General

Research on metacognitive strategies of children's self-regulated learning

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Background

Learning involves numerous self-regulatory processes, and self-regulated learning includes a few metacognitive strategies. Metacognitive skills start to develop at a very young age, though preschool children face some challenges while using metacognitive strategies.

Objectives

The study primarily aims to explore how young students are using metacognitive strategies in their daily activities and how effective they are.

Method

The sample of the study is 15 students from a public kindergarten in China, with ages ranging from 3 years to 6 years. The investigation is qualitative in nature and has employed a case study research design. It involves an observational study along with an interview with the teachers.

Results

From observational data and content analysis of the interviews, it is revealed that young children do use metacognitive strategies in their regular class activities, which vary according to their age. Teachers' support is found to be essential, especially for this age group of children, for effective use of these strategies. Moreover, it is also seen that metacognitive strategies are also important in developing social skills among young children.

Conclusion

Consequently, the findings of this research have significant implications, especially for the teachers and parents who support the children and use metacognitive interventions for their holistic development.

1. INTRODUCTION

1.1. RESEARCH BACKGROUND AND THEORETICAL FRAMEWORK

Self-regulated learning is crucial to the teaching process because it enables students to grow more self-reliant, in charge of their education, and accountable for their academic progress. This is a set of skills with which learners monitor and modify their learning behaviour to reach a self-set target.[1] This is very effective in early childhood education as it helps the learners distinguish between what they know and what they do not.[2] This again assists them in putting their full attention on what they need to learn. All the above-mentioned skills are components of metacognitive abilities.

Metacognition plays a significant role in child development concerning cognition and academics. As the metacognitive abilities develop gradually, it enhances the problem-solving skills, the effectiveness of children in how they approach their learning tasks, and also their decision-making abilities. The study also found that metacognition also improves the prospective memory of young children.[3]

Metacognition is a key aspect of the educational process and the fundamental engine for self-learning. Metacognition, along with motivation and cognition, promotes the constructive and active process of self-regulated learning.[4] During the metacognitive process, students draw on past experiences to create a plan, accomplish a goal, choose a strategy, track their progress, and think back on what they have learned.[5] Thus, by helping students adapt to the shifting situational demands of a particular learning assign-

ment, the use of metacognitive strategies directly addresses information processing, which further boosts self-regulated learning.

The socio-cultural theory of Vygotsky reflects the concepts of self-regulated learning and metacognition very prominently during the development of children.[6] During language development, children react to words by their sound, not by their meaning. However, gradually, in their social environment, they repeatedly get exposed to the meanings of words, and they learn to self-regulate their behaviour and communicate with others through language. The 'Zone of Proximal Development' concept gets great appreciation in the field of education. He talked about the 'gap' between what learners can do independently and what they cannot without 'scaffolding' from teachers. Thus, self-regulated learning and metacognition occur through social interactions.

The importance of self-regulation, social simulation, and observational learning is addressed by social cognitive theory.[7] Self-efficacy is a term coined by Bandura to describe the confidence of an individual in his/her capacity to achieve in particular circumstances. The motivation, effort, and perseverance of the children in learning activities can be influenced by their self-efficacy beliefs in this context of metacognition and self-regulated learning.

Flavell's cognitive monitoring model[8] shows how metacognition assists in different kinds of self-instructions. There are four components to this model: 1) understanding the cognitive processes (meta-cognitive knowledge); 2) understanding the cognitive tasks (meta-cognitive experience); 3) goals; and 4) action. This approach will help children to understand and learn more effectively in formal educational environments, as well as to make intelligent and conscientious life decisions.

Saraff et al.[9] found that metacognitive strategies improved undergraduate students' self-regulated learning. Simons et al.[10] found that primary students only mentioned observable processes, indicating that while metacognitive strategies are crucial in academics, not all are aware of them, highlighting the need for more education on these strategies.

