e-Bangi Faculty of Social Sciences and Humanities Universiti Kebangsaan Malaysia
Journal of Social Sciences and Humanities

eISSN: 1823-884x

Volume 22, Issue 2, DOI: https://doi.org/10.17576/ebangi.2025.2202.35

Article

Impact Of Code-Switching On Learners' Academic Performance: A Systematic Literature Review

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Received: 17 January 2025
Accepted: 26 April 2025

Abstract: This paper explored literature and empirical studies on the correlation between CS and comprehension in academic settings, as well as how CS as a strategy is employed for enhancing comprehension. A systematic literature review was extensively conducted on seven major databases, which have high readability and citation index - ScienceDirect; IBSS; scielo.org; SCOPUS; DOAJ; Taylor and Francis and Web of Science - with search strings that are the combinations of code-switching/codeswitching and keywords, namely code-switching/codeswitching and comprehension, the impact of code-switching/codeswitching on learner performance in South Africa, the impact of code-switching/codeswitching on learner performance, and the correlation between code-switching/codeswitching and comprehension. Findings from the review of local and international literature spanning seven years are ambivalent, with studies ranging from a strong positive correlation to a positive correlation, to no correlation. The paper concludes that the merits of CS in enhancing comprehension in academic settings are applied by both teachers and learners. The paper, therefore, submits that future studies should explore CS in digital learning environments, experimental settings, or policy evaluations. The paper also recommends that curriculum documents provide research-based best practices for applying the strategy as a guide to the employment of the strategy in academic settings.

Keywords: Code-switching; translanguaging; comprehension; multilingual settings; multilingualism

Introduction

Arguably, African states have a multilingual character that occasions Code Switching (CS) in both every day and academic communication. Code-switching is a multilingual languaging strategy whose influence or lack of it in enhancing comprehension in multilingual teaching and learning contexts needs interrogation to determine whether it is a practice worth embracing or rejecting. Code-switching is a language alternation practice that has been widely used in multilingual settings (Malindi, Gobingca & Ndebele, 2023; Mabule, 2019). Our assumption is that its widespread use assumes its efficacy in facilitating comprehension in academic settings. This study then sought to review the literature and empirical studies to determine the extent to which CS as a practice impacts comprehension in academic settings.

Most of the current literature on multilingual education addresses the influence of translanguaging on enhancing comprehension in academic settings (Chaka, 2020; Sefotho, 2022; Charamba, 2023), giving the impression that languaging forms that predated it (in terms of nomenclature) like code-switching are obsolete. Sometimes when it is mentioned, it is flagged as a multilingual practice that falls under the translanguaging approach to multilingual education (Aleksić & García, 2022), which is another area of contestation. In

addition, there is a temptation to couple CS and translanguaging, but translanguaging in recent applied linguistics research has overshadowed code-switching, but the latter is the one that, arguably, is more popular and better known by teachers than the latter. Although it is now fashionable for researchers to write about translanguaging, arguably, most language teachers, especially those trained a couple of years back before translanguaging was popularised in South African literature, are unaware of its existence. We claim that CS was the catchword in applied linguistics during their teacher training. This justifies an examination of the literature on whether CS facilitates comprehension or not.

The mismatch between theory and practice in teachers' code-switching in South Africa also gave impetus to this review. Leruele and Sibanda (2024) observed discrepancies between how teachers perceived their code-switching practices and how they implemented the practice. It is, therefore, questionable whether teachers' use of CS has its basis in conclusive research about its positive correlation with student performance. Thus, this paper reviews the literature to determine code-switching's correlation with comprehension.

Moreover, we realised that the faintest hint of multilingual practices in CAPS English Home Language Grades 4-6 is in the principles of Human rights, inclusivity, environmental and social justice: infusing the principles and practices of social and environmental justice and human rights as in the Constitution of the Republic of South Africa. However, an analysis of the teaching approaches in multilingual classrooms in South Africa is not covered in CAPS, which is possibly the reason CS has no uniform application.

