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Need assessment of Al-Mumtaaz Islamic Elementary School students' food literacy competencies

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ABSTRACT

Al-Mumtaaz Islamic Elementary School Karawang has created various programs to support students' food literacy knowledge and skills. However, the programs implemented by schools have not been supported with systematic curriculum planning and clear food literacy competencies that meet students' needs. Therefore, this research aims to develop food literacy competency and identify the student's actual performance in food literacy. This research uses McNeil's Need Assessment Model method, which consists of 4 stages. The first stage produces several learning objectives with insight into food literacy from various literature sources. The second stage produces food literacy competencies for elementary school students, which multiple experts have validated. The third stage is an initial formative assessment to look for gaps between food literacy competencies and the conditions of 58 Phase A (Level 1 & 2) students. The initial formative assessment results show that 98,3% of students are above the minimum competency category. Even so, there is still a gap in food literacy knowledge among students. The final stage is to provide program recommendations for schools according to the analysis of student performance.

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ABSTRAK

SD Islam Al-mumtaaz Karawang telah membuat beragam program untuk mendukung pengetahuan dan keterampilan siswa sekolah dasar untuk memperoleh kecakapan literasi pangan. Namun, program yang telah dilakukan oleh sekolah belum ditunjang dengan perencanaan kurikulum yang baik dan tujuan kompetensi literasi pangan yang jelas dan sesuai kebutuhan usia peserta didik, latar belakang budaya, latar belakang agama, dan lingkungan sekolah. Oleh sebab itu, penelitian ini bertujuan untuk menyusun tujuan kompetensi literasi pangan dan mengidentifikasi kemampuan aktual siswa berdasarkan tujuan kompetensi yang telah disusun. Penelitian ini menggunakan metode Need Assessment Model dari McNeil yang terdiri dari 4 tahapan. Tahap pertama menghasilkan sejumlah tujuan - tujuan pembelajaran yang memiliki wawasan literasi pangan dari berbagai sumber literatur. Tahap kedua menghasilkan peta kompetensi literasi pangan untuk jenjang SD yang telah divalidasi oleh berbagai ahli. Tahap ketiga adalah melakukan asesmen formatif awal untuk mencari kesenjangan antara kompetensi literasi pangan dengan kondisi aktual siswa SD Fase A sejumlah 58 siswa. Dimana hasil asesmen formatif awal menunjukkan bahwa 98,3% murid SD Fase A menunjukkan tingkat kompetensi literasi pangan pada kategori cakap dan mahir. Meskipun begitu, masih terdapat kesenjangan pengetahuan literasi pangan pada siswa. Tahap terakhir adalah memberikan program rekomendasi untuk sekolah sesua dengan analisis kemampuan siswa.

Kata Kunci: *pengembangan kurikulum; literasi pangan; asesmen kebutuhan*

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INTRODUCTION

Elementary school students, typically aged between 6 to 12 years old, exhibit a unique blend of developmental characteristics that shape their learning experiences and interactions. Their physical energy is abundant at this stage, requiring active engagement and movement opportunities throughout the learning day (Sabani, 2019). Based on their daily physical activity, elementary school-age children need a good quality and sufficient quantity of nutrition to support their growth and energy needs. Moreover, elementary school-age children often do not receive good nutritional intake, which causes various nutritional problems (Nurjanah, 2023).

The Ministry of Health of Indonesia 2018 has reported several recent nutritional problems for elementary school-aged children in National Basic Health Research (Riskesdas). The results of this research show the prevalence of nutritional status of children aged 5 - 12 years in Indonesia based on the characteristics of TB/U (Height by Age) and BMI/U (Body Mass Index by Age). The nutritional status based on height (TB/U) shows that 24.5% of boys and 22.8% of girls aged 5 - 12 years are classified as short and short. The nutritional status of boys aged 5 - 12 years based on BMI/U shows that 10.1% were skinny to thin, and 21.1% were fat to obese. The nutritional status of girls aged 5 - 12 years based on BMI/U shows that 8.2% were skinny to thin, and 19.9% were fat to obese. The report also stated that 96.9% of children aged 5-9 years and 96.8% of children aged 10-14 years did not consume enough vegetables and fruit, which means that most children in Indonesia consume less than five portions of vegetables and fruit per day of the week or less than what is standardized by WHO.

Children's health can be obtained from various factors. One of the internal factors could be eating habits. There is a significant relationship between children's diet or eating habits and the incidence of obesity (Gerungan & Katuuk, 2023). External factors that influence children are the economic status of parents and the school environment, which is the central place to sell or provide food. Nutritional content is rarely considered when choosing and purchasing food. Therefore, food education for children must be part of curriculum consideration with school food practices in the everyday routine (Jones, 2022). By imparting nutrition knowledge, where food comes from, and how it affects their bodies, educators empower young learners to make informed dietary choices and encourage a lifelong appreciation for wholesome eating habits (Medeiros, 2022).

