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TEACH ME TO BE RESPONSIBLE”: IMPARTING THE SENSE OF SAVING AND RATIONAL CONSUMPTION AMONG YOUNG CHILDREN TO DEVELOP SUSTAINABLE BEHAVIOR

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ABSTRACT

This study presents outcomes of a program for imparting sustainable behavior among preschool children aged 5-6 to improve their sense of saving and rational consumption, toward the goal of achieving sustainable development in accordance with the Saudi 2030 vision. Data was collected in a quasi-experimental design, pre-test, post-test and follow-up test for the educational program in which an experimental group (N = 30) was compared to a control group (N = 30). All children completed a test measuring their sense of saving and rational consumption. Results indicated a statistically significant difference in children's mean scores between pre- and post-tests, as well as the follow-up test favoring the program. The findings suggest that our program improves children's sense of saving and rational consumption. There is a need to include sustainable development goals in early childhood programs and raise the cultural awareness of saving and rational consumption among families to educate and train their children. The results are discussed along with the suggested scope of further research.

KEYWORDS: Rational Consumption, Sense of Saving, Sustainable Developmental Goals, Rational Water Consumption, Rational Electricity Consumption, Children.

1. INTRODUCTION

Like many other societies, Saudi society engages in consumption to a large extent. Sharp differences in consumption rates are present at different societal levels in Saudi Arabia, leading to social instability. Moreover, early childhood education in Saudi Arabia has not documented a clear relevance of sustainable development (SD) to Saudi childhood education or the critical need to engage children with a sustainability attitude. Children, as future customers, are deeply affected by commercial advertisements. They are easily lured by all the promotions and offers presented to them. Therefore, there is an indispensable need to promulgate the ethics of rational consumption across society (Elwell, 2009) and to develop a sense of saving, which is defined as feeling the value of saving income for later use to fulfill specific needs and demands (Saad & Mustafa, 2012). Since children are a "vital target segment for advertisers around the world and capable of influencing their parent's purchase decisions, promoting to them is viewed as an exceptionally effective approach in order to create a pool of prospective customers" (Mishra & Das, 2018, p. 54). Children's power to influence parents is thought to affect parents' behaviors, but not necessarily their attitudes (O'Neill & Buckley, 2019). This belief justifies the importance of consumer socialization of children, which, according to Schiffman and Kanuk (2007), refers to "the process by which children acquire the skills, knowledge, attitudes, and experiences necessary to function as consumers" (p. 334). Such orientation toward consumption may eventually contribute to serving SD goals and achieving Saudi Arabia's 2030 Vision, which calls for the consolidation of positive values in children through the development of the educational system, in line with the new plan of action outlined in the 2030 Agenda for Sustainable Development (United Nations, 2015). The representation of SD in the Saudi curricula has not yet been sufficiently investigated; however, there is a substantial conceptual attitude and there are political calls. This creates the need to investigate the extent of sustainable behavior among children and the possibility of teaching behavior related to saving and rational consumption among children, which may go along with the Saudi 2030 vision.

1.1. Education for Sustainable Development

Education for SD refers to reorienting educational practices toward the well-being of people and the planet now and in the future (UNESCO, 2005). A review of the literature revealed that SD has been

flagged as an essential component of childhood education, confirming that early childhood curricula should explicitly highlight sustainability (Borg, 2019; Davis, 2009, 2014; Davis & Elliott, 2014; Ritchie, 2013, 2014; Weldemariam et al., 2017; Chen et al., 2025).

