Need Analysis of Pre-Braille Skills Module as The Pedagogical Support in Early Braille Literacy Learning

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ABSTRACT

Pupils with visual impairments adapt in a variety of ways, one of which is learning to "see" through touch. Therefore, tactual readiness is essential for them to have access to physical reading materials. However, conventional instructional methods emphasize on memorising braille codes and braille writing rather than tactile reading. As a result, pupils find reading braille materials physically less engaging, and in the worst possible case, these pupils suffer from academic deficiencies as a consequence of their inability to read tactile information. This will substantially reduce their prospects of success in the future. As a corollary, instructional strategies emphasising interventions to enhance tactile sensitivity are necessary for resolving this issue. On the basis of the discrepancy model, a questionnaire was created to identify whether teachers need specific interventions to suit the special educational needs of pupils with visual impairments, particularly during early braille learning lessons. This questionnaire was distributed randomly to 92 special education teachers who taught visually impaired pupils in a variety of special education programs (PPK) in Malaysia. Beforehand, seven experts were recruited to evaluate the content validity of the need analysis instrument, and an S-CVI value of 0.86 was determined. In the meanwhile, eleven experts evaluated the instrument's face validity; the S-FVI was 0.90. Meanwhile, the quantitative items in this questionnaire had an alpha value greater than.70, indicating that the instrument used is appropriate for obtaining responses from the intended group, since the instrument's alpha value surpassed >.07 and remained within the recommended range for good internal consistency, that could be interpreted as reliable. According to the results, all of the respondents claimed they need a comprehensive module for pre-braille skills that includes step-by-step instructions and video demonstrations. In essence, teachers need a guided module to implement pre-braille skill interventions that foster tactile awareness and tactile perception to support early braille development among pupils with visual impairment in schools and homes.

Keywords: *pre-braille, tactile reading, need analysis, braille, early braille,*

INTRODUCTION

When preparing for braille literacy, it is important to develop tactual discrimination skills and finger sensitivity. The development of tactual discrimination begins with using the whole hand to explore objects and progresses to using fingers and fingertips to examine the details of tactile materials. Systematic building of skills in early braille learning lesson will facilitate learning to read and write braille in the future. Pre-braille is the initial stage in braille teaching. Ng & Kway (2021) compared pre-braille training in Spain, India, the US, and Malaysia.

In Spain, the *Braitico* programme is used to progressively introduce braille and literacy. Braitico is divided into four age-specific sections. The first spans from 0 to 2 years, while the final extends up to 12 years, corresponding with the completion of Primary Education. In each of these courses, several skills are developed. (National Organization of Blind Spaniards [ONCE], 2020). Module 1 includes pre-braille abilities, whereas Module 2 teaches 0-24-month-olds early braille literacy. Psychomotor coordination, foundational concepts, sensory perception, and phonological awareness are emphasised in *Manitas*. *Punto* focuses on pre-reading and pre-writing in braille. The third module of *Braileo* emphasises reading and writing braille. Last but not least, Module 4-*Superbraille 4.0* focuses on enhancing the speed, efficiency, usefulness, and enjoyment of braille usage.

Visual Impairment Training Module is used in India to teach braille literacy (Abiyah, 2020). The module contains 15 components, with Section 4 dedicated to *Multisensory Sensory Training* and Section 9 to *pre-braille*. Teachers were responsible for consistently applying a pre-braille skill teaching program. In the United States, pre-braille courses have been designed, and it is mandatory for pupils who have visual impairments (VI) to learn pre-braille skills before progressing on to learn more advanced braille literacy (Brown & Palmer, 2013; Afzal et al., 2021; Yoong et al., 2022). Lessons taught in accordance with this curriculum have an emphasis on providing visually impaired pupils with opportunities to develop their tactile reading skills. Additionally, the Prebraille Skills Assessment, which was originally developed at the Texas School for the Blind and Visually Impaired, was included into the curriculum (Bishop, 1996; Sewell, 2020; Wulandari, Parihatin & Santoso, 2021).