In recent years, food literacy has become essential in fostering healthy habits and well-being among individuals of all ages (Park, 2019). Defined as the ability to understand food, from its origin and how it impacts our bodies, the practical skills from preparation to eating with mind-full condition, and the food system nowadays that is influenced by social, economic, cultural, environmental, and political factors (Ares, 2024). Elementary school students, in particular, represent a critical demographic for cultivating these competencies, as early experiences and knowledge can profoundly influence lifelong attitudes and behaviors toward food (Asakura, 2021). Food knowledge influence on increasing task self-efficacy in primary school students. A successful food program includes cross-curricular activities using various teaching methods, extracurricular activities, and synergy programs with parents (Asakura, 2021; Lusiana, 2023; Saraswati, 2022; Saputri, 2023; Smith, 2022; Yuningsih & Kurniasari, 2022). However, in the national curriculum of Indonesia, food literacy knowledge and skills are often underestimated as part of the school curriculum, especially at the elementary school level.

Several similar studies have formulated food literacy competency components for elementary school students (Ares, 2024; Groufh & Medin, 2023; Hernandez, 2021; Park, 2019). Several studies have also summarized articles from various sources relevant to program interventions provided by schools to improve food literacy competencies (Kelly, 2021). Additionally, other research has developed assessment tools to measure food literacy competencies in elementary school students (Amin, 2019; Boariu, 2024;

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Dallant, 2024). However, this series has not been implemented as a unified series of processes that can be applied by schools in creating food literacy programs. So, this research aims to address this gap by combining all the processes above, which start with formulating competencies using a needs assessment model and conducting skills assessments based on the competencies prepared at the school level.

Furthermore, the curriculum should be responsive to social phenomena that happen nowadays. Student needs, interests, cultural or religious background, and other improvement recommendations (Janul & Sunendar, 2024; Murti, 2023; Syarnubi, 2023; Vreuls, 2023). The first step in collecting all the needs for curriculum development is using needs assessment. By conducting thorough assessments, educators can pinpoint areas where students require additional support or enrichment, thereby guiding the development of targeted curriculum interventions and instructional strategies. This article explores the food literacy competency of elementary school students that is appropriate to school and student conditions in Al-Mumtaaz Islamic Elementary School and identifies the students' actual performance based on food literacy competency.

LITERATURE REVIEW

Needs Assessment

Based on explanations by English and Kaufman in the book "*Needs Assessment: A Focus for Curriculum Development*", needs assessment is a systematic process used to identify and prioritize gaps between current and desired conditions. It involves gathering and analyzing data through surveys, interviews, observations, and document reviews to understand specific needs, challenges, and opportunities within a given context. The goal of needs assessment in developing a curriculum context is to clearly understand what is required to achieve desired student outcomes or school program improvements. Needs assessment also promotes stakeholder engagement and collaboration, ensuring that diverse perspectives and insights are considered in the planning and implementing interventions. According to McNeil in the book "Curriculum: A Comprehensive Introduction", this research uses the Needs Assessment Model. There are four steps in this model.

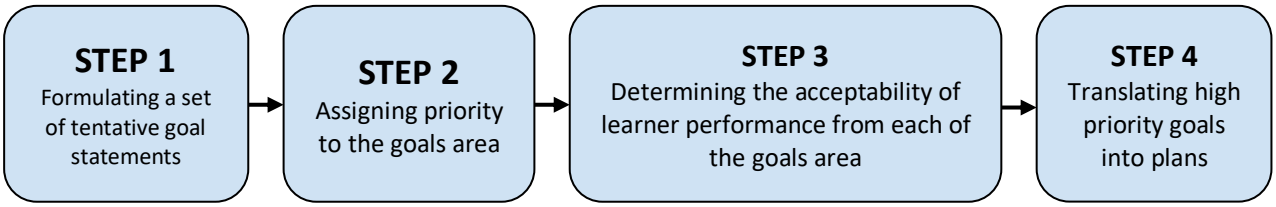

Figure 1. Stages of the Needs Assessment Model according to McNeil
Source: Research 2024

Figure 1 shows the first step; goals are formulated through various sources, which must comprehensively answer problems that arise in the field and reflect the dominant culture or insight that emerges around children. Sources can be through existing curriculum guides, research in education or psychology, evaluation studies, etc. In the second step, after achieving many goals in the previous stage, all of these goals will go through a validation process by experts and stakeholders in the school. After that process, all competencies are determined based on priority and structured to get a comprehensive picture of these competencies. Thus, the competencies that have been synthesized will become a good reference standard. The third step is analyzing student performance based on the goals prepared as a reference and explaining the gaps in students' competency performance. This comparison will obtain values that can be reclassified according to the priority scale of performance. The goals on the highest priority scale will

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be the targets in making the program at the next stage. The results of the third stage will be translated into a curriculum guide or program that schools can implement through various learning activities that suit the characteristics of students.

