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Executive Functioning Skills of Learners with Special Educational Needs amidst Covid19 Pandemic

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ABSTRACT

As the coronavirus spread and harmed the school system and learners with special educational needs, providing learning continuity through distance learning became a critical concern in education and a long-term objective for all learners with special educational needs globally. The main purpose of this study was to help the functional skills of learners with special educational needs to be provided with an early intervention, necessary in everyday life and to identify how this pandemic challenged the parents in educating their children. This study utilized quantitative method where all learners aged from 9 to 36 years old, enrolled in special education class in the Schools Division of Toledo City were eligible for participation and serves the respondents of this study. The descriptive- correlational with multi regression analysis and development of a theory identify the level of executive functional skills; organization, planning, metacognition, time-management, and self-control, and develop a theory for learners with special educational needs. The descriptive-survey method was the most successful and appropriate method in determining what significant variables may influence the development of executive functional abilities of learners with special educational needs. Fifty-six learners with special educational needs were assessed in this study and majority of the learners. The study concluded learners' executive functioning skills, organization skills (2.56) planning (2.86), time-management skills (2.86), self-control skills (2.98), and metacognition (2.96) considered as averagely skilled with the overall aggregate mean of (2.84). With this, school administrators must swiftly design responses with specific contexts in mind as the pandemic runs its course and must consider embedding the functional skills of learners with special needs across all academic areas.

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1. THE PROBLEM AND ITS SCOPE

INTRODUCTION

As the coronavirus continues to spread and harms the school system, providing learning continuity through distance learning and in-person learning has been a critical concern in special education and a long-term objective, especially for all learners with special educational needs globally. Despite the global pandemic, the school aims to continue to provide quality education to all students with special educational needs to assist them in improving skills that are necessary for everyday life. The executive functions are skills that include students' ability to organize, plan, carry out goal-directed plans, and effective performance. These abilities, which are based on school-life experiences and study habits, have a vulnerable influence on their holistic growth; personal and academic. These are the necessary skills that help learners to succeed academically and personally and improve and develop their independent living skills in order to function well notwithstanding the global economic crisis we are currently experiencing.

In the Philippines, educational services for learners with special educational needs during this pandemic had been a significant challenge for the teachers, learners, and parents as well. This crystallizes the challenge of whether to continue to close schools in order to avoid physical contact and preserve lives, or to keep them open. The Department of Education is committed to ensuring educational continuity amidst

the crisis. The health and safety of all learners and the whole school community are of utmost importance and must be constantly protected.

In the Schools Division of Toledo City, it is in light of having the learning continuity plan which will help and support learners with special educational needs under this new normal education. For many years of handling learners with special educational needs, it was assessed that performing basic school-related tasks like organizing, planning, task and time management, flexibility and metacognition had been the most concerning gaps for all learners with special educational needs that need to be given focus for both parents and teachers up to this day. Most learners with special educational need were almost placed in the self-contained classes, and to address their needs and to make sure that they will become functional amid this COVID-19 pandemic, the researchers conducted a home-based survey activity, since the face-to-face meeting is not allowed this time, together with their parent's guidance to discuss the executive functioning skills of Learners with Special Educational Needs through phone call interview.

The researchers chose to study these functional skills for the reason of doing so, it will help the learners with special educational needs to be provided with intervention and support in learning continuity amid this pandemic depending on the level of disability and difficulty in enhancing learners' functional skills.

The goal of this research is to teach and train learners with special educational needs to become self-sufficient and independent. Furthermore, despite their condition, our learners should strive for as much independence as possible which is needed as they face the real field of work in the future. These skills are the main emphasis of this study to further assess how to address the needs and gaps of learners with special educational needs and how to improve their executive functioning skills to effectively become functional and independently live in the community they belong.

Review of Related Literature

To build a foundation for the current study and provide a solid support for the research questions, a careful review of the literature related to executive function skills was conducted. This chapter will provide an overview of the relevant empirical and theoretical literature in each of these key areas, beginning with executive function and how this impacts academic achievement.

Executive Function

Most learners with special educational needs complete high school without mastering basic math, even though basic math is important for math-related challenges in life. The causes of this delay are the limited attention to cognitive skills and a low level of executive functioning skills level (Jansen, 2018).

The development of executive functions differs not only between individuals but also within individuals as shown in the research ranging the wide differences in executive development (McCloskey, 2017). Most learners with special educational needs are significantly struggling with the deficits of executive functions. Executive functions (EFs)—which, in more general and less reductionist theories, overlap with the concept of Working Memory Capacity and Executive Attention —include different processes that are necessary for individuals to control and update their behaviors. Executive Functions have an important role in the adaptation to new environmental stimuli, especially when these require the development of new behavior in order to be successful (Pasqualotto, et. al 2021). Hence, these skills are crucial in the holistic well-being; academic, personal, psychological, and social skills, of the students with special educational needs. Due to its significant relationship to their academic achievement, executive functioning has been increasingly relevant to students' progress, particularly to students with special educational needs.

Executive functions (EFs) is an umbrella term used to refer to high-level mental processes that are active when there is the need to concentrate and pay attention, in other words when automatic or instinctual responses would be not desirable or would be insufficient (Mazzoni, et. al 2021). The difficulties of students with special needs in performing academic-related activities may have been relevant to various levels; organization, planning, metacognition, and self-control. Thus, executive functions are behind the problems and struggles of learners with special needs in all academic areas.

Executive Functions regulate and control students' behaviors in the service of purposive actions (Benallie, et al, 2021). Executive Functions include components, such as attention, hyperactivity, impulsivity, planning, initiative, and evaluation (Kanniainen, 2021). Adolescents with EF problems might be unable to shift their attention from one activity to another or wait for their turn (impulsivity). As a result, executive functions may play a significant influence in their mathematics learning. In the mathematics classroom, learning, and testing scenarios, adolescents may experience worry, hopelessness, guilt, boredom, rage, enjoyment, or pride, among other emotions. Such emotions are

important to look into since they influence adolescent learning and well-being (Pekrun, 2017).

Students with special educational needs who are at risk of dropping out or failing academically, as well as those who experience fundamental changes in their emotions and behavioral difficulties (McCoy, et. al 2020), need their emotions and Executive Functions to be acknowledged and supported. However, executive function issues and similar emotions are not well understood among adolescents who are having difficulty with math. Executive functions and mathematics-related achievement emotions are linked to learners' math performance (Holm, M. E. 2021).

Executive functions are understood as the distinct, but related, higher-order neurocognitive processes that control thoughts and behaviors aimed at achieving an objective or goal (Perone, et.al 2018). Therefore, they regulate behavior and cognitive and emotional activity by means of a set of adaptive capabilities. These functions include working memory (the ability to temporarily manipulate information), inhibition (impulse control), cognitive flexibility (the ability to generate different solutions to a problem) and planning (the development of strategies to achieve an objective); the preceding functions are all considered to be basic processes of this variable.

