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## Metacognitive awareness among secondary school teachers: Demographic analysis

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### Abstract

Metacognition is the individual's awareness of how he learns and what he does, employment of proper knowledge to gain his ends; the ability to employ cognitive skills that are required in an ordinary test, the knowledge of which strategies be employed with which goals, and the assessment of individual processes before and after the performance" (Flavell, 1997). Metacognition means "thinking about one's own thinking". Metacognitive beliefs, metacognitive awareness, metacognitive experiences, metacognitive knowledge, metacognitive skills, executive skills, higher-order skills, metacomponents, metamemory are some of the terms that we are often using in association with metacognition. The investigators in this paper try to analyze the metacognitive awareness of secondary school teachers. The investigator uses a standardized awareness inventory for checking the metacognitive awareness of secondary school teachers i.e., Teachers' Metacognitive Awareness Scale. A sample of 549 secondary school teachers, were selected randomly. The study tries to find out whether there exists any significant difference between the various sub samples Gender, Location of School, Type of School, Type of Management, Subject Handled, Age of teachers, marital status, Educational Qualifications of teachers, Experience in teaching, type of mobile phone, Active on social sites and time spent on internet based on their metacognitive awareness. The investigators use appropriate statistical techniques for the data collection and analysis of the data.

**Keywords:** Metacognitive awareness, metacognitive awareness scale, secondary school teachers

### Introduction

Metacognition has gained significant attention in education by emphasizing thinking about one's own thinking process and regulating it. The ability to reflect, control, and understand one's learning and cognition in a self-aware manner is at the core of metacognition. The concept of "metacognition" was suggested, for the first time, by Flavell in 1976. Flavell (1976: 232), describes metacognition as "knowledge and cognitive about cognitive phenomenon", and "individual's knowledge about his/her own cognitive process, and employing this knowledge to inspect cognitive processes". According to Flavell (1979) <sup>[1]</sup>, metacognition is the individual's awareness of how he learns and what he does, employment of proper knowledge to gain his ends; the ability to employ cognitive skills that are required in an ordinary test, the knowledge of which strategies be employed with which goals, and the assessment of individual processes before and after performance. Furthermore, it is a cognitive activity or knowledge that arranges any items of cognitive functions (Flavell, 1993) <sup>[19]</sup>. Flavell's initial suggestion of this concept in 1976 laid the groundwork for understanding how individuals can control and comprehend their own learning and cognition.

Metacognitive awareness involves understanding and managing our own thoughts as they occur. It's about recognizing what we know and being able to control and regulate our thinking processes. Knowledge and regulation of cognition are indeed fundamental aspects of this skill. Knowledge of cognition refers how much learners learn with their own memories and learning methods (Sperling, Howard, Staley 2004) <sup>[20]</sup>, and their cognitions or what they know about cognition as a general (Akin, Abacı and Cetin, 2007) <sup>[21]</sup>. It is the knowledge that is stockpiled by the individual which has different cognitive goals and skills and attempted different cognitive experiences, and which is composed of interaction among variants of individual, task and strategy (Flavell, 1979; Flavell, 1993) <sup>[9, 19]</sup>.

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Regulation of cognition implies a row of metacognitive activities which help individual control his/her learning and thinking, and associate with both mutually, (Thomas and McRobbie, 2001) [22] in other words, it implies strategies or skills that stimulate comprehension, and enable to accomplish the objective (Flavell, 1979) [9].

Teachers' metacognition encompasses their awareness of their professional lives, teaching competencies, classroom practices, managerial skills, and evaluative strategies. For prospective teachers, understanding content knowledge, teaching processes, and various techniques is crucial. Researchers have highlighted that having metacognitive awareness about teaching enables teachers to think dynamically and strategically in their regular teaching practices, fostering continuous improvement and adaptability in their approach. Balcikanli (2011) [2] highlights that metacognitive awareness in teaching acts as a catalyst within the entire teaching-learning process. Ozcan's (2007) [23] study demonstrates that teachers with metacognitive awareness can effectively employ strategies to enhance students' understanding and awareness of metacognition. This emphasizes the pivotal role of teachers' metacognitive abilities in not just their own teaching process but also in fostering similar awareness among their students.'