Food Literacy

Food literacy encompasses the knowledge, skills, and behaviors necessary to make informed decisions about food choices, preparation, and consumption (Zareimanesh & Namdar, 2022). It goes beyond basic nutrition knowledge to include understanding where food comes from, how it affects health, and its environmental and social impacts. Food literacy promotes critical thinking about food systems, sustainability, and justice issues (Ares, 2024). Individuals with food literacy can navigate food labels, plan balanced meals, and make sustainable food choices that benefit themselves and the broader community. By fostering food literacy, educators and communities empower individuals to develop lifelong healthy eating habits, reduce food waste, and advocate for policies that support equitable access to nutritious food (Silva, 2023).

Food Literacy Competency

Food literacy competency refers to the knowledge, skills, and understanding necessary to make informed decisions about food. It encompasses various aspects related to food, as defined above. The food literacy competencies needed by a child who will grow into an adult (Ares Gastón, 2024). That research portrays a food literacy competency framework expected to holistically describe the relationship between humans and the food they consume in the affective, knowledge, and skills domains. Those three domains emerged, which were interrelated between one category and another, namely (1) Relational Competencies, (2) Functional Competencies, and (3) Critical Competencies. Relational competencies are children's first food literacy skills, including enjoyment of healthy and diverse foods, positive associations with healthy eating, shared meals, appreciation of food culture, mindful eating practices, and body image satisfaction. Functional food-related competencies, the most well-defined in food literacy literature, encompass basic knowledge of food and nutrition and skills for planning, preparing, and disposing of food. They involve obtaining, understanding, and using food and nutrition information and require symbolic, intuitive, and logical thinking, thus developing later than relational competencies. Developing critical competencies is essential for navigating the complex food environment and making healthy, sustainable choices. This requires cognitive and social skills to question information and examine food systems critically. Promoting critical thinking from early childhood involves encouraging children to express themselves and engage in food-related decisions.

From an Islamic religious perspective, food holds significant cultural, social, and religious importance. Islamic dietary laws, known as 'halal' (permissible) and 'haram' (forbidden), guide Muslims on what types of food and drinks are acceptable according to the Islamic way of life (Diana, 2023; Zakaria, 2024). That guidance not only teaches Muslims about foods and drinks that can and cannot be eaten but also teaches (1) purity and cleanliness. Islam emphasizes the importance of cleanliness (Taharah) in all aspects of life, including food preparation and consumption; (2) charity and hospitality, sharing food (Sadaqah) with others, especially the less fortunate, is highly encouraged in Islam and hospitality (Diyafah) is also a significant aspect. Muslims are taught to be generous hosts and guests when sharing meals, (3) ethical considerations. Islam encourages ethical considerations in food production and consumption that are visible from treating animals humanely, avoiding wastage, and promoting sustainable practices in agriculture and food distribution, and (4) cultural diversity, Islamic dietary practices vary across different cultures and regions, influenced by local cuisines and traditions while adhering to basic Islamic dietary guidelines (Nasution & Nasution, 2023). Overall, food in Islam provides physical needs and spiritual

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fulfillment, social cohesion, and ethical responsibility towards oneself and others. It reflects a holistic approach to life where mindfulness in eating and sharing meals significantly strengthens community bonds and observes religious obligations.

METHODS

The research carried out was the initial curriculum development process, namely a needs assessment focused on finding food literacy competencies for Al-Mumtaaz Islamic Elementary School, Karawang students. In order to achieve the comprehensive curriculum objectives, this research used the Needs Assessment Model according to McNeil, which has four stages. The first step is formulating tentative goal statements about food literacy competencies. It contains two processes. The first process involves school program observation and teacher interviews to gather early information on what the school has already done regarding the food literacy program. The second process involves formulating goal statements based on early observations and literature studies. All statements will be collected into 3 phases: phase A for grades 1 and 2, phase B for grades 3 and 4, and phase C for grades 5 and 6. All goal statements are compiled into a questionnaire that needs to be validated in the next stage. The second step is the validation process of 7 experts and stakeholders in the school (**Table 1**) using the questionnaire. The questionnaire used a 4-point Likert scale. The data processing process begins with (1) calculating the average value per competency item, (2) creating an interval of average interpretation values, (3) determining the interpretation of the value of each competency indicator point (**Table 2**), and (4) sorting the items. Competency indicators in the interval strongly agree that priority food literacy competencies will be implemented in the curriculum. The questionnaire analysis will produce a set of food literacy competencies for each phase of education.