Organization

The level of organization and self-regulation are frequently required for success in school and at work. In fact, it is a skill common and necessary for jobs to emphasize and to be successful in the field of work and preparing students for post-secondary education skills, whether vocational school, pursuing higher education in a four-year university, or even graduate education (Chen, P., & Schmidtke, C. 2017). Learners with special needs often need support in the classroom to address difficulties with executive functions, particularly attention, working memory, organization, and self-regulation. These deficiencies can lead to challenges with learning (such as difficulty learning to read), organization (such as losing assignments), working memory (such as trouble remembering and following multiple-part directions), and classroom behavior (such as difficulty sitting still and paying attention).

In the United States, learners with special educational needs typically receive 80% or more of their instruction in a general education setting; however, individualized intervention, support, and accommodations mandated by the Individuals with Disabilities in Education Act (IDEA) can often be delivered inconsistently in these settings.

Disorganization and inattention appear to be the primary factors of impaired functioning among students, especially in the area of academics. These symptoms have been associated with poorer time management and being absent from or tardy to classes, meetings, and work. Therefore, organization skills are vital in terms of contributing to good study habits toward academic success.

Organization skills also affect learners with special educational needs' study habits which is a challenging part that the student can navigate (McMahon & Fleming, 2012). Students with special needs tend to decline with development, in terms of organization, inattention, and self-regulatory deficits that are more likely to remain from adolescence to adulthood. These challenges may be in part due to the struggles with the basic organization; like their backpacks, homework, and assignments in order; difficulty in setting short-term goals, and poor study habits. These challenges and struggles may pose additional executive functioning regulations and interventions.

Planning

Learners with special educational needs frequently experience significant academic impairment, including missing and incomplete homework assignments and low and failing class grades (DuPau, et al 2020). Difficulties with the organization of materials, homework recording, time management, and planning significantly contribute to this academic impairment. For example, problems with organization result in misplaced homework assignments and disorganized backpack and binder systems, difficulties with homework recording result in students not knowing what assignments they need to complete, and problems with planning and time management result in students with ADHD completing tasks last minute or not having adequate time to complete all tasks. Importantly, difficulties with parent-rated homework materials organization in elementary school predict grade point average (GPA) in high school, above the influence of ADHD symptoms, intellectual abilities, and treatment utilization (Langberg, et al., 2019).

Accordingly, multiple interventions have been developed that focus on improving the organization, time management, and planning (OTMP) skills of elementary and secondary school-age students with ADHD (Langberg et al. 2019). Executive function interventions are usually multi-component and train multiple skills, such as materials organization (e.g., binder, bookbag), accurate and consistent homework recording, and planning and time management skills. Further, most OTMP interventions actively engage parents and teach them how to monitor and reinforce skill implementation. Despite this, there has been

almost no research examining which OTMP skills (or combination of skills) are most important to train to lead to improvements in academic outcomes, such as problems with homework materials management and planning, assignment completion rates, and GPA.

Time Management

Time management is a skill that includes self-evaluation, planning, discipline, and daily activity changes in order to attain a certain objective (Belwal, et al. 2020). Time is non-renewable, non-replaceable, and finite. Time management is crucial for students during their learning process so that they may effectively manage their activities. A student's primary goal is to study and strengthen their thinking skills.

However, not all students are interested in furthering their studies. Some people manage their work and personal lives while also managing their studies. Working while studying is not a novel occurrence in academic life; in fact, it is now a typical practice. It's due to a number of factors, including workplace demands for higher human resource quality, job competition, new business options for the younger generation, economic situations, and technological advancements. It is an excellent and beneficial thing to spend and maximize your free time for work.

Furthermore, students who balance their time between working and studying have the opportunity to improve their entrepreneurship skills, improve their soft skills by being directly involved in the work-life, increase their courage to start a business and receive support from venture capital and mentorship. It examines the relationship between time management and academic accomplishment. It demonstrates that there is a significant relationship between time management and academic achievement among students.

Self-control

Beyond basic bodily needs—eating, sleeping, and drinking—media use is one of the most frequent desires people experience on a daily basis (Hofmann et al., 2019). It is hardly surprising that learners with special educational needs are affected by this technology which leads to poor academic achievement. Individuals with weaker trait of self-control—the ability to override urges and engage in potentially aversive behaviors are more likely to respond to smartphone notifications instantly, according to an empirical study (Troll, et al. 2021). They are more likely to succumb to the temptation to check their phone immediately after receiving a message. In a similar line, lower self-control has been empirically associated with more problematic smartphone use, such as sleep loss owing to smartphone use (Hunter-Brown, C. 2021). Likewise, with students, in general; the use of smartphones greatly affected their self-control towards academic aspects. It leads to poor academic performance and getting a lower marks in all subjects.

Metacognition

Students' poor learning outcomes are a multifactorial problem to low learning performance, motivation, self-regulation, and negative emotions, among other inter-and extra personal factors (Gonzaga et. al 2021). Theories and models have been presented to explain the relationships between intrapersonal elements such as motivation, emotions, cognition, and metacognition that influence students' learning performance. Emotions are the real or imagined feelings that a person experiences concerning a circumstance or another person. Judgments, memory, and reasoning are all aspects of cognition. Metacognition as "cognition about cognition," a higher-level function that can influence the cognitive process.

This executive function examines achievement emotions, which are feelings associated with attaining a specific academic goal, such as studying for a test. In an academic setting, accomplishment emotions are critical because they impact the learning strategies, metacognitive and cognitive resources that students will use, and, ultimately, their academic performance (Daniels & Stupnisky, 2018).

Theoretical Background

This research is anchored on the **Functional Context Theory of Sticht** and the **Functionalist Theory of Durkheim**. This study will also be utilizing the **Social Learning Theory of Bandura**, the Education, Science and Technology, Arts, Culture, and Sports, Section I of Article XIV of the 1987 Philippine Constitution **(Republic Act No. 10533),** also known as the Enhanced Basic Education Act enacted on 2013**,** the Magna Carta of Disabled Persons otherwise known as **Republic Act No. 7277**, the Policy Guidelines on the Adoption of the K to 12 Transition Curriculum Frameworks for Learners with Disabilities (**DepEd Order no. 21 s. 2020**) and the Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021 in the Light of the COVID-19 Public Health Emergency which will serve as the legal backbones of the study (**DepEd Order no. 12 series of 2020**).

The **Functional Context Theory** is thought to be a cognitive learning hypothesis. Based on the context, students learn best when prior knowledge is the basis of the instruction- making use of long-term memory. Students are required to use their language and

problem-solving skills as part of the instructional strategy.

The functional context theory emphasizes making learning relevant to the learner's previous experiences and work environment. Understanding new information makes it easier to connect new information to previous knowledge and to transform old knowledge into new knowledge. (Bada, et. al 2015).