Recently, individuals should carry out their studies schemingly and regularly, and also have knowledge of their own cognitive processes in order to be successful, concurrently with their busy learning activities (Akin, Abacı and Cetin, 2007) [21] Therefore, all of these are elements related to metacognitive awareness. Moreover, metacognitive awareness of individuals is regarded as an important factor in increasing of their success, their learning throughout their life span, their creative and critical thinking, and building self-confidence. Consequently, it has very critical importance to determine the level of metacognitive awareness of secondary school teachers and develop their metacognitive awareness.

The aim of this study is to determine the levels of metacognitive awareness of secondary school teachers, and examine whether these levels change according to some variables such as gender, location of school, type of school, type of management, subject handled, Marital status, age of teachers, experience in teaching, educational qualifications, type of mobile, active time on internet, active on social sites. For this purpose, the study aims to achieve these objectives

- To find out the level of metacognitive awareness of secondary school teachers.
- To find out whether there exists any significant difference in the metacognitive awareness of secondary school teachers based on their gender, location of school, type of school, type of management, subject handled, Marital status, age of teachers, experience in

teaching, educational qualifications, type of mobile, active time on internet, active on social sites.

### Hypotheses of the Study

- The secondary school teachers of Aligarh district may have a higher level of metacognitive awareness.
- There will be no significant difference in the metacognitive awareness of secondary school teachers based on the following sub samples;
  - a) Gender
  - b) Location of school
  - c) Type of school
  - d) Type of management of the school
  - e) Subject handled by teachers
  - f) Age of teachers
  - g) Marital status of teachers
  - h) Educational qualifications of teachers
  - i) Experience in teaching
  - j) Type of mobile phone
  - k) Active on social sites
  - l) Active time on internet

**Sample and Methodology:** The sample consists of 549 secondary school teachers from various schools of Aligarh district. The methodology adopted is descriptive method [1]. (Best & Kahn, 2007) [4]. The details of the sample selected for the study is as shown in Table 1 below.

### Tool for the Study

The tool used was metacognitive awareness scale prepared and standardized by researcher. It consists of 47 items following 5-point scale. The scale was standardized with reliability coefficient.984 which shows high reliability.

### Statistical Techniques

- Basic statistical techniques such as arithmetic mean median and standard deviation.
- Significance of difference between the means.

### Methodology

The investigators visited the schools and took the permission of school authorities to conduct the survey. The investigator selected secondary school teachers' level for the present study. Investigators selected 549 teachers by simple random technique and distributed Teachers' Metacognitive awareness Scale among the selected sample. They were given proper instructions regarding how to fill the responses in the scale. The investigators valued the response sheets with a five-point scale. The scores obtained by each teacher in the Metacognitive awareness scale were encoded and undergone statistical calculations. Mean, standard deviation, percentiles and test of significant difference between means were calculated.

**Table 1:** Sample selected for the study

Demographic Variables	Group Compared	N
Gender	Male	266
	Female	282
Location	Urban	357
	Rural	191
Type of School	Secondary	318
	Higher-secondary	230
Management of school	Government/Semi-government	303
	Private	245

