaluate quantitative data from the questionnaires using SPSS. As indicated in Table 1, this study used preset classification criteria to interpret the mean results.

Table 1. Interpretation categories based on mean scores

Mean range	Category	Interpretation
1.00–1.80	Very low	Very low
1.81–2.60	Low-moderate	Low to moderate
2.61–3.20	Moderate	Moderate
3.21–3.80	High	High
3.81–4.00	Very high	Very high

As shown in Table 1, the categories for interpreting the mean scores are defined as very low, low-moderate, moderate, high, and very high. These categories are used to classify the data in Tables 2 and 3. Students' answers show that they consistently have positive views of digital scaffolding based on SAMR. The mean scores for the seven items, which are shown in Table 2, range from 3.30 to 3.48. The overall mean is 3.37 (SD=0.48), which puts all of the indicators in the high category. This means that most people support the use of SAMR in the basic writing course.

Students reported that the challenges faced in SAMR-based learning were mainly manageable rather than severe. Table 3 shows that the average scores for the seven challenge items range from 2.05 to 3.32, with a mean of about 2.59 (SD≈0.78). This means that they are low to moderate. This indicates that, despite encountering specific challenges, students did not encounter obstacles sufficiently severe to substantially hinder their participation in SAMR-based writing tasks.

Table 2. Descriptive statistics for SAMR implementation items

No	Items	N	Min	Max	Mean	Std. Deviation	Category
1	Substitution helps me practice writing more easily	40	3	4	3.38	0.49	High
2	Augmentation features improve the quality of my writing	40	3	4	3.35	0.48	High
3	Collaborative writing at Modification increases my motivation	40	3	4	3.30	0.46	High
4	Redefinition makes me more creative in writing	40	3	4	3.33	0.47	High
5	Gradual SAMR application helps me understand descriptive writing	40	3	4	3.43	0.50	High
6	SAMR integration makes Writing class more interesting	40	3	4	3.48	0.51	High
7	SAMR-based scaffolding gives support suited to my writing needs	40	3	4	3.35	0.48	High

Table 3. Descriptive statistics of students' perceived challenges in SAMR-based learning

No.	Item (challenge)	N	Min	Max	Mean	SD	Category
1	Difficulty understanding the technology used in SAMR-based learning	40	1	4	2.42	0.68	Low-moderate
2	Limited facilities (e.g., laptop, internet connection) hinder participation	40	1	4	2.92	0.76	Moderate
3	Unequal digital skills among students for using SAMR-based applications	40	1	4	2.80	0.65	Moderate
4	Class time is often insufficient to complete technology-based writing tasks	40	1	4	2.40	0.67	Low-moderate
5	Feeling burdened by the number of applications that must be learned in the SAMR model	40	1	4	2.05	0.60	Low-moderate
6	Focus on using technology sometimes reduces attention to language aspects	40	1	4	2.20	0.61	Low-moderate
7	Needing more guidance (scaffolding) from the lecturer when writing with SAMR-based applications	40	2	4	3.32	0.66	High

3.2. Qualitative result

The semi-structured interview data from 40 students were coded in NVivo20 and we categorized the information into categories and subcategories, as shown in Figure 1. Four broad themes were generated: the use of SAMR-based basic writing; the influence of SAMR on writing development; challenges to implementing SAMR; and students' shared tactics, support needs, and suggestions. These themes illuminate how working with digital tools influences students, motivation and writing skills, barriers that were experienced by students as well as kind of support they felt was necessary. We elaborate on each theme, with illustrative examples from the interviews.

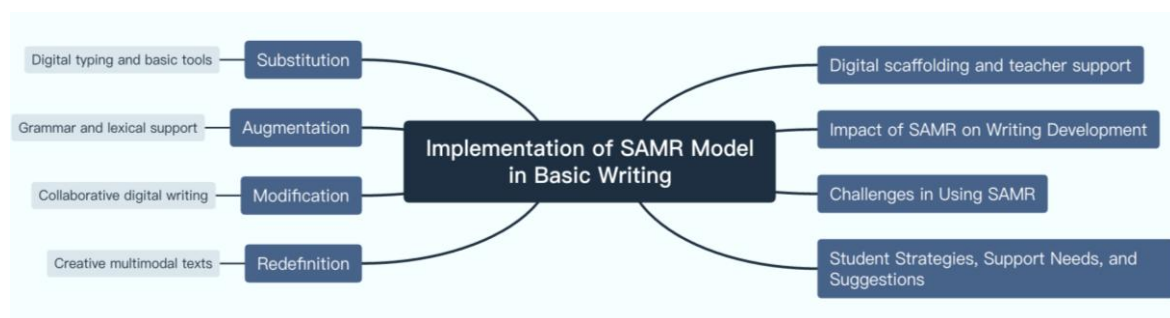


Figure 1. Themes emerging from the qualitative analysis of SAMR-based basic writing instruction