1.2. PROBLEM STATEMENT AND RESEARCH GAP

Although the existing literature provides a general overview of the metacognitive development of children, it is frequently vague about the exact ways in which different metacognitive strategies function within a range of learning tasks. While the previous studies were able to establish the fact that metacognition-mediated self-regulated learning improves academic performance, they failed to address how this happens. Therefore, the present study has identified an unexplored area where very limited empirical research has been conducted on how children specifically apply metacognitive strategies for effective learning in real-world contexts.

1.3. PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

The study primarily focuses on understanding how effective metacognitive strategies are employed by young children in specific learning activities. The total landscape of the research is oriented according to the following two research questions:

1. What are the differences in the use of metacognitive strategies among children of different ages?
2. How effective are the strategies they apply?

1.4. SIGNIFICANCE OF THE STUDY

Educators can gain insight into effective metacognitive strategies. This will assist them in instructional design by reshaping their strategies to match the specific cognitive needs of their students. Further, by being aware of the effectiveness of metacognitive methods in a range of learning situations, educators may design focused interventions that accommodate a variety of learning preferences and styles. This will promote a more inclusive and supportive learning environment.

Not only educators, but parents can also engage in the learning of their children by understanding and reinforcing effective metacognitive learning strategies. Specific learning activities that are optimised for the cognitive development of young children can be highly beneficial, leading to their meaningful understanding and high academic performance. The findings can empower the learners by gaining control over their learning processes, which will further increase their motivation and self-confidence.

In further studies in the field of metacognition, researchers may modify existing theoretical frameworks and suggest new models by using tangible information regarding the efficiency of specific strategies in varied learning environments. This research fosters interdisciplinary collaboration among psychologists, educators, neuroscientists, and technology experts to cultivate metacognitive strategies in learning activities, bridging theoretical and practical application gaps.

Policymakers can use the findings of the study in curriculum development at both the early childhood level and in teacher training to integrate effective metacognitive strategies into broader educational frameworks. This might help in decision-making at the grassroots level. The findings may be used by educational technology designers to construct interactive platforms, adaptive learning systems, and intelligent tutoring systems that help young learners acquire metacognitive skills.

2. MATERIAL & METHOD

2.1. ETHICAL CONSIDERATIONS

The parents of children from a public kindergarten in China have been informed about a study before it begins, covering the research agenda, methods, risks, rewards, and voluntary nature. Oral informed consent has been sought to en-

sure parents are fully aware of the research's scope and can make informed decisions about their child's engagement. Considering the parents' literacy level, the ethical review board decided not to need written consent. The head of the institution and participating teachers also provided oral consent. The study protocol was reviewed and adjudicated by the Hulunbuir University Ethical Review Board. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1975 Helsinki Declaration and its later amendments or comparable ethical standards. This research has been granted approval by the Hulunbuir University Ethical Review Board, and the Approval Number is HBUER-2023-057.

The research has implemented strict confidentiality measures to ensure the privacy of children's personal data, keeping their identities anonymous in all data recordings, including interviews and observational notes. The study prioritizes emotional well-being and maintains age- and developmental stage-appropriate conduct to maintain a safe environment for open communication.

2.2. RESEARCH DESIGN

A case study research design has been employed, aimed at an in-depth analysis to explore in what situations and how children choose metacognitive strategies, along with their effectiveness. The case study research design involves a comprehensive description of the setting or persons, followed by data analysis to identify and examine the intricate behaviours exhibited by the children with respect to the research problem.

2.3. SAMPLE SELECTION AND PARTICIPANTS

The researcher carefully considered the sample selection method to ensure the representativeness and diversity of the research. For this purpose, a public kindergarten in China was selected as a representative, and from that, a sample of 15 individuals was drawn. The samples were selected randomly from the junior standard (3~4 years), middle standard (4~5 years), and senior standard (5~6 years) with five children from each class to provide a balanced representation. This strategy would improve the external validity of the findings. By carefully integrating individuals from three classes, it would explore the complex interactions between educational context and the metacognitive methods of young learners, age-wise.

