Journal of Associated Medical Sciences 2024; 57(3): 18-29

JAMS
Journal of Associated Medical Sciences

Scopus Indexed & Thai-Journal Citation Index Centre (TCI)

Journal of Associated Medical Sciences

Journal homepage: https://www.tci-thaijo.org/index.php/bulletinAMS/index

School performance readiness of elementary students with disabilities before starting the occupational therapy program in special education schools

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ARTICLE INFO

Article history:
Received 30 March 2024
Accepted as revised 28 May 2024
Available online 7 June 2024

Keywords:
Performance, readiness, elementary student, disabilities, special education school.

ABSTRACT

Background: School-based occupational therapists (SBOTs) work as health professionals in educational settings. School performance readiness is within the scope of SBOTs in providing a service for students who might have experienced decreasing performance during their school life.

Objective: This study aimed to explore the school performance readiness of elementary students with disabilities before starting the occupational therapy program in special education schools.

Materials and methods: The school performance readiness checklist for students with disabilities in special education schools was the research instrument. It comprised four areas: physical, social and emotional, pre-academic, and self-care readiness. Seventy-five elementary students with disabilities participated in this study. They consisted of 41 students with intellectual disability, 21 students with physical disability, and 13 students with sensory disability.

Results: Results from the initial semester in special education schools showed that most of the students with disabilities (85.33%) needed support in promoting their school performance readiness, particularly in pre-academic readiness. This included most of those with intellectual disability (33.33%) and all of those with sensory disabilities, while all of the students with physical disabilities needed support in promoting physical readiness.

Conclusion: Most students with disabilities needed support in promoting their school performance readiness according to their type of disability. Although the special education schools had enrolment criteria, SBOTs and school professionals should be concerned with providing related intervention programs to promote school readiness, particularly pre-academic readiness.

Introduction

In 2021, there were 139,640 school-aged children with disabilities in Thailand, which amounted to 8.94% of people or 3.84% of school-aged children with disabilities in the country.[1] Although the recent special education model drives towards inclusive education to encourage students with disabilities to gain a place in regular schools, most of them in Thailand enroll in special education schools. Educators and related professionals realize the benefits of inclusive education for students with disabilities. However, the inclusive system requires changes at all levels of society, including the school, community, and national levels, and more time is needed to prepare for these alterations, particularly in a developing country.[2] During a move to inclusive education, special

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doi: 10.12982/JAMS.2024.043
E-ISSN: 2539-6056

education schools are necessary as a learning setting for students with disabilities in a country that faces barriers to change. Most students with disabilities who can participate in regular schools have high function or independent performances or invisible disabilities such as attention deficit and hyperactive disorder (ADHD), learning disorder (LD), high function autism spectrum disorder (ASD), and so forth.

On the other hand, students with obvious or severe disabilities are rarely accepted in regular schools. Therefore, special education schools are the leading choice for these students in Thailand, which includes those with intellectual, physical, visual, and hearing disabilities. Those who study in special education learn from a modified or parallel curriculum, providing more accessibility to participation in school learning activities. These learning activities are designed to consider the strengths and limitations of the students. Generally, the enrolment criteria in each special education school are based on the student's disability and not on their performance and skills. Before starting school, most students receive an early intervention program to promote development and prepare for the necessary performance in the school context.

Occupational therapy (OT) is a related service that supports the function and performance of students in their daily life activities and their engagement in human occupation.[3] School-based occupational therapists (SBOTs) are health professionals who work collaboratively with education professionals in providing services to students with disabilities in the school context. In Thailand, four types of special education schools follow the types of disabilities: intellectual, physical, visual, and hearing. Regarding elementary students with intellectual disability, the SBOTs focus on developmental stimulation, academic performance preparation, and the school curriculum.[4] Regarding elementary students with a physical disability, the SBOTs focus on the activities of daily living (ADL) training, rehabilitation, academic performance preparation, and the school curriculum.[5] Elementary students with visual and hearing disability are in the group of sensory disability that usually refers to impairment of the senses such as sight, hearing, taste, touch, smell, and spatial awareness. However, sensory disability mainly covers visual or blindness and hearing impairment or deafness.[6] The SBOTs focus on sensory stimulation and training for students with sensory disability by compensation to retain sensory functions for independent living in all everyday activities.[7,8]

In general, the SBOTs provide an intervention program that promotes the functional abilities and participation of the students in their daily routines by following the role of the student.[9] However, in cases of students needing to meet the minimal school criteria, the SBOTs are expected to evaluate and improve the required performances of the students as they progress through school life. Those students were provided with OT intervention programs for establishing new routines, developing new skills needed for independence in school, engaging in academic tasks, and participating in appropriate social interactions with others. These intervention programs for school performance readiness are for students who need extra support in meeting the minimal criteria to become elementary students. Moreover, these programs fulfil the required performance of students who experienced decreased performance during school.