The achievement of SD goals is considered the duty of individuals worldwide, and this is reflected in adopting best practices in the aspect of rationalizing the consumption of water, food and other resources and more importantly, the practice of recycling (Sustainable Development Goals, 2018). When it comes to food, rationalization of consumption is essential as the United Nations has estimated that the amount of food that is wasted every year exceeds 1.3 billion tons. Therefore, the concept of "responsible consumption and production" was initiated by the United Nations Development Program (UNDP) (Sustainable Development Goals, 2015). This rationalization of consumption has requirements when it comes to habits and traditions and behaviours, such requirements are centered around modifying such habits and tradition to align with rationalized consumption (Al-Deeb et al., 2016; McDonald et al., 2006). This implies the need to impart such ideas within the kindergarten curriculum (Wasef & Najm, 2014), mostly regarding rational water and energy consumption, since people are not wholly conscious of their routine behaviors. This rationalization should occur on both societal and individual levels, especially in countries with limited natural resources, like the Gulf countries in general and Saudi Arabia in particular (Naseem, 2009, 2010; Naseem & Subhi, 2015; Qandil, 2002). A considerable amount of literature has also explored the role of individual habits in the field of rational consumption and how they "serve to maintain the incumbent 'locked-in' socio-technical system that relies on the use of fossil fuel energy" (Maréchal, 2009, p. 70). This perspective of consumption habits is critical to understand the continued increases in non-renewable resource consumption despite global environmental awareness and concern. Great interest is emerging in early childhood education pedagogies that consider families' crucial role in shaping children's behaviors, attitudes, values, life skills, and habits. Since SD is an essential issue in societies (Corcoran et al., 2017) and environmental issues are also critical (Giddings et al., 2002), there have been insistent calls for more rational consumption. Changes in the consumer habits of individuals and families have significantly increased. Moreover, early childhood education for environmental sustainability has become significant (Hill et al., 2014; Pollock et al., 2017). Children are

greatly affected by the consumer behaviors of their families and the surrounding society. Borg et al. (2017) showed that family socialization and peer groups influence children's consumption patterns and purchasing habits. The study of Chen et al. (2025) showed children learn sustainable behaviours, in large part, through exposure to socialisation agents such as parents and teachers, as well as through media (e.g., social media) and educational programs. Through engaging with environmental education (EE), youth are encouraged to develop an environmentally responsible perspective, which counters their materialistic tendencies. Since consumer behavior is fashioned early, children should know how to increase eco-friendly behavior and save resources through their actions (Hsiao & Shih, 2016). A shift toward a strategically effective method of teaching sustainable consumption should occur (Kopnina, 2013). It is also essential to inspire the values of proper planning, rational expenditure, and awareness of the importance of saving. The media children are exposed to also plays a critical role in their behavior. Edwards et al. (2013) examined the role of media when interviewing children and parents, and using such data to prompt teacher discussion. They developed an understanding of the strong relationship between children's digital media viewing and their associated clothing choices, food selections, and the sustainability consequences of such behavior. Similarly, using 'funny ideas' is one way to teach children about saving money; parents can use funny banks, birthday occasions, quick visits to supermarkets, and doing extra chores around the house for money rewards (Rippel & Smith, 2003). However, children demonstrate an increased understanding of economic independence, production development, and rationalization of consumption (Developmental Early Learning Standards, 2015). Introducing them to high-quality early childhood education has positive effects on their well-being, health, and intellectual and social-behavioral development, and also is influential in developing their attitudes and forming their behaviors (Siraj-Blatchford et al., 2008). It is necessary to instill such concepts, as well as life skills at early ages (Danes & Dunrud, 2005) through training and endorsement to form sustainable habits. Good habits should be included in education for early childhood (Davis, 2014; Duhn, 2012). A curriculum on consumption may need to enable students to understand their responsibility, how consumption is being promoted, constructed, and enabled by the prominent political and corporate players, and how students can engage at the higher system level