Special education teachers particularly in Malaysia, implement the early braille teaching and learning lessons by referring to the standard curriculum developed by the Ministry of Education (MoE). In line with the National Education Philosophy, which is based on an integrated approach, holistic individual development, accessible education, equal educational quality for all pupils, and lifelong learning, *Basic Skills of Visually Impaired Individuals* (KAIKUP) was introduced to the curriculum in 2016. This is a one of the core subjects taught to visually impaired (VI) primary school pupils. Specifically, pre-braille skills were included as a content standard in *Field 2: Braille Codes, Tactile Graphics, and Assistive Technologies.* In the meanwhile, all pupils in the national school system are equipped with textbooks for all subjects, which serve as the primary resource for teaching and learning. Additionally, the *Visual Impairment Category of The National Standard Based Curriculum for Special Education Preschool* (KSPKPK) is the primary reference for preschool teachers working in recognised national schools administered by the MoE. *Pre-Reading Skills* content standard is under the *Communication Pillar* of the KSPKPK curriculum. These standards require pupils to identify symbols and images that are associated with a certain meaning. *Fine Motor Development* is a content standard that is included in the Pillars of Physical and Aesthetics Development, also known as *Orientation and Mobility* (O&M). This content standard requires pupils to handle a variety of objects, make use of their tactile senses, and have eye and hand coordination when performing fine motor tasks.

BACKGROUND OF THE STUDY

Although in Malaysia, pre-braille skills serve as the initial stage of braille learning, these essential skills are embedded in the *Malaysian Special Education Primary School Standard Curriculum* (KSSRPK) and implicitly apply to the appropriate pillars of the KSPKPK. According to Mahamod (2021), the production of textbooks is contingent upon the content standard and learning standard outlined in the relevant *Curriculum and Assessment Standard Document* (DSKP). The DSKP content standards serve as the textbook's main topics, while the learning standards serve as subtopics. As a consequence of the designation of pre-braille skills as a content standard, these fundamental skills were conveyed briefly in the KAIKUP textbook (Ng & Kway, 2021; Ilhaam, 2021; Kamri et al., 2021). Teachers will need to rely on their own creativity and initiative to devise alternative practices on pre-braille skills. Likewise, teachers in Taiwan acknowledge a lack of expertise in supporting special education preschool pupils, particularly in early braille literacy. The instructional practices in the conventional classroom were based on the

initiative of teachers through self-learning or based on referrals to more experienced senior teachers (Hung, 2008).This shortcoming has hindered teachers' comprehension of the importance of pre-braille skills as the most pivotal point in early braille learning (Ng & Kway, 2021; Abbasi, 2022). Picture 1 shows prebraille skills as one of the primary topics in the KAIKUP Year 1 Malaysian textbook, with the inclusion of fine motor skills and finger sensitivity constituting as subtopics under prebraille skills.
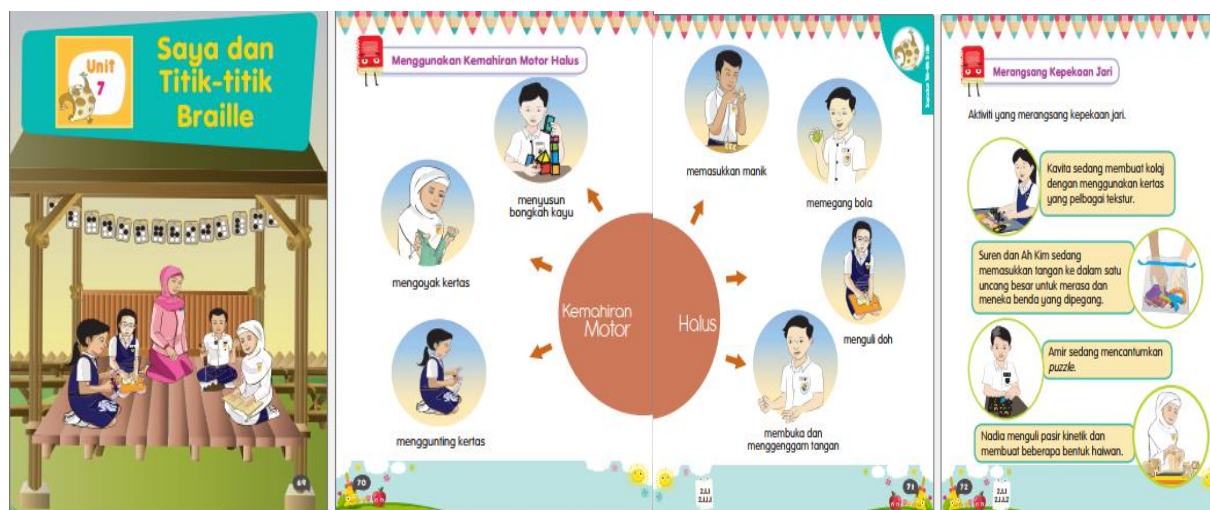
Source: DBP, 2016

Figure 1: Pre-braille skills content in KAIKUP

A literature review matrix which summarises publications on VI pupils published between 2012 and 2019 in the journal databases of three Malaysian local universities, notably UKM, UPSI, and USM have found studies about the dimension of early braille literacy skills viz., pre-braille skills in Malaysia is very limited. Studies on pupils with visual needs between 2012 and 2019. Table 1 shows the Literature review matrix of the summarises studies.