Table 1. The list of stakeholders and experts

No	Job Title	Role
1	Head Master of Al-Mumtaz Islamic Elementary School, Karawang	School Stakeholder
2	Head of the Religious Department of the Al-Mumtaaz Karawang Islamic Charity Foundation	School Stakeholder
3	Lecturer in UNISMA, Faculty of Indonesian Language and Literature Education	Book Author about food literacy for kids
4	Head of the Nutrition Study Program, Singaperbangsa University, Karawang	Nutritionist
5	Executive Director, NUSA Indonesia Gastronomy	Gastronomist
6	Nutritionist Karawang Community Health Center	Nutritionist
7	Lecturer in UPI, Department of Primary School Teacher Education	Literacy Experts

Source: Research 2024

Table 2. Four Points Likert Scale Interpretation

Average	Value Interpretation	Explanation
1 - 1,74	Strongly Disagree	Not included in priority competencies
1,75 - 2,49	Disagree	
2,5 - 3,24	Agree	Priority of competency indicators
3,25 - 4	Strongly Agree	

Source: Research 2024

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The third step is analyzing student performance using an assessment test based on competencies produced from previous steps. The participants are 58 students in phase A (Grade 1 & 2). This research collects both quantitative and qualitative data. For quantitative data, we used a formative assessment test. There are 12 parts of questions represent the food literacy competency knowledge for students in Phase A. The quantitative data processing process refers to calculating the Minimum Competency Assessment (Asesmen Kompetensi Minimum/AKM) conducted by the Ministry of Education. After all students have filled in their answers, the following steps are conducted sequentially: (1) Adding up the total score for every student and (2) interpreting students' abilities using the interpretation in **Table 3**. An example of food literacy competency assessment questions is in **Figure 2**.

Table 3. Interpretation of Student Attribute Test Assessment

Total Test Score	Category	Interpretation
86,25 - 115,0	Proficient (P)	Students at the school demonstrate a proficient level of food literacy and are at an advanced level.
57,5 - 86,24	Competent (C)	Students have reached the minimum competency limit for food literacy, but efforts are needed to encourage them to become proficient.
28,75 - 57,4	Basic (B)	Students have achieved less than 50% of the minimum competency for food literacy.
0 - 28,74	Need Special Intervention (NSI)	Students have not reached the minimum competency limit for food literacy

Source: Research 2024

Figure 2. Examples of food literacy competency assessment questions
Source: Research 2024

(2) calculate the percentage of students in each category from all Phase A elementary school students who took the test using calculations.

$$\%\ \textbf{Category}\ (\mathbf{M, C, D, PIK})\ \textbf{among all students}\ = \frac{\sum \boldsymbol{student\ each\ category}}{\sum \boldsymbol{student}} \boldsymbol{x}\ \mathbf{100}\%$$

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(3) Analyze the question items from the assessment test, which is carried out in a table containing the student's name; the question items will be given 0 points if the answer is incorrect or not filled in and 1 point if the answer is correct. (4) Calculate the school attribute assessment index, which describes the overall food literacy competency level of Phase A elementary school students by following references from the AKM (Minimum Competency Assessment) literacy index assessment carried out by the Indonesian Ministry of Education and Culture (**Table 4**).

Table 4. Calculation of the School Attribute Test Assessment Index

Competency Level	% of students in every category	Heaviness (bobot)	Index	
a	**b_i**	**c_i**	**b_i*c_i**	**sum(b_i*c_i)**
Proficient (P)	b_1	3	b_1*c_1	
Competent (C)	b_2	2	b_2*c_2	
Basic (B)	b_3	1,5	b_3*c_3	
Need Special Intervention	b_4	1	b_4*c_4	

Source: Research 2024

(5) After obtaining an index value in the range of 1.00 - 3.00, the value will be interpreted into a category of school attribute assessment index. Table 5 below translates the value index into categories and interpretations.

Table 5. Interpretation of the School Attribute Assessment Index

Index	Category	Interpretation
2,10 - 3,00 (Range 0,9)	Above Minimum Competency	The school's students demonstrate a proficient level of food literacy competency, and quite several students are at the advanced level.
1,80 - 2,09 (Range 0,3)	Achieving Minimum Competency	Most students have reached the minimum competency threshold for food literacy competency, but efforts are needed to encourage more students to become proficient.
1,40 - 1,79 (Range 0,4)	Below Minimum Competency	Less than 50% of students have achieved minimum competency for food literacy.
1,00 - 1,39 (Range 0,4)	Far Below Minimum Competency	Most students have not reached the minimum competency limit for reading literacy.

Source: Research 2024

For qualitative data, we used three different kinds of instruments: (1) observation guide, (2) FGD guide, and (3) documentation analysis. The observation guide was conducted on four activities representing food literacy skills for students in phase A. The focus group discussion was conducted with eight teachers to understand their perspectives on children's behavior in the food literacy program. The documentation analysis process reveals some of the school's food literacy program guidelines that contain the food literacy program.