3.2.1. Implementation of SAMR-based basic writing

Students were in general interested by and felt that there was something new about the way of using SAMR in the basic writing all-majors course. In particular, they observed use of digital tools across each

SAMR level. At the substitution level, the majority of students preferred typing to handwriting so they could revise and write more easily. The students stated:

“Word typing helps a lot because my text is not so messy and I can modify things without having to redo everything on paper.” (Student 10)

“When the text is already being typed in Word, so much easier to move on to the next steps, like revising. I just write it over again every time I mess up.” (Student 29)

At the augmentation level, students liked using grammar checkers and online dictionaries to assist in their writing. They appreciated the instantaneous, targeted feedback they received from these tools.

“The grammar checker generally helps me to identify precisely where I go wrong and what needs changing one student stated.” (Student 34)

“I only know if I have it right or wrong if I use Grammarly with my grammar and it makes me more precision in writing.” (Student 2)

Another student observed:

“I have been more attentive to the mistakes that I use to make, because I get corrected and so advised by the app” (Student 32).

At the modification level, students were particularly motivated by collaborative writing on platforms, such as Google Docs and Padlet. They loved being able to share ideas, as well as make changes to their texts together in real time. As the students noted:

“What gets me motivated is doing collaborative writing in Google Docs because I see what my friends wrote immediately and we talk sentences together.” (Student 10)

“When we put our writing on Padlet and write stuff about it — I want my words to be better and more organized.” (Student 15)

Noting that he generally liked to work alone, one student indicated that:

“When we get our ideas out [for the cluster] and talk about grammar and punctuation. Mirra: Critical Civic Inquiry 89 I really wanna do it together besides just by myself.” (Student 29)

At the redefinition level, students engaged in writing activities that integrate text with other media (e.g., posters or interactive descriptive texts). Many said these activities gave them new ways to express themselves. The students expressed:

“It’s fun to make the descriptive texts with multimedia because I can put picture and design, and it looks alive at last.” (Student 10)

“I made a poster in Canva and it makes my text look snazzier than just plain ol’ text as I normally do.” (Student 29)

A third student characterized this tier as:

“Very interesting and innovative because it includes writing with images, video, or audio so the process is more creative and interactive.” (Student 32)

During these processes, the students frequently referred to digital scaffolding and support from a teacher. With detailed explanations and modeling, they constructed them around the SAMR levels. Some students replied:

“I like how the lecturer gives us scaffolding it’s helpful as then I can follow their own steps of writing descriptive text.” (Student 20)

“I don’t know if I actually get SAMR yet, but I feel like the teacher explains it step by step starting at the beginning and that helps me.” (Student 31)

“This lecturer’s help is helping me write more descriptively and I don’t know what to do (but) from knowing that it helped and now twist every detail of the action.” (Student 30)

3.2.2. SAMR model and its effect on writing development

Learners believed that the SAMR-related activities had helped to increase their competence in their English writing, including both grammar and vocabulary. A lot mentioned resources like Grammarly, online dictionaries, and translation services to help write more accurately. Several students explained:

“My grammar is a lot better now because I always put it into Grammarly before I like turn it in.” (Student 6)

“Apps like Grammarly teach me how/where/how often I’m wrong so my grammar rules just keep improving.”

“With the digital applications, I can keep checking my grammar and learning a lot of new words as well.” (Student 37)

Students also discovered that SAMR helped them to better organize their writing and ideas. They liked working with mind-mapping and clustering tools before they started writing.

“I only understand how to organize my writing by doing cluster when starting it and that gives me an idea what I’m going to write about, so I am not confuse anymore at the beginning ...” (Student 29)

“I feel that after going back and editing my writing for deception several times my paper ends up being more organized and easier to understand.” (Student 34)

“I’m not stuck no more I know what to write for every line in each paragraph.” (Student 32)

Students reported that they became more creative and were open to taking risks in their writing. One student stated that, *“if I were to write a report, I can be as creative as I want and think of more things because it helps me design the text, like multimedia.”* Another student added, *“I like to create with multimedia and other apps because it keeps me more creative and my editing skills grow.”* Another high school student observed, *“this stage teaches us to create one product that is better than just something being brought out and it’s always the same.”*

Students also found it more productive and efficient. They said saving time and streamlining the process was easier when writing on a computer. As one student (Student 12) expressed, *“it really saves time for doing homework [sic], nobody has to write by hand anymore.”* One respondent (Student 20) added, *“high tech lets me write faster and more organized.”* A third student said, *“typing and editing digitally helps speed up my writing process and makes it less tiring.”*

Additionally, SAMR seemed to raise students’ motivation, confidence, and interest. They reported feeling more excited about going to class and doing their work. Some students said:

