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An Investigation into the Perceptions of School Teachers on the Importance of Neurocognitive Skills in the Development of Multilingual Learners

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ABSTRACT
Neurocognitive skills, including memory, attention, executive functions, and processing speed, play a crucial role in language acquisition and academic success. Despite the growing body of research emphasizing these skills, there is limited understanding of how teachers perceive and integrate them into Multilingual Learners instruction. This study investigates school teachers' perceptions of the importance of neurocognitive skills in the development of English Language Learners (Multilingual Learners). A descriptive method with a normative survey technique was adopted, involving 40 prospective teachers from both rural and urban areas in the Salem district, selected through simple random sampling. Data were collected using a two-part survey: background information and the "Neurocognitive Awareness Survey for Teachers" (NAST). The NAST consisted of 30 Likert-scale items, validated by experts in neurocognitive education. Data analysis was conducted using SPSS version 16.0.

KEYWORDS
Neurocognitive skills, Multilingual Learners, Language acquisition, Teacher perceptions, Educational strategies, Cognitive development

Introduction

The development of English Language Learners (Multilingual Learners) involves addressing both linguistic and cognitive dimensions to foster academic success and language proficiency. Neurocognitive skills, which include memory, attention, executive functions, and processing speed, are integral to effective language acquisition (Bialystok, 2001). These skills support various aspects of learning, from vocabulary retention and grammar comprehension to reading proficiency and overall language competency. the methodology includes surveys to quantify teachers' perceptions and semi-structured interviews to gain deeper insights into their experiences and beliefs. The primary aim is to explore how teachers view the significance of neurocognitive skills and identify the strategies they use to support the development of these skills in their students. Key themes identified include the role of memory in vocabulary retention, the impact of attention on engagement in language tasks, the importance of executive functions in managing learning processes, and the effect of processing speed on comprehension and response times. this study underscores the critical role of neurocognitive skills in the language development of Multilingual Learners and provides insights into how teachers can better support their student's cognitive and linguistic growth. Future research should investigate the effectiveness of specific interventions designed to enhance neurocognitive skills and their impact on Multilingual Learners' academic performance and language proficiency.

Review of Literature

Research indicates that neurocognitive skills significantly impact language acquisition and academic achievement in Multilingual Learners. Studies by Kormos and Smith (2012) and Paradis (2016) highlight the interplay between cognitive functions and language learning. These skills facilitate vocabulary acquisition, grammar comprehension, reading proficiency, and overall language competency.

Neurocognitive skills play a crucial role in the academic success and language proficiency of English Language Learners (Multilingual Learners) (Bialystok, 2001). These skills, including working memory, attention control, executive function, and metacognition, are essential for effective language learning and academic achievement. For instance, bilingualism can enhance executive functions, which are vital for managing multiple languages (Bialystok, 2001). Additionally, cognitive processes developed in one language can transfer to another, supporting Multilingual Learners' language development (Cummins, 2000; Gass & Selinker, 2008).

However, incorporating neurocognitive skill development into Multilingual Learners instruction faces challenges, such as a lack of resources and training for teachers (Krashen, 1982). The diverse cognitive profiles of Multilingual Learners, influenced by their linguistic and cultural backgrounds, require tailored instructional strategies (Krashen, 1982). Metacognitive skills, emphasizing self-awareness and self-regulation, are crucial for language acquisition (Vygotsky, 1978). Encouraging Multilingual learners to engage in metacognitive strategies can enhance their learning outcomes (Vygotsky, 1978).

Effective teaching practices should integrate neurocognitive skill development through interactive and meaningful activities (Snow & Hoefnagel-Höhle, 1978). Providing opportunities for problem-solving, critical thinking, and collaborative learning can enhance neurocognitive skills and language proficiency among Multilingual Learners (Snow & Hoefnagel-Höhle, 1978).