Functional Context theory can be relevant in instructional design, instructional technology, and distance education as it can incorporate the approach to assist individuals. In the current context, where learners are learning to compete in their workplaces, it would be advantageous for them to employ this theory to develop abilities that are relevant to their field of expertise.

In today's world, Sticht's work in Functional Context Theory is a good path. It is simpler than having them begin as young ones and work from that point. They would have just had what it took, and it would be altering as they returned to work and put it into practice (Sticht, 2015).

Learning, according to Sticht, has everything to do with a person's surroundings. Instead of developing in life's set stages, instructional strategies that are relevant to pupils and their own personal experiences must be devised. Importantly, learning occurs in the context of the students' activity, allowing them to successfully transfer their classroom knowledge to their everyday work activities. Educators use this paradigm to blend literacy and other fundamental skills with content learning.

The **Functionalist Theory** emphasized that it concerns the progress of society through the medium of education. It investigates the school's goals as a social institution as well as its relationship with the community. It's concerned with the long-term effects of curriculum design, classroom organization, and teaching methods, as well as how they affect group dynamics (Romiszowski, A. J. 2016).

The **Social Learning Theory** which we utilized, highlighted that individuals can learn to change their behavior through self-experience, learning from others, or learning from their environments (Fonagy, et al 2019). The learning cycle for changing people's behavior is stated as being feasible through self-experience, gain from others, or gain from their environment.

Individual learning, according to Bandura, occurs not just through experience but also through the process of observation, which involves deliberately monitoring and considering the present behavior model. He clarifies that personal learning occurs because of their own understanding as well as a sequence of observations, notably observing.

According to Bandura, observational research includes, but is not limited to, modeling. That is, what is taught is not an exact replica of what was observed on the model, but rather a general form that may be used to help others in more creative ways. As a result, Bandura offered the social cognitive theory of learning by imitation as a learning theory. There are two fundamental assumptions in this regard. Individuals first learn to emulate what they see in their environment, particularly model actions. Second, the individual and his or her surroundings have a close link.

Theories

Functional Context Theory, Sticht (2015)

Functionalist Theory, Durkheim (2016)

Social Learning Theory Belle (2015)

Legal Bases

Article XIV Section I of the 1987 Philippine Constitution

Republic Act No. 10533 also Enhanced Basic Education Act of 2013

Republic Act No. 7277, Magna Carta for Persons with Disabilities

DepEd Order No. 21, s 2020-Adoption of the K–12 Transition Curriculum Frameworks for Learners with Disabilities: Policy Gui**delines**

DepEd Order no. 12 s.2020-Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021

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Theory Development

Article XIV Section I of the 1987 Philippine Constitution states that the state must preserve and promote all citizens' right to high-quality education at all levels, as well as take reasonable actions to ensure that such education is available to everyone. As a result, all learners with special educational needs have the right to a high-quality education, as well as the opportunity to acquire career awareness and work skills through the school-to-work transition, allowing them to become self-sufficient and functioning.

Republic Act No. 10533, the Enhanced Basic Education Act of 2013 states that the state must establish, maintain, and promote a comprehensive, sufficient, and integrated educational system that satisfies the demands of the people, the country, and society, As a result, all students, regardless of disability, must get a high-quality education that meets their requirements while also contributing to global competitiveness.

Republic Act No. 7277 or also known as the Magna Carta of Persons with Disability, as stated in section 2 of article 1, disabled individuals are an integral part of Philippine society, and the government must give full assistance for their overall well-being and integration into society. The state must establish policies that ensure disabled people's rehabilitation, self-development, and self-reliance in order to achieve this goal. It will assist them in improving their abilities and potential in order to compete more effectively for available opportunities. When it comes to claiming their proper place in society, disabled persons have the same rights as everyone else.

Stated also in Section 14, that in all parts of the country, the state must create, maintain, and support a comprehensive, adequate, and integrated special education system for children who are blind, deaf, mentally retarded, or have other special needs.

The government's primary goal will be the rehabilitation of disabled people to help them achieve a more meaningful, productive, and satisfying existence. To reach a larger number of individuals with disabilities, rehabilitation services and benefits must be expanded beyond traditional urban-based facilities to community-based initiatives, allowing full participation from a variety of sectors, with assistance from national and local government authorities. The government must advocate for and encourage respect for disabled persons in order to make it easier for them to integrate into society. Any social, cultural, economic, environmental, or mental barriers that discriminate against disabled persons must be removed by the state.

DepEd Order No. 21 s. 2020, the Policy Guidelines on the Adoption of the K to 12 Transition Curriculum Frameworks, by describing the concepts, features, and criteria, promotes a consistent understanding of the transition of learners with special educational needs in all private and public institutions across the country. This policy puts further emphasis on what the field implementers can offer to learners with special educational needs in terms of their life pathway, which include but is not limited to higher education, entrepreneurship, employment, middle-level skills development, or functional life path.

In light of the COVID-19 Public Health Emergency**, DepEd Order No. 12, Series of 2020,** Adoption of the Basic Education Learning Continuity Plan for School Year 2020-2021**,** aims to provide clear guidance to all schools, offices, and community learning centers of the Department of Education, learners, parents and both internal and external stakeholders who developed the Department's Basic Education Learning Continuity Plan, a package that will respond to basic education challenges and interventions brought by this Covid19 Pandemic.

THE PROBLEM

Statement of the Problem

This study assessed the executive functioning skills of Learners with Special Educational Needs as rated by the teachers amidst this COVID19 Pandemic at the School Division of Toledo City for the school year 2021-2022. The findings of the study were the basis for theory development.

Specifically, it answered the following queries:

1. What is the level of Functional Skills of the learners with special educational needs as rated as to:

1.1. Organization
1.2. Planning
1.3. Time Management
1.4. Self-control
1.5. Metacognition

2. What is the level of the academic performance of learners with special educational needs amidst COVID-19 pandemic?
3. Is there a major significant relationship between the degree executive functioning skills of the respondents and the academic performance of learners with special educational needs as rated by the teachers?
4. Based on the findings, what theory may be developed?

Statement of the Null Hypotheses

The following null hypothesis was tested at the 0.05 level of significance.

H_o1: There is a significant relationship between the academic performance of the respondents and their level of Executive Functional Skills of Learners with Special Educational Needs as rated by the teachers.

RESEARCH METHODOLOGY

This deals with the study's methodology according to the research design, subjects, and respondents, research environment, research instrument, data gathering procedure, statistical treatment of data, and statement of hypothesis in the Division of Toledo City for special education classes.

Design

The study of the executive function skills of learners with special educational needs utilized the quantitative method, descriptive- correlational with multi regression analysis and development of a theory Identify the level of executive functional skills; organization, planning, metacognition, time-management, and self-control, and develop a theory for learners with special educational needs.

The descriptive-survey method was the most successful and appropriate method in determining what significant variables may influence the development of executive functional abilities of learners with special educational needs.