Table 1: *Literature Review Matrix for Publications From 2012 to 2019*

Authors	Constructs						
	EBLM	BL	IC	ADT	CP	TE	TP
Ee, 2019	•	•		•			
Kway et al., 2019		•		•			
Mai Shihah Abdullah, 2019	•			•			
Hammad Mohd Saidi et al., 2018			•		•		
Aizan Sofia Amin & Badri, 2018			•				•
Norliza Mohammad Fadzil et al., 2017				•			
Nurul Asmak Liana Bakar, 2017			•				

	EBL	BL	IC	TE	ADT	CP	TP
Ahmad Yunus Mohd Nor, 2016	•	•					
Fatimah Nazihah Mohd Nazir, et al., 2016	•						
Abdul Rashid Mohamed et al., 2015	•					•	
Alya Qasdina Ng Ai Lee & Kway, 2015	•						•
Manisah Mohd. Ali & Noorfaziha Hassan, 2014							•
Kway, 2012	•	•					•

Note: EBL= early braille literacy/motor skills, BL= braille literacy, IC= issues and challenges, TE= tertiary education, ADT=assistive devices/ technologies, CP= career path, TP= teachers' participation

Pre-braille skills are particularly overlooked when it comes to implementation in Malaysia (Ng & Kway, 2021). Malaysian studies on braille literacy often attribute deficiencies in braille learning to cognitive barriers such as the difficulty of memorising material, the dependability of teachers, time restrictions, and the learning environment (Noor, 2016). In addition, the design of local braille instructional resources put greater consideration to rote learning strategies such as memorising of braille codes and repetition exercises (Fawzy et al., 2016; Jais, 2019; Kway, 2008). Meanwhile, eKod Braille 2.0 online tutorials which is specifically intended for pre-service teachers also focuses on mastery of memorising and writing the braille codes (Lee, 2018).

In essence, Malaysian conventional instructional practices put a greater emphasis on rote learning and braille writing, while other nations place a bigger reliance on tactile readiness before formal braille learning. Day and McDonnell (2008) said that memorization of braille codes is one of the educational practices that should be revised due to a lack of empirical evidence. As a result, Malaysian Visually impaired students with typical cognitive ability are competent in braille writing but struggle with tactile reading. Ee (2019) noted that VI students who are incapable of reading braille have academic shortcomings that have a substantially detrimental effect on their future prospects.

The COVID-19 epidemic has produced unprecedented interruptions in schooling, as shown by worldwide statistics indicating significant learning losses. According to The World Bank (2022), one of the learning recovery programme's principles in R. A. P. I. D framework is to "prioritise teaching the fundamentals." This research defines pre-braille skills as the "basic fundamentals" of early braille literacy. Consequently, instructional techniques that emphasise treatments to improve tactile sensitivities are necessary to accomplish this purpose. In order to

evaluate whether Prebraille Skills is needed as a pedagogical support for the early braille teaching and learning process, it is necessary to undertake a need analysis and solicit responses from teachers.

METHODOLOGY

Need Analysis

The Discrepancy Model compares the existing situation to the anticipated objective (McKillip, 1987). The gap model is also another term for this paradigm. Several assumptions were used in the development of this model. involves the process of creating goals and identifying the desired outcome. Next, performance evaluation and defining expectations. Identifying the disparity and ranking the discrepancies according to their significance. In light of the deficiencies in teaching early braille literacy, it is necessary to determine in this study whether teachers require specific intervention to address the specific educational needs of VI students, specifically intervention to improve tactile sensitivity and tactile awareness, so that instruction can achieve DSKP's intended purpose. The Discrepancy Model was used to respond to the research question.

- *Is Pre-Braille Skills Module needed as a pedagogical support for early braille literacy education*?

Research Design & Sampling

This model has been widely used in educational research, and a range of techniques, such as face-to-face interviews, online interviews, or questionnaires, could well be employed to conduct the study (Yasin et al., 2021; Suleman & Rahman, 2020). In this research, a survey was conducted through questionnaire on the needs of Prebraille Skills Module as the pedagogical support in early braille learning among special education teachers. Due to the pandemic Covid-19 outbreak, the questionnaire was randomly distributed via Google Form to 92 special education teachers in Malaysia who taught visually impaired students in a variety of special education programmes (PPK). According to Krejcie and Morgan (1976), with a population of 155 special education teachers from assorted PPK, 92 respondents are recommended as the sample size.