School performance readiness is a crucial indicator that predicts the potential and achievement of children when they start as students. This includes academic performance and all developmental performances in physical, cognitive, social, and emotional areas.[10,11] Most students with disabilities receive the early intervention program before entering school. However, some of them need related services at the beginning and during their school life. In Thailand, occupational therapists are related to health professionals who provide services in early intervention programs and school settings. Unfortunately, by the time students with disabilities move to schools, the outcome of the early intervention program in school performance readiness has been hardly investigated.

Therefore, this study aimed to explore the school performance readiness of elementary students with disabilities before starting the OT program in special education schools. The results could provide valuable information that reflects the plans of occupational therapists in the early intervention program for promoting school performance readiness of students with disabilities in each type of special education school.

Materials and methods

This descriptive study explored the school performance readiness of elementary students with disabilities before they started the OT program in special education schools in Chiang Mai province, Thailand. These schools consisted of students with physical, visual, hearing, and intellectual disabilities, and they provided education and related services for children living in upper northern Thailand. Each school had only one occupational therapist. A total of four SBOTs evaluated their students by using the school performance readiness checklist, which was a research instrument in this study.

Participants

Seventy-five participants comprised 41 students with intellectual disability, 21 students with physical disability, 13 students with sensory disability, 5 students with visual disability, and 8 students with hearing disability. Before entering the schools, these participants were screened informally by the school professional team, who showed the need for OT services. Most participants were male (66.67%, N=50) and aged 8.0-8.11 years (38.67%, N=29). The demographics of the participants in this study are shown in Table 1.

Table 1. Demographics of the participants (N=75)

Characteristics	Intellectual disability N (%)	Physical disability N (%)	Sensory disability N (%)	Total N (%)
Gender				
Male	31 (41.34)	13 (17.33)	6 (8.00)	50 (66.67)
Female	10 (13.34)	8 (10.66)	7 (9.33)	25 (33.33)
Age (years old)				
6.0-6.11	0 (0.00)	0 (0.00)	3 (4.00)	2 (2.67)
7.0-7.11	7 (9.33)	5 (6.67)	4 (5.33)	15 (20.00)
8.0-8.11	21 (28.01)	4 (5.33)	2 (2.67)	29 (38.67)
9.0-9.11	9 (12.00)	10 (13.34)	2 (2.67)	21 (28.01)
10.0-10.11	4 (5.33)	2 (2.67)	2 (2.67)	8 (10.66)

Instrument

The school performance readiness checklist of students with disabilities in special education schools was a research instrument in this study. It was applied by the normal development of children and the School Readiness Checklist,[12] which comprised four areas of school performance readiness such as physical, social-emotional, pre-academic, and self-care readiness. It was examined for content validity and reliability. Content validity was examined by five related specialists, occupational therapists, and education professionals in the early intervention program and school contexts. The first draft of the checklist consisted of 71 items. After consideration by the specialists, the item-object congruence (IOC) index was calculated to be between 0.40 and 1.00. Suggestions from the specialists were used to correct the checklist before resending it to the specialists. After that, 62 items remained on the checklist with the IOC=1.00. Regarding reliability, the checklist was administered to 12 elementary students with disabilities. Cronbach's alpha coefficient indicated α=0.96, which presented excellent reliability.[13] The checklist items were on a nominal scale, with scores of 1 and 0, in which 1 (Yes) meant the present performance of the students in those items, and 0 (No) meant no present performance. If a student had no opportunity to perform an item, those items were recorded as NA and not included in the scoring. Total scores of items performed and total scores of all items, without the NA ones, were calculated as the performance percentage, as shown in the formula below.

$$\text{Performance percentage} = \frac{\text{Total scores of performed items}}{\text{Total scores of all items without the NA items}} \times 100$$

