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Preschool Teachers' Needs for Vegetable and Fruit Learning Modules

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Abstract

This study was conducted to identify Preschool teachers' perceptions of the need for a vegetable and fruit learning module for 5-6-year-old children. The study employed a quantitative approach in the form of a survey for data collection and analysis. The survey method involved the use of a questionnaire through Google Form. A total of 30 Early Childhood Education teachers in Kota Kinabalu, Sabah participated in this study. The findings of the study indicate that the component with the highest score is the Teachers' Teaching Module Needs component was (M = 4.83, SD = 0.45). While, the Teaching and Learning Content and Preschool Student Activities Component scored the lowest with a score of (M=4.73, SD=0.47). The results of this study suggest that Preschool teachers perceive the need for a vegetable and fruit learning module as important for 5-6-year-old children. Teachers also believe that the presence of this module in preschool is crucial for providing early exposure to the importance of consuming nutritious and balanced food for their growth. In this study, teachers need to implement the vegetable and fruit learning module so as to provide engaging learning materials to enhance student-centered learning development.

Keywords: Early Science, Learning Modules, Vegetables, Fruits, Preschool Children

Introduction

Early childhood education (ECE) serves as the foundational stage of learning, where children begin their educational journey in preschool before entering formal schooling (Ghani & Nor, 2020). The content of lessons taught at the Early Childhood Education level is the basic knowledge needed by students to prepare for primary school (Ministry of Education Malaysia, 2017). Through the Education Act 1996, the preschool education system is included in the national education system which is the beginning of education and preschool is education for students aged 4 to 6 years (Ministry of Education Malaysia, 2001). Therefore, the preschool curriculum has been created to provide guidance for the implementation of preschools that take into account all aspects of child development in line with the latest global trends.

The Early Childhood Education still lacks learning materials to support student-focused learning development. Current teaching practices often lack diversity, which is essential for an effective and engaging learning process (Ramli, 2016). Moreover, there is a lack of qualified material in science education and the inability of teachers to develop original materials that can be used in science education are prominent (Cinar, 2013). Studies indicate that preschool teachers struggle to design and implement meaningful science activities, limiting children's exposure to foundational scientific concepts (Olgan, 2015). Addressing this issue is vital, as early science education plays a key role in stimulating curiosity, critical thinking, and problem-solving skills—competencies that are fundamental for lifelong learning.

In addition, teachers should emphasize the learning appropriate practices with children's development. This learning should be in accordance with the potential of students according to their age, abilities, talents, interests and personal development (Ministry of Education Malaysia, 2017). Effective instruction should build on students' prior experiences, fostering meaningful and engaging learning (Puteh & Ali, 2011). When teaching strategies are developmentally suitable, they enhance children's creativity, innovation, and socio-emotional growth. Conversely, inappropriate methods can lead to stress and hinder overall development. Unfortunately, early science education remains underemphasized in preschools, further widening the gap in foundational STEM literacy.

On top of it, study of Malaysian children aged 1-6 years reported that on average they consumed 0.91 and 1.07 servings of fruit and vegetables, respectively, per day, and that less than a fifth achieved the daily recommended servings of fruit and vegetables (Chong *et al*. 2017). This show that despite an abundance of fruit grown locally, Institute for Public Health 2015 reported that around 90.1% and 88.8% of Malaysian adults did not consume adequate amount of fruits and vegetables (Foon, Cheah, and Razak, 2020). Thus, in this context, the reseacher developed a learning module about vegetables and fruits topics. This is inline with preschool curriculum to help young learners understand a balanced and nutritious diet for the body.

Given these challenges, there is a pressing need to develop structured, research-based learning modules tailored for preschool teachers. Such resources would empower educators to deliver high-quality science instruction, ensuring that young learners receive a strong foundation in scientific inquiry. This study seeks to address this gap by creating and evaluating an original, developmentally appropriate science module, ultimately contributing to the enhancement of early childhood education in Malaysia.