(Kopnina, 2013). Learning during the early stages of life is essential because the patterns we learn as children remain in our minds; it tends to be challenging to unlearn habits as an adult (Hofstede et al., 2010). Different educational strategies can be employed to achieve this purpose. Educational activities within an exciting framework as part of the daily program in kindergarten have been recommended. Educational games (Al-Munir, 2011), expressive activities (Tawfiq, 2018), and role-playing (Suiter & Meszaros, 2005) play a crucial role in the education of kindergarten students. Gharib (2011) demonstrated the importance of different activities (e.g., musical activities and innovative songs) to develop children's awareness. Piatti-Farnell (2015) recommended using TV cartoons like *SpongeBob Squarepants* to instill positive behaviors in children. Also, Whiteside-Mansell and Swindle (2019) suggested that the "We Inspire Smart Eating" (WISE) curriculum was effective. The WISE program promotes healthy food attitudes in preschool and elementary students through not only healthy eating habits, but also rational food consumption. Parents are considered a key player when it comes to forming the behaviour of children in the early stages of their life. The attitude of children is built better when it focused upon at such early stages. Parents can focus on teaching the concepts of saving and the value of money, in addition to winning rewards when adopting such practices in the short term to provide an opportunity for imparting such practices in the future. Rippel and Smith (2003) argue that the child's financial education begins by the parents adopting the practice of a weekly allowance as it contributes to developing the sense of responsibility of children towards their money. Further, they suggested that such successful routines are considered effective when it comes to imparting behaviour and sense of responsibility among children (p. 35). Morris et al. (2016) concluded that more potent messages about healthy eating, active play, and the sustainability consequences of their food and toy choices could be delivered to children when their parents were engaged.

1.2. Current Study

The current proposed program is a response to campaigns calling for rational consumption and instilling positive behaviors such as the sense of saving among children, as well as to mothers' complaints about their children's consumption behaviors, desire to buy everything in sight, and inability to differentiate between need and desire. Children influence their parents and have no

awareness of the importance of rationalizing the consumption of resources (e.g., water, electricity, and food). The proposed program acts at a fundamental stage in children's development and may help teachers and families to introduce the desired principles and values. The current study investigated the effectiveness of a proposed program using songs, stories, plays, and kinetic and artistic activities to develop rational consumption and saving habits among a sample of children. An experimental group was compared to a control group on several outcome variables. The study has the following research question: Is the proposed program effective in improving rational consumption and saving habits among children, and are the effects maintained over time?

2. METHOD

2.1. Research Design

The study employed a quasi-experimental design. Quantitative data were collected to answer the research questions by measuring the effectiveness of an educational program on preschool children's understanding of saving and sustainable consumption through pre- and post-testing to identify the program's impact and its influence on their consumption habits. In addition, a follow-up test was conducted two months after the intervention

to evaluate whether the results were maintained over time.