2.4. DATA COLLECTION INSTRUMENTS AND MATERIALS

2.4.1. CONTENT ANALYSIS

Content analysis has been employed as the primary means of gathering data. As a valuable source of qualitative data, observational notes from the teachers have been collected, which would provide a detailed account of the behaviour and interaction patterns of the students throughout class activities. To document a variety of behaviors and interactions, observations were made at various times of the day for a variety of activities and on several days of the week for six months. To maintain uniformity throughout, observational notes were thoroughly documented using a standardized format that included a description of the situation, listed metacognitive methods, and noted interactions and results. To find and record particular instances of children using self-regulation-related metacognitive techniques and behaviours, these recordings would be subjected to a methodical thematic analysis. By using this approach, the researcher hopes to acquire a thorough grasp of the contextual subtleties related to the use of metacognitive processes in real learning environments.

2.4.2. INTERVIEWS

In addition to observational data, a semi-structured interview has been carried out to get further insight into the experiences and perspectives of individual children concerning the application of metacognitive methods. It is important to mention here that the respective teachers will be interviewed about the learners. These carefully planned interviews are expected to yield answers that shed light on the understanding of the children and use of these methods, as well as their perceived influence on their capacity to successfully regulate their learning processes. To encourage open and honest communication, interviews were held in private settings and lasted 20 to 30 minutes on average. The researcher attempts to record teachers' perceptions of the subjective experiences of the young learners through open-ended talks, adding their distinct viewpoints to the qualitative dataset and assisting in a more comprehensive understanding of metacognitive development in the early educational setting.

2.5. DATA COLLECTION PROCEDURE

The study focuses on the metacognitive strategies of young learners using a rigorous data collection technique that combines non-intrusive and time-sensitive methodologies. Over a semester, the investigation aims to observe, record, and examine these self-regulation practices, allowing for a comprehensive evaluation of metacognitive strategies, considering potential changes over time, and a detailed understanding of their dynamic nature in classroom activities.

Teachers will undertake observations in the real classroom setting, which would be a crucial component of this data-gathering method about non-intrusiveness. By avoiding interference with the regular activities of the learners, this deliberate decision hoped to reduce the possibility that it would affect their impromptu use of metacognitive techniques. Teachers would routinely record instances of metacognitive behaviours since they are an essential part of the everyday classroom environment. This is expected to provide a rich and authentic result.

2.6. DATA ANALYSIS

The qualitative data has been then processed for analysis. Nvivo software has been used to code and categorise the observational records and interview transcripts, carefully.

This analytical tool is opted to organize the qualitative data in a systematic way so that recurring themes, trends, and minor variances in the use of metacognitive methods could be more easily identified.

The coding process will use labels to extract self-regulation and metacognitive strategy ideas from children's data segments. Categorization will identify patterns and frequencies of metacognitive strategies and their impact on self-regulation abilities. Other themes and trends may also surface across the dataset.

2.7. RELIABILITY AND VALIDITY OF DATA

This study on the metacognitive strategies of young children aims to ensure data validity and reliability by defending against biases and errors. A triangulation approach using transcripts of interviews and observational recordings is used to increase the trustworthiness of the results. Strict precautions are taken to protect the results from errors and biases.

This research focuses on the validity of the observational records of kindergarten teachers. Regular evaluations of the data's quality and consistency will be conducted through conversations and cross-validation meetings. Researchers and kindergarten teachers will collaborate to identify and resolve potential biases or contradictions through consensus-building and collaborative reflection. This will enhance the trustworthiness of the findings and increase the dependability of the observational records.

3. RESULTS

Through content analysis, this study examined video recordings of classroom activities and teachers' observation notes involving 15 children, aiming to investigate the metacognitive strategies employed by children in everyday activities. The coding scheme focused on the following aspects: goal-setting, planning, monitoring, regulation, and evaluation.

3.1. SPECIFIC METACOGNITIVE STRATEGIES USED BY CHILDREN AND THEIR FREQUENCY

In goal-setting, the vast majority of children (85%) were able to express simple goals at the beginning of activities. This indicates that children have some awareness of the purpose of learning activities and consciously set preliminary goals for the upcoming tasks.

