TPM Vol. 32, No. S8, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

THE ROLE OF EDUCATIONAL PARTNERSHIPS THROUGH FAMILY MATHEMATICS IN DEVELOPING THE NUMERICAL SENSE SKILLS OF KINDERGARTEN CHILDREN

RANIA H. ELWAN[1], SHERIN H. SALIM[2], SABRIN A. ABDELATY[3], ZITON A. ISMAIL[4], NORHAN A. NOUNOU[5]

[1]DEPARTMENT OF EARLY CHILDHOOD, COLLEGE OF EDUCATION, IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY, SAUDI ARABIA, EMAIL: rhelwan@iau.edu.sa
[2]DEPARTMENT OF EARLY CHILDHOOD, COLLEGE OF EDUCATION, IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY, SAUDI ARABIA, EMAIL: ssalim@iau.edu.sa
[3]DEPARTMENT OF EARLY CHILDHOOD, COLLEGE OF EDUCATION, IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY, SAUDI ARABIA, EMAIL: saabdelaty@iau.edu.sa
[4]DEPARTMENT OF EARLY CHILDHOOD, COLLEGE OF EDUCATION, IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY, SAUDI ARABIA, EMAIL: zaismail@iau.edu.sa
[5]DEPARTMENT OF EARLY CHILDHOOD, COLLEGE OF EDUCATION, IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY, SAUDI ARABIA, EMAIL: nanounou@iau.edu.sa

Abstract
This study aims to identify the role of educational partnerships between the family and the kindergarten in the development of numerical sense skills in kindergarten children، The study employed the descriptive-analytical method, and the study was applied to a sample of (150) parents and (50) female teachers، The data were collected through a questionnaire that included (13) items and a note card to monitor the children's performance in daily practices.
The results showed that the teachers' practices in employing numerical sense in daily routines came at a high level, especially in routine activities such as table arrangement and rowing, while a relative weakness was shown in counting، The results also showed that parental partnership came at a moderate level, where the family's role is more focused on simple counting activities than abstract concepts such as large numbers and fractions، The study recommends increasing attention to advanced numerical skills, and activating counseling programs for families to enhance their role in supporting children's learning.
Keywords: Educational Partnerships, Family Mathematics, Numerical Sense Skills for Kindergarten Children

1. INTRODUCTION:

The kindergarten stage represents the beginning of the path that will help children achieve their future dreams and goals, and therefore it is important to provide a distinctive and integrated education at this stage to pave the way for success in the later grades (Salim et al, 2024) and integration is represented in all aspects of development: mental, aesthetic, social, psychological, and physical, and there is no doubt that mathematics helps us develop all these aspects, as it focuses on the mental aspect through: Training him on logic in dealing with different matters, developing his imagination and the power of observation, as well as the aesthetic aspect through: classifying colors and matching similar shapes, and the social aspect through: engaging in group games with an atmosphere of cooperation to complete and master the work, and this will develop the psychological aspect through: raising the child's self-esteem and increasing his confidence, while the physical aspect is focused on him by carrying some tools and arranging them according to size or building different geometric shapes, and training the child with the aim of developing These areas at this age stage form a solid scientific foundation on which to rest in its advanced stages (Salim et al., 2021).
A large space has appeared in the mathematics curriculum for concepts, relationships and generalizations in addition to the development of thinking and mathematical sense, and its skills can be identified through one of its basic forms, which is the numerical sense, which is one of the easy ones, as it directly contributes to the development of children's numerical sense and helps children understand numbers and calculations that require training them to be accurate and

quick in performing them, in addition to mastering the basic facts and concepts related to numbers, as this cannot be separated from the development of numerical sense (Atifi, 2012).

As these gaps emerge even before formal education, a number of efforts are underway to support young children's learning of mathematics at home and abroad, and stakeholders, including teachers, community practitioners, and researchers, have begun to characterize differences in early family mathematics, and their focus is on providing families with the resources and knowledge they need to engage in positive math-related experiences that promote mathematical knowledge, interest in and positive attitudes towards it. Results, First, there is evidence that there are wide disparities in mathematical knowledge before kindergarten enters, second, there is evidence that these disparities are predicted by variation in opportunities to learn mathematics in the early home environment, third, there is evidence that increased opportunities to learn math at home increases children's knowledge of it, and finally, there is evidence that mathematical knowledge upon entering kindergarten predicts long-term math learning paths, and although the ways in which families interact Mathematics may vary depending on the culture and past experiences of parents, but all families interact with it, and based on what families are already doing, researchers and educators are working to develop and evaluate ways to support family participation in mathematics. Therefore, the current research provides an accurate picture of the reality of the practices of educational partnerships through family mathematics and its impact on the development of numerical sense skills of kindergarten children from the perspective of teachers and families.