Flow of the Study

In order to observe the scientific approach in gathering data from the learners with special educational needs and collect a more valid and more reliable results in terms of the level of their executive functional skills, an Input-Process-Output (IPO) model was used in the course of the study.

Input	Process	Output
Profile of the Learners with special educational needs in terms of: Disability Current Grade in Math	Quantitative method Submission of Transmittal Letter to Schools Division Superintendent Gathering of Profile of Learners and Parents Questionnaire through Google Forms Gathering Data Tabulation of Data Analysis of Data	Executive Functioning Skills of Learners with Special Educational needs amidst COVID-19 Pandemic as a basis of theory development

Figure 2 Flow of the Study

Environment

The study was conducted in the Schools Division of Toledo City, Division of Toledo City became a division in 1963. Prior to that, Toledo City was part of the Division of Cebu Province. It has been located in one of the buildings of the South City Central School, which is located on D. Macapagal Highway in Población, Toledo City, since its beginning as a division.

Initially, South City Central School was the primary Special Education Center in the Division of Toledo City for Elementary Level and Luray II National High school for Secondary level. There are five Special Education Programs: Matab-ang Elementary School, which is located in the Northern part of Brgy. Matab-ang, Toledo City, Bato Elementary School in the Southern part of Brgy. Bato, Toledo City, Magdugo Elementary School located at Brgy. Magdugo, Toledo City, and Don Andres Elementary School are located at the Eastern part of DAS Lutopan,Toledo City, and South City Central School which is located on the central part of Brgy. Poblacion, Toledo City.

These Special Education Classes in each school had only one teacher. The teacher handled multiple subject areas at multiple grade levels. Each school was supervised by one (1) School Head with one (1) Assistant School Head. The school provides Learners with Special Educational Needs with equal chances and advantages,

preparing them to be functional in actual community involvement – offering transition programs reading for the real field of life, mainstreaming, and inclusion that are ready to be in the regular classroom setting with trained regular teachers willing to teach special education classes.

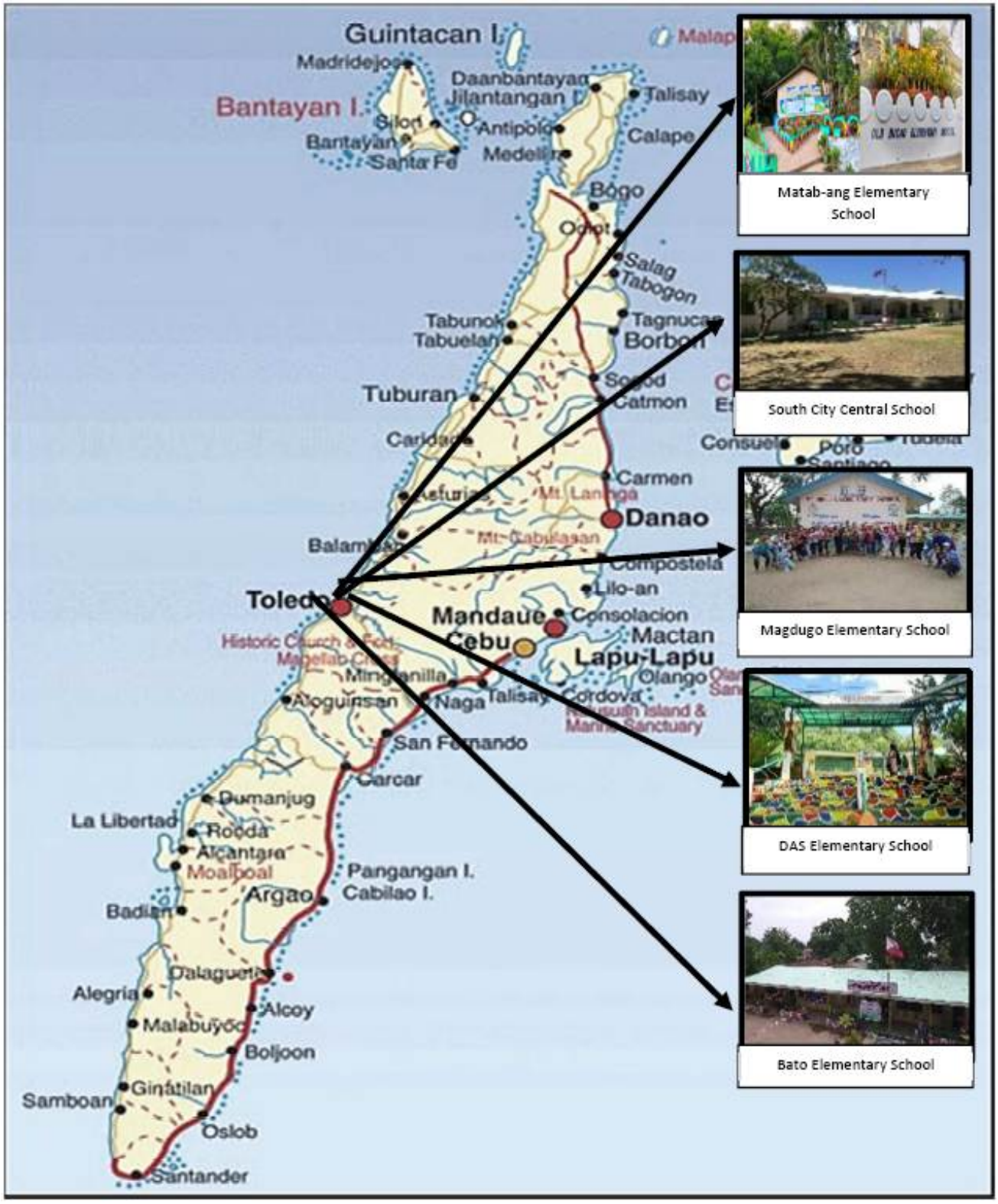


Figure 3 Location Map of the Study

Respondents

The researchers used purposive sampling in choosing the subjects of the study. The researchers used students with unique educational requirements ranging in age from six (9) years old to thirty-six (28) years old, who have specific learning disability, intellectual disability, autism who have mild-moderate condition. The research participants were fifty-six (56) students with Special Educational Needs, with twenty (35) boys and eleven (21) girls. These students are all enrolled in a separate class. Furthermore, they have minimal experience working and socializing with other people, like typical students, and this is dependent on how they perceive and interpret situations.

Instrument

The researchers used the collective ideas of two proponents: Peyton (2021) and Muscat (2021). The researchers had chosen and picked the most useful executive functioning skills from the two proponents and modified the checklist to gather data pertinent to the research information. The researchers carefully added and changed the localized functional skills related to the academic and personal goals. The following items on the questionnaire were utilized, adapted, and modified. Teachers will reply to the tools as respondents, and Learners with Special Educational Needs will be the study's subjects. These were the student's executive functional skills questionnaires and checklists, as well as the responder and subject profiles.