The use of planning strategies was relatively less common, with only 65% of children adopting planning strategies. This finding suggests that children still face some challenges in independently planning activities and often rely on the steps and guidance provided by teachers to organize and execute tasks.

In terms of monitoring strategies, children demonstrated varying degrees of self-monitoring abilities, with 55% of children beginning to check their work after prompts from teachers. This suggests that some children can self-monitor with appropriate external prompts but may not have fully internalized this strategy as autonomous behaviour.

The use of regulation strategies was slightly lower, with about 52% of children attempting to change strategies or seek help when faced with challenges. This reveals that children may not have fully developed the habit of proactively seeking solutions when encountering difficulties.

The frequency of evaluation strategies was the lowest, with only 45% of children engaging in self-reflection after activities. This may indicate that children's skills in evaluating and reflecting post-activity are not yet mature, or they lack systematic guidance to review their performance and learning process.

Figure 1 shows that young students are showing less competence to use metacognitive strategies without teacher help as they progress from simple goal setting to complex evaluation processes.

Regarding the performance of children of different ages, we found that younger children (3-4 years) relied more on adult prompts and guidance when using metacognitive strategies. As children aged, older children (5-6 years) began to show higher levels of self-monitoring and regulatory abilities, but still required adult support for complex tasks. This trend emphasizes the importance of providing differentiated support and guidance for children of different age stages in early education. For goal setting, only 60% of the youngest age group (3 years) could express simple goals, compared to 90% in the 4-year-old group and 95% in the 5-6-year-old group. This progress suggests that the ability to express goals improves with age.

In planning strategies, 40% of the children from the 3-year-old showed the use of such strategies, while 70% children of the 4-year-olds and 80% children of the 5 to 6-year-olds showed planning in activities. This indicates that the ability to independently plan and organize tasks significantly improves with age.

When examining monitoring strategies, we found that 45% children of the 3-year-olds, 60% of children the 4-year-olds, and 75% children of the 5 to 6-year-olds used some form of self-monitoring. This gradual increase suggests that the development of self-monitoring abilities may be more pronounced in older age groups.

In terms of regulation strategies, the data showed that only 30% of the 3-year-old children could adjust strategies when facing difficulties, while 50% students of the 4-year-olds and 65% students of the 5 to 6-year-olds exhibited this ability. This trend shows that the tendency to adjust problem-solving methods increases with the age of the child.

Lastly, in evaluation strategies, only 20% of the 3-year-old children engaged in any form of self-reflection after completing activities. In contrast, 40% children of the 4-year-of age and 60% of the 5 to 6-year-olds demonstrated self-evaluation behaviour, indicating that the ability to reflect and evaluate one's performance post-activity develops later in childhood.

The line graph in Figure 2 demonstrates the evolution of metacognitive strategies with individuals' age, becoming more adept at using complex strategies and using them more independently.