The problem statement is that despite the ubiquity of CS practices in the classroom, we cast doubt on teachers' appreciation of the value of CS practices and the research-based CS best practices. The lack of appreciation of the practice's efficacy manifests in the practice being ad hoc, spontaneous, unpremeditated, relatively brief, reactive, and proscribed to oral use (Sibanda, 2021). Before determining teachers' knowledge of the intersection between CS and comprehension and the nature of their CS practices, it was important to determine the intersection between CS and learner comprehension from literature as a precursor to an empirical study with teachers. Therefore, the paper reviews the literature on CS and its relation to comprehension and how the practice should be applied in multilingual contexts. Moreover, most research on code-switching has focused on its structural perspective, identifying the types of code-switching patterns, as inter-sentential code-switching, intra-sentential code-switching, and extra-linguistic code-switching (Bousquette, Klosinski & Putnam, 2023; Nguyen, Yuan & Seed, 2022). However, what is least known is the correlation between CS and learner comprehension or no correlation at all.

The study is guided by the research question: What impact does CS have on comprehension in academic settings?

Literature Review

1. A Multilingual Phenomenon – Code-Switching

Code switching is a bilingual and multilingual phenomenon, which occurs in a bilingual context (Dykes, 2018; Auer, 2020). Code-switching has been the subject of a variety of scholarly perspectives rooted in different theoretical outlooks, as in our study, where it is underpinned by the sociocultural theory propounded by Vygotsky (1978) discussed later in this paper, relying on different methodologies, and pursuing different goals. Against this eclectic background, it should be unsurprising that code-switching has been given quite distinct – not to say contradictory – definitions.

Although outdated, Blom and Gumperz (1972) share a detailed definition of code-switching as "the process whereby speakers move from one language to another either within a single utterance or between one utterance and the next in the same interaction". Code-switching (sometimes called code alternation or language alternation) describes essentially bi- and multilingual speakers' use of more than one language or language variety within a single interaction or conversational turn. Moreover, code-switching is defined as the occurrence of multilingual speakers switching between different [shared] languages (Khalema & Raselimo, 2024). Besides, Couto, Romeli and Bellamy (2021) define code-switching as the multilingual practice where speakers "go back and forth" between their languages within the same conversation, either between clauses (inter-clausal) or within the same clause (intra-clausal).

Code-switching is that it consists of a matrix or host language and an embedded or guest language. The matrix language provides the grammatical structure and system morphemes, while the embedded language provides content morphemes "rather like putting the flesh onto the skeleton" (Cook, 2008:177). However, it is unclear because it is difficult to differentiate between embedded and matrix language during intrasentential switching, especially where the speakers experience simultaneous bilingualism with both languages being used with the same 'measure of fluency' However, for most CS practices, Sibanda (2021:30) posits that "…sometimes the Home Languages only serve pedestrian non-pedagogical functions … where the stakes are low."

Linked to CS is the mother tongue, which, according to Austrus, Mahamod and Adnan (2024), is the first language informally learnt by an individual compared to the second language learnt informally through interactions in a community using the second language or formally in the classroom. Eisenchlas and Schalley (2020) add that the mother tongue is the language one learns first, identifies with, and/or is identified by others as a native speaker of; sometimes also the language that one is most competent in or uses most.

Methodology

This study used a systematic literature review, which is defined by Siddaway, Wood and Hedges (2019) as a comprehensive search to locate relevant published and unpublished work on a subject, the systematic integration of search results, and a critique of the extent, nature, and quality of evidence in relation to a particular research question. A systematic literature review was extensively conducted on seven major databases, which have high readability and citation index - ScienceDirect; IBSS; scielo.org; SCOPUS; DOAJ; Taylor and Francis and Web of Science - with search strings that are the combinations of code-switching/codeswitching and keywords, namely code-switching/codeswitching and comprehension, the impact of code-switching/codeswitching on learner performance in South Africa, the impact of code-switching/codeswitching on learner performance, and the correlation between code-switching/codeswitching and comprehension. We also changed performance to achievement or attainment. This meant that our search considered the hyphenated code-switching and the unhyphenated codeswitching. We chose a systematic review to identify all empirical evidence that fitted the pre-specified inclusion criteria to answer the impact of CS on comprehension in academic settings. We did not restrict the sample to articles with a qualitative research focus but also embraced mixed methods studies. Only studies published between 2018 and 2025 were considered in this study to see whether there was a current consensus on the nature of the relationship between CS and comprehension.