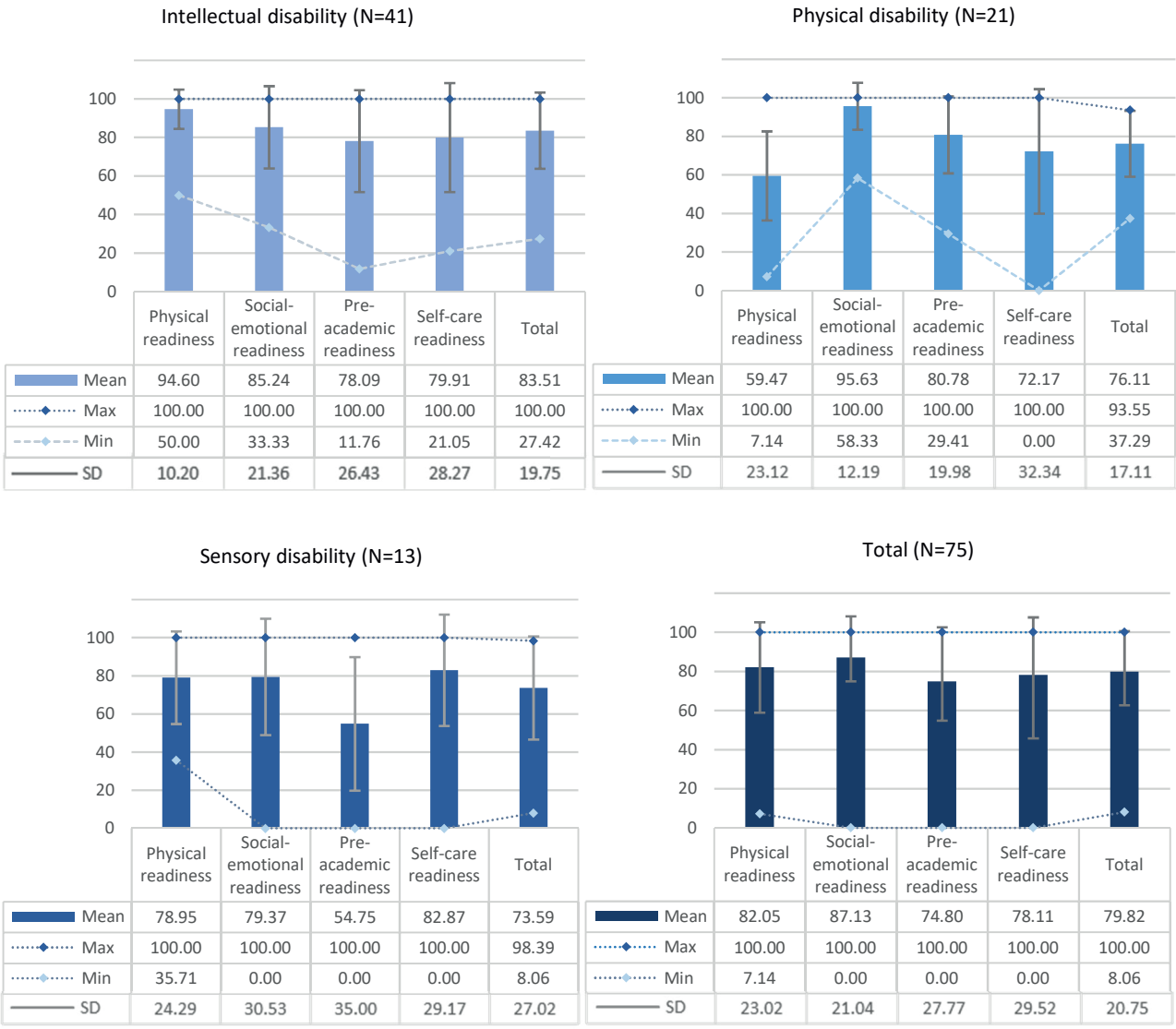
The interpretation of school performance readiness was based on the performance percentage of each item and overall items, but it did not include the NA items. All performance items were considered as minimally required performance for elementary school students. Thus, if any items were checked "no," the child needed support. The students who were able to perform in all of the items were marked for reaching school performance readiness. On the other hand, those unable to get the total performance percentage of each item and overall items were seen to need support.

Statistical analysis

Demographic data, school performance readiness, and the number of students with disabilities were analyzed for each item using descriptive statistics, including frequency and percentage. The percentage of school performance readiness was analyzed using descriptive statistics, including maximum, minimum, mean, and standard deviation.

Results

Results indicated that the minimum, maximum, and average performance percentage of school performance readiness in students with disabilities was 8.06, 100.00, and 79.82$\pm$20.75, respectively. Regarding the type of school performance readiness, social-emotional readiness showed the highest performance percentage, followed by physical, self-care, and pre-academic readiness in that order. When considering each type of student with disabilities, the results showed that those with intellectual disability presented the highest performance percentage in physical readiness. The students with physical disability and those with sensory disability presented the highest performance percentages in social-emotional readiness and self-care readiness, respectively. Details of the school performance readiness percentage in each type of student with disabilities are shown in Figure 1.



Intellectual disability (N=41)	Physical readiness	Social-emotional readiness	Pre-academic readiness	Self-care readiness	Total
Mean	94.60	85.24	78.09	79.91	83.51
Max	100.00	100.00	100.00	100.00	100.00
Min	50.00	33.33	11.76	21.05	27.42
SD	10.20	21.36	26.43	28.27	19.75

Physical disability (N=21)	Physical readiness	Social-emotional readiness	Pre-academic readiness	Self-care readiness	Total
Mean	59.47	95.63	80.78	72.17	76.11
Max	100.00	100.00	100.00	100.00	93.55
Min	7.14	58.33	29.41	0.00	37.29
SD	23.12	12.19	19.98	32.34	17.11

Sensory disability (N=13)	Physical readiness	Social-emotional readiness	Pre-academic readiness	Self-care readiness	Total
Mean	78.95	79.37	54.75	82.87	73.59
Max	100.00	100.00	100.00	100.00	98.39
Min	35.71	0.00	0.00	0.00	8.06
SD	24.29	30.53	35.00	29.17	27.02

Total (N=75)	Physical readiness	Social-emotional readiness	Pre-academic readiness	Self-care readiness	Total
Mean	82.05	87.13	74.80	78.11	79.82
Max	100.00	100.00	100.00	100.00	100.00
Min	7.14	0.00	0.00	0.00	8.06
SD	23.02	21.04	27.77	29.52	20.75