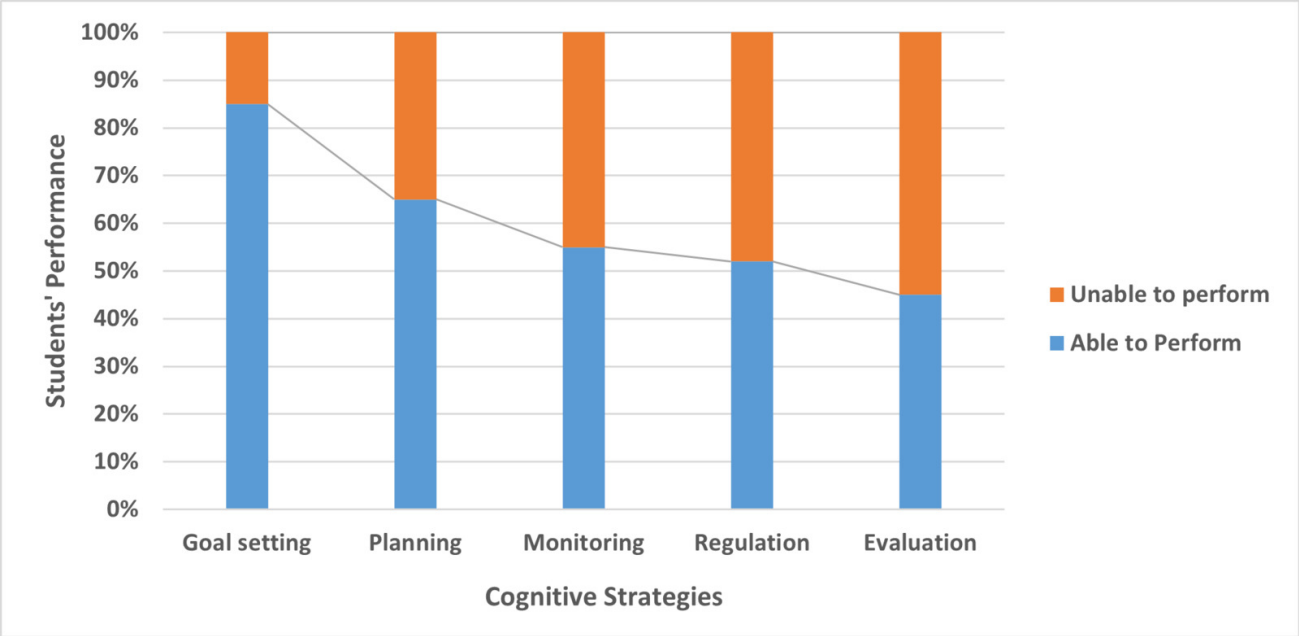

Figure 1. The Frequency of Use of Different Strategies

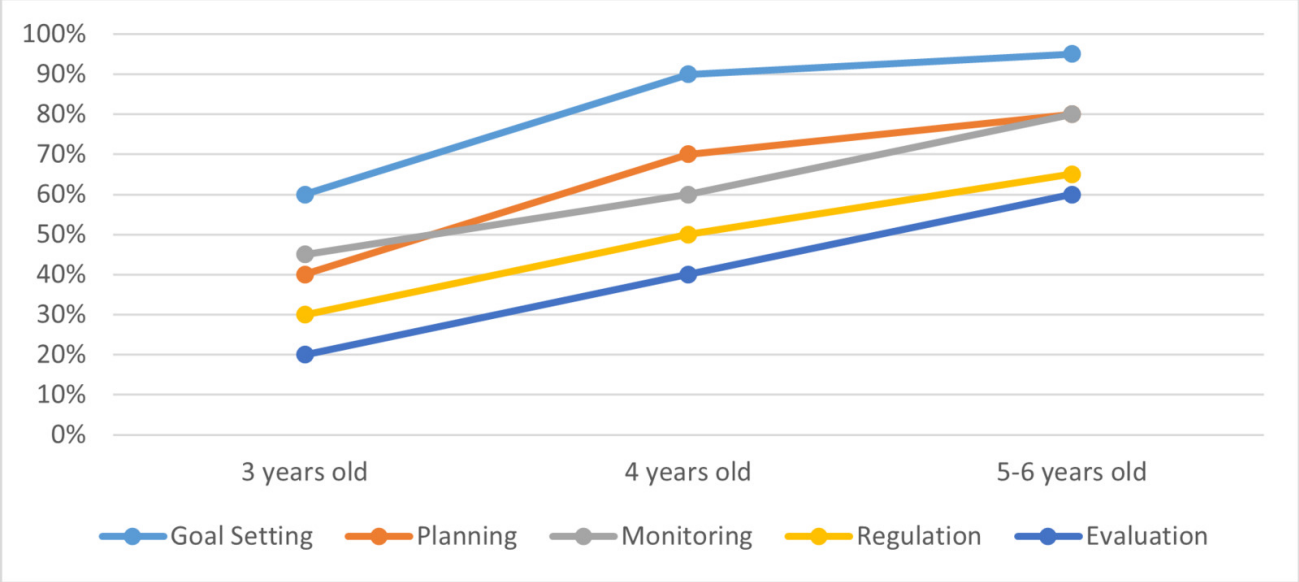

Figure 2. Changes in the Use of Strategies by Age Group

3.2. THE RELATIONSHIP BETWEEN STRATEGIES AND SELF-REGULATED LEARNING

To explore the relationship between self-regulated learning and metacognitive strategies, first-hand qualitative data through interviews with teachers was used. The interview results indicated that children who actively used metacognitive strategies in everyday learning activities not only demonstrated stronger learning capabilities but also had more prominent social skills.

Teachers saw that these pupils could make logical learning strategies and swiftly grasp the needs of new assignments. The students closely monitored their understanding and progress during the learning process. They were found to make timely adjustments to their learning strategies. This seemed to improve their learning efficiency, significantly. As per the trachers' observation, their independence and adaptability in learning gave them a head start in cognitive development.

Excellent social metacognitive skills also found among the children. They showed the ability to understand others feelings and intentions. Moreover, they reflected on and also modified their behaviour very easily. It helped them to maintain a healthy and cordial bonding with their classmates. As example teachers mentioned that during any disagreement, the kindergarten students employed more problem-solving techniques instead of responding emotionally. This not only helped them to develop emotional

intelligence but also assisted them in maintaining a supportive social network.

3.3. CASE ANALYSIS OF CHILDREN'S STRATEGY USE

This current section presents some real cases observed by the teachers where the kindergarten children used different metacognitive skills in their daily activities and this skills led to self-regulated learning.

CASE 1: GOAL-ORIENTED LITTLE ARTIST

Goal setting is an important part of metacognition. A four year old boy called Xiao Ming showed this ability in a drawing activity. He made a clear announcement that he wanted to draw a "big red fire truck". So he chose the appropriate colours and materials to make it. He was very focused on every details of the fire truck. In between he assessed his own drawing and tried to make up the odds. With a good knowledge of defining and attaining personal goals, Xiao Ming skilfully matched his creative vision with his ability level.