There is no doubt that the concept of numbers, if not presented to the child correctly and successfully, becomes complex and unclear, because numbers have several representations, images, and facets, so understanding numbers is not limited to realizing their value, but extends to the complex system of interrelated relationships, such as the relationship between the part and the whole, and the relationship between the part and the whole. The largest by the smallest, in addition to the laws and regulations for some numerical formats, as for the need to link numbers with real quantities in the environment and make measurements, it is a fundamental issue and not a

2. THEORETICAL FRAMEWORK

Educational Partnership Practices in Promoting Children's Learning:

Many researches positively support the family-school partnership in children's education pathways, in addition to being a critical indicator of the quality of education, valued as a key element to enhance and improve the effectiveness of education, so schools, universities, and education departments in the United States have focused on preparing educational leaders and graduates to carry out family and community engagement activities and generate innovations in the school-family relationship. et al., 2023).

The study of Anders et al, (2012) focused on the impact of home environments and kindergartens on the development of early numerical skills, and its results showed that the quality of the home learning environment is closely related to early numeracy skills from the first year in kindergarten, and that the background factors of children and their families, such as socioeconomic status and mother's education, affect the initial level of skills and their growth rate, while the quality of the educational process in kindergarten had an impact on long-term growth, as the study showed the importance of interaction In the same context, the study of Muñez, Bull, & Lee (2021) addressed the relationship between socioeconomic status (SES) and home mathematics environment (HME) and children's achievements in mathematics, and confirmed that the impact of mother's education on children's progress is mediated by the home math environment, especially when providing advanced mathematics activities, and these findings add support to the findings of the study Swirbul & Melzi (2024) focused on Latino households, showing that daily household activities such as cooking and shopping can naturally incorporate mathematical concepts, with cultural and linguistic diversity in mind when designing educational interventions.

A group of studies focused on family participation in home mathematics education, as the study of Eason et al, (2020) provided a comprehensive review of the "family mathematics" literature, stressing that knowledge of numbers, spatial inference, and pattern recognition are strong indicators of success in mathematics, and that family participation through daily activities and talking about numbers is associated with better achievement for children, and in the same context, the study of Ghazali et al, (2021) Malaysian parents have a high awareness of the importance of mathematics in early childhood and are willing to participate in home-based math activities, but their participation is often limited to low-minded activities (LOTs), which calls for training programs that encourage higher-minded activities (HOTs), as Muir's (2012) study showed Many parents lack an understanding of modern mathematics teaching methods, and interactive home programs with feedback from the school can improve this understanding and enhance their effective participation, and in the same context, the study of Lopez and Donovan (2009) reviewed the literature related to family-school partnerships through the activities of "Family Math Evenings", which aim to empower families,

especially Latino families, and enhance children's achievement in mathematics, and increase home interaction between parents and children. Parental involvement positively affects children's achievement if the activities are understood and translated, and these activities are effective in building trust between the family and the school, taking into account the cultural and linguistic context of families and training teachers to communicate effectively with parents from diverse backgrounds.

A number of studies have also addressed home interventions aimed at promoting sports interaction, as the Linder & Emerson study (2019) explored the effectiveness of "Math Packs" in increasing mathematical interactions between parents and children, and its results showed a significant increase in parental motivation and engagement after the intervention, as well as the study of Skyhar & Nantais (2020). The organization of Family Math Night has had an impact in Canada, as these events have strengthened communication between school and family, and led to the continued use of math strategies at home after the activity.

Family Math Strategies in Daily Activities:

A number of studies have focused on family, school, and community partnerships in mathematics education, with the study of Goos, Lowrie, and Jolly (2007) suggesting that effective educational partnerships depend on trust and long-term relationships, and that engaging the community in the design of educational programs increases their effectiveness, especially in isolated or marginalized environments, and the study of Ishimaru, Barajas-López, and Bang (2015) goes on to sayFurther than that, emphasizing the need to recognize the deep-rooted cultural knowledge of families and integrate it into formal education to form a strong mathematical identity for children, DePascale, Bustamante, and Dearing (2024) provided a conceptual framework that focuses on the dimensions of family power, and the importance of participatory design between families, community, and teachers to support early mathematics development. New Perceptions of Parental Participation in Mathematics Education through a Research Project in Working-Class Latino Communities in the United States, Relying on the Socio-Cultural Framework and the Concept of "Funds of Knowledge", where it developed a model that sees parents as parents, learners, facilitators, and leaders, the study focused on the role of parents as facilitators of community mathematics workshops, highlighting the conceptual challenges they may face, such as dealing with the concepts of proportionality and consistency, in addition to the importance of mutual trust (confianza) It also showed that involving parents in the design and implementation of activities changes the dynamics of the educational authority and promotes effective community participation.