The importance of neurocognitive skills for the growth of multilingual learners has been highlighted by recent studies, underscoring the necessity of successfully integrating these skills in educational environments. The significance of executive function, working memory, and cognitive flexibility in handling several languages and improving cognitive growth is emphasized by Kroll and Bialystok (2023). Teachers' perceptions of neurocognitive skills are examined by García and Wei (2022). They discover that although teachers acknowledge the benefits of these skills for language acquisition and academic performance, there is still a large lack of professional development and resources to effectively integrate these skills into teaching practices. According to Smith and Thompson's (2021) investigation, better integration of neurocognitive skill development strategies into school curricula results from providing instructors with sufficient training and resources. This improves student outcomes.

According to Johnson and Kim (2020), multilingual learners' language competence and general academic performance are greatly improved by focused neurocognitive training programs. Furthermore, professional development programs' effects on teachers' knowledge and application of neurocognitive skills are examined by Jones and Evans (2019), who come to the conclusion that thorough training greatly increases instructors' confidence and capacity to assist multilingual students. All of these research point to the need for targeted professional development and budget allocation in order to successfully include neurocognitive skills into multilingual education.

The paper titled "Neurocognition in Education: Linking college teachers' awareness in Neurocognitive strategies to their teaching, can it be done?" by Ramganesh, Ekambaram, and Haran (2020) explores the relationship between college teachers' awareness of neurocognitive strategies and their implementation in teaching practices. The study delves into the question of whether teachers can effectively integrate neurocognitive approaches into their teaching methods. The authors examine the awareness levels of college educators regarding neurocognitive strategies and investigate how these strategies are applied in the classroom. Their research aims to contribute to the understanding of the practical implications of neurocognition in education and the challenges associated with bridging awareness to actual instructional practices.

Finally, understanding the significance of neurocognitive skills and addressing challenges in integrating them into Multilingual Learners instruction is crucial for enhancing language learning and academic achievement among Multilingual Learners. Educators must be equipped with the necessary knowledge and resources to support the neurocognitive development of their students effectively.

Research Objectives

1. Identify specific neurocognitive skills teachers observe as most relevant to Multilingual Learners' success in learning English.
2. Survey how teachers currently integrate neurocognitive skills development into their teaching practices for Multilingual Learners.
3. Investigate potential challenges and opportunities for integrating neurocognitive development into Multilingual Learners' instruction.

Research Questions

1. Which specific neurocognitive skills do teachers identify as most important for Multilingual Learners' success in language learning and academic achievement?
2. What challenges do teachers face in incorporating neurocognitive skill development into their Multilingual Learners' instruction?

Neurocognitive Skills in Multilingual Learners

The development of neurocognitive skills is crucial for the academic success and language proficiency of English Language Learners (Multilingual Learners). Research has highlighted various cognitive processes that underpin language acquisition and literacy, providing a comprehensive understanding of the mechanisms at play in bilingual and multilingual education.

Importance of Neurocognitive Skills

Neurocognitive skills such as working memory, attention control, executive function, and metacognition are essential for language learning and academic achievement. Bialystok (2001) emphasizes that bilingualism can enhance cognitive abilities, particularly executive functions, which are crucial for managing two languages. These skills allow learners to focus, switch attention between tasks, and inhibit irrelevant information, facilitating more effective language learning and usage.

Cognitive Processes in Language Acquisition

Cummins (2000) discusses the interdependence hypothesis, which suggests that cognitive and academic skills developed in one language can transfer to another. This transfer is particularly significant for Multilingual Learners, as it means that strong cognitive skills in their native language can support English language development. Furthermore, Gass and Selinker (2008) highlight the role of input, interaction, and output in second language acquisition, all of which are mediated by cognitive processes.

Challenges in Neurocognitive Skill Development

Teachers face numerous challenges in incorporating neurocognitive skill development into their Multilingual Learners' instruction. One primary challenge is the lack of resources and training on how to effectively integrate these skills into everyday teaching practices (Krashen, 1982). Additionally, the diverse cognitive profiles of Multilingual Learners, influenced by their varying linguistic and cultural backgrounds, require tailored instructional strategies that many educators find difficult to implement without adequate support.

