A Study on Meta-Cognition of Secondary School Students in relation to Few Variables

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ABSTRACT

The investigation conducted a study on to find out the differences in the Meta-Cognition of secondary school students with few background variables (sex, type of school management and medium of instruction). This research was carried by descriptive survey method and interprets varied kinds of numerical data obtained from the said subjects. A sample of 180 secondary school students from 6 secondary schools of Bengaluru District was selected using stratified random sampling technique. Data was collected through Meta-Cognition Inventory developed by Punitha Govil (2003) along with personal details. The inventory contains 30 items with two components a) knowledge of cognition and b) regulation of cognition. The collected data was analyzed by utilizing Independent 't' test and the significance level was fixed at 0.05 level of confidence in all the cases. From the 't' test analysis it was concluded that sex, type of management and medium of instruction are found to be influential factors to develop meta-cognition variables. The secondary school girls had higher ability in meta-cognition than the other boys. Teachers should be made aware about the role of meta-cognitive abilities in learning especially for boys, likewise creation of meta-cognitive learning environment for students. The secondary school students from private unaided schools had higher ability in meta-cognition than the secondary school students from aided and government schools. The aided and government schools must be followed meta-cognitive teaching strategies in teaching learning process. The secondary school students learning through Kannada medium had higher ability in meta-cognition than the secondary school students learning through English medium. In creating a meta-cognitive environment, Teachers teaching in English medium should monitor and apply their knowledge deliberately, in modeling cognitive behaviours to assist students to become aware of their own thinking.

Keywords: Meta-cognition, Secondary School Students, Sex, Type of School, Medium of Instruction

1. INTRODUCTION

The development of the whole person, including communication, reading comprehension, language acquisition, social cognition, attention, self-control, memory, self-instruction, writing, problem solving, and personality, depends heavily on metacognition. Knowledge of cognition and control of cognition are referred to as metacognition. Metacognition is hence higher order thinking that requires intentional management of the cognitive processes involved in learning. Effective learning depends heavily on meta-cognition, or the capacity to reflect on one's own thoughts. In order to succeed academically, one must be aware of their own cognitive processes and be able to control them.

'Meta-cognition was originally referred to as the knowledge about and regulation of one's own cognitive activities in learning processes' (Flavell, 1979). Applegate et al. (1994) address meta-cognition as learners' knowledge and use of their own cognitive resources. A recent definition describes meta-cognition as 'one's knowledge and beliefs about one's own cognitive processes and one's resulting attempts to regulate those cognitive processes to maximize learning and memory.' (Ormrod, 2006)

According to Schoenfeld (1992), the idea of meta-cognition is challenging to use since it contains a variety of nearly contradictory interpretations (such as understanding of one's own mental processes and self-regulation during problem solving).

Several studies have revealed that learners who possess higher degrees of meta-cognitive abilities tend to be more successful pupils (Norehan Zulkiply, 2006). It is crucial to comprehend secondary school students' metacognitive awareness as a result. In comparison to young children, high school students have been shown to have greater meta-cognitive skills, according to one study (Sajna Jaleel, P. Premachandran, 2016) However, there are also flaws in students' metacognitive awareness, such as their over-reliance on instructor input and their lack of self-reflection (Shahlan Surat, Saemah Rahman, Zamri Mahamod & Saadiah Kummin, 2014).

To assess the amount of meta-cognition among secondary school students, a survey can be used to gather data on how well the students' own assessments of their learning strategies, reflections on their own learning, and awareness of their strengths and weaknesses. When participating in learning activities, the survey can inquire about the use of metacognitive strategies including taking notes, reflecting on oneself, and summarising.

Meta-cognitive processes include deciding how to tackle a particular learning assignment, keeping track of comprehension, and gauging how far along you are. In this context, meta-cognition is the higher mental capacity to comprehend one's own understanding, which aids the learner in problem-solving, evaluating their own knowledge and the task at hand, and exercising critical thought. Meta-cognition aids an individual in achieving specific goals and ensuring that the learning objective is being met. A unique kind of information and skill called meta-cognition is acquired through both personal experience and formal education. The purpose of the current study is to characterise secondary school students' metacognition skills in connection to a few variables.

