Brain Dominance, Learning Styles and Reading Comprehension of Saudi EFL Learners: A Survey Study

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Abstract

Development of global skills to pave the way in the Sustainable Development Goals (SGs) requires institutions around the world to put quality education as one of the pillars for a sustainable economy. The present study employed a descriptive survey research design to capture the brain dominance, learning styles, and reading comprehension of Saudi EFL learners. The study involved a randomly sampled 154 students enrolled in language and reading courses at Qassim University, Saudi Arabia. The results of the study showed that Saudi EFL learners are left-brain dominant in that they consider themselves analytical, logical, methodological, and detail-oriented. Similarly, the distribution of respondents' learning styles, whether visual, auditory, or kinesthetic, is almost equal, indicating that the Saudi EFL learners have distinct learning preferences and processes. Finally, the results revealed that a significant number of students excel in reading, while a smaller number still struggle with it. Hence, Qassim University must implement student-centered language teaching interventions and strategies to realize the vision of the Saudi future. The diversity of Saudi EFL learners necessitates different instructional modalities and processes, and their level of reading performance demands effective interventions to address their language capabilities.

Keywords: Brain dominance, learning style, reading proficiency.

1. Introduction

Neuronal dominance is the inherent tendency of a person to mostly process information using one hemisphere of the brain (Güntürkün, et al, 2020). Distinct cognitive processing mechanisms are present in the left and right hemispheres of the brain. The left hemisphere is specialized in the processing of language and logical thinking, especially for activities that require interpretation of written material. Conversely, the right hemisphere is linked to creativity and creative manifestation, particularly when communicating significant information based from the findings of researches (Corballis & Beale, 2021; Güntürkün, et al, 2020; Hartikainen, 2021).

There has been extensive empirical research conducted on the relationship between brain dominance and different levels of proficiency in English language literacy (Alshihry, 2024; Goldrick & Gollan, 2023). Previous studies have demonstrated a strong correlation between the dominance of the left brain and reading proficiency (Corballis, 2021; Handayani & Aminatun, 2020; McLean et al., 2020; Yudha & Mandasari, 2021). These specific functions governed by the left hemisphere of the brain might improve writing abilities, vocabulary, and reading comprehension (Carrión-Castillo et al., 2023). Contrary to the common perception, a study has demonstrated that brain dominance has no substantial influence on one's speaking abilities (Rossion & Lochy, 2022), nor does it affect the auditory perception function (Alzamil, 2021). Past research also indicates that brain dominance can influence specific aspects of language acquisition (Suwarto & Hidayah, 2023). Nevertheless, it is worth mentioning that the impact of brain dominance can vary across different cognitive abilities (Promsri, et al, 2020).

Moreover, doing additional study is essential to determine the relationship between brain dominance and learning styles, thereby requiring further investigation (Lwande, et al, 2021). Individual learning styles relate to the preferred method of acquiring, evaluating, and retaining information (Dantas, et al, 2020). Brain dominance is hypothesised to influence learning methods and, therefore, reading proficiency. Given the compelling evidence that the left hemisphere is accountable for reading abilities (Rossion & Lochy, 2022), it is plausible that one of the learning styles, namely kinesthetic, visual, or auditory, may be linked to reading proficiency. While there exists a theoretical basis for this correlation, it is unnecessary to quantitatively assess the relationships among brain dominance, learning styles, and reading proficiency. Therefore, the aim of this study is to explore the possible correlation between brain dominance and learning styles, expanding on previous studies that have shown a link between memory, brain function, and learning styles. This study aims to answer these questions:

1. What is the distribution of respondents for each brain dominance?
2. What is the distribution of respondents learning style preference?
3. What is the Saudi EFL reading performance level?

2. Literature Review

This literature review begins by discussing the opposite-brained readers. It moves to present reading for students with a right brain. The review also delves into the reading instructional approaches and finishes by talking about the ability to read and write.

Opposite-Brained Readers

The abilities to think logically, concentrate on the here and now, and understand symbols and abstract ideas are common among students who are dominant in the left hemisphere of the brain (Lindsay, 2021). Kids excel in analytical thinking, which is great for written assignments and in-depth reading. For example, pupils who are more naturally inclined to think critically and analytically often read with a left-brained mindset. They are quite good at deducing meanings from symbols and words (Shaw, 2020). A stronger left-brain dominance is associated with

improved reading skills, according to research (Li et al., 2022). One finding that lends credence to the cerebral lateralization concept is the correlation between left-brain asymmetry and enhanced pseudo-word reading ability.