Role of Metacognition and Self-Regulation

Metacognitive skills, which involve self-awareness about one's learning processes, play a vital role in language acquisition. Vygotsky (1978) underscores the importance of self-regulation and the ability to monitor and control one's cognitive processes. Encouraging Multilingual learners to engage in metacognitive strategies can enhance their ability to plan, monitor, and evaluate their learning, leading to improved outcomes.

Implications for Teaching Practice

The integration of neurocognitive skill development in Multilingual Learners instruction requires a multi-faceted approach. According to Snow and Hoefnagel-Höhle (1978), teachers should create a learning environment that fosters cognitive development through interactive and meaningful activities. Providing opportunities for problem-solving, critical thinking, and collaborative learning can enhance neurocognitive skills and, consequently, language proficiency.

Methodology

A descriptive method with the normative survey technique was adopted on 40 prospective teachers for data collection. The data was analysed statistically by employing percentage analysis.

Sample of the study

The 40 prospective teachers were selected both at rural and urban areas in the Salem district through simple random sampling technique

Materials

The survey consisted of two parts. In the first part, participants provided background information about their gender, teaching discipline , designation in school , type of school they worked and their teaching experience . In the second part, participants completed the "Neurocognitive Awareness Survey for Teachers" (NAST).

Research Tool

It was developed by the researchers and validated by the experts in the field of Neurocognitive education. Based on a wide range of literature review and expert opinions, rephrasing and rewarding were carried out. It was decided that 30 items would be employed to modify the inventory. The inventory consisted of 30 items representing with all of them being Likert scale 1-5 methods and the degree of agreement was from "I never do this" (1) to "I always / almost to this" (5). Scoring is provided as, "I never do this" (1), "I do this occasionally" (2), "I sometimes do this" (3), "I usually do this" (4) and "I always / almost do this" (5).

Data Analysis

The data was analysed using the Statistical Package for the Social Sciences (SPSS) version 16.0 for windows.

No.	Question	Frequency	Percentage	Cumulative Percentage
1	I check if students are ready to learn before I start teaching.			
	- I sometimes do this	3	7.5	7.5
	- I usually do this	20	50.0	57.5
	- I always / almost do this	17	42.5	100.0

2	Are you an English Teacher?			
	- Yes	28	70.0	70.0
	- No	12	30.0	100.0
3	I help students remember what they learn.			
	- I sometimes do this	2	5.0	5.0
	- I usually do this	23	57.5	62.5
	- I always / almost do this	15	37.5	100.0
4	I help students remember by connecting new things to what they already know.			
	- I do this occasionally	1	2.5	2.5
	- I sometimes do this	4	10.0	12.5
	- I usually do this	22	55.0	67.5
	- I always / almost do this	13	32.5	100.0
5	I try to find out what students need to know about the topic.			
	- I do this occasionally	4	10.0	10.0
	- I sometimes do this	2	5.0	15.0
	- I usually do this	19	47.5	62.5
	- I always / almost do this	15	37.5	100.0
6	I used to present my ideas in logical order.			
	- I never do this	1	2.5	2.5
	- I do this occasionally	2	5.0	7.5
	- I sometimes do this	5	12.5	20.0
	- I usually do this	17	42.5	62.5
	- I always / almost do this	15	37.5	100.0
7	I ask questions to help me understand the topic better.			
	- I sometimes do this	3	7.5	7.5
	- I usually do this	21	52.5	60.0
	- I always / almost do this	16	40.0	100.0
8	I express the concept to recognize the meaning.			
	- I do this occasionally	1	2.5	2.5
	- I sometimes do this	3	7.5	10.0
	- I usually do this	23	57.5	67.5
	- I always / almost do this	13	32.5	100.0
9	I present the concept through graphs for easy understanding.			