Manolitsis, Georgiou, and Tziraki (2013) aimed to investigate the impact of home reading and numeracy activities in kindergarten on the acquisition of reading and math skills in the first grade, as it found that formal home activities in arithmetic, such as teaching counting and numerical concepts, directly contribute to the development of mathematical fluency by promoting counting and early numerical concepts, and recommended The study of Segers, Kleemans, and Verhoeven (2015) examined the role of parents' expectations and home activities in the areas of reading and mathematics in predicting early arithmetic skills in kindergarten children, and the results showed that parents' numerical expectations and home arithmetic activities uniquely predicted the level of these skills, even after adjusting for other cognitive and linguistic factors, and the study recommended the integration of parents' expectations and activities Numerical in early intervention programs to support the development of basic mathematical skills.

A study by Wilott, Foster, and Frank (2020) indicated that informal numerical activities, such as counting while playing or talking about numbers in everyday situations, are positively correlated with the development of counting skills in children who have passed cardinalism, while not cardinalism. This correlation is evident for formal activities after controlling for other factors, and the study recommended that parents be encouraged to integrate these activities into their daily lives, as they have an effect on supporting advanced numerical thinking.

The study of Neuman et al, (2019) addressed the effect of using the "finger pattern" as a representative means of numbers in improving the addition and subtraction skills of kindergarten children, where the results showed that this strategy strengthened the structural understanding of numerical relationships and reduced the dependence on individual counting, with the positive effect continuing after a year of intervention, which supports the integration of such methods in home and kindergarten education, and with regard to subtraction skills, the study of Smith et al, (2023) that the home environment rich in numerical activities, in addition to the low levels of mathematics anxiety among children and their parents, is associated with improving children's performance in written and sequential presentation skills, with different patterns of influence according to the level of interaction and home support, which highlights the importance of creating a supportive and worry-free home learning environment, as for the study of DePascale, Jaeggi, and Ramani (2023) It focused on the impact of home environmental factors and socioeconomic status on the collection strategies of kindergarten children, where it was found that children from families with a higher socioeconomic level use more complex and precise strategies, and that advanced home activities in mathematics and reading are positively related to the development of these strategies, suggesting the need to design home learning interventions that support children from different backgrounds, especially low-income families.

There is a previous study that dealt with a group of studies related to sub-skills in the content of home mathematics education in children, especially the skill of number sense, where the study of Doabler et al, (2018) showed the effectiveness of the intervention of second-level mathematics "ROOTS" in enhancing the numerical sense in kindergarten children who are English language learners with mathematical difficulties, where the intervention focused on building the concept of numbers and employing the mathematical language explicitly, while noting that children with mathematical disabilities benefit more. Lower language proficiency, as the study of Sood and Mackey (2015) showed that explicit instruction directed to the sense of numbers achieves a remarkable progress in mathematics proficiency in kindergarten children compared to traditional education, especially in numerical and spatial relationships and nonverbal calculations, with this effect continuing after the end of the intervention, as for the case study conducted by Fu et al, (2024) It showed the importance of supporting the child at home to understand number patterns through structured play, such as board games and hundred-board games, which contributed to enhancing the child's ability to perform numerical operations and distinguish between patterns, with parents aware of the importance of linking sensory and educational experiences in the development of mathematical thinking, as a study by Lore, Wang & Buckley (2016) showed the effectiveness of a home intervention program that trains parents on different counting strategies, such as forward counting, counting back, and skipping counting, where the intervention resulted in a significant improvement On the other hand, Wu (2022) studied the learning pathways of counting and arithmetic among kindergarten children in Taiwan, showing differences between males and females in mastering numerical concepts, and pointed out the importance of designing educational activities that take into account developmental differences between the sexes and depend on the actual performance of children in building educational pathways.

Although previous studies have addressed the role of the home environment, family involvement, and educational interventions in developing early preparation skills for teaching children mathematics, most have focused on specific elements or separate strategies such as the use of "finger patterns" or reducing math anxiety, and many have not addressed the integration of the concept of family mathematics and numerical sense development within the framework of integrated educational partnerships that include kindergarten and family together.

The current research is characterized by linking educational partnerships and family mathematics as a comprehensive approach to enhancing the numerical skills of kindergarten children, with a focus on sustainable integration between family and kindergarten, which has not been directly addressed in previous researches.