REVIEW OF RELATED LITERATURE

Studies in the past have revealed a strong correlation between metacognition and academic achievement. Nongtodu and Bhutia (2017) looked at the meta-cognition of Meghalayan college-going students and found that most of them exhibited ordinary meta-cognition. When compared to male pupils, female students had better metacognition. The meta-cognitive abilities of B.Ed. students were compared by Das (2017) with regard to sex and management, and it was discovered that there are significant differences between male and female students' meta-cognitive abilities. Additionally, Das (2017) discovered differences between government and private teacher training colleges' meta-cognitive abilities. In Port Harcourt, Rivers State, secondary school chemistry students, Owo and Ikwut (2015) investigated the relationship between meta-cognition and academic accomplishment. The findings revealed that both metacognition and academic achievement significantly correlate. Yet, attitude is a better predictor of academic success than metacognition. According to Karaali (2015), weekly metacognitive and self-reflective exercises allowed students to maintain their attention on in-depth learning and to stay engaged and motivated throughout the semester. College students' meta-cognitive awareness and academic achievement were evaluated by Young and Fry (2008), and it was discovered that there were statistically significant differences between male and female students' meta-cognitive awareness. The ability to engage in meta-cognition differs between male and female students, according to studies, and there is a link between meta-cognition and academic success for students in high school and college. Girls utilise self-monitoring, goal setting, and planning considerably more frequently than boys do, according to Bidjerano (2005). Male students employ more superficial learning tactics than female pupils, according to Niemivirta (1997). There haven't been any studies on secondary school students' meta-cognition in relation to their sex, management style, or mode of instruction. Academic performance is more likely to improve for kids who are taught to apply metacognitive techniques including goal-setting, tracking one's own progress, and reflecting on what they've learned. So, the purpose of the current study was to compare the Meta-Cognition of secondary school pupils with and without a few background characteristics (sex, type of school management and medium of instruction).

NEED AND IMPORTANCE OF THE STUDY

For secondary school kids to succeed academically, meta-cognition analysis is essential. We can learn more about students' metacognitive awareness and the connection between metacognition and academic achievement through surveys and data analysis. With the use of this knowledge, we can create techniques to raise students' metacognitive abilities and encourage productive learning. For a variety of reasons, from its pedagogical relevance to its broader social consequences, a study on the examination of meta-cognition in secondary school pupils can be useful and noteworthy. We can assist students in becoming more efficient learners, better decision-makers, and responsible members of society by expanding our comprehension of meta-cognition and how it grows in kids. For school-age children to succeed, they must master metacognition. It may result in better learning outcomes, increased motivation, self-awareness, and problem-solving abilities. By encouraging kids to think back on their learning experiences and giving them opportunity to practise managing their own learning, teachers and parents can aid in the development of meta-cognition. So, the current study was conducted to look at the metacognition of secondary school pupils using a limited number of variables.

STATEMENT OF THE PROBLEM

The topic identified for the present investigation is 'A Study on Meta-Cognition of Secondary School Students in relation to few variables.' The examiner conducted a study on to find out the differences in the Meta-Cognition of secondary school students with few background variables (sex, type of school management and medium of instruction).

OBJECTIVES OF THE STUDY

1. To find out the differences in the Meta-Cognition Ability of secondary school boys and girls.
2. To find out the differences in the Meta-Cognition Ability of secondary school students educating in government, private aided and private unaided Schools.
3. To examine the differences in the Meta-Cognition Ability of secondary school students learning through English and Kannada language as medium of instruction.

RESEARCH HYPOTHESES

1. There is no significant difference in the Meta-Cognition Ability of secondary school boys and girls.
2. There is no significant difference in the Meta-Cognition of secondary school students educating in government and private aided schools.
3. There is no significant difference in the Meta-Cognition of secondary school students educating in private aided and private unaided schools.
4. There is no significant difference in the Meta-Cognition of secondary school students educating in Government and Private unaided schools.
5. There is no significant difference in the Meta-Cognition of secondary school students learning through English and Kannada language as medium of instruction.

METHODOLOGY

The investigation conducted a study on to find out the differences in the Meta-Cognition of secondary school students with few background variables (sex, type of school management and medium of instruction). This research was carried by descriptive survey method and interprets varied kinds of numerical data obtained from the said subjects. A sample of 180 secondary school students from 6 secondary schools of Bengaluru District was selected using stratified random sampling technique. Data was collected through Meta-Cognition Inventory developed by Punitha Govil (2003) along with personal details. The inventory contains 30 items with two components a) knowledge of cognition and b) regulation of cognition. The collected data was analyzed by utilizing Independent 't' test and the significance level was fixed at 0.05 level of confidence in all the cases.