“I am very motivated to learn basic writing with SAMR, it makes me more confident about using technology.” (Student 14)

“This tool is fun, I want to continue learning.” (Student 27)

“Every time I write another one it becomes more and more clear that there is a lot of growth between drafts.” (Student 11)

3.2.3. Challenges in using SAMR model

Despite its benefits, SAMR also presented a number of challenges for students. The biggest problem was an unreliable internet hookup. Unreliable connectivity hampered access to online tools and platforms. As some students stated:

“Sometimes we cannot arrive at the app because network is poor” (Student 1)

“Slow internet makes it difficult to open the websites and I get behind in the lesson” (Student 27)

“Connection is a very hard thing that makes me feel difficult to use the SAMR - based technology.” (Student 18)

Also, secondly the absence of devices and weak infrastructure. Other students lacked computers and relied on their phones or borrowed a friend’s laptop. Several students responded:

“I don’t have a laptop, so I have to do the assignments in a group using a friend’s laptop.” (Student 12)

“I find it is very difficult for me to acquire the lesson without a laptop since I can only use and practice on campus with friend.” (Student 4)

“It’s very hard to participate when I don’t have a laptop, especially when we are getting multimedia tasks.” (Student 32)

Students also reported that digital literacy and the use of new applications were challenging, especially in the early stages of their learning. For others, the new tools and English menus—coupled with their many steps—proved overwhelming.

“First dizzy, for nothing to understand technology. But I gradually have learned to try.” (Student 12)

“It is kind of confusing and there is a lot to remember.” (Student 31)

“As you know, I’m still a novice user it’s quite hard to use some of the platforms.” (Student 8)

Some students found the sheer number of apps and steps daunting. Although testing new tools was fun for some, others were overwhelmed by the sheer number of platforms.

“We’ve just got so many applications and there’s learning all the steps, I dunno, it feels a bit relentless.” (Student 19)

“I mean it’s a lot for me personally skills wise but I wouldn’t learn these new softwares or get this experience without this.” (Student 25)

A third student, who was new to technology, expressed this by saying:

“I feel stressed up because I have never ever learned using a laptop, numerous apps in the same time.” (Student 12)

Lastly, some students mentioned feeling pulled in two directions toward sharpening language skills and toward becoming tech savvy. Many felt that their technology involvement had actually benefited their grammar, although some were concerned about relying too heavily on these tools. Some student remarked:

“Sometimes when I concentrate on the technology/page, I don’t focus at all to language.” (Student 14)

“We are focusing too much on technology and it makes us unaware of grammar and vocabulary since we depend on auto-correct.” (Student 25)

“When I am worrying about layout and features, I don’t take as much care with my words and sentences.” (Student 32).

3.2.4. Student strategies, support needs, and suggestions

The ways students managed these challenges, and the support they sought varied. Many collaborated with classmates, sharing resources to troubleshoot device or skill issues.

“Not that concerned, the absence of technology doesn’t bother us too much because we work in groups.” (Student 5)

“The lack of technology doesn’t bother us all that much due to the fact that we do group work.”

“I work with a friend who has a laptop and we learn together.” (Student 12)

A third student mentioned that collaboration was about more than sharing devices, *“my friends and I can still work together on one platform when my gadget isn’t working.”*

Students frequently emphasized the importance of clear and incremental teacher support. They desired additional time, examples and step-by-step guidance when they learned new apps. Several students commented:

“I want short and easy-to-understand explanations.” (Student 2)

“He should teach calmly and clearly so that people like me who don’t know technology much can come through.”

“There should be a brief training or practical demonstration of the software before starting off with the tasks.” (Student 32)

Students also had ideas for campus facilities and buildings. They believed the institution should help guarantee everyone has equal access.

“The campus ought to have computers and better internet, because not everybody has that stuff.” (Student 24)

“Hopefully the university will set up a computer lab for just this class because many do not own laptops.” (Student 12)

“Good internet and devices are very important for us to use digital platforms fully.” (Student 27)

Students sought instead practice and interactive activities without wasting too much time and careful selection of tools in their courses.

“The use of SAMR would be more fun if we played some (games) in between.” (Student 2)

“The instruction should not be too difficult; it’s good when the steps are simple and not so fast.” (Student 31)

A third student recommended a compromise:

“SAMR should keep going but not so many apps at one time and should be easy to find.” (Student 19)

Finally, students acknowledged the life-long utility of SAMR and described instances where they would like to see it applied more. They viewed how it could benefit them in school and after they graduated.