2.2. Participants

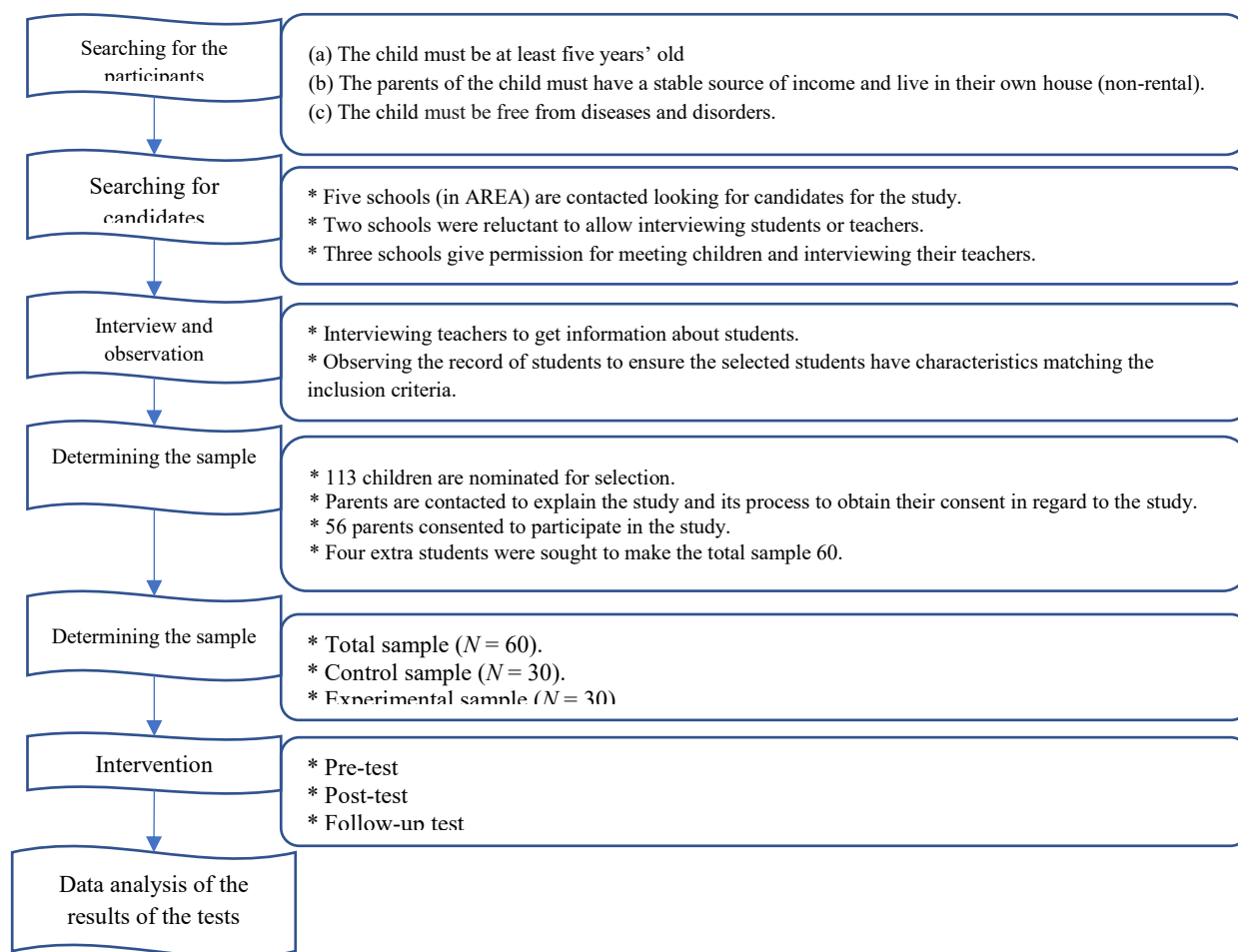
Children: The participants were 60 primary education students. Inclusion criteria included age, income level of the family, health condition of the child, and informed consent of the parents (see Figure 1). The students were randomly assigned to the experimental and control groups. Evaluation tests were conducted on both groups. Figure 1 illustrates the process of identifying the participants for the study, and Table 1 presents the demographic characteristics of participants.

Table 1: Demographic Characteristics of Participants.

Variables		N	%
Child's gender	Male	34	57
	Female	26	43
Child's age	5-5.5 years	21	35
	5.5-6 years	39	65
Number of siblings	3 or fewer	34	57
	4-7	22	37
	More than 7	4	7
Monthly income of the family	Less than 5,000 SAR	5	8
	5,000-10,000 SAR	41	68
	Above 10,000 SAR	14	23

Note. SAR stands for Saudi Arabian Riyal.

Figure 1: Inclusion Criteria and Sampling Process.



2.3. Intervention Program

The program was designed after a thorough review of the literature on studies for improving the mental health and well-being of school-aged children (see e.g., Durlak et al., 2011; Jones & Bouffard, 2012; Weare & Nind, 2011). The program was also designed to go along with the recommendations of Tawfiq (2018), Naseem and Subhi (2015), Naseem (2010), about the use of multiple activity programs in training children to rationalize the use of resources, mostly water, while teaching many economic and financial concepts. Reading stories (Mahasneh et al., 2017), playing educational games (De Freitas, 2018), and songs (Standley, 2008) are attractive, interactive, and desirable activities for children within their daily routine. This program also benefited from Rippel and Smith's (2003) suggestions about teaching children to save and spend money. Recent studies highlight the importance of childhood experiences in forming lasting financial habits (Brother, 2025). This shift shows the growing acknowledgment that financial decision-making skills, like other cognitive abilities, develop gradually through experience and guided teaching. Several relevant literature sources were

reviewed in order to ensure that the program was an effective tool to impart the concepts of saving and rational consumption to children, which may also be effective in encouraging sustainable behavior in the long run.