Reading for Students with a Right Brain

Students who are more naturally gifted with the right side of the brain tend to think more holistically, intuitively, and at random (Abraham, 2024). Feelings and emotions, colour recognition, pattern recognition, creativity, and visualising are areas of attention for them. Just looking at the title of a book could elicit a visual representation or memory jog in right-brained kids (Kantrowitz, 2022). When using their right brain, they are able to absorb information more holistically and on a global scale, and their memories are more likely to remain intact. Reading with visual material or creative aspects is especially enhanced by this hemisphere's function in intuition, insight, and imagination (Rossion & Lochy, 2022).

Reading Instructional Approaches

Information processing styles are impacted by students' preferred learning methods, which in turn are impacted by their brain hemisphere dominance. According to research of Lim et al. (2020), the preferred learning method of students is influenced by their dominant brain hemispheres. Teachers can enhance their ability to meet their students' needs by gaining an understanding of various learning styles and applying that knowledge to tailor their reading instruction. Students' learning style to Lukyanova et al. (2020) which is influenced by brain dominance, can significantly impact their reading comprehension and overall learning experience.

Ability to Read and Write

When students do better than what is required by their schools on standardised tests, we say that they are proficient readers (Teltemann & Schunck, 2020). There are two main aspects to strong reading comprehension: first, the capacity to absorb and analyse the material, and second, the ability to make sense of what they read (Silalahi et al., 2022). When evaluating students' level of competence, it is essential to measure their reading comprehension. Studies showed that a high correlation between children's chosen learning methods and reading competency (Abella et al., 2024; Hall et al., 2023; Loh et al., 2024). More study is needed to fully comprehend the relationship that exists between dominant brain type, learning style, and reading competency. It is necessary to do further research in order to get a comprehensive understanding of the connection that exists between the dominant brain type, learning style, and reading proficiency.

3. Methods

Research Design

The study employed descriptive design. A questionnaire on the reading levels, learning methods, and brain dominance of English as a Foreign Language (EFL) students was the primary objective of the research. This questionnaire was adopted from Jorgenson (2015). The study took place at Qassim University,1445AH.

Participants

The participants of the study were the 110 third-semester English students of Qassim University. They enrolled at Department of English Language and Literature. No specific age or gender was used in the random sample process that chose the participants. Using a brain dominance questionnaire, the students were divided into two groups: right-brain and left-brain. They were also divided into three sub groups according to their preferred method of learning: visual, aural, and kinesthetic. Students were asked whether to participate in the study. Those who welcomed where entered into the sampling.

Instruments and Procedure

As to research instrumentation, this study investigation used historical documents as well as a questionnaire. Initially, there existed the Hemispheric Dominance Test designed by Jorgenson (2015). The scale was modified and updated. This 35-item exam measures predominance of the right hemisphere in processing information. Twenty standardized questions on reading performance. Reading ability, learning style profiles, and brain dominance were some of the other variables that were taken into account over the course of the research procedure. For the purpose of gathering information about reading abilities, learning styles, and brain dominance, questionnaires and relevant studies were used. These research instruments were subjected to proper validation and reliability testing. The Google Forms assessments measuring brain dominance and learning styles have a 30-minute time limit. The instructors were consulted for the students' final reading course exam results. In order to establish proficiency, the researchers examined reading comprehension test results and used Excel to analyze the questionnaire responses in order to find different kinds of brain dominance and learning styles. The questionnaire displays a good average reliable of 0.84 of the three dimensions tested.

Table 1 presents Reliability coefficient of the variables.

Table 1. Reliability coefficient of the variables

Variables	Number of Items	Number of Items Removed	Cronbach's Alpha	Interpretation
Brain Dominance Tool	10	0	.876	Good reliability
Reading Performance Tool	10	0	.811	Good reliability
Learning Styles Tool	15	0	.856	Good reliability
	35	0	0.84	Good reliability

4. Results and Discussion

RQ1: What is the distribution of respondents for each brain dominance?

The first goal of the study is to reveal the percentage of respondents for each brain dominance. Results revealed that 62% of the respondents as shown in Table 1 and figure 1, described themselves to have left brain dominance with the frequency of 96 over the 58 having right brain dominance. This indicates that a majority of the Saudi EFL students are analytical, logical, methodological and detailed-oriented. As such most of the students put strong preference to

math and language since they consider themselves critical thinkers. In like manner, the lower number of students who assessed themselves to be right-brain dominant put themselves to be artistic, creative, and emotional. As such, they put strong preference ton arts activities, and visual learning process. These findings align with Ameen (2017) who found that 62% business students in India described themselves as having left-brain dominance. One the contrary, these findings contract Nithyanantham and Regis (2021) who found that just 37.15% of higher students in India are left brain dominance while 56.1% of them where moderate brain dominance. Studies suggest that brain dominance of students is a factor for learning and mental process (Ocklenurgh & Gunturkun, 2024, Wang et al, 2023).