Thus, there is a need to develop fruits and vegetables learning modules, so that Malaysian children will develop awarness for healthy food intake. To address this, study introduces a learning module focused on vegetables and fruits, aligning with the preschool curriculum's emphasis on variety on local fruits and vegetable and its characteristic. By incorporating interactive and student-centered activities, this module aims to enhance early science comprehension while promoting critical and creative thinking. Given the limited focus on early science in Malaysian preschools, this research contributes to improving pedagogical strategies in ECE, ensuring that learning is both meaningful and aligned with children's developmental needs.

Objectives

This study was conducted to identify the perception of preschool teachers' towards the need for vegetables and fruits learning modules for children aged 5-6 years in Kota Kinabalu, Sabah.

Metodology

This study uses a descriptive method that aims to identify the perception of preschool teachers towards the need for vegetable and fruit learning modules for children aged 5-6 years. This study is a quantitative approach that used survey design. The respondents consisted of 30 teachers preschool teacher from the public school, Pusat Minda Lestari (PML), TADIKA (KEMAS) and private preschool in Kota Kinabalu, Sabah. The questionnaire distributed in the form of *a Google Form* which was distributed through Whatsapp *, Telegram* and email platforms. The selection of samples selected was random.

Table 4.1
Likert Scale

Score	Interpretation
1	Strongly disagree
2	Disagree
3	Not Sure
4	Agree
5	Strongly Agree

Table 4.1 above is the Likert scale used in this study which has a score of 1-5 as measures to obtain answers. The data collected is then analyzed using Statistical *Package For Social Science (SPSS)* software version 30.

Table 4.2
Interpretation of Mean Score Scale

Mean Score	Interpretation of Mean Score
1.00-1.79	Very Low
1.80-2.59	Low
2.60-3.39	Medium
3.40-4.19	High
4.20-5.00	Very High

Source: Robinson (2023)

Table 4.2 shows the mean score and interpretation of the mean score for each item studied. There are a total of 20 items that have four main components, namely the vegetable and fruit needs component, the module development component, the preschool student activity component and the learning module material component. Researchers also obtained the face validity and content from experts in the field of Early Science before the actual study was carried out. The reliability and internal consistency of items is determined using *Cronbach Alpha*. In this study, quantitative data was analyzed using descriptive statistics. The data obtained were processed and analyzed using SPSS (*Statistical Package for Social Sciences*) statistical software version 30.

Demografic of Respondents

Findings of the study on the demographics of respondents for early childhood education teachers are as shown below;

Table 4.3
Demographics of Respondents

Demography	Respondent Category	Frequency (f)	Percentage (%)
Age	20-30	16	51.6 %
	31-40	7	22.6 %
	41-50	7	22.6 %
Race	Malay	12	38.7 %
	Others	17	54.8 %
	Chinese	1	3.2 %
Gender	Female	29	93.5 %
	Male	1	3.2 %
Education Level	Diploma in Education	15	48.4 %
	Bachelor's Degree	14	45.2 %
	Master Degree	1	3.2 %
Years of teaching experience	1-5 years	19	61.3 %
	6-10 years	3	9.7 %
	11-15 years	3	9.7 %
	16-20 years	1	3.2 %
	Over 20 years	4	12.9 %
Schools	Public Preschool	10	32.3 %
	Pusat Minda Lestari Kindergarten	5	16.1 %
	TADIKA (KEMAS)	5	16.1 %
	Private Preshool	10	32.3 %

Based on the demographic analysis of the respondents, the data reveals that the majority of participants were teachers under the age of 30, totaling 16 individuals (51.6%). Teachers aged 31 to 40 and those aged 41 to 50 were equally represented, with 7 individuals (22.6%) in each age group.

In terms of ethnicity, respondents from other races constituted the largest group, with 17 individuals (54.8%), followed by Malays with 12 individuals (38.7%). Chinese respondents were the smallest group, with only 1 individual (3.2%). Regarding gender, female respondents were significantly predominant, comprising 29 individuals (93.5%), while male respondents were represented by only 1 individual (3.2%).

