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A Study on the Possibility of Assessing Children's Development Using an Exercise Workbook Based on the Kumon Method: A Case from the Preparatory Group of Preschool Education

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Abstract: In today's era of a knowledge-based society and rapid advances in information and communication technology, it is more essential to foster children's innate curiosity, motivation, and interest in learning than to simply provide them with various forms of knowledge from an early age. Preschool teachers should design developmentally appropriate activities and tasks that correspond to children's age-specific characteristics, thereby supporting their overall development and enhancing their learning abilities. Teachers must conduct effective assessments by comparing formative (ongoing) and summative (outcome) evaluations of children's development, ensuring that progress is measured accurately, objectively, and based on reliable evidence.

Keywords: Exercise, book, assessment, child, development, skill

Rationale of the Study

Children enrolled in early childhood education programs engage in daily exercises and assignments for a designated period of time. These include activities such as drawing, coloring, counting, and recognizing visual patterns, which must be intentionally organized in a sequence that progresses from simple to more complex, involving repeated practice. For example, when a child repeatedly practices counting from 1 to 10 through various methods, the repetition not only helps the child master the concept but also builds confidence and fosters motivation for further learning. Therefore, developing age-appropriate exercise books based on the Kumon methodology and incorporating them into the daily routine of preschool children can contribute not only to improved academic performance but also to gradual step-by-step progress, perseverance, increased self-confidence, and independent learning. Moreover, this approach allows teachers to conduct accurate and evidence-based assessments aligned with relevant developmental criteria. It also reduces teachers' workload while enabling them to work more effectively with each individual child. For these reasons, this topic was selected for study.

Objective: The objective of this study is to explore how exercise workbooks can enhance children's learning abilities and provide opportunities for effective assessment.

Objectives:

- To develop an exercise workbook based on the Kumon methodology.
- To implement the workbook in senior and preparatory preschool groups.
- To conduct baseline and final assessments of children in the preparatory group and analyze their progress.
- To examine the extent to which teachers of senior and preparatory groups can assess children's development using the exercise workbook.

Hypothesis: The exercise workbook will have a positive effect on children's learning abilities and on the assessment of their development.

Novelty of the Study: A developmentally appropriate exercise workbook tailored to the needs of children in the preparatory group of preschool education was created and implemented in the teaching–learning process.

Practical Significance: The exercise workbook can facilitate rapid improvements in children's learning abilities while reducing teachers' workload.

Focus of the Study: To examine the feasibility of assessing children's development using the exercise workbook.

Scope of the Study: Preschool teachers and children in the preparatory group.

Research Methods:

- Questionnaire method (closed and open-ended questions)
- Document analysis method
- Generalization method

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- **Problem-solving method**
- **Experimental method**
- **Sampling method**

Main Section: What is Kumon?

Kumon not only helps children acquire knowledge but also improves their concentration and learning strategies, while fostering self-confidence. The Kumon method aims to fully harness each child's learning potential. A child progresses step by step along a unique path until they successfully master the targeted skills. Fifty years ago in Japan, Toru Kumon, a teacher, sought a method to help his son excel academically. Each day, he created a few short math problems suited to his son's current ability, which his son could complete in less than twenty minutes. As today's problems were slightly more challenging than yesterday's, Takashi's skills gradually increased, giving him confidence to continue developing further. Over time, this approach made not only middle school mathematics but also university-level mathematics much more accessible.

The Kumon method not only enhances academic achievement but also cultivates fundamental learning skills—such as perseverance and independent study—that are difficult to quantify yet more valuable than grades alone.

Principles of Assessing Child Development

- The assessment should encompass the child's holistic development.
- It should be based on objective evidence regarding the child's progress.
- The child's performance and improvement should not be compared with those of others.
- Assessment should be continuous and interconnected within the context of daily activities.
- Attention should be given not only to the outcomes of the child's performance but also to the effort, diligence, and conscientiousness demonstrated during the process.

Types of Assessment: Assessment can be categorized into two types: formative and summative. Formative assessment allows teachers to evaluate what children are learning, their skills, interests, and developmental progress through daily lessons and other activities. Summative assessment, on the other hand, measures the skills children have acquired at each level of learning objectives.

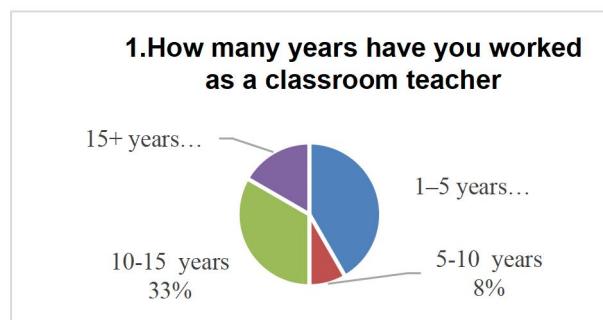
Summative assessment is aimed at identifying the child's developmental achievements. It is determined by the skills the child has mastered at each learning domain and level. Teachers evaluate the child's acquired skills and progress twice a year—once in the fall (September–November) and once in the spring (April–June)—using summative assessment sheets.