“I think this technology will really help in our future careers, I won’t be far behind using any kind of digital tools.” (Student 23)

“The best part of it is that I’ve come to know a lot of digital platforms, which will assist me more even with my thesis in the future.” (Student 13)

“Up next, Rudy could make it (SAMR) enhanced even more and maybe use it in other classes because I feel like it helps us write more creative and better.” (Student 27)

3.3. Discussion

In exploring the usage of SAMR-based digital scaffolding in a basic writing course, this study explores the role of technology alongside quantitative findings and themes drawn from student interviews. The majority of students found the SAMR activities to make descriptive writing more effective, engaging, and enjoyable, and viewed the challenges as low or moderate, mostly requiring more support from the instructor. Evidence indicated that various SAMR levels, ranging from basic technological tools to cooperative technologies platforms, enabled students to shift from simple drafts towards more creative writing. However, students had worries about technology access, differences in skills and feeling overwhelmed.

These findings do provide support complementary to other studies which have found the SAMR model may enhance technology use in writing teaching by going beyond substitution and promoting higher order thinking and creativity. This study contributes to the field by linking SAMR with grammar-focused descriptive writing and composition skills more generally. It also advocates employing SAMR as a technological framework for technology-supported EFL writing [23], [24] and argued that it should be combined with scaffolding and sociocultural methods.

The importance of scaffolding support in improving student engagement and development is underscored by the qualitative findings. The establishment of a supportive learning environment was determined to necessitate scaffolding, which includes coaching, modeling, and motivating assignments. Students were able to enhance their writing abilities while simultaneously participating in the learning process through the use of digital scaffolds, such as online resources and teacher guidance. This discovery is consistent with scaffolding theory, which posits that learners may perform well when they are provided with structured support that facilitates their transition from dependent to independent learning habits.

Additionally, SAMR-informed tasks are in excellent alignment with the current pedagogical scaffolds [12], [24], [25] (e.g., the utilization of grammar check tools and close drafting). These assignments facilitate the gradual development of students’ writing abilities, establishing a distinct progression from basic to advanced levels of writing. As long as clear guidelines are established, teachers can effectively utilize these tools to ensure that students are confident and capable of manipulating additional tools.

Teachers’ professional development is essential for facilitating students’ learning through SAMR-based scaffolding. Teachers must possess the necessary knowledge and strategies to offer structured learning support for students’ language and technology needs [26]–[29]. This encompasses the provision of explicit guidelines and illustrative works that illustrate the efficient application of SAMR tools at each level.

Teachers must receive training in order to not only incorporate technology into their teaching, but also to effectively facilitate student learning during these technological transitions.

Policy implications from these findings indicate that infrastructure is suffering as poor access to technology was reported, this had major inhibitions on taking part in multimedia and interactive activities. By incorporating both survey and interview data, the study gained detailed understandings of the students' experience with SAMR learning, in which interview themes included challenges to clarity and cognitive load in negotiating multiple platform-based engagement as well as inequities that a lack of personal devices introduced.

Interestingly, many students reported that using media tools helped them focus more effectively on language structure. Students discovered that the utilization of multimedia applications and grammar analyzers actually improved their understanding of language structure, despite initial worries that technology could result in language dependency. This discovery challenges the prevalent belief that technology will erode grammar proficiency and instead suggests that, when utilized appropriately, digital tools can promote creativity and improve language awareness. Furthermore, the utilization of collaborative platforms contributed to the mitigation of certain disparities in technology accessibility, as students collaborated in overcoming device limitations.

The study's generalizability to other student groups may be restricted by its use of only one class. Furthermore, the investigation is deficient in a method that is adequately impartial for evaluating the efficacy of SAMR-based instruction. It did not also conduct comparative analyses of various SAMR levels regarding tool functionality, nor did it address grammaticality and creativity over longer periods. Further research is required to determine the most effective methods of incorporating AI-based writing assistants into the SAMR model while still preserving learner agency, in light of the growing prevalence of these tools.

Lastly, this study illustrates the efficacy of SAMR-based scaffolding in improving descriptive writing and fostering creative thinking in students. To effectively harness the advantages of this strategy, educational institutions must invest in infrastructure and deliver extensive teacher training. Future research should concentrate on investigating the incorporation of AI tools, assessing the influence of SAMR across various writing genres, and analyzing the long-term implications on student outcomes.

4. CONCLUSION

This study aimed to improve grammar skills and descriptive writing through SAMR-based digital scaffolding in a basic writing course. The results show that using SAMR alongside organized scaffolding significantly improved student engagement and writing skills, notably in grammar and creativity. Students reported enhancements in their grammar comprehension, idea generation, and overall writing confidence, indicating that technology use exceeded mere substitution and actually influenced learning.

However, significant obstacles were noted, such as unequal access to resources and differing degrees of digital skills, emphasizing the importance of ongoing infrastructure support and investment. The key lesson from this study is that SAMR-based scaffolding can effectively inspire students and develop descriptive writing skills, as long as adequate assistance and resources are available. Future study might look into expanding the SAMR model to other literary genres, experimenting with AI technologies, and including longer-term research designs to assess the sustained influence of these methods.

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C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article.




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