After identifying all the articles for the research review, we coded them according to the research question, theoretical focus, research approach, data, and geographical and time focus. Initially, we had more than 30 articles, but after considering the inclusion criteria, we settled for 10 articles from different journals, covering different countries, developed and developing, indicating the diversity of our study sample. Besides, some sources were excluded because they were mere duplications. We excluded studies that did not focus on CS and comprehension in academic settings, as some studies focused on types of CS and non-academic functions of CS. Also, some had a citation count below 5, and we targeted a citation count above 5. Regarding data analysis, we used narrative synthesis to identify common patterns/themes across the selected studies.

The Findings

The presentation below is a summary of the 10 studies used in this study. These studies cover CS in multilingual classrooms. The overall finding is that there is a strong positive relation between CS and comprehension in academic settings since out of the 10 selected studies, 3 found positive relation, 6 found a strong positive relation, and only one found no correlation.

Malindi et al. (2023) in South Africa conducted a study on the impact of CS on the learning and teaching of Mathematics. It covers both rural and urban schools. Only 2 focus groups were used and only 6 participants were selected. They used focus groups and Grade 6 Mathematics teachers. Their main finding is that CS has a positive impact on learners'academic performance. Thus, CS is inevitable in teaching learners whose first or mother tongue is not English.

Alang and Idris (2018) in Malaysia looked at the perception of university students towards the use of code-switching by their lecturers in enhancing the teaching and learning process in Malaysia. A quantitative approach using a questionnaire and 45 participants were used in the study. The finding is that there is a strong positive correlation between CS and learner achievement. Learner achievement is improved due to lecturers' code-switching practices as they can recognise their errors, learn new words and answer questions asked by the lecturers.

Another study was conducted by Khalema and Raselimo (2024) in Lesotho, focusing on the impact of code-switching in the domain of Lesotho's geography education, drawing insights from both learners' and teachers' viewpoints. Only 3 three geography teachers were systematically selected in the study that employed explanatory sequential mixed methods research design, which involved classroom observations, focus-group interviews as well as in-depth interviews with 26 Grade 10 learners and teachers respectively. The study found a positive correlation between CS and learners' academic performance. Code-switching in geography education improves learners' comprehension by improving their proficiency in subject-specific terminology.

In another study, Seabela and Ncanywa (2024) demonstrated the effectiveness of code-switching as a pedagogical practice for senior-phase teachers teaching content subjects in some selected schools of the OR-Tambo education district in South Africa. Only 3 schools were selected: one high school and 2 senior secondary schools in semi-rural areas. Observation, focus groups and questionnaires were the data collection tools used in the study that involved 9 senior phase teachers of Mathematics, Social Sciences and Natural Sciences. A mixed methods approach was used for triangulation. The study results indicate a strong positive correlation between CS and learners' academic performance. The use of code-switching is a very useful tool to improve the effectiveness of teaching and learning in senior-phase lessons. The acquisition of conceptual information through CS provides information for language comprehension in another.

Ali et al. (2023) in Pakistan investigated the effects of code-switching techniques on the academic achievement of bilingual pupils in the fields of mathematics and language education. Quantitative data from standardised tests and qualitative data from interviews and classroom observations were used. This quantitative data from 150 students and 10 teachers for interviews and 20 students for interviews as well was used. The findings revealed a strong positive correlation, thus a high positive correlation between CS and bilingual students' mathematics and language performance.

Likewise, Li and Yiakoumetti (2023) in the United Kingdom investigated why teachers switch to students' first language. Observations (one Grade 3 and one Grade 6 classes), questionnaires, and interviews for 2 teachers of both classes were used in this study. The findings collected through these 3 data collection tools used for triangulation in this study revealed that CS enhances learner understanding. Also, the study highlighted that there is a strong positive correlation between CS and learners' academic performance.

In Thailand, Jeanjaroonsri (2022) investigates the effects of using CS when learning and teaching English as a foreign language. Classroom observations, a questionnaire and semi-structured interviews were the data collection tools used to collect data from one teacher and thirty-one students. The findings revealed a strong positive correlation between CS and learners' academic performance. The findings assert that CS enhances additional language acquisition and cordial classroom interaction.