Figure 1. *Performance percentage of school performance readiness.*

Regarding interpreting school performance readiness, results showed that during the initial semester in special education schools, most students with disabilities (85.33%) needed support in promoting their school performance readiness, especially pre-academic readiness. On the other hand, 14.67% of the students did not need the OT program to facilitate their school performance readiness. When considering each type of student with disabilities, the results showed that most students with intellectual disability (33.33%) needed support in promoting their pre-academic readiness. In comparison, most of them (37.33%) had completed physical readiness. All students with physical disability needed support in promoting their school performance readiness, particularly physical readiness. All students with sensory disability needed support in promoting their school performance readiness, especially pre-academic readiness. Details of school performance readiness of the students with disabilities are shown in Figure 2.

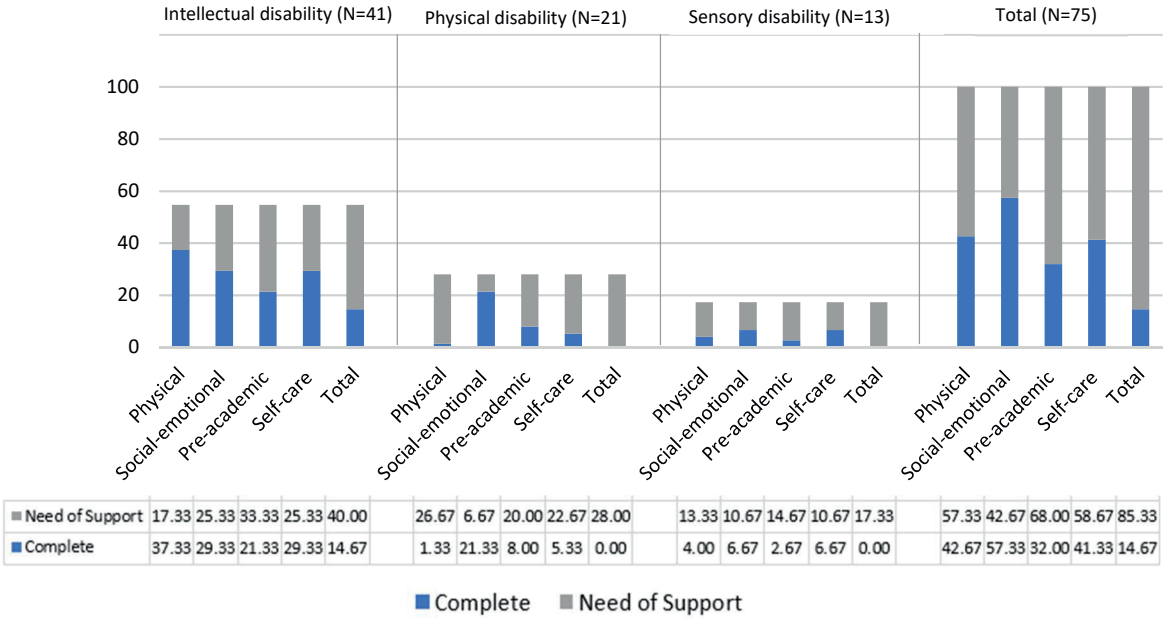


Figure 2. *Percentage of students with disabilities together with school performance readiness.*

When considering the performance items, in terms of physical readiness, most of the students (44.00%) could not perform "use scissors correctly", including those with intellectual disability (31.71%), while most of the students with sensory disabilities (30.00%) could not perform "Operate eye-hand activities coordinately". In addition, most of the students with a physical disability (80.95%) could not perform "grasp objects dexterously." In terms of social-emotional readiness, most of the students (22.67%) could not perform "control aggressive behaviors when facing unsatisfactory situations", including those with intellectual (31.71%) and sensory disabilities (23.08%). In comparison, most of the students with a physical disability (9.52%) could not perform "keep toys after play", "be patient by waiting", and "adapt to an unfamiliar environment easily". In terms of pre-academic readiness, most of the students (36.00%) could not perform "solve problems with age appropriately" and "understand the concept of numbers with age appropriately," including those with a physical disability (52.38%). In addition, most of the students with intellectual disability (34.15%) were unable to perform "solve problems with age appropriately", "perceive person, time, and place orientation", and "give directions and locations of places". Meanwhile, most of the students with sensory disability (46.15%) could not perform "give directions and locations of places", and "inform about the usefulness of objects in daily life". In terms of self-care readiness, most of the students (38.67%) could not perform "button up independently," including those with a physical disability (61.90%). Moreover, most of the students with intellectual disability (36.58%) could not perform "maintain personal devices", "being aware of the danger in daily activities", and "making the bed after getting up". In comparison, most of those with sensory disability (38.46%) were unable to perform "being aware of the danger in daily activities." Details of the number of participants in each item of school performance readiness are shown in Table 2.