The program's development process involved determining objectives, the appropriate time and place for each activity, teaching strategies, age characteristics, diversity, integration of program activities, and evaluation tools. Components of the proposed program are presented in Table 2.

The program was administered for 8 weeks during the second semester of the 2023 academic year. Two sessions, that continued for two hours each, were held per day. Each session was geared toward a specific dimension and sub-concepts. The main setting was a classroom; however, some activities like playing were conducted outside the classroom (e.g., the school yard). Three teachers were trained with respect to proposed activities, teaching strategies, and evaluation techniques in order to implement the program.

Table 2: Components of the Proposed Program.

Concepts	Sub-concepts	Activities
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Saving	<ul style="list-style-type: none"> - Saving money - Rational expenditure - Difference between need and want 	
Rationalizing water consumption	<ul style="list-style-type: none"> - Water consumption at home - Agricultural water consumption - Water cycle - Water resource - Recycling water 	<ul style="list-style-type: none"> - Plays - Stories - Songs
Rationalizing power consumption	<ul style="list-style-type: none"> - Electricity consumption at home - Lighting sources - Electricity outlets 	<ul style="list-style-type: none"> - Practical activities - Kinetic activities
Rationalizing food consumption	<ul style="list-style-type: none"> - Preserving food - Storing food - Healthy and harmful food - Utensils 	<ul style="list-style-type: none"> - Artistic activities
Recycling	<ul style="list-style-type: none"> - Recycling symbols - Recyclable materials 	

2.4. Instruments

Evaluation test. The evaluation test was designed to measure the extent, level, and nature of child participants' sense of saving and rational consumption. It was administered before the intervention program, immediately after the intervention program, and 2 months after the intervention program (i.e., follow-up). The test included 25 items in five categories covering the five concepts of saving and rational consumption (Table 2).

In the test, the child is asked to point to the picture, among other pictures, that refers to the sense of saving. If the child successfully distinguished the picture of the right behaviour, a score of one mark is given to the child. In other cases, the child gets zero

points when picking the wrong photo. A pilot test was conducted with 30 children outside the experimental group to calculate completion time, scoring system, consistency, and reliability.

3. RESULTS

3.1 Evaluation tests

Mean scores on the three sequenced tests with respect to the five variables of saving and rational consumption were obtained by accumulating the scores for each question on the evaluating test under one particular variable. Table 3 exhibits the details of the score obtained by participants in both groups in the three sequenced tests conducted to measure the study variables. For instance, with respect to the pre-test, participants in the control group scored a mean of 1.80 for the total exercises included in saving and rationalizing expenditure; while participants in the experiment group scored 1.90 This indicates a very low level of the sense of saving and rationalizing expenditure among participants in both groups (control and experimental).

The results of the post-test show that participants in the control group scored a mean of 1.67 in saving and rationalizing expenditure, which is not different from their score in the pre-test (1.80), while participants in the experimental group scored a mean of 4.30, which indicates a large change towards imparting such behaviour through the intervention program. This result is confirmed by the results of the follow-up test, which was held two months after the post-test to test the stability of the test outcome among the children's behaviour which was found to be 4.40 with respect to saving and rationalizing expenditure which also indicates the significant improvement in the extent of the other behaviour categories included in the intervention program. Further details relating to the behaviour categories are exhibited in Table 3.

It can be stated through the descriptive analysis of the mean scores of the three sequenced tests that there is a large change in the extent of behaviours among participants in the experimental group, which is in favour of the objectives of the intervention program towards imparting the sense of sustainable behaviour among children.

Table 3: Descriptive Statistics for Control and Experimental Group Scores.