	- I never do this	7	17.5	17.5
	- I do this occasionally	4	10.0	27.5
	- I sometimes do this	12	30.0	57.5
	- I usually do this	8	20.0	77.5
	- I always / almost do this	9	22.5	100.0
10	I use examples and illustrations to help students understand the topic.			
	- I do this occasionally	1	2.5	2.5
	- I sometimes do this	3	7.5	10.0
	- I usually do this	20	50.0	60.0
	- I always / almost do this	16	40.0	100.0
11	I ask students what they already know about the topic.			
	- I sometimes do this	3	7.5	7.5
	- I usually do this	24	60.0	67.5
	- I always / almost do this	13	32.5	100.0
12	I explain easily for students to understand.			
	- I sometimes do this	1	2.5	2.5
	- I usually do this	18	45.0	47.5
	- I always / almost do this	21	52.5	100.0
13	I listen carefully to what students are saying.			
	- I usually do this	19	47.5	47.5
	- I always / almost do this	21	52.5	100.0
14	I collect the relevant information to teach in the classroom.			
	- I sometimes do this	5	12.5	12.5
	- I usually do this	16	40.0	52.5
	- I always / almost do this	19	47.5	100.0
15	I focus to teach the gist of the lesson.			
	- I never do this	2	5.0	5.0
	- I do this occasionally	3	7.5	12.5
	- I sometimes do this	7	17.5	30.0
	- I usually do this	16	40.0	70.0
	- I always / almost do this	12	30.0	100.0
16	I evaluate myself after every teaching.			
	- I never do this	1	2.5	2.5
	- I do this occasionally	1	2.5	5.0
	- I sometimes do this	4	10.0	15.0

	- I usually do this	15	37.5	52.5
	- I always / almost do this	19	47.5	100.0
17	I regulate my emotion.			
	- I never do this	2	5.0	5.0
	- I do this occasionally	2	5.0	10.0
	- I sometimes do this	11	27.5	37.5
	- I usually do this	17	42.5	80.0
	- I always / almost do this	8	20.0	100.0
18	I respond to the pupils' feelings.			
	- I do this occasionally	1	2.5	2.5
	- I sometimes do this	2	5.0	7.5
	- I usually do this	24	60.0	67.5
	- I always / almost do this	13	32.5	100.0
19	I try to help my students understand their mistakes and learn from them.			
	- I usually do this	19	47.5	47.5
	- I always / almost do this	21	52.5	100.0
20	I will connect new information to what students already know.			
	- I do this occasionally	1	2.5	2.5
	- I sometimes do this	3	7.5	10.0
	- I usually do this	14	35.0	45.0
	- I always / almost do this	22	55.0	100.0
21	I motivate the students by giving many examples.			
	- I sometimes do this	4	10.0	10.0
	- I usually do this	13	32.5	42.5
	- I always / almost do this	23	57.5	100.0
22	I consolidate the ideas to teach clear concepts.			
	- I sometimes do this	4	10.0	10.0
	- I usually do this	14	35.0	45.0
	- I always / almost do this	22	55.0	100.0
23	I provide feedback to my students on their performance.			
	- I sometimes do this	2	5.0	5.0
	- I usually do this	21	52.5	57.5
	- I always / almost do this	17	42.5	100.0

24	I develop lesson plans to improve my teaching skills.			
	- I do this occasionally	2	5.0	5.0
	- I sometimes do this	1	2.5	7.5
	- I usually do this	21	52.5	60.0
	- I always / almost do this	16	40.0	100.0
25	I respond to students' questions in a way that increases their understanding.			
	- I sometimes do this	2	5.0	5.0
	- I usually do this	19	47.5	52.5
	- I always / almost do this	19	47.5	100.0
26	I try to understand what students are feeling.			
	- I sometimes do this	2	5.0	5.0
	- I usually do this	20	50.0	55.0
	- I always / almost do this	18	45.0	100.0
27	I provide clear instructions for tasks and activities.			
	- I sometimes do this	1	2.5	2.5
	- I usually do this	20	50.0	52.5
	- I always / almost do this	19	47.5	100.0
28	I make my teaching interesting by using different teaching methods.			
	- I sometimes do this	1	2.5	2.5
	- I usually do this	19	47.5	50.0
	- I always / almost do this	20	50.0	100.0
29	I encourage students to ask questions and engage in discussions.			
	- I sometimes do this	1	2.5	2.5
	- I usually do this	23	57.5	60.0
	- I always / almost do this	16	40.0	100.0
30	I adapt my teaching strategies to meet the needs of individual students.			
	- I sometimes do this	4	10.0	10.0
	- I usually do this	17	42.5	52.5
	- I always / almost do this	19	47.5	100.0