Validity and Reliability the Need Analysis Instrument

A need analysis survey was conducted by delivering a series of questionnaires modified from earlier research on early literacy and tools to identify learning needs in children as young as 4 years old (Elias, 2017; Bacotang, 2019; Amurugam, 2020). The need analysis questionnaire is divided into four major sections based on the discrepancies model: Section A is devoted to respondents' demographic information, Section B to teacher's opinion on desired outcomes for early braille learning, Section C to the need for teachers to have a proper module to conduct early braille literacy lessons, and Section D to the current situation. These items include 7 items about the demographic background of respondents and eight open-ended questions that allow respondents to provide their opinions and information regarding the implementation of prebraille skills and the shortcomings they encountered when teaching this skill in the early braille lesson. In addition, the instrument includes 16 items with dichotomous questions, and the questionnaire includes 18 items with closed-ended questions using a 5-point Likert scale. 1 = extreme disagree, 2 = disagree 3 = partially agree 4 = agree, and 5 = strongly agree. Seven experts were recruited beforehand to examine the content validity of the need analysis instrument, and its S-CVI value was calculated to be 0.86. Eleven experts reviewed the instrument's face validity in the meantime; the S-FVI was 0.90.

In order to meet the central limit theorem, the sample size for the pilot study is 30 randomly selected special education teachers from the targeted population. Initially, these samples have homogeneity characteristics with the research respondents. The minimum required alpha value for overall items is .65, although it is preferable to attain an alpha value of at least .70. (Ismail, Yunus & Awang, 2020). The instrument featured three types of questions, including dichotomous items, 5-point Likert scaled items, and open responses items. Cronbach's Alpha was used to measure reliability for the 5-point Likert scale items and Kudar-Richardson (20) was used to examine the dichotomous items (excluding 7 demographic data items and 8 open-response questions). The quantitative items in this questionnaire had an alpha value greater than.70, indicating that the instrument used is appropriate for obtaining responses from the intended group, since the instrument's alpha value surpassed >.07 and remained within the recommended range for good internal consistency, that could be interpreted as reliable. The alpha value of the needs analysis questionnaire for the Prebraille Skills Module as a pedagogical tool for early braille learning is shown in Table 2.

Table 2: *Alpha Value for Need Analysis Questionnaire*

Types of Question	Number Of Items	Reliability measurements	Alpha Value ()
Dichotomous (Yes/No)	18	Kudar-Richardson 20 (KR20)	.736
5-point likert scale	19	Cronbach's Alpha	.830

Data Collection

In the pilot study, all questions were approved with minor alterations to sentence structures, spelling errors, and jargon terms included in the questionnaire. The finalised questionnaire was then randomly distributed to 92 special education teachers in Malaysia who taught VI pupils. The responses were then analysed using the software IBM SPSS Statistics 24. Simultaneously, multiple responses data were analysed by grouping the identified key words into themes and categorizing them into dichotomous information in order to figure out the frequencies and percentages of the relevant answers. The findings were provided in four sections: demographic information about the students, teachers' opinions on the intended goal for early braille literacy learning, shortcomings experienced by teachers when teaching early braille literacy to VI pupils, and the need to develop the Prebraille Skills Module as the pedagogical support for early braille learning. Each section's results and findings are presented below.

FINDINGS

Section A: Demographic Information of Respondents

This section consists of 7 items about respondent's education background, years of expertise of teaching VI pupils, training received pertaining to prebraille skills. Table 3 shows demography information about respondents.

Table 3: *Demographic Information of Respondents*

Items	Responses	Frequencies	Percentage
Types of School	Segregate System: Special education primary school/preschool (SKPK/PraSKPK)	30	32.6%
	Segregate System: Special education secondary school/vocational school (SMKPK/SMKPKV)	15	16.3%

		Frequencies	Percentage
	Primary School/ Preschool Special Education Integration Programme (PPKISK/PRAPPKISK)	20	21.1%
	Secondary School's Special Education Integration Programme (PPKISMK)	13	14.1%
	Primary School/ Preschool Inclusive Education Programme (PPISK/PRASK with PPKI)	6	6.5%
	PPI SK without PPKI	0	0%
	Secondary School's Inclusive Education Programme (PPI SMK) with PPKI	1	1.1%
	PPI SMK without PPKI	1	1.1%
	Private School	1	1.1%
	Others	5	5.4%
Education Level	Doctor of Philosophy (PhD)	0	0%
	Master Degree	20	21.7%
	Bachelor Degree	68	73.9%