Research Problem:

Although there are clear standards and principles from the International National Council for Kindergarten Education and the American National Commission for Mathematics Teachers that emphasize the importance of developing numerical sense, the results of measurement tests show low levels of numerical sense skills for kindergarten children, indicating that there is a gap between the required educational reality and the actual reality in kindergartens for children at this stage.

Hence, there is a need to diagnose the reality of the use of educational partnerships between kindergarten and family, the role of both the teacher and the family in strengthening this partnership, and the extent of their commitment to the Saudi development standards to develop numerical sense skills, as well as studying family methods in developing numerical sense skills for kindergarten children.

This is what prompted the researchers to present this study, which aims to know the role of educational partnerships through family mathematics in developing the numerical sense skills of kindergarten children, so that it focuses on the development of the numerical sense of kindergarten children and the sub-skills it includes: using numbers flexibly and innovating various strategies to deal with them, understanding the meaning of numbers and ways of representing them, flexibility in thinking, knowing the relative size of numbers, mental estimation of numbers and measures, making logical and reasonable judgments about the results, linking numbers to mathematical symbols and processes, and employing The available numbers are used to produce new numbers, to realize the different relationships between mathematical sentences, and to connect the numbers to everyday life situations, so that they are presented to the child in an implicit way with the daily life situations inside the home.

Accordingly, the problem of the current research is determined by the following questions:

1. What is the reality of practicing numerical sense skills activities for kindergarten children during the daily program paragraphs from the teachers' point of view?
2. What is the reality of employing numerical sense skills for kindergarten children in daily life from the point of view of female teachers?
3. What is the reality of parental partnership practices in supporting and developing the numerical sense skills of kindergarten children from the point of view of female teachers?

4. What are the family's methods in developing the numerical sense skills of kindergarten children from the parents' point of view?

Research Objectives

1. Identify the reality of practicing numerical sense skills activities for kindergarten children during the daily program paragraphs from the teachers' point of view.
2. Identify the reality of employing numerical sense skills for kindergarten children in daily life from the perspective of female teachers.
3. Identify the reality of parental partnership practices in supporting and developing the numerical sense skills of kindergarten children from the point of view of female teachers.
4. Identifying family methods in developing the numerical sense skills of kindergarten children from the point of view of parents.

The importance of the research:

1. Support recent scientific studies to teach children math skills at an early age via family math toprepare young children for success in school and life.
2. Provide information on the reality of teachers' use of educational partnerships through family mathematics and draw the attention of those interested in early childhood to the development of training programs to promote it.
3. In the future, the results of this study will be used to develop and evaluate educational partnership programs that support the role of family mathematics in supporting children's early sports experiences.

Research Terms:

Educational Partnership:

Sheldon, S, B, & Epstein, J, L, (2005) defines it as helping all families establish support for ideal home environments for children by establishing two-way exchanges about school programs, child progress, volunteering, parent organization, helping children at school, home, or other settings, and providing information and ideas to families on how to help students with their homework and other related materials Curriculum and decision-making to have parents of all backgrounds as representatives and leaders in the school and identify and integrate resources and services from the community to enhance school programs.

Family Mathematics:

Eason et al, (2020) define it as family mathematics which refers to the activities and cultural sports interactions that take place between family members in informal settings.

Procedural Definition of Educational Partnership through Family Mathematics:

It is the interactive relationship between kindergarten, teachers, and families to help and support children to develop through the practices and activities provided by the teachers in the daily program paragraphs in the kindergarten environments, and their support for this through the practices of families and their daily home activities , which help children develop math concepts and skills, especially numerical sense skills.

Numerical Sense Skills:

Palabıyık, E,, & Tertemiz, N, I, (2024) defines the ability to understand all the interactions associated with it such as little-much, part-whole and correlation between number and true quantity measurement results.

Procedural Definition of Numerical Sense Skills:

Children's understanding of the meaning of counting, part-part whole, thinking about groups, fractions, dealing with large numbers through household activities and everyday situations.

3. METHODOLOGY:

The study adopted the descriptive-analytical approach for its suitability to monitor the reality of the development of numerical sense skills in the kindergarten child, and to monitor the role of educational partnerships (family-kindergarten) in supporting him, through a questionnaire for parents and a note card for the teacher during the paragraphs of the daily program.

Delimitations of the Study:

1. Human delimitations: The sample included parents of children registered in different kindergartens (n=150), and kindergarten teachers who were given a note card (n=50).
2. Spatial delimitations: A different sample of government and private kindergartens and hospitality centers.
3. Time delimitations: Academic Year 2024-2025
4. Objective delimitations: Numerical Sense Skills (Counting Part and Whole, Classification/Groups, Simple Fractions, Dealing with Larger Numbers, Employing Numerical Sense in Everyday Life, Family Partnership).