Research Process: The study involved a total of 12 teachers from 4 state-run kindergartens, as well as 20 out of 60 children from preparatory groups who regularly used the exercise workbook. The details are as follows:

1. **Bayangol District, Selenge Province, Kindergarten No. 1**
 - Preparatory Group – 3 teachers
 - Preparatory Group – 3 teachers
2. **Sharyn Gol District, Darkhan-Uul Province, Kindergarten No. 2**
 - Preparatory Group – 1 teacher
 - Preparatory Group – 3 teachers
3. **Darkhan-Uul Province, Kindergarten No. 21**
 - Preparatory Group – 1 teacher
4. **Darkhan-Uul Province, Kindergarten No. 7**
 - Preparatory Group – 1 teacher

Data for the study were collected using a questionnaire administered via **Google Forms**.

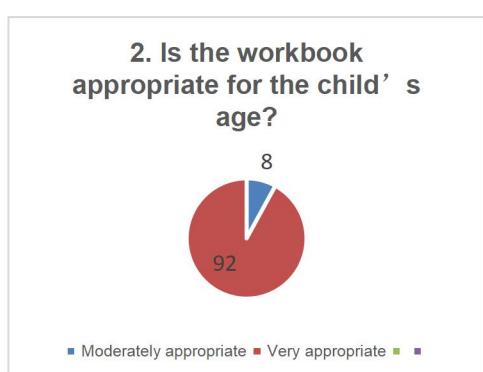
Research-1 Diagram.1



According to the above study, **42% of the respondents have 1–5 years of experience, 33% have 10–15 years, 8% have 5–10 years, and 17% have more than 15 years of experience** working as preschool group teachers.

Diagram.2
According to the above results, 8% of respondents evaluated the exercise workbook as **moderately suitable** for the age characteristics of children, while 92% considered it **highly suitable**. Therefore, this exercise

2. Is the workbook appropriate for the child's age?



exercise workbook as **moderately suitable** for the age characteristics of children, while 92% considered it **highly suitable**. Therefore, this exercise

workbook can be regarded as **fully appropriate for use by preschool preparatory group children.**

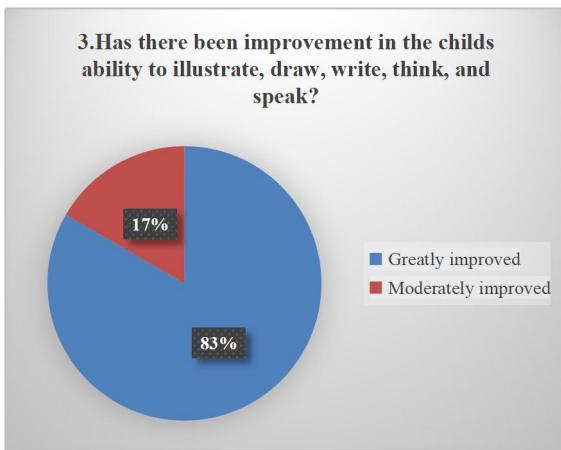


Diagram..3

According to the above study, **83% of children showed significant improvement** in their abilities to draw, write, calculate, and speak, while **17% demonstrated moderate improvement**. Therefore, the exercise workbook based on the Kumon method can be considered to have a **positive impact on children's learning abilities**.