Table 2. The distribution of respondents for each brain dominance

Brain dominance	Frequency	Percentage (%)
Left brain (f=96)	96	62
Right brain (f=58)	58	38
TOTAL	154	100

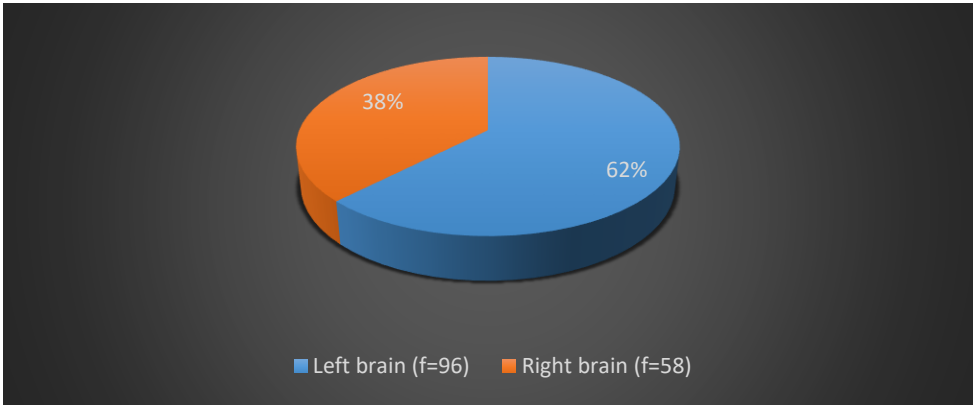

Figure 1. The distribution of respondents for each brain dominance

RQ2: What is the distribution of respondents learning style preference?

Perusing the result of Table 3 and Figure 2 on the distribution of respondents according to their ways of learning shows that there is almost close distribution of respondents learning styles from three categories. Out respondents, 38 % were visual learners, 28% were auditory learners and 34% were kinesthetic learners. It can be general gleaned from the data that almost close distribution of respondents learning styles would mean that the Saudi EFL learners have differentiated learning preference and processes, hence, an accommodating strategy by the language teachers to cater with thee students learning styles is important. These findings agreed with Wahyudin (2022) who reported that the highest percentage (49%) of learners of English education were visual, followed by kinesthetic (31%) while the lowest percentage respondents were of auditory interest (20%). As such, this result provides implications on effective modalities to teach language lessons with the use of differentiated learning instruction. A flexible process of teaching is expected form the teachers. Studies showed that learning preference is a factor for

students' success and it shows better learning performance when catered properly in the classroom (Albulescu et al, 2023, Al-Temeemi, et al, 2023, Magulod, 2019).

Table 3. Distribution of respondents according to their ways of learning

Learning Style	Frequency	Percentage %
Visual	58	38
Auditory	43	28
Kinesthetic	53	34
Total	154	100

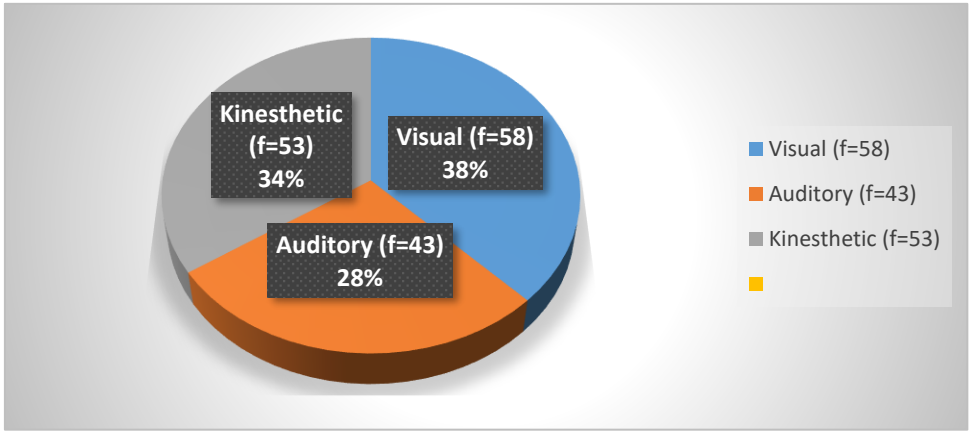

Figure 2. The distribution of respondents for learning styles

RQ3: What is the Saudi EFL reading performance level?