Variable	Test	Control group		Experimental group	
		Mean	Std. Deviation	Mean	Std. Deviation

Saving and rationalizing expenditure	Pre-test	1.80	0.48	1.90	0.66
	Post-test	1.67	0.55	4.30	0.75
	Follow-up test	1.73	0.64	4.40	0.72
Rationalizing water consumption	Pre-test	1.23	0.73	1.43	0.63
	Post-test	1.17	0.75	4.73	0.52
	Follow-up test	1.20	0.66	4.63	0.56
Rationalizing electricity consumption	Pre-test	1.57	0.57	1.30	0.70
	Post-test	1.43	0.77	4.57	0.68
	Follow-up test	1.50	0.57	4.67	0.48
Rationalizing food consumption and methods of preserving it	Pre-test	1.27	0.74	1.20	0.85
	Post-test	1.23	0.73	4.63	0.56
	Follow-up test	1.17	0.79	4.77	0.50
Recycling	Pre-test	1.30	0.70	1.37	0.67
	Post-test	1.47	0.78	4.47	0.73
	Follow-up test	1.23	0.77	4.60	0.62
Total score of Intervention	Pre-test	7.17	1.37	7.20	1.35
	Post-test	6.97	1.69	22.70	1.86
	Follow-up test	6.83	1.39	23.07	1.44

3.2. Inferential Statistics

3.2.1. Evaluation tests

Tables 4-6 depict the process of investigating the significant differences in the scores of the children across the tests conducted in the educational intervention. Assessing the differences between the pre-test scores and post-test scores yielded no significant differences among the control group participants ($p > 0.05$) while a significant difference is observed in the experimental group with respect to saving and rationalizing expenditure ($t = -11.932$, $p = 0.001$), rationalizing water consumption ($t = 20.612$, $p = 0.001$), rationalizing electricity consumption ($t = -18.252$, $p = 0.001$), rationalizing food consumption and methods of preserving it ($t = -18.082$, $p = 0.001$), recycling ($t = -20.097$, $p = 0.001$), and the total score of the test ($t = -35.755$, $p = 0.001$).

Similarly, to ensure the long-lasting effect of the educational intervention, the difference between post-test scores and the follow-up test scores which yielded no significant differences in both control and experimental group participants with respect to all the dimensions of the interventions and their total scores ($p > 0.05$) which implies that no significant change emerged among students.

Furthermore, the difference between the pre-test scores and follow-up test scores in both groups and the results indicated that there was no significant difference among participants in the control group

while significant differences exist among the experimental group participants in the aspect of saving and rationalizing expenditure ($t = -13.138$, $p = 0.001$), rationalizing water consumption ($t = -20.696$, $p = 0.001$), rationalizing electricity consumption ($t = -21.687$, $p = 0.001$), rationalizing food consumption and methods of preserving it ($t = -22.759$, $p = 0.001$), recycling ($t = -20.632$, $p = 0.001$), and the total score of the test ($t = -45.571$, $p = 0.001$).

It can be concluded that the program was highly effective and the effects were maintained at follow-up. This promotes the conclusion that concentrating on delivering such interventional contents for children is considered highly effective. This implies that there is an earnest need for attention to be paid towards the status of the pre-school curricula and the capabilities of teachers in imparting these concepts among pre-school children.

Table 4: Differences Between Pre-Test and Post-Test Scores.

Variable	Test	Control group				Experimental group			
		Mean	SD	t	p	Mean	SD	t	p
Saving and rationalizing	Pre-test	1.80	0.48	1.161	0.25	1.90	0.66	-	0.00
	Post-test							11.932	0

g expenditure	Post-test	1.67	0.547			4.30	0.750		
Rationalizing water consumption	Pre-test	1.23	0.728	0.528	0.601	1.43	0.626	-	0.00
	Post-test	1.17	0.747			4.73	0.521	20.612	0
Rationalizing electricity consumption	Pre-test	1.57	0.568	1.278	0.211	1.30	0.702	-	0.00
	Post-test	1.43	0.774			4.57	0.679	18.252	0
Rationalizing food consumption and methods of preserving it	Pre-test	1.27	0.740	0.273	0.787	1.20	0.847	-	0.00
	Post-test	1.23	0.728			4.63	0.556	18.082	0
Recycling	Pre-test	1.30	0.702	-	0.305	1.37	0.669	-	0.00
	Post-test	1.47	0.776	1.044	0.506	4.47	0.730	20.097	0
Total score	Pre-test	7.17	1.367	0.673	0.506	7.20	1.349	-	0.00
	Post-test	6.97	1.691			22.70	1.860	35.755	0

Table 5: Differences Between Pre-Test and Follow-Up Test Scores.