The final step in the needs assessment is developing a program based on the student's performance and the food literacy competencies developed for students at Al-Mumtaaz Islamic Elementary School. However, this research is limited to providing program recommendations.

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RESULTS AND DISCUSSION

Preliminary Study of Food Literacy Program at Al-Mumtaaz Islamic Elementary School

As previously explained, Al-Mumtaaz Islamic Elementary School has provided the students with a food literacy program. Several forms of activity programs in schools that contain various things about food literacy can be categorized into three forms of activity:

1. An activity program that is included in students' daily routine at school

   This program is a meal activity carried out in several activity schedules. First, at 09.00 - 09.50 for morning snack activities. Second, lunch activities are from 12.30 - 13.00. Third, at 15.00 - 15.30 for afternoon snack activities (only for grades 5 and 6). In this activity, the school provides a food menu appropriate to students' daily food consumption according to elementary school age. So, students should not bring food from home or buy it from street vendors. Students are also not allowed to bring pocket money from home. The catering team has placed lunch boxes in every class during eating activities. Students and teachers prepare classroom tables in a position that makes it easy to surround the dining table. The food is given after students wash their hands and pray before eating. When students rotate the food tray and take food according to their needs, the teacher explains today's food menu and begins to convey information about their food.

   In **Figure 3**, after everyone had received food, the teacher and students simultaneously started eating. After eating, students washed their hands and cleaned the eating area according to the picket schedule agreed upon in class. After all procedures had been completed, students continued their activities.

Figure 3. Student lunch activities with teachers
Source: Research 2024

2. An activity program that is part of a co-curricular program

   Co-curricular activities are a series of learning activities that involve students directly with particular objects or places that support intra-curricular learning. In Kurikulum Merdeka, the co-curricular program is part of the curriculum the school must provide to strengthen the students' character based on the Pancasila Student Profile. At Al-Mumtaaz Islamic Elementary School, co-curricular activities related to food can be found in several activities: (1) Market day, (2) Outing class activities on themes related to food, such as visiting the traditional food producers in Karawang, (3) Sustainable Lifestyle Project like growing spinach using organic methods, harvest them, and at the end they cook the spinach into a delicious dish, (4) Competitions for Islamic Holidays by including food processing activities, and (5) Activities life skills that carry out simple cooking processes according to the age stages of students. All those activities are represented in **Figure 4** below.

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Figure 4. Market day and Project Learning series of planting, caring for, harvesting, and cooking vegetables from the school garden
Source: Research 2024

3. An activity program that is part of an extracurricular program

   Extracurricular activities that can facilitate activities related to food include scouting activities. The scout extracurricular has a jamboree activity, which is held once a year. During the jamboree activity, students were asked to do "Anjangsana" or present their group's cooking results. Before the jamboree activities were held, several times, the students and teachers had carried out a preparation process to train the students in the cooking process, as represented in **Figure 5**. From this process, students become better trained to use cooking utensils skillfully.

Figure 5. Cooking activities in scout extracurricular activities
Source: Research 2024

Synthesis of Learning Outcomes from Literature Study

Before we build a comprehensive food literacy competency map, we must clearly define food literacy and its outcome for individuals after they put some activity programs about food. The definition of food literacy that we agreed to use as a reference in compiling Food Literacy Learning Outcomes at Al-Mumtaaz Islamic School is:

> *Food literacy is a concept that aims to improve individual health and well-being through awareness of daily food consumption, which occurs because of human understanding of (1) the function of food, (2) the positive emotional relationship that exists towards food, and (3) the system that formed to provide food, where this occurs due to personal experience as an individual and information searches carried out from various literature.*

A learning outcome was created for elementary school students to achieve the food literacy goal. Learning outcomes serve as the compass for educators and learners, articulating the specific knowledge, competencies, or attitudes that learners are expected to gain after engaging with a particular educational

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experience. Food literacy learning outcomes for 6 to 12 year olds students in Al-Mumtaaz Islamic Elementary School are:

> *At the end of the elementary school stage, students can have (1) good self-confidence and self-empowerment towards food, (2) a pleasant relationship and good meaning towards food, and (3) understand the impact of food on social welfare and the sustainability of human life in the future. Mastery of the material being studied is demonstrated by having good individual eating habits in daily life. Furthermore, students are expected to become wise and careful consumers in choosing the food they will consume, conduct investigations or investigations into the content of food that is good for the body and their personal needs, and carry out cooking activities that are healthy and enjoyable for themselves. Students appreciate and implement teachings about the relationship between humans and food from a cultural and religious perspective. Students understand the broad impact of food on human life in the form of access to food or sustainability in food systems.*