Items	**Responses**	**Frequencies**	**Percentage**
	Diplome/Malaysian Higher School Certificate (STPM)/A-level	4	4.3%
	Malaysian Certificate of Education (SPM)/O-level	0	0%
Years of Expertise	0-8	35	38.04%
	9-16	35	38.04%
	17-24	14	15.22%
	25-32	6	6.52%
	>33	2	2.18%
Have you received training about prebraille skills?	Yes	34	37%
	Never	58	63%

Table 3 indicates that 63% of teachers from different PPK and education background have never received prebraille training. Among teachers who have received prebraille skills pedagogical training, 35.29 percent stated they acquired it from the Ministry of Education (MoE), 47.06 % from the Teacher's Training Institute (IPG) or schools' own staff development efforts, 2.9% from universities, and 14.79 % from non-government organisations (NGOs).

Section B: Open Responses on Teachers Opinion

This section includes teachers' open responses about the intended function of early braille literacy instruction for VI pupils. Respondents are allowed to specify alternative intended goals in addition of the options provided. All open-ended responses are categorized by the study's designated themes.

Table 4a: *Teachers' Opinion on Intended Goal for Early Braille Learning*

Item		Responses	Frequencies	Percentage
What competencies are expected to be acquired by VI pupils at the completion of early braille lessons?	i.	tactile perception acquisition	68	73.9%
	ii.	recognition of braille dots	82	89.1%
	iii.	acquirement of alphabetic braille (Gred 1)	75	81.5%
	iv.	able to create gred 1 braille text with a brailler	71	77.2%
	v.	capable of tactilely reading braille text	66	71.7%

Based on Table 4 (a), the majority of respondents anticipated V.I pupils to acquire the competencies listed in the instrument, notably tactile perception acquisition, recognition of braille dots, acquisition of Grade 1 Braille, skill to utilise brailler into prebraille grade 1 braille text, as well as the ability to read braille text tactilely. The opinions expressed by teachers in this item suggest that the recognition of braille dots has become the most important goal for early braille learning.

Table 4b (i): *Instructional Methods for Early Braille Lessons*

Open Responses		Instructional Methods for Early Braille Lessons
	i.	memorising contracted and uncontracted braille
	ii.	Start with gross motor activities and transition to fine motors activities.
	iii.	Introducing alphabetic braille by recognizing the position of braille dots with corresponding braille keys on the brailler.
Themes	iv.	Learning braille by using tangible objects (*buttons, eggs, table tennis etc*)
	v.	Learning braille through websites
	vi.	Learning braille through functional approach- preparing a braille-rich environment
	vii.	Native practices which inherit from seniors
	viii.	Follow the textbook page to page

The perceptions expressed by teachers in intended goal acquired by VI pupils suggest that the recognition of braille dots has become the most important goal for early braille learning. This perspective is also consistent with the responses given to the question, "*How do teachers conduct early braille lessons to VI pupils*?" Table 4b (i) provides informants' responses that have been

sorted according to themes defined by the researcher by referring to the Instructional Strategies for Braille Literacy (Swenson, 2016). The answers were then converted to dichotomous data to determine the frequencies and percentages of early braille teaching methods. Table 4b (ii) contains frequency and percentage data relative to the method used by early braille teachers.

Table 4b (ii): *Frequent of teaching method used in early braille lessons.*

Instructional Methods for Early Braille Lessons	Frequency	Percentage
i. Memorising contracted and uncontracted braille	39	42.39%
ii. Start with gross motor activities and transition to fine motors activities.	17	18.48%
iii. Introducing alphabetic braille by recognizing the position of braille dots with corresponding braille keys on the brailler.	14	15.22%
iv. Learning braille by using tangible objects (*buttons, eggs, table tennis etc*)	10	10.87%
v. Learning braille through functional approach- preparing a braille-rich environment	5	5.43%
vi. Follow the textbook page to page	3	3.26%
vii. Learning braille through websites	2	2.17%
viii. Native practices which learn from senior colleagues	2	2.17%

Memorising contracted and uncontracted braille has become the most frequent instructional methods used in early braille lessons followed with other conventional methods which emphasises on gross motor and fine motor activities, learning braille through assistive technologies such as braille machine, websites, functional approach, following stereotype textbook page to page and lastly native practice depends on the creativity of teachers or ideas which learned from senior teacher. In addition, respondents also mentioned additional intended competencies that are as essential as the specified competencies. All of the suggestions have been decoded and classified according to the themes listed in Table 4(c) Additional Intended competencies in early braille Lesson.