ANALYSIS AND INTERPRETATION OF DATA

Table-1: Table shows independent 't' test results on Meta-Cognition Scores of secondary school students with regard to sex.

Groups	N	Mean Scores	Standard Deviation	't' Value and Sig. level
Boys	90	85.744	11.819	2.94*
Girls	90	90.677	10.657	

**Significant at 0.05 level*

From the above table-1, it can be inferred that the obtained 't' value 2.94 is greater than the table value 1.97 (df 178) at 0.05 level of significance. Hence, the null hypothesis-1 is rejected and alternate hypothesis has been accepted that 'there was a significant difference in Meta-Cognition Ability of secondary school boys and girls.' The table further reveals that the secondary school girls (M=90.677) had higher ability in meta-cognition than the secondary school boys (M=85.744).

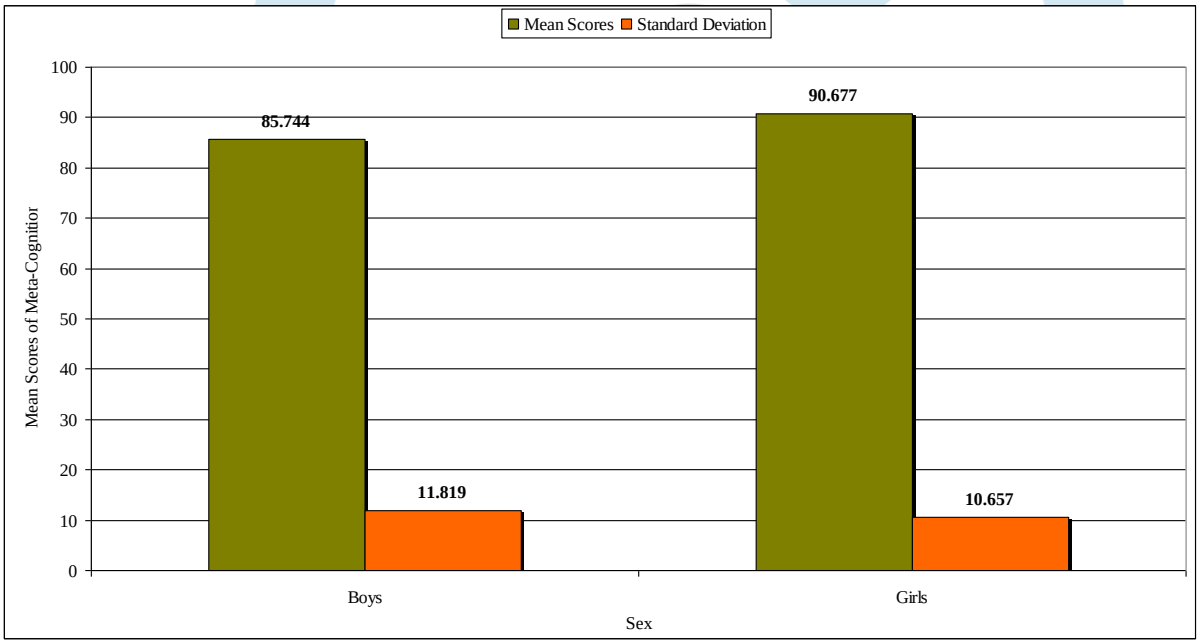

Fig.1: Bar graph shows comparison of Meta-Cognition Ability of secondary school boys and girls.

Table-2: Table shows independent 't' test results on Meta-Cognition Scores of secondary school students with regard to type of management.

Groups	N	Mean Scores	Standard Deviation	't' Value and Sig. level
Government School students	60	86.016	9.048	0.32^{NS}
Private Aided School students	60	86.600	10.632	
Private Aided School students	60	86.600	10.632	2.43*
Private Unaided School students	60	92.016	13.544	
Government School students	60	86.016	9.048	2.85*
Private Unaided School students	60	92.016	13.544	

*NS-Not Significant; *Significant at 0.05 level (Table Value of 1.98 for df=118).*

From the above table-2, it can be inferred that the obtained 't' value 0.32 is less than the table value 1.98 (df 118) at 0.05 level of significance. Hence, the null hypothesis-2 is accepted that 'there is no significant difference in Meta-Cognition Ability of secondary school students educating in government and private aided schools.'