As shown in Table 4 and Figure 3 on the distribution of respondents reading performance level as a research question of this study, it showed that 56% of the respondents have manifested satisfactory reading performance. Result showed that 28% of them demonstrated excellent reading performance. Just 15% of the students displayed poor reading performance. The findings suggest that the reading performance of the respondents is mainly at the level of satisfactory highlighting also additional support to those few individuals who are not yet manifesting better reading competence. These results are impacted by various factors. Isma and Nur (2023) showcased that Indonesian college students face difficulties in comprehending reading texts. Casicas and Quirap (2023) reported that Philippian students' ability are internal factors like reading habits and motivation influence students' reading ability. Considering this finding, a better reading development program can be initiated to assist the students to become excellent readers. The emergence of struggling readers would remind language teachers to innovate reading strategies considering that some needs are need to be addressed, it can be attributed to the fact that poor readers do not really benefit from the present reading activities implemented. Studies showed that effective reading program is related to the reading proficiency enhancement of students (Elleman & Oslund, 2019, Alhrbi & Al-Ahdal, 2024, Charernnit et al, 2021).

Table 4 displays the distribution of respondents based on their reading proficiency.

Reading Performance	Frequency	Percentage %
Excellent	43	28
Satisfactory	87	56
Poor	24	15
total	154	99

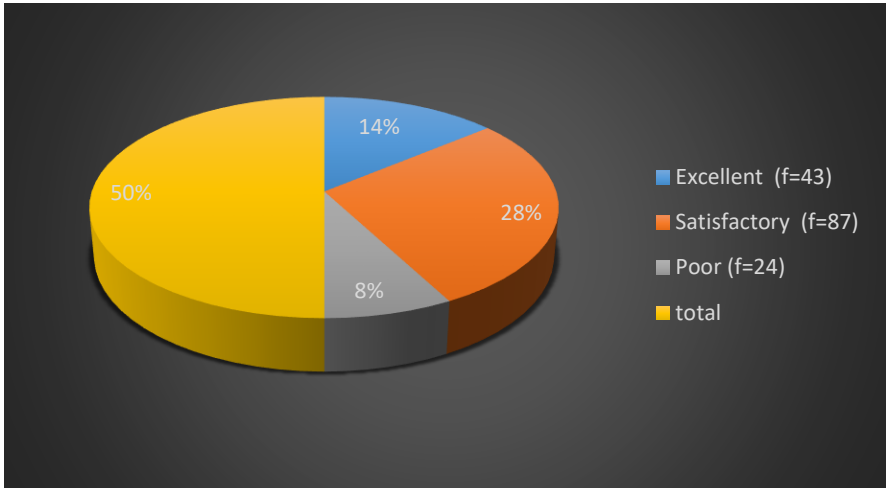

Figure 3. The distribution of respondents for Reading Performance

5. Conclusion

According to the study's findings, Saudi EFL learners are left-brain dominant in that they consider themselves analytical, logical, methodological, and detail-oriented. Similarly, the distribution of respondents' learning styles, whether visual, auditory, or kinesthetic, is almost equal, indicating that the Saudi EFL learners have distinct learning preferences and processes. Finally, the data reveals that a significant number of students excel in reading, while a smaller number still struggle with it. It is evident that Qassim University must implement student-centered language teaching interventions and strategies to realize the vision of the Saudi future. The diversity of Saudi EFL learners necessitates different instructional modalities and processes, and their level of reading performance demands effective interventions to address their language capabilities.

6. Recommendations and Future Research Direction

The study's results recommend that the language department initiate a better language development plan, taking into account equally important variables such as brain domain, learning

preference, and reading performance. Hence, the following are the recommendations: first, conduct an intensive reading instructional program; second, prioritize the poor readers and conduct remedial classes as an example of the reading program; third, encourage teachers to innovate reading strategies with the use of traditional and new reading approaches; fourth, conduct better profiling of students upon entry to school, as this will provide better data analytics for the school to implement evidence-based decision-making. As to the future research direction, the present study is a survey process, and the need for further validation is essential to obtaining data generalizability. A point for further study is to increase the number of samples and consider the implementation of experimental research methods coupled with qualitative data to empirically provide statistical evidence of the identified research gap of the study.

7. Theoretical and Practical Implications

The results, aligned with the study's theoretical and practical lenses, add sophistication to the learning style theory, cognitive style theory, and reading comprehension model. This study confirms that several theories in Saudi Culture Next take into account the dynamic cultural interpretation and characteristics of Saudi language learners. Such theories emphasize the importance of flexibility in the teaching process, as well as the necessity of designing reading materials that contribute to the development of students' mental reading skills. The findings suggest that the integration of these theories is necessary to educate a child within the framework of traditional teaching methods. As such, educators can provide better instruction to learners, enabling them to achieve human learning and adapt to language skills.

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