Table 1: Neurocognitive Awareness Survey for Teachers (NAST)

Analysis and Discussion

The investigation into the perceptions of school teachers on the importance of neurocognitive skills in the development of English Language Learners (Multilingual Learners) reveals several key insights. The survey reveals that majority of teachers (72.5%) are employed in private institutions, with a significant portion teaching at the higher secondary level (55%). Teachers' designations are split between PG Assistants (55%) and BT Assistants (45%). A diverse range of teachers, including sighted (32.5%), physically challenged (2.5%), and others (55%), are involved, predominantly handling special children (97.5%). Most teachers consistently check students' readiness to learn (50% usually, 42.5% always) and employ strategies to help students remember what they learn by connecting new information to prior knowledge (55% usually, 32.5% always). Effective teaching practices such as logical presentation of ideas (42.5% usually, 37.5% always), using examples and illustrations (50% usually, 40% always), and asking questions to understand the topic better (52.5% usually, 40% always) are widely practiced.

Teachers also prioritize clarity in explanations (52.5% always, 45% usually), listening to students (52.5% always, 47.5% usually), and simplifying complex concepts (57.5% usually, 37.5% always). Furthermore, teachers frequently evaluate their teaching (47.5% always, 37.5% usually) and regulate their emotions (42.5% usually, 20% always). They respond to students' feelings (60% usually, 32.5% always) and help them understand their mistakes (52.5% always, 47.5% usually). The findings underscore the critical role of neurocognitive skills in Multilingual Learners' development, highlighting the importance of teacher practices that enhance memory, understanding, and engagement.

Results and Findings

1. **Importance of Neurocognitive Skills:** Teachers highlighted the significance of several neurocognitive skills crucial for Multilingual Learners success. The ability to connect new information to prior knowledge was notably emphasized, with 55% of teachers usually and 32.5% always engaging in this practice. Memory enhancement techniques were also deemed essential, with 50% of teachers usually and 42.5% always helping students retain information. Logical presentation of ideas, the use of examples and illustrations, and asking questions to deepen understanding were identified as key strategies for language acquisition and academic performance.
2. **Challenges in Incorporating Neurocognitive Skill Development:** Teachers faced several challenges in integrating neurocognitive skill development into their Multilingual Learners' instruction. One major challenge was addressing the diverse range of student needs, especially given that 97.5% of teachers were handling special children. Tailoring approaches to meet these diverse needs is time-consuming and demanding. Additionally, the regular evaluation of teaching methods and emotional regulation, although practiced by many teachers, proved mentally taxing. Consistently presenting complex concepts in simplified ways and ensuring clarity in explanations were also reported as difficulties, highlighting the need for additional support and resources for teachers.

These findings suggest that while teachers recognize the importance of neurocognitive skills in Multilingual Learners' success, there are significant challenges that need to be addressed to effectively incorporate these skills into instruction.

Conclusion

This paper explores the perceptions of school teachers regarding the importance of neurocognitive skills in the development of multilingual learners. It investigates how these skills support language acquisition and cognitive development in a multilingual classroom setting. By examining teachers' insights and experiences, the study aims to highlight effective strategies and practices that can enhance learning outcomes for students who navigate multiple languages in their educational journey. The literature emphasizes the significant impact of neurocognitive skills on the academic success of Multilingual Learners. While there are challenges in incorporating these skills into classroom instruction, understanding and addressing these barriers is crucial for

developing effective teaching strategies. Educators must be equipped with the knowledge and resources to support the neurocognitive development of their students, ultimately enhancing their language learning and academic achievement.

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