CASE 2: LITTLE BUILDER FACING PLANNING CHALLENGES

A five years old boy, named Xiao Hua tried to build a long tower with building-blocks. But every time it collapsed. He became very frustrated. Teacher observed that and told him to make the base of the tower strong. He listened very carefully and chose stronger blocks for the base. This time he completed his long tower. From this lesson, he improved his planning skills and gained greater confidence in his ability to solve issues. This was a significant learning experience for him.

CASE 3: SELF-REGULATING PUZZLE MASTER

Xiao Li was a six-year-old child who displayed remarkable self-monitoring as well as self-regulation skills during a puzzle activity. Teachers mentioned that Xiao Li completed the puzzle very methodically. She checked her process continuously and with accuracy. Whenever she faced any challenge, she tried to modify her strategies. She never stopped herself from seeking help from teachers or peers, whenever required. She remained focused until she completed the puzzle correctly. This indicates the strong self-regulating ability, an important element of strong metacognitive awareness.

CASE 4: LITTLE ACTOR OVERCOMING REFLECTION CHALLENGES

Here is an instance of a three years old child, named Xiao Zhao. He found it difficult to reflect after pretend-playing as a young cook. Although he was delighted, he could not answer when questioned about what he had learned. The teacher encouraged him to share his experiences and recall the cooking process. With the help of the teacher and peers, Xiao began to describe the cooking process in simple terms and understand the importance of cooperation, which helped him reflect on and understand the significance of the activity.

4. DISCUSSION

4.1. OVERALL TRENDS IN METACOGNITIVE STRATEGY USE BY YOUNG CHILDREN

This study aims to understand the effectiveness of metacognitive strategies used by young children in specific learning activities. Early self-regulated learning is critical for children because it helps them acquire learning skills that are difficult to modify. As the importance of autonomous knowledge acquisition and adaptation grows, children should develop into competent and independent learners. Metacognition remains an important part of self-regulated learning, and monitoring and control processes are required for successful learning. In this regard, the researcher intends to explore the different uses of metacognitive strategies among young learners and finally wants to find their effectiveness concerning self-regulated learning.