The researchers will respond to the first phase via a phone interview. The contents include the subjects' basic background and profile information, such as disability and their current grade in Mathematics. Following that, the teachers will complete a questionnaire created by the researchers. These were the items on executive functioning skills and were emphasized to be the focus. The following headings were organization, planning, self-control, time management, and metacognition. The checklist has five evaluation options: (1) if the child is unskilled, (2) if the child is low averagely skilled, (3) if the child is averagely skilled, (4) if the child is moderately skilled, (5) if the child is highly skilled.

The researchers consolidated the results and focused on executive functional skills with "average to unskilled" which means that the skill requires both partial and full assistance and improvement. The focus of the researcher was the most numbered or most checked of executive functional skills under the first option.

The questions were made with Mique (2015). However, there was a modification of the form of lists of the questions for more understanding and meaningful gathering of information. The five-point Likert Scale as shown below was applied to categorically rate the executive functioning skills of learners with special educational needs.

Weight	Range	Interpretation	Description
5	4.23 – 5.00	Highly Skilled	The child has extensive experience in the functional skill area
4	3.43 - 4.22	Moderately skilled	The child has good experience in the functional skill area
3	2.62 – 3.42	Averagely Skilled	The child has average experience in the functional skill area
2	1.81 – 2.61	Low-averagely Skilled	The child has little experience in the functional skill area
1	1.00 – 1.80	Unskilled	The child has no experience in the functional skill area

Reliability Results

In this research**,** Cronbach Alpha thru IBM SPSS to appropriately present, describe, evaluate, and infer the acquired data from the respondents via survey questionnaires.

Cronbach's alpha was used to analyze the survey's items' internal consistency. A preliminary study of the 26 items in the questionnaire produced a Cronbach alpha value of 0.820 (Organization), 0.852 (Planning), 0.896 (Time-Management), 0.885 (Self-Control), 0.814 (Metacognition). According to Hair, Babin, Anderson, & Black (2018), a credible construct should have a dependability score of at least 0.70 to be accepted. Thus, the total reliability analysis result for this study was acceptable and demonstrated the reliability of the questionnaire's items.

Data Gathering Procedures

The researcher submitted a letter of permission to conduct and to gather research data through the Schools Division Superintendent of Toledo City Division addressed to special education institutions namely, South City Central School, Bato Elementary School, Matab-ang Elementary School, Magdugo Elementary School, DAS Elementary School. Though it was the former station where the researcher taught, the school head's permission was particularly important. Furthermore, a letter asking for the parent's consent to conduct this study will also be sent.

Treatment of Data

In this research**,** a Statistical Package for Social Sciences (SPSS) version 28 was used to analyze the data from 56 respondents, and both descriptive and inferential statistics were used to show the findings and was used to appropriately present, describe, evaluate, and infer the acquired data from the respondents via survey questionnaires.

The frequency distribution was utilized to display and explain the subjects (learners) in the table in terms of grades in Mathematics, and percentages of each subject's profile were determined to quantitatively and generally describe them.

Likewise, weighted mean and standard deviation were employed to summarize and interpret the executive functional skills of learners with special educational needs as rated by the teachers.

Lastly, descriptive statistics, correlation analysis, and multiple linear regression was considered to gauge the significant mean gain between the executive function skills of learners with special educational needs before and their academic achievement in Math.

ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the gathered data from the respondents regarding the executive functioning skills of learners with special needs in the identified schools in Toledo City Division, the school year 2021-2022.

CURRENT GRADES OF THE RESPONDENTS

The special needs current grade in Mathematics as part of their academic subject.

Table 1 presents the result.

Table 1 Current Math Grades of Learners with Special Education Needs

(n = 56)

A. Current Grade in Math	Frequency	Percentage
70-73	2	3.6
74-77	15	26.8
78-80	15	26.8
81-83	22	39.2
84-86	2	3.6
Total	56	100

The table shows that (2, 3.6%) learners with special needs obtained a failing grade in Mathematics; (30, 53.6%) got a decent and average grade; (22, 39.2%) got a high- average grade; and (2. 3.6%) got a high grade in Mathematics based on the range grade gathered by the researcher.

Correlation

The bivariate correlation evaluates the strength and direction of linear relationships between pairs of variable produces a correlation coefficient. The study is expected a positive correlation between the independent variables (organization, planning, time-management, self-control, and metacognition) and the dependent variable (academic achievement).

This study used the nonparametric test of Pearson's rank-order correlation to examine the relationship between the executive functioning skills of learners with special educational needs and their academic achievement. A normality test was run before deciding to use the Pearson. All p-values were below the 0.05 level of significance, which led to the normality test being performed, which indicated that the distributions were not normally distributed.

Table 3 presents the results.

Table 3 Correlation Results of Independent Variables

(n = 56)

Independent Variables	Correlation Coefficient	P-value	Remark
Organization	.646**	.001	Significant
Planning	.445**	.021	Significant
Time-Management	.614**	.041	Significant
Self-Control	.379**	.017	Significant
Metacognition	.460**	.031	Significant

***. Correlation is significant at the level 0.01 (2-tailed)*

Based on table 2 above, it can be observed that the p-value is less than the preset significance limit of 0.01. This results to the rejection of the null hypothesis and come to the conclusion that there is a significant relationship between the independent and dependent variables. This study showed a connection between students' level of preparedness for academic achievement and their executive functioning skills (organization, planning, time-management, self-control, and metacognition). The findings below demonstrate that all variables had significantly positive linear correlations (Reject H0, p-value = 0.01).

LEVEL OF EXECUTIVE FUNCTIONAL SKILLS OF THE LEARNERS WITH SPECIAL NEEDS

In this study, the executive functioning skills of the learners with special needs are discussed and categorized into Organization, Planning, Time Management, Self-Control, and Metacognition.

Organization Skills of Learners with Special Needs

Table 4 presents the results.

Table 4 Organization Skills of Learners with Special Needs

Indicators	Mean	Interpretation
Backpacks and binders are neat and organized	2.71	Average
Separate worksheets or activities with the help of lockers or storage folders	2.55	Low-average
Taking notes during class discussions	2.39	Low-average
Uses folders or portfolios for current or completed activities in an orderly manner	2.59	Low-average
Chunks or divides of work activities or assignments	2.54	Low-average
Can do what is asked to do	2.63	Average
Aggregate Mean	**2.56**	**Low-Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22, Moderate; 4.23-5.00; High Skilled)

Table 4 shows that the indicators, backpacks and binders are neat and organized got the highest mean of 2.71 (averagely skilled) and can do what is asked to do got the mean of 2.63 (averagely skilled). Whereas, the indicators, separate worksheets or activities with the help of lockers or storage folders (2.55), taking notes during class discussions (2.39), uses folders or portfolios for current or completed activities in orderly manner (2.59), and chunks or divides of work activities or assignments (2.54), got the lowest mean which means low-average.