Similarly, in the Philippines, Maed and Barcelona (2023) explored the attitude towards English and frequency of code-switching and implications on Grade 10 students' English academic performance. In this study, 60 Grade 10 students were used in the questionnaire and 5 Grade 10 learners were used in the focus group discussion. A concurrent nested mixed-methods approach, thus the quantitative – questionnaire, and the qualitative-focus group discussion, thus the qualitative portion, was used for triangulation. In this study, Bernice Anoykes' questionnaire was used. The results showed that a high frequency of code-switching, significantly influenced the learners' academic performance in English., indicating a strong positive correlation between CS and learners' academic performance.

Olagbaju et al. (2023) in Nigeria examined code-switching and its effect on learners' academic achievements and interest in learning. Data was collected using simple frequency count, percentages and mean based on a 20-item questionnaire. Only 4 schools participated in the study, with 230 participants, covering

Grades 7-9. The findings revealed that CS can improve learners' achievement, attitude and interest in learning, indicating a positive correlation between CS and learners' academic performance.

In South Africa, Grobler (2018) explores the perceptions of Grade 8 students regarding codeswitching in Natural Sciences classrooms and their perceptions of the effect of code-switching on their academic achievement. A questionnaire was used to gather data during Natural Sciences lessons. In this study, only 30 participants from the classes doing Natural Sciences were selected. The study revealed that the use of code-switching confused many students, resulting in underachievement in Natural Sciences. Also, the findings of the present study indicate participants' strong preference for the use of only English as the medium of instruction. In this study, no correlation was found between CS and learners' academic performance.

Discussion

While these comprehensive 10 studies focus on code-switching in the classroom, they are set in different geographical contexts, at different levels, and involve different languages. The studies cover countries, namely South Africa, Lesotho, Nigeria, Malaysia, Pakistan, the Philippines, Thailand, and the United Kingdom. These countries have different linguistic characteristics, making this paper a worthwhile endeavour, as it sheds information about the correlation or lack of it between CS and comprehension in academic settings.

A further discussion of the results starts with the studies that showed a positive relation, followed by the ones with a strong positive correlation, and then one study that showed that there is no correlation between CS and comprehension in academic settings. Of the 3 studies conducted in South Africa, only one showed a positive correlation, while one had a strong correlation, and the other one showed no correlation between CS and comprehension in academic settings. These 3 studies covered the English language, Geography and Mathematics. The study with a positive correlation had only one data collection tool, a focus group, and 6 participants. We argue that perhaps the extent of the correlation between CS and comprehension could have changed from a positive to a strong positive correlation if more data collection tools had been used for data triangulation. Besides, considering that only 6 participants participated in the concerned study, perhaps that led it to lose statistical power, hence a positive correlation, not a strong one. Similarly, Vasileiou, Barnett, Thorpe and Young (2018) share that qualitative sample sizes are predominantly – and often without justification – characterised as insufficient (i.e., 'small') and discussed in the context of study limitations. Sample size insufficiency is seen to threaten the validity and generalisability of studies' results.

The South African study with a positive correlation covered Grade 6 Mathematics, a content subject with peculiar terms. In many cases, learners struggle to comprehend a concept faster because of unfamiliar terms. However, through CS, the learners can easily relate to the new terms by moving from the familiar to the unfamiliar, hence the finding that there is a positive correlation between CS and comprehension in academic settings. Similarly, the importance of pre-knowledge is noted by Zano (2020), who emphasises that teachers should help learners become aware of and draw on their existing knowledge because when learners lack a solid background in the subject under study, it becomes challenging to score highly in the given task.

Besides, the above study, with a positive correlation between CS and comprehension in academic settings, is based on data collected from rural and urban schools. Comparatively, we expected rural and urban schools to have different CS 'infrastructure', as rural schools use CS more often than urban schools. This assumes that indigenous languages are shared in the immediate settings of the learners and teachers in rural schools fairly better than to the learners and teachers in urban schools, as supported by Motseke (2020) and Mabule (2019). In most rural schools and settings like home, there are not many enabling natural opportunities for the learner to use the medium of teaching and learning, conveniently termed foreign language in this paper, because, in most cases, the teachers and the learners and community members share a common language, as asserted by Graham and Mtsweni (2024). We advance that learners hardly acquire the LoLT outside of the classrooms. However, in urban schools, learners and teachers are from different places, have different home languages, and have more exposure to the LoLT outside of the classroom; thus, they mostly resort to it, which is conveniently termed additional language in this paper. Perhaps, this needs further interrogation to confirm or negate our assumption that teachers in rural areas use CS more often than those teaching in urban schools because urban contexts are more multilingual than rural settings.