From the learning outcomes of food literacy above, three elements of food literacy need to be part of the curriculum aspects in building food literacy competencies for elementary school-age students in order to achieve status as individuals or communities who have good food literacy, namely (1) Functional element, (2) Relational element, and (3) Food systems Element. The functional element aims to build self-confidence and self-empowerment regarding food by understanding the function of food for our body. The skills and processes that need to be understood by the children start from the origin of the food to consuming food at the dining table. So, in the functional element aspect, there are four categories: (1) planning before consuming food, (2) Selecting food ingredients, (3) processing food ingredients, and (4) food consumption. The relational element aims to build enjoyment and meaning in food through understanding the relationship that can be established between food and oneself as an individual, with other people/groups/specific communities, with culture, and with the religion one adheres to. In relational competence, there are four categories, namely (1) Food and myself, (2) Food and the people around me, (3) Food in Indonesian culture, and (4) Food in Islamic religion. The food system element aims to provide awareness about food that is not directly visible when carrying out food activities related to social equality/welfare and sustainability in the food system created in the 21st century. In the system competency aspect, there are four categories: (1) social justice towards food, (2) the food processing industry, and (3) sustainability in the food system.

Food Literacy Competency for Curriculum for Al-Mumtaaz Islamic Elementary School

Every sub-element of food literacy competencies has some specific competency related to sub-element criteria. Some experts will judge all the specific competencies for content validation. After the validation process, some experts provided much input and corrected the specific competency. So, from the early statement of specific competency, we only take the priority (Most experts choose 'strongly agree' in the questionnaire) specific competency based on the expert's judgment. Some experts also make an additional specific competency in some sub-element. So, the total competency in every sub-element for all phases in the elementary school stage is obtained as in **Table 6** below.

Table 6. Total Competency obtained from the expert's judgment

Level	Elements of Food Literacy Competency	Sub Elements of Food Literacy Competency	Early	Deleted	additional experts	Total Competency
	Functional Element	Planning Before Consuming Food	4	3	2	3

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Level	Elements of Food Literacy Competency	Sub Elements of Food Literacy Competency	Early	Deleted	additional experts	Total Competency
Phase A (Grade 1 & 2)		Selection of Food Ingredients	17	11	0	6
		Cooking Food	16	5	0	11
		Consuming Food	15	6	2	11
	Relational Element	Food and Myself	10	5	0	5
		Food and people around me	6	1	0	5
		Food in Indonesia Culture	4	0	0	4
		Food in Islamic Religion	5	1	2	6
	Food System Element	Social justice towards food	7	5	1	3
		Food processing industry	4	1	1	4
		Sustainability in food systems	7	2	1	6
Total Competencies						**64**
Phase B (Grade 3 & 4)	Functional Element	Planning before consuming food	6	2	0	4
		Selection of Food Ingredients	16	6	1	11
		Cooking Food	15	3	2	14
		Consuming Food	16	4	2	14
	Relational Element	Food and My Self	11	6	0	5
		Food and people around me	5	1	1	5
		Food in Indonesia Culture	4	1	2	5
		Food in Islamic Religion	5	0	0	5
	Food System Element	Social justice towards food	7	5	2	4
		Food processing industry	4	1	1	4
		Sustainability in food systems	7	2	0	5
Total Competencies						**76**
Phase C (Grade 5 & 6)	Functional Element	Planning before consuming food	6	3	1	4
		Selection of Food Ingredients	15	6	0	9
		Cooking Food	16	2	0	14
		Consuming Food	13	2	1	12
	Relational Element	Food and My Self	7	1	0	6
		Food and people around me	4	1	0	3
		Food in Indonesia Culture	3	1	1	3
		Food in Islamic Religion	4	0	0	4
	Food System Element	Social justice towards food	8	3	0	5
		Food processing industry	4	2	1	3
		Sustainability in food systems	8	3	2	7
					Total Competencies	**70**

Source: Research 2024

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Performance Analysis in Food Literacy Competency from Student in Phase A (Grade 1 and 2)

Table 7. Results of individual student attributes for Phase A Elementary School students

Category	Number of Students per Category	Percentage (%)
Proficient (P)	29	50
Competent (C)	28	48,3
Basic (B)	1	1,7
Need Special Intervention (NSI)	0	0

Source: Research 2024

The performance analysis takes all the data from the quantitative and qualitative instruments. The quantitative data explains the percentage of students in the 4-level category competency (P, C, B, or NSI). As we can see in **Table 7**, all students in Phase A have (1) 50% of students are at the advanced level, (2) 48.3% of students are at the competent level, (3) 1.7% of students are at the primary level, and 0% of students are at the level of Need for Special Intervention. This data said that almost all students (98,3%) are proficient and competent, and no one in phase A needs particular intervention to learn about food literacy.