Table 4(c): *Additional Intended Competencies in Early Braille Lesson*

Open Responses	Intended Competencies in Early Braille Lesson

	i.	Fine motor skills to improve tactile sensitivities
	ii.	Mechanical skills to improve finger dexterity
	iii.	Tactile graphics reading skills
Themes	iv.	Self esteem to accept shortcomings because of the disabilities
	v.	Tracking skills
	vi.	Assistive technologies
	vii.	Acquire concept development

According to informants, the additional competencies mentioned in Table 4(b) are essential for developing tactile readiness to VI pupils. Furthermore, the acquired early braille literacy skills will serve as the fundamental basics before the pupils are exposed to more advance and complexed braille literacy.

Section C: Current predicaments of early braille lessons

This section comprised 16 dichotomous questions about the present predicaments experienced by teachers while teaching early braille literacy to VI pupils. Table 5 (a) includes responses from respondents on current circumstances of early braille lessons.

Table 5(a): Current circumstances of Early Braille Instructional Execution

Items	Positive Responses	Percentage
Do you start your early braille lessons with memorising braille code?	74	80.4%
Do you apply drilling method while teaching early braille literacy to VI pupils?	90	97.8%
Are you familiar with prebraille skills?	65	70.7%
Are you aware of the prebraille skills checklist that circulated by Special Education Division on 6th April 2017?	37	40.2%
Do you receive the prebraille skills checklist circulated by The Special Education Dividion on 6th April 2017?	28	30.4%
Do you utilize the checklist as a guide for implementing prebraille skills in the lesson?	16	17.4%

Items	Positive Responses	Percentage
Are you aware that the *Visual Impairment Category of The National Standard Based Curriculum for Special Education Preschool* (KSPKPK) serves as the primary guideline for preschool teachers conducting instructional procedures with VI pupils in preschool?	49	53.5%
Do you refer to pre-reading content standard in the Communicaiton pillar of the KSPKPK when conducting early braille lessons?	40	43.5%
Do you refer to Fine Motor Development content standard in the Pillars of Physical and Aesthetics Development, commonly referred to as *Orientation and Mobility* (O&M) when conducting early braille lessons?	41	44.5%

Items	Positive Responses	Percentage
Before conducting early braille lessons, do you refer to teachers' manual for information on the key skills to be gained by VI pupils?	40	43.5%
Do you aware of the *Malaysian Special Education Primary School Standard Curriculum* (KSSRPK) serves as the primary guideline for elementary teachers to implement instructional procedures with VI pupils in elementary schools?	80	87%
To execute prebraille skills, do you refer to the apllicable content standards and learning standards in *Curriculum and Assessment Standard Document* (DSKP) for *Basic Skills of Visually Impaired Individuals* (KAIKUP)?	73	79.3%
Do you refer to KAIKUP textbook for prebraille skills lesson?	63	68.5%
Do you aware that tactile perception is essential for tactile reading?	89	96.7%
Do you conduct prebraille skills lessons to prepare VI pupils for tactile readiness?	59	64.1%

Based on Table 5 (a), the teaching techniques for early braille lessons include memorization drills for both uncontracted and contracted braille. The majority of respondents aware of the national curricula served as primary guides for developing lesson plans and implementing the learning standard in instructional processes. 96.7% of respondents also aware that tactile readiness is essential for tactile reading.

However, Chen & Dote-Kwan (2018) emphasized the essential of prebraille skills as the fundamental foundations for early braille learning before introducing VI pupils to braille codes. Sewell (2020) proposed The Prebraille Skills Assessment serves as a checklist for implementing

prebraille skills in early braille lessons. Before VI pupils are introduced to braille codes, prebraille skills and the checklist serve as the intended goal for special education teachers at *Texas School for the Blind*. Regrettably, in Malaysia, barely nine (32.14%) respondents use the checklist provided by BPKhas prior to teaching braille codes, while the other nineteen (67.86%) respondents who received the checklist did not apply it for different reasons given in open-ended questions. Table 5 (c) shows the responses of informants to the question "*Why isn't prebraille skills checklist included in early braille lessons*?". The researcher organised the open responses into the defined themes. The responses were then presented in descriptive data in order to calculate the frequencies and percentages of the reasons for not executing the in early braille lessons.