Moreover, the other two studies with a positive correlation between CS and comprehension in academic settings were conducted in Lesotho and Nigeria. The study conducted in Lesotho was a mixed methods study, with 29 participants, both teachers and learners, and 3 data collection tools were used, while the one done in Nigeria was a quantitative study, with 230 learner participants, and only a questionnaire used as a data collection tool. We established that the 3 three studies in this paper that yield a positive correlation between CS and comprehension in academic settings do not have a pattern, but their different findings could have been moulded by their different contexts, methodologies and samples.

In this paper, 6 studies indicated a strong positive correlation between CS and comprehension in academic settings, and they were conducted in South Africa, Malaysia, the United Kingdom, the Philippines, Thailand and Pakistan. This strong positive correlation could have been due to two common variables among these 6 studies. First, they all had a quantitative component in their studies. Secondly, they all used at least 2 data collection methods, namely standardised tests, focus groups, interviews, observations and questionnaires. This could have helped one data collection tool to ease the weaknesses of the other tool, hence a strong positive correlation. This resonates with Dawadi, Shrestha and Giri's (2021) assertion that the use of a mixed methods approach enables researchers to answer research questions with sufficient depth and breadth and helps generalise findings and implications of the researched issues to the whole population. For example, the quantitative approach enables a researcher to collect data from many participants, increasing the possibility of generalising the findings to a wider population. The qualitative approach, on the other hand, provides a deeper understanding of the issue being investigated, honouring the voices of its participants.

Mathematics, English as a foreign language, Natural Sciences and Social Sciences were some of the subjects covered in the studies that reported a strong correlation between CS and comprehension in academic settings. In the case of Mathematics, the study was carried out in a semi-rural setting, implying that the teachers and the learners involved did not have too much access to the language of teaching and learning outside of the classroom; thus, CS became handy. Also, since these learners and the teachers were from the surrounding villages, chances are high that they shared a common home language since family members tend to stay in one village; thus, the temptation to use CS was high during Mathematics lessons. Moreover, considering learners' poor performance in Mathematics in South Africa, Maluleke (2019) and McLachlan and Essien (2022) report that teachers encounter challenges when they use English as the medium of instruction because learners fail to comprehend the challenging mathematical concepts presented to them in a language that is not their home language. Thus, the findings of this study have helped reveal that CS can be used as a multilingual approach to empower learners when attempting content subjects like Mathematics, Natural Sciences and Social Sciences as they use their home languages to understand newer concepts, improving their performance in the subjects under study.

In this paper, where a large sample is used, there is a strong correlation between CS and comprehension in academic settings. For example, in a study carried out in Pakistan, in the quantitative phase, 150 bilingual students in Grades 6-8 in a diverse urban school were selected as participants (Ali, Ihsan & Sherazi, 2023). On the contrary, Olagbaju, Olubunmi and Olaniyi (2023) in Nigeria used 230 participants but found the correlation between CS and comprehension in academic settings positive, not a strong correlation. In a quantitative study, an adequate number of representative cases is chosen to represent the larger population, unlike in qualitative research, where only a few non-representative participants are used as a sample to develop an initial understanding of the subject under study. This is in line with Fowler and Lapp (2019), who share that when sample sizes are too small in quantitative studies, the result may indicate that relationships between variables are not statistically significant when they are. Besides, larger sample sizes are more representative of the population one is studying.

Of the 10 selected studies, 8 used the mixed methods approach. We then ask why some studies avoid mixed methods approach although they are conscious of its multiple advantages over a single approach study. We claim that the phenomenon of CS could also be best addressed qualitatively as the selected participants share their opinions on this matter. Even Nigussie and Bekele (2021) share that the responses of the participants' reality, pedagogical practices and understandings are derived from their unique built-into societal beliefs and habits, some of which more closely align with their own lived experiences than others. Besides,

one might argue that since CS is language-based, a qualitative approach can help explore this concept of the correlation between CS and comprehension in academic settings rather than investigating it using quantitative means. However, the thrust is not to dismiss mixed methods input in CS studies, but we claim that the quantitative approach works better if it plays a complementary role to the qualitative approach when dealing with a language-based concept like CS, as it did in the bulk of the selected studies in this paper.