The study examined how young learners aged 3-6 years in kindergarten use metacognitive techniques in their daily activities. Metacognitive skills develop during the preschool period.[11] The study found most children understand the purpose of educational exercises and set learning targets. However, they rely on teachers for independent planning strategies, which can be explained by Vygotsky's ZPD. Teachers can help bridge this gap in self-regulated learning. Over half of the children showed self-monitoring ability. However, when they faced challenges, the majority of them showed less competence in problem-solving. The reason could be limited working memory functioning and a lack of coherent theory of mind.[10] Moreover, it is evident from the study that self-evaluation abilities have not yet developed among the majority of them.

4.2. AGE DIFFERENCES AND STRATEGY USE

The study reveals that kindergarten students aged 3-4 have limited metacognitive abilities, with only some ability to set simple goals. They are also incompetent in planning, monitoring, regulation, and evaluation. The later faculties of metacognitive skills develop with age. Goal setting is an early step in self-regulated learning, and it depends on environmental cues.[12] Studies have shown that the metacognition of students aged 4-years-old significantly predicts their changes in learning goals. Roebers et al.[13] also found metacognitive skills among 5 years-old children in terms of the ability to find the difference between correct and wrong responses. Though they show a very low level of metacognitive accuracy. Similarly, another investigation showed that in problem-solving situations, children aged 3-6 use both verbal and non-verbal metacognitive strategies, with older children using more. According to the study, younger children (ages 3-4) rely more on adult cues and direction, while older children (ages 5-6 years old) show better self-monitoring and self-regulation. However, they still needed adult assistance with more difficult activities. It has been shown

that metacognitive scaffolding, a procedure that entails helping young children reflect on their learning, greatly improves their cognitive and brain development.[14] This emphasises the importance of tailoring assistance and guidance to early education students based on their developmental stages.

4.3. RELATIONSHIP BETWEEN STRATEGY USE AND LEARNING ABILITIES

The research explores the intricate relationship between metacognitive strategies and the learning abilities of young children. It found that children who use the most metacognitive strategies in their daily class activities have more learning abilities. Studies[15,16] found that the ability to plan and monitor boosts confidence in oneself, as seen in a 4-year-old child, Xiao Ming, who confidently completed his task of painting a red fire truck. Establishing definite or near-term goals helps students develop self-efficacy, thus influencing learner's motivation. Interviews with teachers revealed that the quick understanding, adaptability, and efficient learning of young learners are enhanced through active monitoring and timely strategy adjustments. As children's cognitive capacities develop in preschool, it is crucial to support self-regulated learning early on. The study also found that older children are more likely to adjust and modify their learning behavior in problem-solving situations, supporting a previous study by Jeong and Frye.[2]

4.4. SOCIAL SKILLS AND THE CONNECTION WITH METACOGNITIVE STRATEGIES

The study reveals that young children who use metacognitive strategies in their daily activities show growth in their social skills. A similar result was also found in high school students.[17] Metacognition being 'meta-thinking',[18] these children demonstrated an improved understanding of others' emotions and intentions, enabling them to reflect on and adjust their behaviour, leading to more harmonious relationships in their peer interactions. This indicates that metacognitive strategies enhance empathy levels among young children, which is an important component of social development. Implementing metacognitive strategies from the kindergarten stage could lead to the development of social perspectives among the children.[19] Moreover, metacognitive awareness was also noted to be correlated with and a predictor of socio-emotional skills among talented and gifted pupils.[20] Children's metacognitive skills, like emotional understanding and self-control, are critical for handling social situations and settling disputes.[21,22] They found a sense of metacognitive awareness in conflict resolution among young children since they are receptive to other people's objections and frequently mediate problems on their own.[23] More significantly, a recent study by Hartwell et al.[24] found preschool children opting for meta-talk to reach a logical collaborative decision. Therefore, these findings indicate the interplay between metacognitive strategies and social skill development that promote the socio-emotional component of children's personalities.