Table 2. Number and Percentage of participants in each item of school performance readiness

School performance readiness	Intellectual disability (N=41)			Physical disability (N=21)			Sensory disability (N=13)			**Total** (N=75)		
	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Physical Readiness												
1. Control upright head and neck while doing activities	41 (100.00)	0 (0.00)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	13 (100.00)	0 (0.00)	0 (0.00)	75 (100.00)	0 (0.00)	0 (0.00)
2. Sit steadily on floor and chair	41 (100.00)	0 (0.00)	0 (0.00)	17 (80.95)	4 (19.05)	0 (0.00)	13 (100.00)	0 (0.00)	0 (0.00)	71 (94.67)	4 (5.33)	0 (0.00)
3. Keep balance when facing an external force	39 (95.12)	2 (4.88)	0 (0.00)	7 (33.33)	14 (66.67)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	58 (77.33)	17 (22.67)	0 (0.00)
4. Move actively without fatigue	41 (100.00)	0 (0.00)	0 (0.00)	6 (28.57)	15 (71.43)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	57 (76.00)	18 (24.00)	0 (0.00)
5. Be mobile independently	41 (100.00)	0 (0.00)	0 (0.00)	17 (80.95)	4 (19.05)	0 (0.00)	13 (100.00)	0 (0.00)	0 (0.00)	71 (94.67)	4 (5.33)	0 (0.00)
6. Reach out, grasp, carry and release voluntarily	40 (97.56)	1 (2.44)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	72 (96.00)	3 (4.00)	0 (0.00)
7. Grasp objects steadily	40 (97.56)	1 (2.44)	0 (0.00)	15 (71.43)	6 (28.57)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	67 (89.33)	8 (10.67)	0 (0.00)
8. Grasp objects dexterously	37 (90.24)	4 (9.76)	0 (0.00)	4 (19.05)	**17 (80.95)**	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	52 (69.33)	23 (30.67)	0 (0.00)
9. Use bilateral hand coordinately	41 (100.00)	0 (0.00)	0 (0.00)	16 (76.19)	5 (23.81)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	68 (90.67)	7 (9.33)	0 (0.00)
10. Grasp stationery with age appropriately	37 (90.24)	4 (9.76)	0 (0.00)	11 (52.38)	10 (47.62)	0 (0.00)	8 (61.54)	3 (23.08)	2 (15.38)	56 (74.67)	17 (22.66)	2 (2.67)
11. Transfer objects from one hand to the other	41 (100.00)	0 (0.00)	0 (0.00)	17 (80.95)	4 (19.05)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	68 (90.67)	7 (9.33)	0 (0.00)
12. Grasp and rotate objects with one hand	37 (90.24)	4 (9.76)	0 (0.00)	9 (42.86)	12 (57.14)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	56 (74.67)	19 (25.33)	0 (0.00)
13. Use scissors correctly	28 (68.29)	**13 (31.71)**	0 (0.00)	5 (23.81)	16 (76.19)	3 (10.00)	8 (61.54)	4 (30.77)	1 (7.69)	41 (54.67)	**33 (44.00)**	4 (5.33)
14. Operate eye-hand activities coordinately	39 (95.12)	2 (4.88)	0 (0.00)	15 (71.43)	6 (28.57)	0 (0.00)	8 (61.54)	**5 (38.46)**	0 (0.00)	62 (82.67)	13 (17.33)	0 (0.00)

Table 2. Number and Percentage of participants in each item of school performance readiness (cont.)

School performance readiness	Intellectual disability (N=41)			Physical disability (N=21)			Sensory disability (N=13)			**Total** (N=75)		
	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Social-emotional Readiness												
1. Share things with peers	35 (85.37)	6 (14.63)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	67 (89.33)	8 (10.67)	0 (0.00)
2. Control emotion appropriately	29 (70.73)	12 (29.27)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	10 (76.92)	**3 (23.08)**	0 (0.00)	59 (78.67)	16 (21.33)	0 (0.00)
3. Keep toys after play	34 (82.93)	7 (17.07)	0 (0.00)	19 (90.48)	**2 (9.52)**	0 (0.00)	10 (76.92)	**3 (23.08)**	0 (0.00)	63 (84.00)	12 (16.00)	0 (0.00)
4. Be patient by waiting	29 (70.73)	12 (29.27)	0 (0.00)	19 (90.48)	**2 (9.52)**	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	60 (80.00)	15 (20.00)	0 (0.00)
5. Follow class rules	34 (82.93)	7 (17.07)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	66 (88.00)	9 (12.00)	0 (0.00)
6. Greet others	38 (92.68)	2 (4.88)	1 (2.44)	21 (100.00)	0 (0.00)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	71 (94.67)	3 (4.00)	1 (1.33)
7. Make and maintain relationships with friends	39 (95.12)	2 (4.88)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	72 (96.00)	3 (4.00)	0 (0.00)
8. Change or move from one activity to another smoothly	40 (97.56)	1 (2.44)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	71 (94.67)	4 (5.33)	0 (0.00)
9. Adapt to an unfamiliar environment easily	40 (97.56)	1 (2.44)	0 (0.00)	19 (90.48)	**2 (9.52)**	0 (0.00)	11 (84.62)	1 (7.69)	1 (7.69)	70 (93.34)	4 (5.33)	1 (1.33)
10. Repent for mistakes	41 (100.00)	0 (0.00)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	9 (69.23)	**3 (23.08)**	1 7.69)	71 (94.67)	3 (4.00)	1 (1.33)
11. Collaborate with group activities	41 (100.00)	0 (0.00)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	72 (96.00)	3 (4.00)	0 (0.00)
12. Control aggressive behaviors when facing unsatisfactory situations	27 (65.85)	**13 (31.71)**	1 (2.44)	20 (95.24)	1 (4.76)	0 (0.00)	10 (76.92)	**3 (23.08)**	0 (0.00)	57 (76.00)	**17 (22.67)**	1 (1.33)