Table 8. Results of school attributes in providing Food Literacy competency activity programs for Phase A Students

Competency Level	% of students in every category	Heaviness (bobot)	Index	
a	b	c	b*c	sum(b*c)
Proficient (P)	0,5	3	1,5	**2,49**
Competent (C)	0,483	2	0,966	
Basic (B)	0,017	1,5	0,0255	
Need Special Intervention (NSI)	0	1	0	

Source: Research 2024

From the individual attributes above, an assessment index can be calculated to measure the achievement of food literacy competency among Phase A elementary school students using **Table 8** below. From **Table 8**, it can be seen that the overall activity program implemented by the school in TA. 2023/2024 has produced a food literacy competency index 2.49 (two point forty-nine). The interpretation of the 2.49 value based on **Table 4** indicates that *students at the school show a proficient level of food literacy competency, and quite a lot of students are at the advanced leve*l (Category: **Above Minimum Competency**).

Table 9. Results of the percentage of answers answered correctly by all students from each category of SD Phase A food literacy material (n=58)

No	Material	Percentage (%) of students answered correctly
1	Food names: animal-based protein	94,5
2	Food names: plant-based protein	80,2
3	Fruits names	98,6
4	Vegetable names	82,8
5	Part of the plants that are consumed as vegetables	42,5

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No	Material	Percentage (%) of students answered correctly
6	Place obtain food	66,4
7	Food contain carbohidrat	38,6
8	Food contains protein	47,2
9	Food contains fibre	42,9
10	The beverage that is healthy for the body	84,1
11	Traditional food from Karawang	80,2
12	Halal & Haram Food	95,7
13	Food from other nations' culture	94,1
14	Real food vs. processed food	85,0
15	Reading literacy about food origin	59,3
16	Cooking process	88,2
17	Organic and Anorganic food waste	64,5

Source: Research 2024

Another result from the quantitative data tells us about the percentage of correct answers provided by all students per category, thereby explaining which materials have not been mastered by many students. From Table 9, it can be seen that less than 70% of students were able to fill in several materials tested correctly, respectively, from the lowest percentage, they were (1) Types of food containing carbohydrates (38.6%), (2) Names of parts of the food consumed (42.5%), (3) Types of food that contain fiber (42.9%), (4) Types of food that contain protein (47.2%), (5) Literacy reading stories about food (59.3%), (6) Classification of organic-inorganic waste (64.5%), and (7) Places to obtain food (66.4%).

The observation process explains some competencies not yet visible in daily activities or student performance in food literacy activities. The observation was arranged in different kinds of activity, and every activity has some food literacy indicators to check. Four activities were observed in the school: the school lunch program, a life skills program that includes cooking activities, morning reading activities in the library, and the school culture evident in the school environment. The results of this observation are as follows: (1) Out of 33 indicators observed during lunch activities with teachers, 31 were observed in students, while two were not. (2) Out of 19 indicators observed in the life skills "cooking" activity with teachers, 13 were observed in students, while six were not. (3) Out of 7 indicators observed during reading literacy activities in the library, three indicators were observed in students, while four indicators were not observed. (4) Out of 5 indicators observed in the food literacy culture within the school environment, all indicators were observed in students.

Some indicators that were not visible in students' performance during the observation are in the list below:

1. Students choose food consciously based on the concept of "*halal thoyyiban*"
2. Students explain the health benefits that can be obtained from the etiquette or eating habits exemplified by the Prophet Muhammad SAW
3. Students wash food before cooking
4. Students carry out the activity of grating soft food ingredients (e.g., cheese, sweet potatoes, steamed cassava, etc.).
5. Students spread jam (butter) on bread without damaging the bread fibers.
6. Students carry out the activity of frying food using a small amount of oil using a safe procedure using a flat frying pan
7. Students express feelings of loving themselves, whatever the condition of their body

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8. Students expressed that they wanted to take care of their bodies by consuming good food, getting enough sleep, and getting regular exercise
9. Students read stories about the goodness and benefits of food, which are linked to the health of the human body
10. Students listen to stories about the origins of fresh or processed Indonesian food and look for good values and lessons from these stories
11. Students read stories about the origins of fresh or processed Indonesian food and look for good values and lessons from these stories
12. Students tell stories of personal experiences about their favorite fresh foods or processed foods

The focus group discussion results indicated that teachers significantly improved children's understanding of nutrition and healthier eating habits due to the food literacy program. Teachers reported that students exhibited better food skills like preparation, process, and eating habits based on Islamic instigation. Some progress also reported by the teachers after one year of the food literacy program included students eating without making a mess, chewing food thoroughly, and not keeping food in their mouths. Despite that, teachers in the classroom feel some challenges when accompanying food-related activities. For example, teachers' knowledge varies because their knowledge of food literacy information also refers to various sources on the internet, and sometimes there are expert understandings that are different and contradictory.