Table 5c (i): *Reasons of Not Executing Prebraille Skills Checklist*

Reasons not executing the checklist in early braille lessons	Frequencies	Percentage
Not teaching subject matter related to braille literacy	2	10.53%
Had the checklist but do not know how to utilise it since haven't received training pertains to prebraille skills	12	63.16%
Time constraint	4	21.05%
The BPKhas-distributed checklist is irrelevant to the particular educational demands of VI pupils with varying cognitive ability.	1	5.26%

There are 12 (63.16%) respondents claimed they didn't implement the checklist in early braille lessons because they haven't received training pertain to prebraille skills. Also, four (21.05%) of the respondents claimed the limitation was caused by time constrains, as so many standard contents and learning contents need to be accomplished within the school term. One of the respondents claim the distributed checklist could not fulfill the educational needs of VI pupils due to different level of cognitive abilities.

Table 5c (ii) reflects the perception of respondents regarding "*why prebraille skills are not emphasized in early braille* lessons?" despite the fact that respondents aware of the prebraille skills serve as fundamental foundations to acquire braille codes.

Table 5c (ii): *Perceptions of Respondents for Not Implementing Prebraille Skills in Lessons*

Reasons	Frequencies	Percentage
Not teaching subjects related with prebraille skills	4	4.35%

Depends upon the needs of VI pupils	5	5.43%
Lack of exposure to prebraille skills	19	20.65%
Due to the DSKP's focus on studying braille codes and rules, prebraille classes are considered auxiliary.	2	2.17%
Environmental factors, such as lack of resources, non-VI-optionist teachers, and absence of VI students, contribute to implementation inconsistencies.	1	1.09%
Time constraints	2	2.17%
Not having a comprehensive module to assist the implementation of prebraille skills	59	64.13%

As shown in Table 5c (ii), knowing the essentials of prebraille skills in early braille lessons, 59 (64.13%) respondents stated that they do not have a comprehensive module including clear instructions to assist in the implementation of prebraille skills, The need of Prebraille Skills Module as pedagogical support is shown in Table 5 (d).

Table 5 (d): *Need of Prebraille Skills Module as Pedagogical Support*

Items	Frequencies	Percentage
Do you need a comprehensive Prebraille Skills Module with clear instructions for implementing prebraille skills in early braille lessons?	88	95.7%
Do you need a Prebraille Skills Module with video demonstrations of prebraille skills training in early braille lessons?	82	89.1%

Based on an online survey administered to 92 randomly selected special education teachers serving VI pupils in PPK, Malaysia, 88 (95.7%) of the respondents need a comprehensive Prebraille Skills Module with step-by-step instructions for implementing prebraille skills in early braille lessons. In addition, 82 (89.1%) of the respondents request the Prebraille Skills Module to include video demonstrations as reference.

Section D: Shortcomings of Early Braille Instructional Process

This section comprised of 18 five point-likert scale items about the shortcomings experienced by teachers while teaching early braille literacy to VI pupils. With a Likert scale, the variables to be measured were translated with 1 = extreme disagree, 2 = disagree 3 = partially agree 4 = agree,

and 5 = strongly agree. The data will be computed into 2 variables whereby extreme disagree and disagree as new variable – "disagree", and partially agree, agree and strongly agree will be compute as "agree". The indicators are used as guidelines in compiling items in the forms of questions or statements. Table 6 shows, an overview of teachers' perception on the shortcomings experienced when teaching early braille lessons.

Table 6: *Overview of Teachers' Perception on Shortcomings Experienced in Early Braille Lessons*

No.	Item	Percentage	Criteria
1.	Do you agree that prebraille skills have been introduced implicitly in KSPKPK?	93.48%	Agree
2.	Do you agree that prebraille skills supposed to be classified as a pillar in KSPKPK?91	98.91%	Agree
3.	Do you agree that prebraille skills are not supposed to be mentioned implicitly in pillars pertain to KSPKPK for VI?	77.17%	Agree

continue

No	Item	Percentage	Criteria
4.	Do you agree that prebraille skills as one of the fundamental skills is mandatory to be acquired by VI pupils?	94.57%	Agree
5.	Do you agree that VI pupils must acquire prebraille skills prior to acquire more advanced braille codes	97.83%	Agree
6.	Do you agree that prebraille skills have been introduced briefly in KSSRPK for VI?	95.65%	Agree
7.	Do you agree that prebraille skills is too brief in Teachers' Manual book for KSPKPK?	94.57%	Agree
8.	Do you agree that Prebraille skills is mentioned briefly in Year 1 KAIKUP textbook?	93.48%	Agree
9.	VI pupils who have tipical cognitive abilities are able to memorize braille codes	100%	Agree
10.	VI pupils could use brailler to braille after they have memorized the braille codes.	95.67%	Agree
11.	Novice braille learners have weak tactile perception	95.67%	Agree
12.	VI pupils who have weak tactile perception are incompetent to identify braille dots in a cell.	97.83%	Agree
13.	VI pupils who have poor tactile perception found difficult to read the braille text they had created	97.83%	Agree