Saving and rationalizing expenditure	Pre-test	1.80	0.484	0.494	0.625	1.90	0.662	-	0.00
	Follow-up test	1.73	0.640			4.40	0.724	13.138	0
Rationalizing water consumption	Pre-test	1.23	0.728	0.372	0.712	1.43	0.626	-	0.00
	Follow-up test	1.20	0.664			4.63	0.556	20.696	0
Rationalizing electricity consumption	Pre-test	1.57	0.568	1.439	0.161	1.30	0.702	-	0.00
	Follow-up test	1.50	0.572			4.67	0.479	21.687	0
Rationalizing food consumption and methods of preserving it	Pre-test	1.27	0.740	0.902	0.375	1.20	0.847	-	0.00
	Follow-up test	1.17	0.791			4.77	0.504	22.759	0
Recycling	Pre-test	1.30	0.702	0.360	0.722	1.37	0.669	-	0.00
	Follow-up test	1.23	0.774			4.60	0.621	20.632	0

Variable	Test	Control group				Experimental group			
		Mean	SD	t	p	Mean	SD	t	p
Saving and rationalizing expenditure	Post-test	1.67	0.547	7.17	0.000	4.30	0.750	4.30	0.000
	Follow-up test	1.73	0.640	-0.812	0.423	4.40	0.724	4.40	0.000
Rationalizing water consumption	Post-test	1.17	0.747	6.83	0.000	4.73	0.521	4.73	0.000
	Follow-up test	1.20	0.664	-0.328	0.745	4.63	0.556	4.63	0.000
Rationalizing electricity consumption	Post-test	1.43	0.774	0.701	0.489	4.57	0.679	4.57	0.000
	Follow-up test	1.50	0.572	0.403	0.690	4.67	0.479	4.67	0.000
Rationalizing food consumption and methods of preserving it	Post-test	1.27	0.740	0.403	0.690	4.63	0.556	4.63	0.000
	Follow-up test	1.17	0.791	0.403	0.690	4.77	0.504	4.77	0.000
Recycling	Post-test	1.47	0.776	1.882	0.070	4.47	0.730	4.47	0.000
	Follow-up test	1.47	0.776	1.882	0.070	4.47	0.730	4.47	0.000
Total score	Post-test	7.17	1.367	7.17	0.000	22.70	1.860	22.70	0.000
	Follow-up test	6.97	1.691	0.436	0.666	35.755	1.437	35.755	0.000

Table 6: Differences Between Post-Test and Follow-Up Test Scores.

Variable	Test	Control group				Experimental group			
		Mean	SD	t	p	Mean	SD	t	p
Saving and rationalizing expenditure	Post-test	1.67	0.547	7.17	0.000	4.30	0.750	4.30	0.000
	Follow-up test	1.73	0.640	-0.812	0.423	4.40	0.724	4.40	0.000
Rationalizing water consumption	Post-test	1.17	0.747	6.83	0.000	4.73	0.521	4.73	0.000
	Follow-up test	1.20	0.664	-0.328	0.745	4.63	0.556	4.63	0.000
Rationalizing electricity consumption	Post-test	1.43	0.774	0.701	0.489	4.57	0.679	4.57	0.000
	Follow-up test	1.50	0.572	0.403	0.690	4.67	0.479	4.67	0.000
Rationalizing food consumption and methods of preserving it	Post-test	1.27	0.740	0.403	0.690	4.63	0.556	4.63	0.000
	Follow-up test	1.17	0.791	0.403	0.690	4.77	0.504	4.77	0.000
Recycling	Post-test	1.47	0.776	1.882	0.070	4.47	0.730	4.47	0.000
	Follow-up test	1.47	0.776	1.882	0.070	4.47	0.730	4.47	0.000
Total score	Post-test	7.17	1.367	7.17	0.000	22.70	1.860	22.70	0.000
	Follow-up test	6.97	1.691	0.436	0.666	35.755	1.437	35.755	0.000

4. DISCUSSION
 This study demonstrates that a structured intervention effectively fosters sustainable behavior, specifically saving and rational consumption among children aged 5-6. The statistically significant improvements observed at post-test and the two-month follow-up suggest that these behaviors are not merely temporary but can be sustained over time.