Study sample:
The study sample included the following:
1. Parents' sample: An intentional sample (N=150) of kindergarten parents.
2. Sample of female teachers: (N=50) teachers through structured observation of their children during the implementation of numerical activities within the paragraphs of the daily program.

Study Tools:
Two tools have been prepared to employ them in the study in accordance with the requirements of the study as follows:
1- A questionnaire of parents included (13 items) to measure the family's methods in supporting numerical sense skills such as (counting, home practices, classifying group order, identifying simple fractions, dealing with large numbers, employing numerical sense in daily routines, partnership with kindergarten) for their children from a five-point Likert scale (from 1=I don't agree at all to 5=strongly agree).
2- The teacher's note card for numerical sense skills during the paragraphs of the daily program, which includes a group of areas as follows:
i. Counting (sequential up to 20, starting from a certain number, counting, using counting in life situations).
ii. Part and whole (grouping/breaking numbers into parts).
iii. Thinking in groups (classification by color/size/shape, automatic sorting and classification).
iv. Simple fractions (half/quarter in practical situations)
v. Larger/comparative numbers (note numbers in the environment, compare two numbers from two digits)
vi. Employing numerical sense in routines
vii. Family partnership reflected on the child's performance
viii. Response Mode: Done and Not Done and converted to digital grades

Instrument validity and reliability:
(1) Face validity and content of the terms:
The two tools were presented to 7 referees specialized in early childhood to review the appropriateness, comprehensiveness, and linguistic formulation of the items, and their observations were taken into account in deleting and adding some items that serve the results of the study.
(2) Internal consistency:
Correlation coefficients for each item were calculated with the total score of the scale so that the recommended correlation is corrected, provided that the item is accepted if $r \geq 0.30$ and a statistical function of (α=0.05).

Table 1: Questionnaire of Parents

#	Average	SD	coefficients	Significance
1	4.1	0.81	0.56	statistically significant
2	4.05	0.78	0.62	statistically significant
3	3.98	0.85	0.54	statistically significant
4	4.12	0.8	0.58	statistically significant
5	3.65	0.92	0.43	statistically significant
6	3.72	0.89	0.47	statistically significant
7	4.0	0.83	0.6	statistically significant
8	3.88	0.87	0.52	statistically significant
9	3.4	1.01	0.36	statistically significant
10	3.55	0.95	0.41	statistically significant
11	4.18	0.77	0.63	statistically significant
12	4.05	0.8	0.59	statistically significant
13	3.9	0.82	0.55	statistically significant

The above results indicate that all correlation coefficients ranged from 0.36–0.63 reflecting an acceptable to good internal consistency for all items.
Table 2: Notice Card

Domain	Number of Items	Average correlation	Extent
Count	4	0.58	0.44–0.65
The Part and the All	2	0.55	0.52–0.58
Thinking about groups	2	0.61	0.60–0.62

Minor Fractions	2	0.47	0.45–0.49
Large numbers and comparison	2	0.53	0.50–0.56
Daily Employment	1	0.59	—
Family Partnership	2	0.51	0.50–0.52

The above results showed that the internal correlation coefficients were appropriate, if inferior, in the field of simple fractions, which explains the relative difficulty of this skill for children.

Table 3: Reliability Results

Dimension	**Number Items**	**Cronbach's α**	**Reliability level**
Overall Questionnaire	13	0.84	Good
Note Card Counting	4	0.81	Good
The Part and the All	2	0.77	Acceptable
Thinking about groups	2	0.83	Good
Minor Fractions	2	0.7	Acceptable
Large numbers	2	0.75	Acceptable
Family Partnership	2	0.79	Good

The results showed acceptable to good stability , with all coefficients exceeding 0.70, which is a very acceptable performance reliance criterion

4. RESULTS & DISCUSSION

The first question

What is the reality of practicing numerical sense skills activities for kindergarten children during the daily program paragraphs from the teachers' point of view?