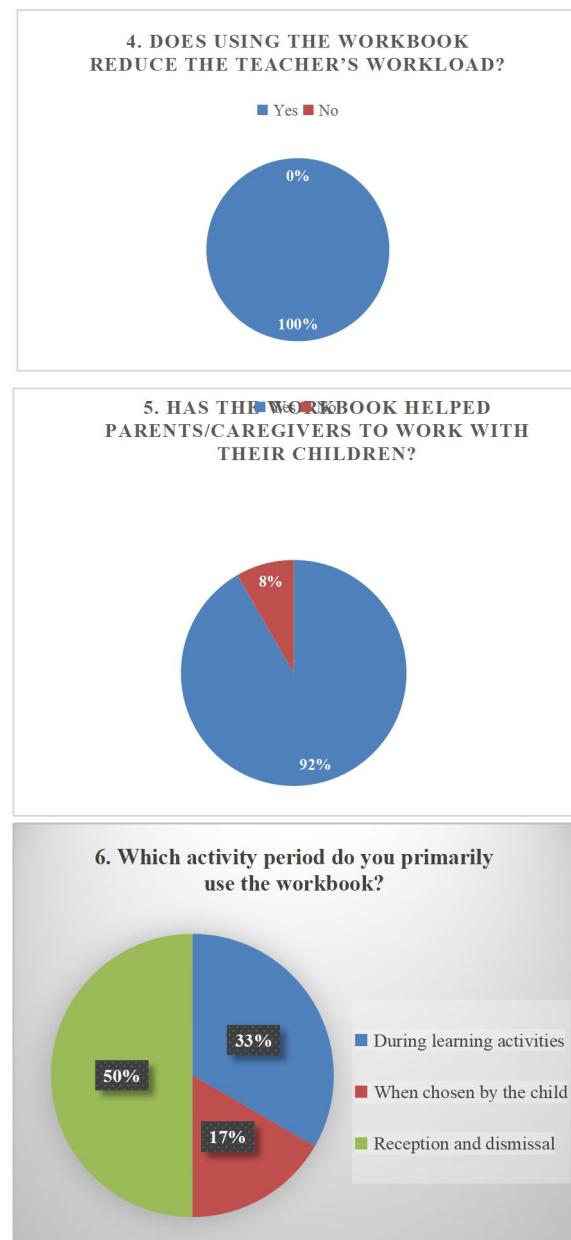


Diagram 4

Based on the above study, respondents indicated that the exercise workbook was able to reduce teachers' time workload by 100%. This suggests that the workbook serves as a reliable documentation tool for teachers' daily instructional activities, distribution of materials, and objective assessment of each child's developmental skills.

Diagram.5

The study indicates that 8% of respondents reported an inability to collaborate with parents or guardians through the exercise workbook, whereas a total of 92% were able to work together with caregivers. It is concluded that when children use the exercise workbook in collaboration with their parents or guardians, it effectively supports and promotes the child's developmental progress.

Diagram 6

The study shows that 54% of respondents use the exercise workbook during instructional activities. Additionally, 27% of children work with the workbook at their own initiative, while 19% use it during morning reception or evening dismissal periods. These findings indicate that the exercise workbook is well-aligned with the content of preschool educational activities.

According to the child development assessment approved by the Minister of Education, Culture, Science, and Sports under Annex of Order No. A/280 dated June 2, 2020, the preparatory group's cognitive and social-emotional domains include a total of 30 criteria. Based on the above study, 58% of respondents indicated that the exercise workbook allows children to acquire 15–20 skills, 17% indicated 25–30 skills, 17% indicated 10–15 skills, and 8% indicated 5–10 skills. Therefore, it can be concluded that the exercise workbook provides a means to assess children's cognitive and social-emotional development effectively.

Research-2 For children in the preparatory group, progress in hand and grip skills was determined using an exercise workbook based on the Kumon method and the corresponding criteria of the child development assessment, with data collected and documented based on evidence.

Graph.1 Through the "Problem" exercise workbook, the progress of children's hand and grip skills was assessed and compared. Specifically, 42% of the participants showed improvement in identifying and writing consecutive numbers, 17% in recognizing symbols and notations, 42% in performing subtraction operations, and 51% in performing addition operations. These results indicate that the exercise workbook contributes to significant improvements in children's learning abilities.

Graph.2 Through the "Drawing" exercise workbook, children's hand and grip skills were assessed and compared to determine their progress. Specifically, 31% of participants showed improvement in drawing straight lines, 20% in drawing curved lines, 14% in coloring within the boundaries, and 44% in combining colors while coloring. These results indicate that the exercise workbook contributes to significant improvements in children's learning abilities.

Graph.3 Through the "Illustrative Drawing" exercise workbook, children's hand and grip skills were assessed and compared to determine their progress. Specifically, 34% of participants showed improvement in coloring according to patterns, 60% in completing and coloring animal figures, 57% in correctly identifying and coloring opposite sides, and 52% in replicating and coloring patterns. These results indicate that the exercise workbook contributes to significant improvements in children's learning abilities.

Conclusion:

The study led to the following conclusions:

Implementing regular preschool activities based on the Kumon method not only results in significant improvements in children's development but also enables teachers to assess the criteria of child development evaluations accurately. Based on these assessments, teachers can identify each child whose skill level is lagging in the class, and collaboratively develop plans with parents to support and enhance the child's progress according to the plan. Furthermore, the exercise workbook provides the potential to significantly reduce teachers' workload. For preschool teachers, a reduced workload can alleviate work-related stress and prevent burnout.

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