Based on the study's findings, most of the learners with special educational needs have a very low life skills training especially learners with intellectual disabilities. Most of the learners are more exposed to basic life skills performed at home rather than outside or in the community they belong, letting the learners explore outside and think of their own. Turner, McDonald, and Somerset (2018) discovered substantial correlations between life skills and critical thinking, which is consistent with their findings.

To support those findings, a functional program based on academic curriculum should focus on life skills enables learners with special needs to use functional behaviors and abilities to live and work in their community rather than isolating them at home (Hallahan et al., 2015). In addition to their academic program, children's education should incorporate an integrated life skills training program to real life experiences. Personal skills or social behaviors were one such critical life skill that learners with special educational needs, specifically, learners with intellectual disability, needed to be exposed to.

Planning Skills of Learners with Special Needs

Table 5 presents the results.

Table 5 Planning Skills of Learners with Special Needs

Indicators	Mean	Interpretation
Creates a plan of action or “to-do-list”	2.75	Average
Uses daily planners and calendars	2.71	Average
Parts of the activity (assignments and projects) completed with structure	2.91	Average
Follow instructions or directions in making assignments	2.82	Average
Does the work in order	3.14	Average
Aggregate Mean	**2.86**	**Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22; 4.23-5.00; High Skilled)

Table 5 shows that the indicators, does the work in order got the highest mean of 3.14 (average), parts of the activity completed with structure got the highest mean of 2.91 (averagely skilled), follow instructions or directions in making assignments of 2.82 (averagely skilled), creates a plan of action or “to-do-list” of 2.75 (average), and uses daily planners of 2.71 (average).

The data imply that learners with special educational need continuous assistance in terms of their planning skills as this area resulted to averagely skilled. This is because for most learners with special needs, they have developed a routinized activity that had helped their academic achievement such as creating a “to-do-list” and working on assignments in order. While many learners with special needs struggle with nonverbal signs and social interactions, some individuals are more likely to struggle than their classmates in some areas.

According to the findings, the learning process in a special education environment must be thoroughly examined and regulated in order to ensure that what is taught is kept by special needs students and can be applied in a practical way afterwards. Many students with special educational needs believe that planning with social interaction difficulties are the most restricting aspects of their disorder (Lai et al., 2015), which may be linked to difficulties building and sustaining planning skills, as well as diminished routinized engagement and inclusion in academic activities. Abilities obtained in a special needs context connected to community education must be practiced often in the same manner at home or spatial skills can be lost if they are not practiced.

Time-Management Skills of Learners with Special Needs

Table 6 presents the results.

Table 6 Time Management Skills of Learners with Special Needs

Indicators	Mean	Interpretation
Complete the task on time (modular or google classroom)	2.71	Average
Maintain good attitude throughout assignments	2.89	Average
Attend classes on time (online or in-person)	2.77	Average
Maximize the time working on assignments	3.07	Average
Can estimate time very well	2.88	Average
Aggregate Mean	**2.86**	**Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22; 4.23-5.00; High Skilled)

Table 6 shows that the indicators, maximize the time working on assignments got the highest mean of 3.07 (average), maintain good attitude throughout assignments got the highest mean of 2.89 (averagely skilled), can estimate time very well of 2.88 (averagely skilled), attend classes on time (online or in-person) of 2.77 (average), and complete the task on time of 2.71 (average).

The data imply that learners with special educational need performs averagely in terms of time-management. Aside from having a routinized activity that influence their academic ability, being able to effectively manage their time is crucial part of their learning. One of the goals of learners with special needs especially specific learning disability is to study and strengthen their thinking skills. However, some students find it struggling especially in high school. Some students have work and conflicts their learning management which results to low academic achievement.

The findings of this study is best supported by the study of Sukmawati, et al (2021), examines the relationship between time management and academic accomplishment. It demonstrates that there is a significant relationship between time management and academic achievement among students. Students who successfully manage employment and school have the chance to develop their entrepreneurial talents, soft skills through engaging in the working world, raise their courage to launch a business, and obtain support from venture capital and mentoring.

Self-control Skills of Learners with Special Needs

Table 7 presents the results.

Table 7 Self-control Skills of Learners with Special Needs

Indicators	Mean	Interpretation
Manage emotional outburst (angry, overwhelm, panic or anxiety)	3.04	Average
Acts with thinking and appropriately	2.88	Average
Gets angry or disappointed when low scores on tests	3.04	Average
Listens to feedbacks and criticism	2.82	Average
Does not blurting out and interrupting others	3.11	Average
Aggregate Mean	**2.98**	**Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22; 4.23-5.00; High Skilled)

Table 7 shows that the indicators the learners manifest moderate self-control skills (W.M= 2.98). They do not blurt out and interrupt others moderately (μ=3.11), manage emotional outburst and gets disappointed when low scores on tests got the mean of 3.04 (average). Meanwhile, Acts with thinking and appropriately got the mean of 2.88 (averagely skilled), Listens to feedbacks and criticism of 2.82 (averagely skilled).

According to the research, the most basic skills are referred to as self-control are managing emotions and handling emotions toward other students. Based on the findings, most students with special educational needs in

the mild-moderate conditions averagely handles themselves towards their academic achievement. This also implies that learners are self-sufficient, independent from adult supervision, and able to demonstrate good and positive behavior in an age-appropriate manner.

Although self-management has the potential to empower students in controlling their own behaviors, there are elements of adult's involvement in both teaching students to self-manage and monitoring students' performance after instruction to ensure the desired impact is occurring.

When students with disabilities learn to self-manage, they are more likely to rely on themselves than others for decision-making, they empower themselves for determining areas where they desire to improve, and the need for other adults or peers to assist in controlling their behaviors is minimized or eliminated. However, students with disabilities are not likely to learn how to self-manage unless their teachers select it as an instructional intervention, and know how to teach self-management to them (Fagel, 2017).

Metacognition Skills of Learners with Special Needs

Table 8 presents the results.

Table 8 Metacognition Skills of Learners with Special Needs

Indicators	Mean	Interpretation
Solve problems on his/her own	2.88	Average
Adjust to situations when facing difficulty or challenges	3.02	Average
Avoiding the same mistakes over and over	2.79	Average
Easily remember facts and solve problems	3.04	Average
Reflective to his thinking	3.09	Average
Aggregate Mean	**2.96**	**Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22; 4.23-5.00; High Skilled)

Table 8 shows that the indicators, reflective to his thinking got the highest mean of 3.09 (average), easily remember facts and solve got 3.04 (average), adjust to situations when facing difficulty or challenges got 3.02 (average), avoiding the same mistakes over and over got 2.79 (average), and solve problems on his/her own got the mean of 3.04 (average).

According to the statistics, teaching special needs students how to be reflective to his thinking and adjusting to situations when facing difficulty or challenges is important as a way to promote mental growth and development, which benefits his academic achievement.