With respect to educational qualifications, the largest group of respondents, totaling 15 individuals (48.4%), held a Diploma in Education. This was followed by 14 individuals (45.2%) who held a bachelor's degree. Only 1 respondent (3.2%) reported having a Master's degree.

The study also examined the teaching experience of the respondents. The majority of teachers, 19 individuals (61.3%), had 1 to 5 years of experience in the field of Early Childhood Education. Teachers with more than 20 years of experience comprised 4 individuals (12.9%). Those with 6 to 10 years and 11 to 15 years of experience were equally represented, with 3 individuals (9.7%) in each category. Only 1 respondent (3.2%) reported having 16 to 20 years of experience.

The study involved teachers from various types of schools in Kota Kinabalu, Sabah. The highest representation came from teachers working in Preschools and private TADIKA institutions, with 10 individuals (32.3%) each. TADIKA (KEMAS) and Pusat Minda Lestari were equally represented, with 5 individuals (16.1%) each."

Results and Findings

Table 5.1

Mean and Standard Deviation for Component Requirements of the Vegetable and Fruit Learning Module

Item	Statement	Mean	SD
Preschool Learning Needs' of Vegetable and Fruit Module			
A1	Learning modules on vegetables and fruits are necessary for preschool children.	4.86	0.35
A2	Learning module on vegetables and fruits focusing on cognitive development for children.	4.70	0.65
A3	Learning modules on vegetables and fruits necessary for children's personal health.	4.90	0.30
A4	Learning modules on vegetables and fruits necessary for children's knowledge of balanced nutrition.	4.77	0.62
	Total	**4.80**	**0.34**
Teaching and Learning Contents			
B5	Learning modules on vegetables and fruits can helps the preschool to distinguish the colors of vegetables and fruits	4.77	0.43
B6	Learning modules on vegetables and fruits can help preschool to distinguish the shapes of vegetables and fruits.	4.67	0.67
B7	Learning modules on vegetables and fruits can help preschool to identify different taste of vegetables and fruits.	4.70	0.47
B8	The learning module on vegetables and fruits can help preschool to distinguish between the vegetable and fruit categories.	4.77	0.50
	Total	**4.73**	**0.47**
Preschool Learning Activities			
C9	This learning module on vegetables and fruits is perfect for group activities.	4.67	0.55
C10	This learning module on vegetables and fruits is ideal for brainstorming activities.	4.47	0.73
C11	This learning module on vegetables and fruits is suitable for writing activities.	4.47	0.69
C12	This learning module on vegetables and fruits is suitable for drawing activities.	4.63	0.72
C13	This learning module on vegetables and fruits is suitable for coloring activities.	4.80	0.67
C14	This learning module about vegetables and fruits is suitable for Q&A activities.	4.63	0.68
	Total	**4.73**	

Teachers' Teaching Module Needs			
D15	Teachers needs a media based teaching modules on vegetables and fruits topic.	4.60	0.49
D16	Teachers needs a flashcards based teaching modules on vegetables and fruits topic.	4.67	0.67
D17	Teachers needs a interactive whiteboards based teaching modules on vegetables and fruits topic (digital).	4.40	0.68
D18	Teachers needs a matching card based teaching modules on vegetables and fruits topic.	4.67	0.66
D19	Teachers needs a printed materials based teaching modules on vegetables and fruits topic.	4.73	0.58
D20	Teachers needs a plastics model based teaching modules on vegetables and fruits topic.	4.60	0.72
	Total	**4.83**	**0.45**

Based on the findings, the analysis of the items revealed the following results. The statement "Learning modules on vegetables and fruits are necessary for preschool children" (Item A1) received a mean score of (M = 4.86, SD = 0.35). The statement "Learning modules on vegetables and fruits focusing on cognitive development for children aged 5–6 years" (Item A2) recorded a mean score of (M = 4.70, SD = 0.65). Similarly, the statement "Learning modules on vegetables and fruits are necessary for personal health for children aged 5–6 years" (Item A3) recorded a mean score of (M = 4.90, SD = 0.30). Additionally, the statement "Knowledge about balanced nutrition in the learning modules on vegetables and fruits is necessary for children aged 5–6 years" (Item A4) recorded a mean score of (M = 4.77, SD = 0.62). Overall, the Vegetable and Fruit Needs Component recorded a total mean score of (M = 4.80, SD = 0.34).