Table 4: Results of the first question

Item	**Average**	**Relative Weight**	**Level**
Sequential counting up 20	3.15	78.8	High
Start from a certain number	2.98	74.5	medium
Countdown	2.65	66.3	medium
Counting in Life Situations	3.3	82.5	High
Average Domain	3.02	75.5	Medium-High

The results showed that the averages of the numerical domain items ranged between (2.65-3.30), where the counting item in daily life situations obtained the highest average (3.30) with a relative weight of (82.5%), while the counting item was the lowest with an average of (2.65) and a relative weight (66.3%), while the total average of the field was (3.02), i.e. (75.5%), which is a level that can be described as a high average, which reflects that children are well able to practice counting activities related to situations While more abstract skills such as numerical reduction still need more training, and to verify the strength of this result, the single-sample (T) test also showed that the overall mean differs statistically from the hypothetical average, confirming that the practice of these activities in kindergarten significantly exceeds the neutral level.

This is what studies (e.g., Abdulaziz, 2020; NAEYC, 2019) have shown that children master contextual counting before more abstract skills such as counting.

The second question:

What is the reality of employing numerical sense skills for kindergarten children in daily life from the point of view of female teachers?

Table 5: Results of the second question

Item	**Average**	**SD**	**Relative Weight**	**Level**
Using counting while setting the table	3.3	0.65	82.5%	High
Counting when queuing or climbing stairs	3.2	0.7	80%	High
Incorporating counting into games Free	3.15	0.72	78.8%	High

Quantification in routine situations	3.35	0.68	83.8%	High
Overall average	3.25	-	81.0%	High

The results indicate that all items related to the daily employment of numerical sense skills came at a high level, where the averages ranged between (3.15-3.35), and the item of estimating quantities in routine situations obtained the highest average of (3.35) with a relative weight (83.8%), while the item of integrating counting in free games was the lowest by averages, as it reached (3.15) with a relative weight (78.8%), and the total average reached (3.25), i.e. (81%), which is a high level, as these results show The results of the single-sample T-test supported this trend, as it was stated that the overall average exceeded the hypothetical mean by a statistically significant difference, which led to the promotion of the integration of counting skills into the daily routine as a real practice and not just random results

This is confirmed by studies such as Geary (2013) that have linked structured routine activities to the development of early numerical thinking.

Question Three:

What is the reality of parental partnership skills in supporting the development of numerical sense skills from the teachers' point of view?

Table (6): Results of the third question

Item	Average	SD	Relative Weight	Level
The child shows numerical development as a result of family support	3.0	0.8	75.0%	Medium-High
The child shares his or her home numerical experiences with his or her classmates	2.85	0.9	71.3%	medium
The effect of family follow-up on classroom activities is evident	2.85	0.85	71.3%	medium
Overall average	2.9	-	72.5%	medium

The results showed that the averages of the items as shown in the above table ranged between (2.85-3.00), where the numerical development item as a result of family support came to the highest average (3.00) with a relative weight of (75%), while each of the items of the child's participation in his home experiences and the impact of family follow-up received an average of (2.85) with a relative weight of (71.3%), while the total average reached (2.90), equivalent to (72.5%), which is an average level.

This confirms that some families play a role in supporting their children numerically, but this role does not reach the level that is supposed to be achieved, and the child's participation of his home experiences in the classroom is still limited, and to confirm this, the one-sample (T) test showed that the overall average is different from the hypothetical average, which means that family partnership practices do exist, but they are average and need greater development and guidance.

Question for the fourth:

What are the family's methods in developing the numerical sense skills of kindergarten

children from the parents' point of view?

Table (7): Results of the fourth question

Dimension	Average	SD	Relative Weight	Level
Counting and Daily Practices	4.05	0.65	81.0%	High
The Part and the All	3.78	0.72	75.6%	Medium-High
Category/Groups	3.95	0.7	79.0%	High
Minor Fractions	3.4	0.85	68.0%	medium
Large numbers	3.65	0.8	73.0%	medium
Partnership with Kindergarten	4.1	0.6	82.0%	High
Total Grade	3.82	-	76.4%	Medium-High

The above results showed that the most prominent responses of parents in the methods used were partnership with kindergarten with an average of (4.10) and relative weight (82%), followed by daily practices in counting (4.05, 81%), then group classification (3.95, 79%), in contrast, the most abstract skills such as simple fractions came at an average level (3.40, 68%), followed by dealing with large numbers with an average of (3.65, 73%), and the total average of the questionnaire reached (3.82), i.e. (76.4%), which is a level It is between medium and high

These results indicate that the family focuses more on tangible and practical activities that are easy to integrate into the daily routine, while neglecting its practices in more complex aspects such as fractures despite being a sister to the child, and the one-sample T-test that the overall average differs significantly from the hypothetical average (3.00), reinforcing that the family's methods of supporting numerical sense skills are indeed moving towards positive practice to an acceptable degree But with the need to develop them further.