Most of the chosen studies in this paper, 9, indicate either a correlation or a strong between CS and comprehension in academic settings. We advance that it was most probable that CS was enhanced in these selected studies because some, if not all, of the authors could be bilingual/multilingual. In a scenario where the teacher is bilingual in Sesotho-English, meaning a native Sesotho speaker, we expect more instances of CS. If the teacher had been English-Sesotho, meaning a native English speaker, occurrences of CS in the classroom may not be that pronounced. This implies that the drive to CS in a classroom can be driven by the teacher's home language, which could also be their learners' home language, as alluded to by Patmasari and Kamaruddin (2022).

In this paper, only one study showed no relation correlation between CS and comprehension in academic settings. This study was carried out in South Africa, whose finding was that CS confuses learners, and the learners preferred English as the sole medium of instruction in Natural Sciences classroom. According to this study by Grobler (2018), CS leads to learners' underachievement Natural Sciences. Unlike most self-reports in this paper, this paper is based on learners' opinions about CS and academic achievement. The limitation of this study is that only one data collection was used, a questionnaire, hence there was no room for triangulation.

Another limitation of these studies is that most of them are based on self-reports because they are based on teachers' opinions without roping in the learners who may be qualified enough to comment on what they find working and not working for them. The integrity of survey self-reports is even questioned by Jürgens, Stark and Magin (2020), who report that they are highly unreliable since they are plagued with over- and underreporting. We argue that there is no unanimity on the causes of the unreliability of the self-reports, but we believe that it could be that human beings are limited in recalling events or experiences truthfully due to the passage of time. However, to strike a balance in this study, some of the selected studies are based on learners' perceptions of CS, not teachers' perceptions of the learners' experiences with CS.

This study has some implications for language policymakers, classroom teachers, and researchers. Firstly, as there may be a significant difference between what a language policy states and learners' preference of medium of instruction, decision-makers should regularly revise language policies in order to reach the desirable goal of learning. Secondly, careful consideration should be made based on several factors, such as the purpose of a switch at a particular stage of the lesson, students' proficiency level, students' needs, expectations or even emotions in order to achieve beneficial and judicious use of code-switching. Lastly, teachers will be more assured and more effective in teaching if they are empowered with a deeper understanding and an improved realisation of the potential benefits of the functions and symbolic representations of CS practices in their classes.

Conclusion

The paper dwelt on a crucial matter regarding the correlation, or lack of it, between CS and comprehension in academic settings. This will help researchers understand where the selected reviewed literature stands, which is instructive for future engagement in this matter. The general findings in this study are mixed, indicating no correlation, one study, a correlation, 3 studies, and a strong correlation, 7 studies, between CS and comprehension in academic settings. Therefore, the overall finding is that there is a strong positive relation between CS and comprehension in academic.

The differences in these findings could be justified depending on some variables, including sample size and research approach. Only two approaches were used in the selected studies, namely qualitative and mixed methods approach. This indicates a weakness in the sampling, as one would suggest that we should have deliberately looked for the quantitative studies and those that utilised experimental designs. A search

for the literature that deals with the correlation between CS and comprehension in academic settings using experimental designs did not yield positive results because no suitable historical data was available.

Based on these findings, we recommend the following: more studies should be carried out covering other African countries to see if there is a correlation between CS and comprehension in academic settings, considering that Africa is largely a multilingual community and it is important to identify aspects of the syllabus that could be better presented in the local language than in the English language which is the language of instruction. Also, future studies can explore CS in digital learning environments, experimental settings, or policy evaluations. Besides, there is a need for more mixed methods approach studies to confirm or negate the correlation or lack of it between CS and comprehension in academic settings since, presently, the qualitative approach is mostly used.

Acknowledgement: We are grateful to Walter Sisulu University for paying page fees.

Informed Consent Statement: Since this study did not involve humans, there was no need for informed consent.

Conflicts of Interest: The authors declare no conflict of interest.

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