According to Gonzaga et. al (2018) student's metacognition skills are multifactorial problem linked to poor academic performance; learning motivation, self-regulation, and negative emotions. Developing this skill in the area of executive functions can provide students an enrichment and a sense of connection of their emotions and actions. The emotions connected to achieving a particular academic goal, like studying for a test, are examined in this executive function. Achievement emotions are crucial in academic settings because they influence students' learning strategies, use of metacognitive and cognitive tools, and, ultimately, academic achievement (Daniels & Stupnisky, 2018).

Summary of Executive Functioning Skills of Learners with Special Needs

Table 9 presents the results.

Table 9 Executive Functioning Skills of Learners with Special Needs

Independent Variables	Mean	Interpretation
Organization	2.56	Low-average
Planning	2.86	Average
Time-Management	2.86	Average
Self-Control	2.98	Average
Metacognition	2.96	Average
Overall Aggregate Mean	**2.84**	**Average**

(1:00-1.80, Unskilled; 1:81-2:61, Low-average; 2.62-3.42, Average; 3:43-4.22; 4.23-5.00; High Skilled)

The table shows that self-control got the highest mean of 2.98 (averagely skilled), followed by metacognition of 2.96 (averagely skilled), planning and time-management of 2.85 (averagely skilled), and organization 2.56 (low-averagely skilled).

Based on the findings of the study, most of the learners with special educational needs in the Schools Division of Toledo City performed self-control as the highest. This supports the study that self-management is regularly mentioned as one of several essential qualities that help students with disabilities become more independent children who can responsibly and pro-actively take charge of parts of their lives, both within and outside of the classroom. Although research on the most effective ways to combine elements like goal-setting, self-managing, choice making, and decision making is still in its early stages, self-determination skill sets have been a prominent influence toward student's academic success.

TEST OF SIGNIFICANT RELATIONSHIP

The study hypothesized that the functional skills of the learners with special needs have significant relationships with the academic achievement of the respondents.

Multiple Linear Regression

To respond to research objective 3, standard multiple linear regression was applied. It was determined through preliminary analysis that the assumptions of normality, linearity, multicollinearity, and homoscedasticity had not been violated. To further identify the factors that most influence learner's academic success, this model explores the linear relationship between a learner's executive functioning skills such as organization, planning, time-management, self-control, and metacognition. Table 11 presents the results on collinearity statistics.

Table 11 Multiple Linear Regression on Executive Functioning Skills of Learners with Special Needs

Independent Variables	Collinearity Statistics	
	Tolerance	VIF
Organization	.217	4.611
Planning	.284	3.524
Time-Management	.226	4.418
Self-Control	.364	2.748
Metacognition	.495	2.020

Based on the table presented the collinearity data, all tolerance values were greater than 0.10, and variance inflation factor (VIF) values less than ten suggested there were no issues with multicollinearity when using multiple linear regression.

Table 11 presents the results.

Table 11 Collinearity Results on Executive Functioning Skills of Learners with Special Needs

Model	Dimension	Eigen value	Condition Index	Variance Proportions					
				(Constant)	Organization	Planning	Time Management	Self-control	Metacognition
1	1	5.914	1.000	.00	.00	.00	.00	.00	.00
	2	.049	10.973	.14	.11	.00	.04	.00	.02
	3	.012	22.609	.20	.07	.31	.12	.26	.08
	4	.010	24.153	.02	.54	.11	.49	.16	.02
	5	.009	26.366	.56	.00	.17	.32	.00	.50
	6	.007	29.894	.08	.28	.40	.03	.58	.37

A. Dependent Variable: Academic Achievement

The preliminary study was done to make sure the multi-collinearity was not violated and strongly correlated data between independent variables of 0.90 and higher confirm this (Pallant, 2016). Based on table 11 presented, a correlation study revealed that the levels of positive linear correlation between the independent variables were significantly low to moderate.

Table 12 presents the results.

Table 12 Regression Analysis and Results on Executive Functioning Skills of Learners with Special Needs

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	73.530	2.318		31.723	<.001	68.875	78.186
	Organization	.550	.151	.748	3.637	<.001	.246	.853
	Planning	-.474	.202	-.423	-2.351	.023	-.879	-.069
	Time Management	.370	.178	.419	2.080	.043	.013	.728
	Self-control	-.487	.200	-.386	-2.433	.019	-.888	-.085
	Metacognition	.423	.197	.293	2.150	.036	.028	.819
a. Dependent Variable: VAR00001								

Based on the table shown above, all the variables related to students' organization skills (t=3.637, p=0.001<0.05), planning skills (t=-2.351, p=0.023 < 0.05), time-management skills (t=2.080, p=0.043 <0.05), self-control skills (t=-2.433, p=0.019< 0.05), and metacognition (t=-2.150, p=0.036 < 0.05) were found significant towards student's executive functioning skills. Additionally, the proficiency level of students' executive functioning development was strongly connected with all variables. This suggests that a student's proficiency level with regards to their executive functioning help and assist them in monitoring their academic progress, adaptable thinking, working memory, self-regulation, and organization during this distance learning.

Based on the findings, student's organization skills had the highest standardized coefficient (Beta = 0.748) based on standardized coefficients beta. As a result, in the model, student organization skills play the most important role in determining how efficient embedding executive functions in all academic for student's achievement. This results to have a direct benefit on students' to engage in the learning process and overcome challenges in a self-directed learning environment. The projected coefficient values were 0=0.550, 1=-0.474, 2 =0.370, 3=0.487, and 4=-0.423 based on the unstandardized coefficients. Thus, this displays the exact regression model used in this investigation.

Summary of Regression Findings

Table 13 present the results.

Table 13 Summary of Regression Analysis on Executive Functioning Skills of Learners with Special Needs

Model	Findings
Organization	Learner's with special educational needs proficiency level for embedding executive functioning skills increases as the rating scale for their organization does.
Planning	Learner's with special educational needs proficiency level for embedding executive functioning skills increases as the rating scale for their planning does.
Time-Management	Learner's with special educational needs proficiency level for embedding executive functioning skills increases as the rating scale for their time-management does.
Self-Control	Learner's with special educational needs proficiency level for embedding executive functioning skills increases as the rating scale for their self-control does.
Metacognition	Learner's with special educational needs proficiency level for embedding executive functioning skills increases as the rating scale for their metacognition does.

According to table 13, overall, the study demonstrates a positive correlation between the five independent variables and the dependent variable in students' preparation for independent distant study.

THEORY DEVELOPMENT

Student's Planning Skills

Proposition: *Higher grades in mathematics are obtained by students with special educational needs who have a good planning skills.*

When students have competence to succeed, they connect their success to personal capabilities and feel quite confident about themselves. The capacity of students to study and develop high levels of competency is

acknowledged by their planning abilities. In a study on the connection between organizational abilities and academic success, (Smith, et. al 2020) found that there are significant positive associations between executive functioning and grade point average (GPA). Planning has a big impact on how well students do in school. It is an indication of the necessity for and outcome of their high executive functioning skills in their learning. When students know what's involved in a task or an assignment, it helps them resist the urge to procrastinate. Seeing a task written out step-by-step eliminate the unknown factor which is a big reason that students procrastinate in the first place. This can also help teachers to better understand that planning skills of students with special needs contribute a lot to their academic success.