A critical finding of this research is that children adopt sustainable habits more effectively through individual educational experiences and daily routines rather than theoretical instruction alone. This aligns with the "new environmental paradigm,"

which emphasizes changing consumer habits through everyday behaviors (McDonald et al., 2006; Carrington et al., 2010; Carrigan, 2017). By grounding the intervention in locally relevant activities, children were able to absorb complex behavioral concepts (Prothero et al., 2011), proving that sustainability is both feasible and impactful in early childhood (Kahriman-Pamuk & Pramling Samuelsson, 2024).

The program's success relied on a multimodal approach—incorporating theatrical, artistic, musical, and hands-on activities—tailored to the developmental needs of preschoolers. Such diverse methodologies are supported by a wide body of literature confirming their efficacy in teaching consumption rationalization (Hsiao & Shih, 2016; Mahasneh et al., 2017). Furthermore, the observed improvement in behavior at both school and home validates the role of specific practices, such as "green-school" initiatives, in promoting longitudinal change (O'Neill & Buckley, 2019; Ojala et al., 2020).

Our results highlight the synergy between the school and home environments. Consistent with Carrigan et al. (2011) and Dunlap (2008), even brief educational interventions can stimulate a pro-environmental shift in children. While previous literature has relied heavily on qualitative data regarding teacher and parent perceptions (Boyd, 2020; Pollock et al., 2017), this empirical study provides robust quantitative evidence for interventional success.

While preschool teachers show a high interest in imparting sustainability (Türkoğlu, 2019), rigid teaching structures often act as a barrier to implementation (Ohlsson et al., 2024). To overcome this, curricula should adopt pedagogies that encourage children to take initiative and reflect on their daily behaviors (Samuelsson & Park, 2017). By integrating sustainability into everyday practices and outdoor activities—as seen in successful models in the United States (Ginsburg & Audley, 2020)—educators can foster a lifelong commitment to sustainable development.

Study Limitations: Despite the significant outcomes observed, several limitations regarding the generalizability of these findings must be acknowledged.

- **Geographic and Cultural Context:** The study was specifically situated within Saudi Arabian society and designed to align with the Saudi 2030 Vision. Consequently, the program's effectiveness in different cultural or economic settings remains to be tested.

- **Sample Size and Selection:** The findings are based on a relatively small sample of 60 children from only three schools in a specific area. This narrow selection may not fully represent the diversity of the broader preschool population.

5. CONCLUDING REMARKS

Based on the research outcomes, which are in line with those of previous investigations (De Freitas, 2018; Hsiao & Shih, 2016; Naseem & Subhi, 2015; Standley, 2008; Tawfiq, 2018), it can be concluded that the proposed program was influential in developing the sense of saving and rationalization of consumption among children, and amending some unwanted consumer behaviors. It can also be concluded that the outcome of this research is in line with the pursuit of SD through the 2030 Vision of the Kingdom.

The implication of this study is drawn in the aspect of centers and schools dedicated to teaching preschool which can design effective programs and activities that focus on the sense of saving and rationalization of consumption, since the kindergarten education makes the foundation of all education, it is considered the essential stage for imparting behaviours, especially when it comes to considering sustainability and sustainable behavior, shaping the development of a conscious personality (Ojala et al., 2020). SD goals, especially those related to conserving resources and rationalizing consumption, could be included in curricula at this level. It is also recommended to enlighten Saudi families about the importance of saving and rationalizing expenditures and consumption, and urge them to accustom their children to these practices as early as possible. It is necessary to train and encourage children to save and rationalize consumption using educational and awareness activities.

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