Regarding the learning outcomes of the module, the statement "The learning module on vegetables and fruits can help students distinguish the colors of vegetables and fruits" (Item B5) recorded a mean score of (M = 4.77, SD = 0.43). The statement "The learning module on vegetables and fruits can help students distinguish the shapes of vegetables and fruits" (Item B6) recorded a mean score of (M = 4.67, SD = 0.67). Furthermore, the statement "The learning module on vegetables and fruits can help students distinguish the taste of vegetables and fruits" (Item B7) recorded a mean score of (M = 4.70, SD = 0.47). The statement "The learning module on vegetables and fruits can help students distinguish the categories of vegetables and fruits" (Item B8) recorded a mean score of (M = 4.77, SD = 0.50). The total mean score for the Teaching and Learning Contents was (M = 4.73, SD = 0.47).

In terms of the suitability of the module for specific activities, the statement "This learning module on vegetables and fruits is suitable for group activities" (Item C9) recorded a mean score of (M = 4.67, SD = 0.55). The statement "This learning module on vegetables and fruits is suitable for brainstorming activities" (Item C10) recorded a mean score of (M = 4.47, SD = 0.73). Similarly, the statement "This learning module on vegetables and fruits is suitable for writing activities" (Item C11) recorded a mean score of (M = 4.47, SD = 0.69). The statement "This learning module on vegetables and fruits is suitable for drawing activities" (Item S12) recorded a mean score of (M = 4.63, SD = 0.72). The statement "This learning module on vegetables and fruits is suitable for coloring activities" (Item C13) recorded a mean score of (M = 4.80, SD = 0.67). Lastly, the statement "This learning module on vegetables and

fruits is suitable for question-and-answer activities" (Item C14) recorded a mean score of (M = 4.63, SD = 0.68). The total mean score for Preschool Learning Activities component was (M = 4.73, SD = 0.47).

Concerning the teaching methods and materials for the module, the statement "Teachers need to teach the learning module on vegetables and fruits using media-based methods" (Item D15) recorded a mean score of (M = 4.60, SD = 0.49). The statement "Teachers need to teach the learning module on vegetables and fruits using flashcards" (Item D16) recorded a mean score of (M = 4.67, SD = 0.67). The statement "Teachers need to teach the learning module on vegetables and fruits using an interactive (digital) whiteboard" (Item D17) recorded a mean score of (M = 4.40, SD = 0.68). The statement "Teachers need to teach the learning module on vegetables and fruits using graft cards" (Item D18) recorded a mean score of (M = 4.67, SD = 0.66). The statement "Teachers need to teach the learning module on vegetables and fruits using printed materials (books)" (Item D19) recorded a mean score of (M = 4.73, SD = 0.58). Finally, the statement "Teachers need to teach the learning module on vegetables and fruits using plastic models of vegetables and fruits" (Item D20) recorded a mean score of (M = 4.60, SD = 0.72). The total mean score for Teachers' Teaching Module Needs component was (M = 4.83, SD = 0.45).

Discussion and Conclusion

The findings of this study underscore the critical role of a structured Vegetable and Fruit Learning Module in early childhood education, particularly for children aged 5–6 years. The high agreement among preschool teachers regarding the module's necessity for personal health education (Item A3) highlights its importance in fostering healthy eating habits from an early age. Research consistently shows that early exposure to nutrition education significantly influences children's dietary choices, reducing risks of obesity, malnutrition, and chronic diseases later in life (Mita, Li, & Goodell, 2013; Syahroni et al., 2021). By integrating this module into preschool curricula, educators can actively contribute to long-term public health improvements, aligning with national health objectives (Ministry of Health Malaysia, 2015).