Table 2. Number and Percentage of participants in each item of school performance readiness (cont.)

School performance readiness	Intellectual disability (N=41)			Physical disability (N=21)			Sensory disability (N=13)			**Total** (N=75)		
	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Pre-academic Readiness												
1. Understand and express needs by natural gestures	39 (95.12)	2 (4.88)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	72 (96.00)	3 (4.00)	0 (0.00)
2. Understand verbal, non-verbal or sign language	39 (95.12)	2 (4.88)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	72 (96.00)	3 (4.00)	0 (0.00)
3. Use two-way communication with verbal, non-verbal or sign language	38 (92.68)	3 (7.32)	0 (0.00)	21 (100.00)	0 (0.00)	0 (0.00)	9 (69.23)	4 (30.77)	0 (0.00)	68 (90.67)	7 (9.33)	0 (0.00)
4. Understand age-appropriated vocabularies	36 (87.80)	5 (12.20)	0 (0.00)	17 (80.95)	4 (19.05)	0 (0.00)	8 (61.54)	5 (38.46)	0 (0.00)	61 (81.33)	14 (18.67)	0 (0.00)
5. Tell stories continuously	31 (75.61)	10 (24.39)	0 (0.00)	14 (66.67)	6 (28.57)	1 (4.76)	8 (61.54)	5 (38.46)	0 (0.00)	53 (70.67)	21 (28.00)	1 (1.33)
6. Optimal level of arousal	38 (92.68)	3 (7.32)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	68 (90.67)	7 (9.33)	0 (0.00)
7. Optimal attention and concentration	36 (87.80)	5 (12.20)	0 (0.00)	14 (66.67)	7 (33.33)	0 (0.00)	9 (69.23)	4 (30.77)	0 (0.00)	59 (78.67)	16 (21.33)	0 (0.00)
8. Able to finish all assignments	35 (85.37)	6 (14.63)	0 (0.00)	13 (61.90)	8 (38.10)	0 (0.00)	9 (69.23)	4 (30.77)	0 (0.00)	57 (76.00)	18 (24.00)	0 (0.00)
9. Tell his/her name correctly	36 (87.80)	5 (12.20)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	66 (88.00)	9 (12.00)	0 (0.00)
10. Be flexible in uncertain situations	34 (82.93)	7 (17.07)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	64 (85.33)	11 (14.67)	0 (0.00)
11. Solve problems with age appropriately	27 (65.85)	**14 (34.15)**	0 (0.00)	10 (47.62)	**11 (52.38)**	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	48 (64.00)	**27 (36.00)**	0 (0.00)
12. Understand concept of numbers with age appropriately	29 (70.73)	11 (26.83)	1 (2.44)	10 (47.62)	**11 (52.38)**	0 (0.00)	8 (61.54)	5 (38.46)	0 (0.00)	47 (62.67)	**27 (36.00)**	1 (1.33)
13. Compare and analyze similarity and difference of tangible objects	28 (68.29)	12 (29.27)	1 (2.44)	20 (95.24)	1 (4.76)	0 (0.00)	9 (69.23)	4 (30.77)	0 (0.00)	57 (76.00)	17 (22.67)	1 (1.33)
14. Compare and analyze similarity and difference of intangible objects	29 (70.73)	11 (26.83)	1 (2.44)	15 (71.43)	6 (28.57)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	54 (72.00)	20 (26.67)	1 (1.33)
15. Perceive person, time, and place orientation	26 (63.41)	**14 (34.15)**	1 (2.44)	20 (95.24)	1 (4.76)	0 (0.00)	9 (69.23)	4 (30.77)	0 (0.00)	55 (73.33)	19 (25.33)	1 (1.33)
16. Give directions and locations of places	26 (63.41)	**14 (34.15)**	1 (2.44)	20 (95.24)	1 (4.76)	0 (0.00)	7 (53.85)	**6 (46.15)**	0 (0.00)	53 (70.67)	21 (28.00)	1 (1.33)
17. Inform about the usefulness of objects in daily life	27 (65.85)	13 (31.71)	1 (2.44)	16 (76.19)	5 (23.81)	0 (0.00)	7 (53.85)	**6 (46.15)**	0 (0.00)	50 (66.67)	24 (32.00)	1 (1.33)

Table 2. Number and Percentage of participants in each item of school performance readiness (cont.)