It can be also inferred that the obtained 't' value 2.43 is greater than the table value 1.98 (df 118) at 0.05 level of significance. Hence, the null hypothesis-3 is rejected and alternate hypothesis has been accepted that 'there is a significant difference in Meta-Cognition Ability of secondary school students educating in private aided and unaided schools.' The table further reveals that the secondary school students from private unaided schools (M=92.016) had higher ability in meta-cognition than the secondary school students from aided schools (M=86.600).

Further, It can be seen that the obtained 't' value 2.85 is greater than the table value 1.98 (df 118) at 0.05 level of significance. Hence, the null hypothesis-4 is rejected and alternate hypothesis has been accepted that 'there is a significant difference in Meta-Cognition Ability of secondary school students educating in government and private unaided schools.' The table further reveals that the secondary school students from private unaided schools (M=92.016) had higher ability in meta-cognition than the secondary school students from government schools (M=86.016).

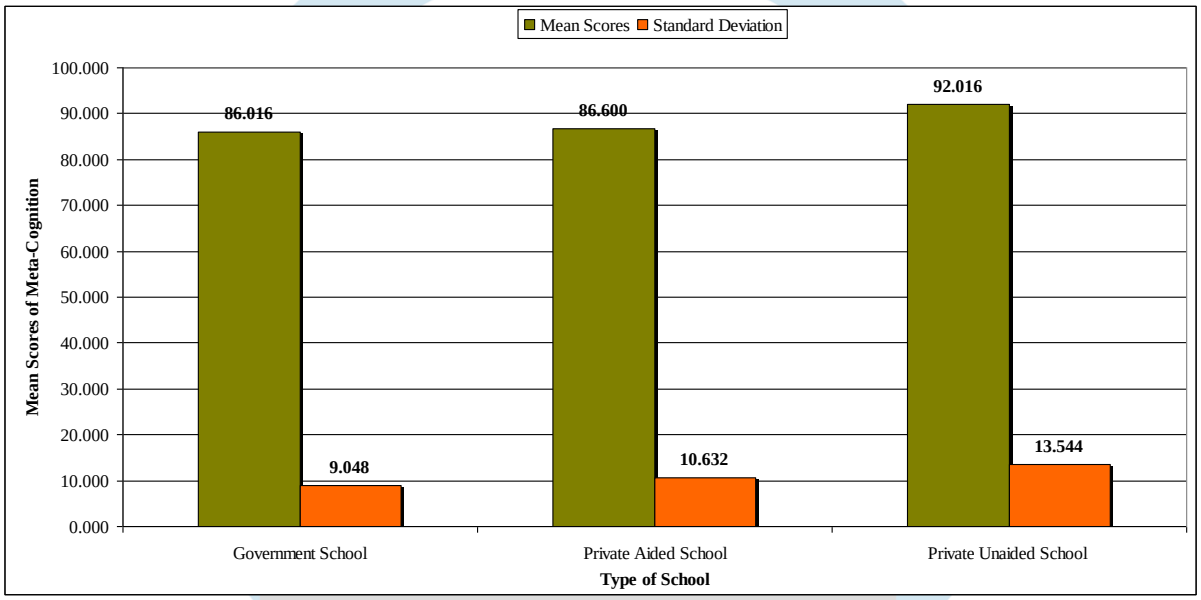

Fig.2: Bar graph shows comparison of Meta-Cognition Ability of secondary school students educating in different type of schools.

Table-3: Table shows independent 't' test results on Meta-Cognition Scores of secondary school students with regard to medium of instruction.

Groups	N	Mean Scores	Standard Deviation	't' Value and Sig. level
English medium	95	85.242	9.809	3.75*
Kannada medium	85	91.529	12.353	

**Significant at 0.05 level*

Further, It can be seen that the obtained 't' value 3.75 is greater than the table value 1.98 (df 178) at 0.05 level of significance. Hence, the null hypothesis-5 is rejected and alternate hypothesis has been accepted that 'there is a significant difference in Meta-Cognition Ability of secondary school students learning through English and Kannada language as medium of instruction.' The table further reveals that the secondary school students learning through Kannada medium (M=91.529) had higher ability in meta-cognition than the secondary school students learning through English medium (M=85.242).