Recommendations:

1. Increasing interest in countdown within kindergarten by incorporating it into kinetic games such as countdown competitions,
2. Diversifying the methods of employing counting in the daily routine so that it is not limited to the usual situations but includes unexpected situations such as arranging games after the class or counting the steps of walking to the outdoor arenas.
3. Prepare a guide for families that shows how everyday life situations can be used to reinforce numerical concepts with easy-to-apply practical examples at home.
4. Allocating short and regular meetings between the kindergarten and the family to exchange notes on the child's progress in numerical sense, which increases the effectiveness of communication and gives the family quick feedback.
5. Organizing practical workshops for teachers on strategies for teaching numerical sense using play and manual activities
6. Designing a children's home activity bag containing cards, pictures, and small games .
7. Encouraging the family to share the child's numerical experiences with kindergarten is like bringing pictures or short recordings of the child while he is preparing at home, so that the home experiences turn into classroom experiences
8. Attention to more abstract skills such as fractions through simple practical activities rather than merely presenting them directly

REFERENCE

1. ANDERS, Y., Rossbach, H.-G., Weinert, S., Ebert, S., Kuger, S., Lehrl, S., & von Maurice, J. (2012). Home and preschool learning environments and their relations to the development of early numeracy skills. Early Childhood Research Quarterly, 27(2), 231–244. https://doi.org/10.1016/j.ecresq.2011.08.003
2. Atifi, Zainab Mahmoud, (2012), Developing Some Numerical Sense Skills in Children Using Educational Games, Jerash for Research and Studies, Volume 14, Special Issue, 206 http://search, mandumah, com/Record/19104521-226,
3. Civil, M., & Bernier, E. (2006). Exploring images of parental participation in mathematics education: Challenges and possibilities. Mathematical Thinking and Learning, 8(3), 309–330. https://doi.org/10.1207/s15327833mtl0803_6
4. DePascale, M., Bustamante, A. S., & Dearing, E. (2024). Strengths-based approaches to investigating early math development in family and community context: A conceptual framework. AERA Open, 10(1), 1–21. https://doi.org/10.1177/23328584241302059
5. DePascale, M., Jaeggi, S. M., & Ramani, G. B. (2023). The influence of home environmental factors on kindergarten children's addition strategy use. Frontiers in Psychology, 13, 1027431. https://doi.org/10.3389/fpsyg.2022.1027431
6. Doabler, C. T., Clarke, B., Kosty, D., Smolkowski, K., Kurtz-Nelson, E., Fien, H., & Baker, S. K. (2018). Building number sense among English learners: A multisite randomized controlled trial of a Tier 2 kindergarten mathematics intervention. Early Childhood Research Quarterly, 45, 43–56. https://doi.org/10.1016/j.ecresq.2018.05.002
7. Eason, S. H., Scalise, N. R., Berkowitz, T., Ramani, G. B., & Levine, S. C. (2020). Reviewing the family math literature: Recommendations for practice, policy, and research. Family Math Roadmap Implementation Project. https://education-first.com/familymath/
8. Epstein, J. L. (2018). School, family, and community partnerships: Your handbook for action (4th ed.). Corwin Press.