4.5. THE IMPORTANCE OF TEACHER ROLE AND EDUCATIONAL PRACTICE

Theories of constructivism have placed major emphasis on metacognition and self-regulated learning, which are mutually intertwined functionally and developmentally. From the cognitive perspective of Piaget, the interaction of peers influences these constructs, whereas Vygotsky's social perspective emphasized formal schooling.[25] This emphasises on more collaborative learning tasks at the kindergarten stage. Teachers must act as facilitators and scaffold them whenever required.

While using metacognitive strategies, cognitive interventions were found to be most impactful.[26] More significantly, when metacognitive strategies were employed along with cognitive strategies, this hybrid mode was found to be beneficial in not only the near but also the far transfer of metacognitive skills in new learning situations among preschool children.[5] Thus, teachers should use more cues like 'Think more', 'Are you sure about it?', 'Can you think of any other solution?' or 'Are there any other alternatives?'. Motivational strategies, along with these two strategies, are found to have the greatest effect on children's learning.[27]

It was also seen that regular exercise of autonomy and initiative developed mental self-management among preschool students.[28] Similarly, van Loon et al.[29] showed that when teachers followed child-centric instruction, giving full autonomy to primary school students to regulate their learning, their self-monitoring became more accurate. Thus, it is the responsibility of the teachers to provide sufficiently structured learning activities where students can use autonomy and initiative to the fullest.

4.6. LIMITATIONS OF THE STUDY

During the data analysis and interpretation phases, the researcher encountered a few limitations that were required to be mentioned. The first limitation was the size of the sample. Although the small sample size allows for more concentrated investigation, it also lacks variations in the sample. This could reduce the efficiency of the study by generalising the result to all the kindergartens in China. This can be overcome in future studies by using a bigger sample, including geographical variations and a range of educational environments. The second limitation was that the study relied on the observations of the teachers. This could lead to subjectivity and bias. This is because their own experiences, pre-conceptions, and prejudices can influence their perspectives. So, in future studies, including multi-observers, inter-rater reliability tests can mitigate the limitation.

5. CONCLUSION

The present study is intended to explore how kindergarten students are using metacognitive strategies in their daily activities and how effective they are. The investigation shows that children do use a range of metacognitive strategies in everyday activities, although to varying degrees.

Goal setting was a strategy frequently used by children, while the regular use of evaluation strategies was less common. The study revealed that children's metacognitive strategies evolve with age as they become more adept at using complex strategies. The study highlights the significance of teacher intervention in promoting metacognitive strategies in early education, with younger children requiring more teacher support while older children perform tasks independently. Moreover, metacognitive skills are found to develop social skills among young children as well. Therefore, metacognitive strategies play a significant role in the process of self-regulated learning and the overall development of young children.

5.1. SUGGESTIONS FOR FURTHER STUDIES

Further longitudinal studies in metacognitive strategies would help to understand the persistence and sustainability of the developed cognitive and social skills among children. There are ample scopes for studying the influence of other factors, like socio-economic background, cultural context, parenting style, and self-efficacy, on the development of metacognition and the use of various metacognitive strategies by children in their daily activities. An investigation can be carried out on the impact of incorporating metacognitive training into existing early childhood education curricula in terms of students' performance and academic achievement. Lastly, amidst the digital revolution, the evaluation of digital tool usage in developing metacognitive strategies among young children must be explored. The findings can be leveraged to assist them in their self-regulated learning.

AUTHORS' CONTRIBUTIONS

Narengaowa conceived the study and was responsible for the design and development of the data collection, data analysis, data interpretation, the first draft of the article and the revision of the manuscript. Tungalag Orosoo was responsible for the data analysis, the first draft of the article and critical revision of the manuscript. All author read and approved the final version of the manuscript

CONFLICT OF INTEREST

The authors declare no conflict of interest associated with this research.

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