School performance readiness	Intellectual disability (N=41)			Physical disability (N=21)			Sensory disability (N=13)			**Total** (N=75)		
	Yes	No	NA	Yes	No	NA	Yes	No	NA	Yes	No	NA
Self-care Readiness												
1. Face washing independently	41 (100.00)	0 (0.00)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	73 (97.33)	2 (2.67)	0 (0.00)
2. Tooth brushing independently	39 (95.12)	2 (4.88)	0 (0.00)	18 (85.71)	3 (14.29)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	69 (92.00)	6 (8.00)	0 (0.00)
3. Combing hair independently	40 (97.56)	1 (2.44)	0 (0.00)	19 (90.48)	2 (9.52)	0 (0.00)	11 (84.62)	1 (7.69)	1 (7.69)	70 (93.33)	4 (5.33)	1 (1.33)
4. Eating independently	39 (95.12)	2 (4.88)	0 (0.00)	20 (95.24)	1 (4.76)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	71 (94.67)	4 (5.33)	0 (0.00)
5. Toileting independently	31 (75.61)	10 (24.39)	0 (0.00)	13 (61.90)	8 (38.10)	1 (4.76)	11 (84.62)	2 (15.38)	0 (0.00)	55 (73.33)	20 (26.67)	0 (0.00)
6. Cleaning after toileting independently	31 (75.61)	10 (24.39)	0 (0.00)	19 (90.48)	2 (9.52)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	61 (81.33)	14 (18.67)	0 (0.00)
7. Putting on clothes independently	35 (85.37)	6 (14.63)	0 (0.00)	15 (71.43)	6 (28.57)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	62 (82.67)	13 (17.33)	0 (0.00)
8. Taking-off clothes independently	35 (85.37)	6 (14.63)	0 (0.00)	18 (85.71)	3 (14.29)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	64 (85.33)	11 (14.67)	0 (0.00)
9. Zipping clothes independently	31 (75.61)	10 (24.39)	0 (0.00)	14 (66.67)	7 (33.33)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	56 (74.67)	19 (25.33)	0 (0.00)
10. Button up independently	28 (68.29)	13 (31.71)	0 (0.00)	8 (38.10)	**13 (61.90)**	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	46 (61.33)	**29 (38.67)**	0 (0.00)
11. Unbutton independently	29 (70.73)	12 (29.77)	0 (0.00)	18 (88.71)	3 (14.29)	0 (0.00)	11 (84.62)	2 (15.38)	0 (0.00)	58 (77.33)	17 (22.67)	0 (0.00)
12. Putting on socks independently	31 (75.61)	10 (24.39)	0 (0.00)	15 (71.43)	6 (28.57)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	58 (77.33)	17 (22.67)	0 (0.00)
13. Taking-off socks independently	37 (90.24)	4 (9.76)	0 (0.00)	18 (85.71)	3 (14.29)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	67 (89.33)	8 (10.67)	0 (0.00)
14. Putting on shoes independently	34 (82.93)	7 (17.07)	0 (0.00)	15 (71.43)	6 (28.57)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	61 (81.33)	14 (18.67)	0 (0.00)
15. Taking-off shoes independently	37 (90.24)	4 (9.76)	0 (0.00)	18 (85.71)	3 (14.29)	0 (0.00)	12 (92.31)	1 (7.69)	0 (0.00)	67 (89.33)	8 (10.67)	0 (0.00)
16. Maintaining personal devices	25 (60.98)	**15 (36.58)**	1 (2.44)	12 (57.14)	9 (42.86)	0 (0.00)	10 (76.92)	3 (23.08)	0 (0.00)	47 (62.67)	27 (36.00)	1 (1.33)
17. Being aware of danger in daily activities	23 (56.10)	**15 (36.58)**	3 (7.32)	19 (90.48)	2 (9.52)	0 (0.00)	8 (61.54)	**5 (38.46)**	0 (0.00)	50 (66.67)	22 (29.33)	3 (4.00)
18. Being able to do basic chores	26 (63.41)	13 (31.71)	2 (4.88)	9 (42.86)	11 (52.38)	1 (4.76)	11 (84.62)	2 (15.38)	0 (0.00)	46 (61.33)	26 (34.67)	3 (4.00)
19. Making the bed after getting up	24 (58.54)	**15 (36.58)**	2 (4.88)	16 (76.19)	5 (23.81)	0 (0.00)	9 (69.23)	3 (23.08)	1 (7.69)	49 (65.33)	23 (30.67)	3 (4.00)

Discussion

Generally, related federal laws address the rights of children with disabilities to access educational participation in the school system. However, due to the limitation of their disability status, they need support in achieving school performance readiness. As the students with disabilities in this study were screened informally by the school professional team before entering school, it was indicated that the students needed OT services and that some of them showed essential readiness to study in the school system as elementary students.