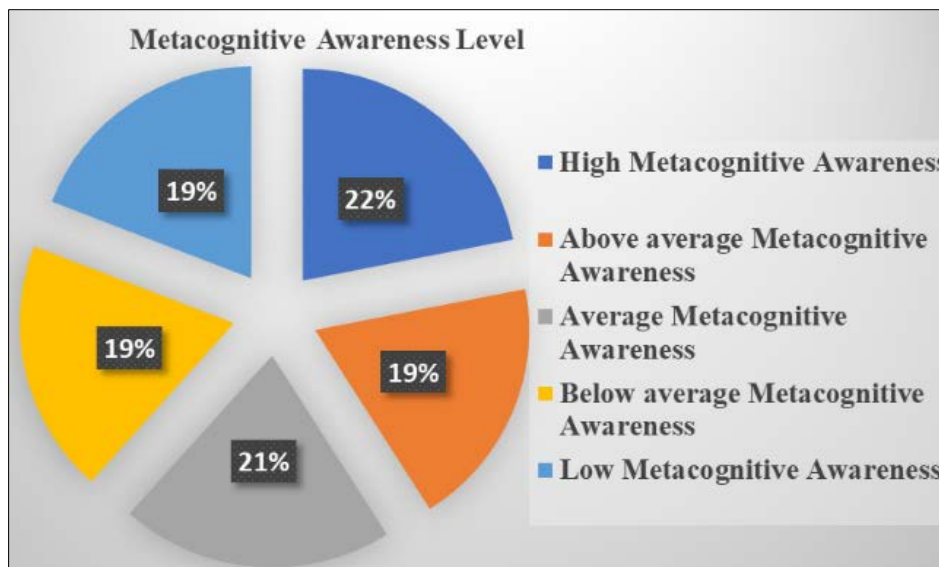
Subject Handled	Arts / Others	242
	Science / Commerce	306
Age of the teachers	Below 30	443
	Above 30	105
Marital Status	Married	151
	Unmarried	397
Educational Qualifications	Graduation/Post-Graduation	255
	B.Ed./M.Ed./Ph.D./Others	293
Experience in Teaching	Below 5 years	429
	Above 5 years	119
Type of Mobile Phone	Smart	535
	Ordinary	13
Active on Social Sites	Yes	418
	No	130
Time spent on Internet	1 hour	197
	2 hours	171
	More than 2 hours	180

**Analysis and Interpretation of the Data**  
**Metacognitive Awareness of Secondary School teachers**  
 The investigators categorized the whole sample used for the study in to Low, Below Average, Average, Above Average and High Metacognitive awareness groups based on the scores of Metacognitive awareness using Percentiles. P20, P40, P60, P80 percentiles were calculated and the teachers

who scores less than P20 scores (138) is categorized as Low group, the teachers who scores in between P21 (139) and P40 (144) as below average, P4 (145) and P60 (151) as Average, P61 (152) and P80 (159) as Above Average and greater than P81 (160) as High groups. The frequency of teachers, its score and percentage is given in table 2.

**Table 2:** Number and Percentage of different groups of Secondary School teachers based on Metacognitive Awareness

Percentile	Score	N	Percentage	Interpretation of Metacognitive Awareness
P81 – above	160 - 186	120	21.9%	High Metacognitive Awareness
P61- p80	152 – 159	105	19.1%	Above average Metacognitive Awareness
P41 – p60	145 – 151	113	20.6%	Average Metacognitive Awareness
P21 – p40	139 – 144	106	19.3%	Below average Metacognitive Awareness
less – p20	less - 138	105	19.1%	Low Metacognitive Awareness



**Fig 1:** Percentage of different groups of Secondary School teachers based on Metacognitive Awareness

**Metacognitive Awareness of Secondary School teachers Based on Various Demographic features**

In order to find out whether the metacognitive awareness of secondary school teachers vary with the various demographic features (Gender, Location of School, Type of School, Type of Management, Subject Handled, Age of teachers, marital status, Educational Qualifications, Experience in teaching, type of mobile phone, Active on

social sites and time spent on internet). The mean and the standard deviation of the scores on the metacognitive awareness of secondary school students were calculated. To know whether these variables’ groups varied significantly in their scores on the metacognitive awareness, the t/F test of non-equivalent groups was administered. The values thus obtained are tabulated below.

**Table 3:** Results showing significance of difference between means of scores of metacognitive awareness of secondary school students based on various demographic features