In contrast, Item A2, with the statement "The learning module on vegetables and fruits focuses on cognitive development for children aged 5–6 years," recorded the lowest mean score. According to Piaget (1970), children learn through schemes, accommodations, and equilibration. This learning module serves as a medium to enhance understanding and cognitive development through engaging activities. Children absorb knowledge more effectively through hands-on experiences and social interactions, which reinforce their learning schemas. Teaching aids, such as games involving fruits and vegetables, can further enhance cognitive abilities by promoting Higher-Order Thinking Skills (HOTS).

In the Module Development component, Item B8, with the statement "The learning module on vegetables and fruits can help students distinguish the categories of vegetables and fruits," and Item B5, with the statement "The learning module on vegetables and fruits can help students distinguish the colors of vegetables and fruits," both recorded high mean scores. For Item B5, teachers agreed that the module helps children differentiate and compare colors, a skill typically developed by age 3 (Yusoff, 2018). For Item B8, children must first understand the concept of vegetables and fruits before categorizing them. According to

Piaget (1950), children achieve cognitive balance through schema formation, assimilation, and accommodation. For example, when a child mistakes an apple for a tomato, corrective feedback helps them distinguish between the two, leading to the formation of separate schemas. This process strengthens cognitive development and memory retention. On the other hand, Item B6, with the statement "The learning module on vegetables and fruits can help children distinguish the shapes of vegetables and fruits," recorded a lower mean score. Teachers noted that children aged 5–6 years are already proficient in identifying shapes, as shape recognition is typically introduced at an earlier age (Sultan et al., 2016).

In the Preschool Learning Activities component, Item C13, with the statement "The learning module on vegetables and fruits is suitable for coloring activities," received the highest mean score. This indicates that respondents strongly agreed that coloring activities are an effective way to teach children about vegetables and fruits. Fun and engaging activities, such as coloring, create a positive learning environment, which enhances children's understanding and retention of the topic (Puteh & Ali, 2011). In contrast, Item C11, with the statement "The learning module on vegetables and fruits is suitable for writing activities," recorded the lowest mean score. Despite this, respondents still agreed that writing activities are beneficial for reinforcing children's understanding of vegetables and fruits.

The study also reveals key insights into preferred teaching methods for early science education. Item D19, with the statement "Teachers need to teach the learning module on vegetables and fruits based on printed materials (books)," recorded the highest mean score. Teachers emphasized the importance of printed materials in applying constructivist learning theories, particularly through scaffolding, where teacher support helps children to develop independent problem-solving skills (Irsyad, 2023).

Conversely, Item D17, with the statement "Teachers need to teach the learning module on vegetables and fruits using an interactive (digital) whiteboard," recorded the lowest mean score. Some teachers felt that interactive whiteboards are less suitable for children aged 5–6 years, despite their potential to simplify teaching and enhance engagement (Mohamad et al., 2022).

While printed materials were favored for their alignment with constructivist scaffolding techniques, digital tools received mixed responses. This suggests that while traditional methods remain effective, there is potential for further research into integrating interactive digital elements in a developmentally appropriate manner (Cobanoglu, 2019). By addressing these preferences, the module can be refined to better support teachers in delivering flexible, engaging, and pedagogically sound lessons.

This study not only validates the practical utility of the Vegetable and Fruit Learning Module but also highlights its broader educational and societal benefits. By emphasizing developmentally appropriate, interactive learning, the module serves as a versatile tool for improving early childhood education outcomes. Future iterations could explore blended learning approaches, combining print and digital resources to maximize engagement while maintaining pedagogical effectiveness. Ultimately, this research contributes to the ongoing effort to enhance preschool education quality, ensuring that young learners develop essential skills for lifelong health and academic success.

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