Although the results showed that students with intellectual disability had the highest performance percentage in physical readiness, they also had the lowest in pre-academic readiness. Those students had a neurodevelopmental condition that brings about cognitive and functional performance issues, including language learning, imitation, symbolic activities, reasoning, problem-solving, planning, abstract thinking, judgment, generalization, and adaptive functioning.[14] These performances might be essential capacities that contribute to developing students' academic potential with intellectual disability.[14-16]

In terms of students with physical disability, although they had high performance in social-emotional readiness, they faced barriers when performing related physical activities due to health conditions and severity of physical impairment. These findings are noteworthy because students with physical disability spend a significant portion of their lives in the school environment. Previous studies indicated that environmental issues in the school context could affect students with physical disability in active participation.[17,18] For this reason, the environment for such students in special education schools was designed universally so that they could participate in school activities independently. Moreover, they could participate in group activities such as camping, dancing, field trips, etc. This support could encourage their social-emotional readiness, even though they had physical limitations. This finding related to a previous study in South Africa, in which the government released policies that provided equal opportunity for students with disabilities to participate in sports and recreational activities as much as their non-disabled peers.[19] Social-emotional development took a complicated path for students learning their occupation, including studying in an educational setting and developing skills in daily life.[20] Promoting social-emotional skills for students with disabilities should begin in the preschool and elementary years, particularly for initiatives and social problem-solving. These skills are associated with favorable long-term outcomes that are important in encouraging the development of self-determination skills for the students.[21,22] Therefore, health professionals might be concerned about addressing appropriate support in the school environment; for instance, environmental modification should focus on improving specific areas of risk or enhancing areas of competence in the educational setting.

Regarding students with sensory disability, the results indicated they had the highest performance percentage in self-care readiness and the lowest in pre-academic readiness. The severity of disability might impact the learning ability of these students. This is because the awareness of sensory input was crucial for interpretation and response to surrounding information.[23] The students with sensory impairments such as hearing and visual disabilities often had difficulty in perceiving and learning lessons in the classroom due to their surrounding sensory inputs. They would have limitations in learning that might be caused by delayed language development when communicating with other people, which contributed to learning problems and poor academic achievement.[24] Indeed, they might need to achieve successful pre-academic readiness.[25] Therefore, they needed OT intervention to promote their academic performances and related skills. In addition, related professionals in school settings should focus on providing services in early intervention programs and promoting continual pre-academic readiness.[26-27] In other words, the students with hearing and visual disabilities had unique challenges. However, appropriate preparation of school readiness skills for the kindergarten or early intervention period could bring about their future academic success.[28]

Although special education schools for students with disabilities had enrolment criteria, most students needed support in reaching school performance readiness before starting elementary school. This finding related to a previous study, which indicated that school readiness of children with disabilities has significantly less likely foundational reading and numeracy skills when compared to children without disabilities, particularly in low- and middle-income countries.[29] Moreover, this finding could act as valuable information for SBOTs and school professionals for planning and providing related intervention programs that promote school performance readiness according to the student's disabilities. This is because each type of student with disabilities has different preparation needs that relate to a previous study, which explained why the effects of treatment varied by the diagnosis and context of the children.[30] This finding significantly impacts OT and related service provision programs before entering the school context for children with disabilities. This transitional period of school performance readiness needs to be promoted to children with disabilities to improve their pre-academic and fundamental skills in achieving student life in a school setting.[31]

Limitation

This study used an exploratory research methodology to explain the school performance readiness of elementary students with disabilities before starting the occupational therapy program in special education schools. These findings revealed a broad perspective that could not be explained in deep perspectives. Therefore, these findings might be used in further study to develop potential research questions and generate hypotheses using the inferential statistical method. Another limitation of this study was the sample size. This study was performed in special education schools in upper northern Thailand. Thus, the number of

schools and students needed to be increased. The sample size was small, and it was difficult to analyze each type of student, especially those with sensory disabilities. For future research, more students with sensory disabilities could be recruited, which might reveal their similarities to and differences from students with visual and hearing disabilities and clarify more understanding. In addition, further research might expand to other areas of Thailand. Also, the results of this study were in the context of special education schools. Therefore, future research could develop a specific research instrument for students in the context of mainstream or regular schools. Furthermore, before elementary school, comparing school performance readiness between students in special education schools and those in mainstream or regular schools would be interesting in future research.

Conclusion

The students with disabilities in special education schools were perceived as potential learners. They could perform their age-appropriated occupations when they received opportunities and related services. However, due to their disabilities, they had activity limitations and participation restrictions in their role as students, especially during the transition period from the early intervention setting to an elementary school. For this reason, they needed OT services to enhance school performance and readiness in the school system and their school life.

Conflict of interest

The author(s) declared no potential conflicts of interest concerning this article's research, authorship, and publication.

Ethical approval

This study was approved by the Research Ethics Committee of the Faculty of Associated Medical Sciences, Chiang Mai University, Thailand (AMSEC-63EX-044).

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