Based on information from several curriculum documents obtained by researchers, the background and objectives of implementing this food literacy program are to meet the needs of students to have optimal physical and brain growth with the hope that students will be better prepared to learn and carry out activities optimally and increase the child's body immunity and to provide a pleasant experience with various types of food and drinks that are consumed every day and become a culture in the environment where students live. Thus, a daily and annual routine program related to food was created with the aim of (1) encouraging students to express their gratitude to Allah SWT for the various types of food provided by nature, (2) instilling confidence in students to practice good eating etiquette as guided by Rasulullah SAW, (3) educating students about the health information of the food they consume, and (4) ensuring students follow proper eating procedures smoothly from start to finish.

Discussion

This research produces a series of food literacy competencies that schools can use to create food literacy programs suitable for elementary school age. From the food literacy program that the school has carried out, the performance results shown by students referring to the food literacy competency show that Al-Mumtaaz Islamic Elementary School students have shown results in the above minimum category. Implementing a food literacy program for primary school students can have profound and multifaceted effects. Such programs educate children about the importance of healthy eating, sustainability, and the cultural aspects of food. Students gain practical skills in food selection, meal preparation, and mindful eating practices, which foster a positive relationship with food. As a result, these young learners are more likely to make informed and nutritious choices, reducing the risk of obesity and related health issues (Doustmohammadian, 2020; Labbé, 2023; Omidvar et al., 2023; Pierre, 2024; Ülker, 2024; Widhi, 2022). Additionally, food literacy programs promote critical thinking by encouraging students to question and understand their food choices' social, economic, and environmental impacts. By integrating these programs into the curriculum, schools can cultivate a generation of health-conscious, informed individuals equipped to navigate the complexities of the modern food landscape.

The results of this study also emphasize the significant role that structured food literacy programs play in shaping students' understanding of food from multiple perspectives, including functional, relational, and

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systemic elements. At Al-Mumtaaz Islamic Elementary School, integrating these elements into daily routines and co-curricular and extracurricular activities has fostered a holistic approach to food literacy. The consistent exposure to activities such as meal routines, sustainable lifestyle projects, and cooking practices rooted in Islamic teachings has allowed students to internalize good food habits, cultural values, and critical thinking about food systems (Islam et al., 2019). This comprehensive approach aligns with the broader goals of character education embedded in the Pancasila Student Profile within the Kurikulum Merdeka, reinforcing knowledge, essential life skills, and values.

Moreover, the performance analysis reveals that most students, particularly in Phase A, have reached proficiency or competency levels in food literacy. The data shows that 98.3% of students fall into the proficient or competent categories, demonstrating that the school's approach effectively meets its learning objectives. However, areas for improvement are identified in specific competencies like recognizing carbohydrate-rich foods and understanding organic versus inorganic waste. The program's success in these foundational years suggests that targeted interventions could further refine students' knowledge, especially in more complex aspects of food literacy, ensuring a well-rounded understanding as they progress through higher grade levels.

The challenges teachers face, including the need for more consistent and accurate sources of food literacy information, highlight the importance of professional development and resource standardization in sustaining the program's effectiveness. Despite these challenges, the positive feedback from teachers regarding students' improved eating habits and food skills underscores the program's impact. Additionally, the emphasis on integrating Islamic values into food literacy education has proven beneficial in providing a culturally relevant framework that resonates with students and supports their moral and ethical development. Refining the curriculum based on expert feedback and addressing observed gaps will be crucial in enhancing the overall food literacy competencies of Al-Mumtaaz Islamic Elementary School students.

CONCLUSION

A preliminary study on food literacy at Al-Mumtaaz Islamic Elementary School revealed that the school had developed a curriculum and various programs to support students' food literacy skills. Observations showed student activities related to food literacy, such as lunchtimes with teachers, cooking, farming, sharing food during Islamic day commemorations, and scouting. A validated food literacy competency map identified three elements: functional, relational, and food system. Phase A students were found to be "Above Minimum Competency," indicating proficiency. However, gaps remain in understanding specific indicators, such as types of carbohydrates, fiber, protein, parts of food consumed, food-related stories, classification of organic and inorganic waste, and places to obtain food. Discussions with teachers highlighted both the benefits and challenges of teaching food literacy. Despite its contributions, this research has limitations, including analyzing a small number of students and focusing only on one school. Consequently, the generalization of the competencies is specific to the needs of the school where the research was conducted. Future researchers interested in studying food literacy at the elementary school level, conducting performance analysis on national schools in various regions or cities could provide broader insights into students' competency levels with larger sample size. In addition, recommendations for implementing government policies relating to providing free food consumption for elementary school students must also be accompanied by a meaningful understanding of the food served and measuring the food skills demonstrated by students.

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