Student's Time-Management Skills

Proposition: *Students who have good time-management skills have a good academic performance.*

Time is a process that continues uninterrupted beyond the control of individuals from the past to the future success of events to come today. Time should not be wasted; it is an important resource that must be used wisely. Effective time management is associated with greater academic performance and lower levels of anxiety in students; however many students find it hard to find a balance between their studies and their day-to-day lives. Time management skills have been shown to have a positive impact on student learning and student outcomes (Adams, et. al 2019*)* report that the capacity to successfully manage their time is the foundation of students developing good study habits and strategies for success. In people's private and professional life, time management is an application process of people's own events to management functions such as planning, organizing and controlling in order to achieve their goals effectively and efficiently. The aim of time management is to increase the quality of the activities being carried out within a limited time (İşcan 2009). Time management requires the utilization of analysis, planning and making programs as in the management of other resources. It is necessary to make an accurate schedule and set goals, objectives and priorities (Gayef, et al 2017). It is not enough just to know how to use time in order to understand and apply the time management principles. According to the study, a student's capacity for time management both influences and predicts how well they will do academically. Reading about the subject or utilizing the framework of psychological counseling and guidance studies performed in classrooms are both effective ways for children to start building their own time management skills throughout their primary school years, according to the pertinent research.

Student's Self-Control Skills

Proposition: *Students who have self-control skills have positive impact towards to their academic performance.*

Self-regulation—the ability to exercise control over our feelings, thoughts, and behavior—turns out to be a stronger predictor of success in the classroom than intelligence, talent, or standardized test scores. That's because strong self-control is the main contributor to traits like perseverance, determination, and grit, all of which have been linked to higher school achievement as well as to success in the world of work (Tedesqui, 2018). Self-control has been related to positive student outcomes including academic performance of college students. Practicing self-control may have long-term effects on academic performance and provide first evidence for a motivational mechanism. Good self-control has been related to many positive outcomes related to health, success, wellbeing, and crime avoidance (Baumeister & Vohs, 2015). The relationship between self-control and academic performance has been investigated with students at the middle school level, which is a time of transition and a point when students typically start to become more aware of the contribution of effort and intelligence (Duckworth et al., 2012). Learners with special needs need to improve on self-control because students recognize the value of academic work for their future, but in the moment in which they are completing it, they typically do not enjoy it.

THEORY DEVELOPMENT

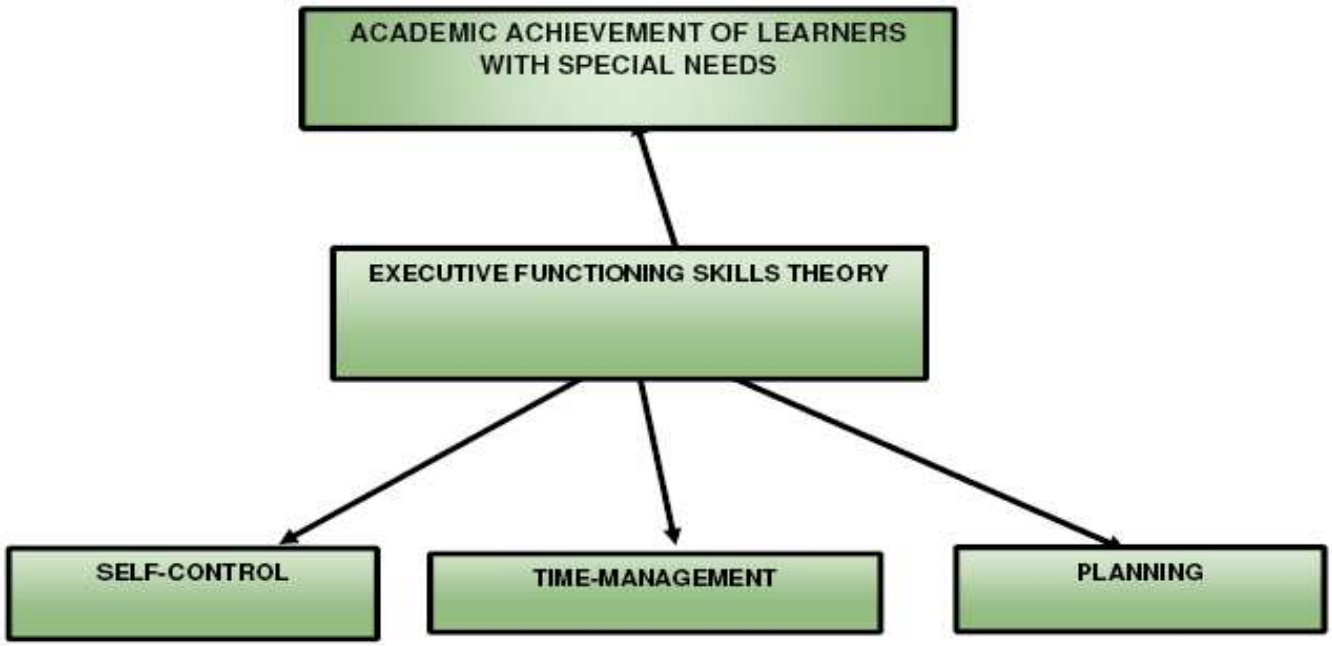
Our practice is guided by effective theory, which makes instruction more efficient for students. An effective theory that provide instruction that is personalized, encourages independent learning, and offers the right support (teaching), all of which may increase the instruction's effectiveness for the student.

EMBEDDING EXECUTIVE FUNCTION THEORY IN ACADEMICS

In executive functioning, this helps the learners with special educational needs develop their knowledge on the capacity to succeed academically. Planning, time-management, and self-control are connected to the embedment of executive function theory. If we want learners to develop strong executive functioning skills, it is critical to integrate them into the daily classroom. Integrating executive functioning skills into classroom instruction just makes sense. In short, this means taking important skills like organizing and planning their tasks when working, managing their emotions when selecting positive choices, and practicing them right alongside average daily

tasks. Executive function (EF) skills are the attention-regulation skills that make it possible to sustain attention, keep goals and information in mind, refrain from responding immediately, resist distraction, tolerate frustration, consider the consequences of different behaviors, reflect on past experiences, and plan for the future. EF skills have become a major focus of research in psychology, neuroscience, and education, and increasingly both teachers and parents are aware that these skills provide an important foundation for learning in school settings. Indeed, EF is central to school readiness and early school achievement (Blair 2002; Blair and Raver 2014); school performance and social competence in adolescence; better physical health; higher socioeconomic status (SES); and fewer drug-related problems and criminal convictions in adulthood.

EXECUTIVE FUNCTIONING THEORY DIAGRAM



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