14.	VI pupils are more competent in brailling (writing) compared to reading braille tactilely.	100%	Agree
15.	Do you agree that Prebraille Skills Module is expected to become a guidebook for teachers who are teaching early braille literacy	100%	Agree
16.	Do you agree that Prebraille Skills Module is expected to improve tactile perception among VI pupils?	100%	Agree
17.	Do you agree that Prebraille Skills Module is expected to help pupils to trace braille dots in braille cells?	100%	Agree
18.	Do you agree that Prebraille Skills Module facilitate VI pupils in tactile reading?	100%	Agree

On the basis of the data collected from respondents on shortcomings encountered by teachers while teaching prebraille skills in early braille lessons, respondents are agreed with each of the shortcomings mentioned in the questionnaire. All respondents agreed that VI pupils with ordinary cognitive abilities are capable of memorising braille codes. In addition, respondents agree that VI pupils are more competent in writing braille compared to reading braille tactilely. This conclusion correlates with a study done by Koenig and Holbrook (2002), which found that drilling techniques in braille encourage visually impaired students to become more competent in writing if prebraille skills are not consistently incorporated into early braille learning to prepare visually impaired students for tactile readiness. Prebraille Skills Module is also anticipated to serve as a manual for teachers executing interventions to enhance tactile perception among VI students, hence supporting pupils in tactilely recognising braille codes and improving tactile reading among VI pupils.

DISCUSSION

Research Questions 1: Is Prebraille Skills Module Needed as Pedagogical Support in Early Braille Lessons?

The initial purpose of this study is to determine if Prebraille Skills Module is needed as a pedagogical support in early braille lessons. The majority of teachers agree that the Prebraille Skills Module is predicted to be a comprehensive module with specific instructions to assist teachers in implementing interventions for prebraille skills. It is inclined with a practise report by Chen and Dote-Kwan (2018) that focuses on promoting emergent literacy in visually impaired

students by using developmentally appropriate language-input techniques. Ely and Ostrosky (2018) highlighted the need for pre-braille skills interventions to address tactile reading difficulties among visually impaired students. Before introducing VI students to the learning of contracted and uncontracted braille codes, finger dexterity-improving interventions should be done regularly so they are able to recognize the position of braille dots. Therefore, students with visual impairments must be taught to use their tactile perceptions efficiently (Ghani, 2014). Pre-braille skills encompass motor-sensory training beginning with shoulders, arms, palms, thumbs, and fingers, bilateral hand use, clockwise and counterclockwise movements, motor strength in the hands and fingers, light touch, and tracking, as well as tactile perception and braille dot detection skills (Bishop, 1991; Brown & Palmer, 2013; Mangold, 1994). According to Fadjectic (2011), prebraille skills are the foundation for future braille literacy development. In a nutshell, Prebraille Skills Module is needed as pedagogical support in early braille lessons.

IMPLICATION OF FINDINGS

Respondents for this study are special education instructors in Malaysia who teach VI pupils in various PPK settings. The findings of the study indicate that teachers need a Prebraille Skills Module to support them in teaching early braille literacy. Teachers also requested that the module feature video demonstrations. The findings of this study may have consequences for the practicality of early braille learning in conventional classrooms. Therefore, it is critical for researchers to design and develop more comprehensive resources for teachers to use in implementing prebraille skills. It is recommended that an odd number of experts Prebraille Skills Module, it is essential to include only relevant contents that fulfil the triangular fuzzy number criteria, namely threshold value (d) 0.2, (Cheng & Lin, 2002), expert consensus percentage > 75%, and fuzzy score based on a cut value equivalent to a value of 0.5 or more (Tang & Wu, 2010; Bodjonava, 2006). The findings of this study may influence the actual teaching and learning of early braille literacy among VI pupils by causing a change from rote learning to lessons that prioritise prebraille skills as the fundamental foundations of formal braille literacy.

CONCLUSION

The need analysis of prebraille skills as a pedagogical support in early braille literacy provides teachers with insight into the importance of prebraille skills in the initial stages of braille learning.

Teachers generally agree that prebraille skills are essential for VI pupils to develop a foundation for tactile readiness. It is expected that Prebraille Skills Module comprised of interventions promoting tactile awareness would enhance the tactile reading of VI pupils. The open responses of informants revealed a deficiency in resources and trainings as the most critical challenges faced by teachers who teach VI pupils. For future study, it is recommended for researchers to conduct FDM to analyse the contents for Prebraille Skills Module.

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