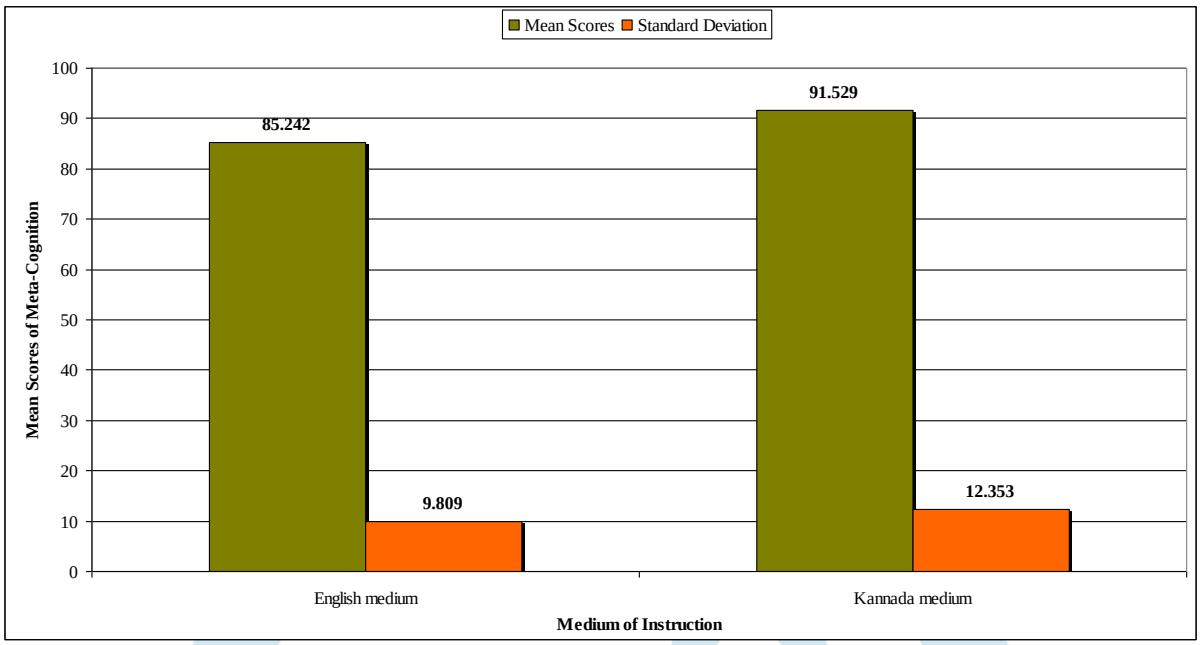

Fig.3: Bar graph shows comparison of Meta-Cognition Ability of secondary school students learning through English and Kannada as medium of Instruction.

RESULTS

1. There was a significant difference in Meta-Cognition Ability of secondary school boys and girls. The secondary school girls had higher ability in meta-cognition than the other boys.
2. There was no significant difference in Meta-Cognition Ability of secondary school students educating in government and private aided schools.
3. There was a significant difference in Meta-Cognition Ability of secondary school students educating in private aided and unaided schools. The secondary school students from private unaided schools had higher ability in meta-cognition than the secondary school students from aided schools.
4. There was a significant difference in Meta-Cognition Ability of secondary school students educating in government and private unaided schools. The secondary school students from private unaided schools had higher ability in meta-cognition than the secondary school students from government schools.
5. There was a significant difference in Meta-Cognition Ability of secondary school students learning through English and Kannada language as medium of instruction. The secondary school students learning through Kannada medium had higher ability in meta-cognition than the secondary school students learning through English medium.

CONCLUSION

Metacognition enables one to be successful learner. Metacognition means higher order thinking which involves active control over the cognitive processes engaged in learning. Activities like planning how to approach a given learning task, monitoring comprehension and evaluating progress toward the completion of a task are metacognitive in nature. Therefore it plays a critical role in successful learning. From the 't' test analysis it was concluded that sex, type of management and medium of instruction are found to be influencial factors to develop meta-cognition variables. The secondary school girls had higher ability in meta-cognition than the other boys. Teachers should be made aware about the role of metacognitive abilities in learning especially for boys, likewise creation of metacognitive learning environment for students. The secondary school students from private unaided schools had higher ability in meta-cognition than the secondary school students from aided and government schools. The aided and government schools must be followed metacognitive teaching strategies in teaching learning process. The secondary school students learning through Kannada medium had higher ability in meta-cognition than the secondary school students learning through English medium. In creating a metacognitive environment, Teachers teaching in English mediam should monitor and apply their knowledge deliberately, in modeling cognitive behaviours to assist students to become aware of their own thinking.

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