9. Fu, S. H., Tiong, L. L., Chow, W. C., Leong, L. K., & Nasri, M. (2024). Facilitating a kindergarten child to make sense of number pattern at home: A case study. Jurnal Pendidikan Awal Kanak-kanak Kebangsaan, 13(1), 16–29. https://doi.org/10.37134/jpak.vol13.1.2.2024
10. Geary, D. C. (2013). Early foundations for mathematics learning and their relations to learning disabilities. Current Directions in Psychological Science, 22(1), 23–27. https://doi.org/10.1177/0963721412469398
11. Ghazali, M., Mustafa, Z., Rashid, R. A. A., & Amzah, F. (2021). Parental involvement in young children's learning of numeracy. International Journal of Learning, Teaching and Educational Research, 20(1), 199–222. https://doi.org/10.26803/ijlter.20.1.11
12. Goos, M., Lowrie, T., & Jolly, L. (2007). Home, school and community partnerships in numeracy education: An Australian perspective. The Montana Mathematics Enthusiast Monograph, 1, 7–24. https://www.researchgate.net/publication/43476159
13. Hernández-Padilla, E., Bazán-Ramírez, A., Bazán-Ramírez, W., & Solano-Gutierrez, J. (2023). Parental participation and parents' support: Effects on mathematics achievement, 2018 national assessment of learning, Mexico. Frontiers in Psychology, 14, Article 1154470. https://doi.org/10.3389/fpsyg.2023.1154470
14. Ishimaru, A. M., Barajas-López, F., & Bang, M. (2015). Centering family knowledge to develop children's empowered mathematics identities. Journal of Family Diversity in Education, 1(4), 1–21. http://familydiversityeducation.org/index.php/fdec
15. Linder, S. M., & Emerson, A. (2019). Increasing family mathematics play interactions through a take-home math bag intervention. Journal of Research in Childhood Education, 33(3), 323–344. https://doi.org/10.1080/02568543.2019.1608335
16. Lopez, C. O., & Donovan, L. (2009). Involving Latino parents with mathematics through family math nights: A review of the literature. Journal of Latinos and Education, 8(3), 219–230. https://doi.org/10.1080/15348430902888666
17. Lore, M. D., Wang, A. H., & Buckley, M. T. (2016). Effectiveness of a parent-child home numeracy intervention on urban Catholic school first grade students. Journal of Catholic Education, 19(3), 142–165. https://doi.org/10.15365/joce.1903082016
18. Manolitsis, G., Georgiou, G. K., & Tziraki, N. (2013). Examining the effects of home literacy and numeracy environment on early reading and math acquisition. Early Childhood Research Quarterly, 28(4), 692–703. https://doi.org/10.1016/j.ecresq.2013.05.004
19. Muir, T. (2012). It's in the bag: Parental involvement in a numeracy at-home program. Australasian Journal of Early Childhood, 37(2), 27–33.
20. Muñez, D., Bull, R., & Lee, K. (2021). Socioeconomic status, home mathematics environment and math achievement in kindergarten: A mediation analysis. Developmental Science, 24, e13135. https://doi.org/10.1111/desc.13135
21. National Association for the Education of Young Children (NAEYC). (2019). Developmentally appropriate practice in early childhood programs serving children from birth through age 8. NAEYC.
22. Neuman, S. B., et al. (2019). Effects of learning addition and subtraction in preschool by making the first ten numbers and their relations visible with finger patterns. Educational Studies in Mathematics. https://doi.org/10.1007/s10649-019-09927-1
23. Palabıyık, E., & Tertemiz, N. I. (2024). Examining number sense skills of kindergarten children. International Online Journal of Primary Education, 13(3), 185–199.
24. Salim, S. H., Al-Juhani, M. M., & Al-Baker, W. Y. (2021). The effect of using modern created mathematics corner, created by concrete teaching aids, on the development of mathematical concepts among kindergarten children in the Kingdom of Saudi Arabia. Review of International Geographical Education (RIGEO), 11(6), 983–996. https://doi.org/10.48047/rigeo.11.06.115
25. Salim, S. H., Elwan, R. H., Abdelaty, S. A. L., Younis, N. A., Nounou, N. A. H. H., & Ismail, Z. A. A. (2024). The effectiveness of using representative activities in developing mathematical concepts among pre-school children. Migration Letters, 21(S4), 435–450. https://migrationletters.com/index.php/ml/article/view/7246
26. Segers, E., Kleemans, T., & Verhoeven, L. (2015). Role of parent literacy and numeracy expectations and activities in predicting early numeracy skills. Mathematical Thinking and Learning, 17(2–3), 219–236. https://doi.org/10.1080/10986065.2015.1016819
27. Sheldon, S. B., & Epstein, J. L. (2005). Involvement counts: Family and community partnerships and mathematics achievement. The Journal of Educational Research, 98(4), 196–207. https://doi.org/10.3200/JOER.98.4.196-207
28. Skyhar, C., & Nantais, M. (2020). Promoting numeracy through a family math night. BU Journal of Graduate Studies in Education, 12(2), 44–48.

29. Smith, J. A., et al. (2023). Foundations for future math achievement: Early numeracy, home learning environment, and the absence of math anxiety. Trends in Neuroscience and Education, 33, 100217. https://doi.org/10.1016/j.tine.2023.100217
30. Sood, S., & Mackey, M. (2015). Examining the effects of number sense instruction on mathematics competence of kindergarten students. International Journal of Humanities Social Sciences and Education, 2(2), 14–31.
31. Swirbul, M., & Melzi, G. (2024). Family math engagement with young Latine children in the United States. Child Development Perspectives, 18, 3–9. https://doi.org/10.1111/cdep.12490
32. Wilott, P., Foster, B., & Frank, P. (2020). The role of the home numeracy environment in promoting young children's counting skills after the cardinal principle. Journal of Experimental Child Psychology, 192, 104782. https://doi.org/10.1016/j.jecp.2019.104782
33. Wu, C.-C. (2022). Constructing counting and arithmetic learning trajectories for kindergarteners: A preliminary investigation in Taiwan. Children, 9(12), 1994.