Demographic Variables	Group Compared	N	Mean	s.d.	't' /F Value	Level of Significance (p-value)
Gender	Male	266	148.10	12.786	.171	.679
	Female	282	148.55	12.360		
Location	Urban	357	147.94	12.252	.969	.325
	Rural	191	149.05	13.116		
Type of School	Secondary	318	147.93	12.351	.766	.382
	Higher-secondary	230	148.88	12.847		
Type of Management in school	Government/Semi-government	303	148.61	12.597	.329	.566
	Private	245	147.99	12.528		
Subject Handled	Arts / Others	242	148.33	12.338	.000	.994
	Science / Commerce	306	148.33	12.750		
Age of the teachers	Below 30	443	148.14	12.567	.506	.477
	Above 30	105	149.11	12.552		
Marital Status	Married	151	148.62	13.891	.108	.743
	Unmarried	397	148.22	12.030		
Educational Qualifications	Graduation/Post-Graduation	255	148.08	12.736	.192	.662
	B.Ed./M.Ed./Ph.D./Others	293	148.55	12.420		
Experience in Teaching	Below 5 years	429	148.27	12.292	.045	.832
	Above 5 years	119	148.55	13.529		
Type of Mobile Phone	Smart	535	148.28	12.631	.305	.581
	Ordinary	13	150.23	9.248		
Active on Social Sites	Yes	418	148.70	12.615	1.556	.213
	No	130	147.13	12.349		
Time spent on Internet	1 hour	197	147.78	12.664	1.730	.178
	2 hours	171	147.48	12.094		
	More than 2 hours	180	149.74	12.822		

The results (Table 4.3) indicate that there exists statistically insignificant difference in Metacognitive Awareness of secondary school teachers in relation to various demographic features (Gender (Male (M=148.10, S.D.=12.786) & Female (M=148.55, S.D. 12.360),  $t((549))=.171, p>.05$ )), Location of the school (Urban (M=147.94, S.D.=12.252) & Rural (M=149.05, S.D. 13.116),  $t((549))=.969, p>.05$ )), Type of school (Secondary (M=148.73, S.D.=12.597) & Higher Secondary (M=147.99, S.D. 12.528),  $t((549))=.329, p>.05$ )), type of management in school (Government/Semi-government (M=148.09, S.D.=11.954), Private (M=147.99, S.D.=12.528), Subject handled (Arts/Others (M=148.33, S.D.=12.338), and Science/Commerce (M=148.33, S.D.=12.750),  $t(549)=.000, p>.05$ ), Age of teachers (Below 30 (M=148.14, S.D.=12.567) & Above 30 (M=149.11, S.D.=12.552,  $t(549)=.506, p>.05$ ), Marital Status (Married (M=148.62, S.D.=13.891), and Unmarried (M=148.22, S.D.=12.030,  $t(549)=.108, p>.05$ ), Education qualifications of teachers (Graduation/Post-Graduation (M=148.08, S.D.=12.736) & B.Ed./M.Ed./Ph.D./Others (M=148.55, S.D. 12.420),  $t((549))=.192, p>.05$ ), Experience in Teaching (Below 5 years (M=148.27, S.D.=12.292) & Above 5 years (M=148.55, S.D.=13.529,  $t(549)=.045, p>.05$ )), Type of Mobile Phone (Smart (M=148.28, S.D.=12.631) & Ordinary (M=150.23, S.D.=9.248),  $t((549))=.305, p>.05$ ), Active on Social Sites (Yes (M=148.70, S.D.=12.615) & No (M=147.13, S.D.=12.349),  $t((549))=1.556, p>.05$ ) and Time Spent on Internet (1 hour (M=147.78, S.D.=12.664), 2 hours (M=147.48, S.D.=12.094), & More than 2 Hour (M=149.74, S.D.=12.882),  $t((549))=1.730, p>.05$ ).

#### Major Findings

- The secondary school teachers are identically distributed among each group in the Metacognitive Awareness.

- There is no significant difference in the metacognitive awareness of secondary school teachers based on various demographic features (Gender, Location of School, Type of School, Type of Management, Subject Handled, Age of teachers, marital status, Educational Qualifications, Experience in teaching, type of mobile phone, Active on social sites and time spent on internet).

#### Educational Implications

- It is recommended that the theoretical aspects of metacognitive awareness should be included in the curriculum of teacher education.
- The practical framework should be made to develop metacognitive awareness in teaching by the top-level educational bodies i.e., NCERT, NCTE, SCERT, etc.
- Teachers' training institutes should introduce metacognitive intervention strategies to develop teaching awareness and competence among pupil teachers.
- Metacognitive awareness should be included as a core paper of instruction in teacher education programs.
- The teachers should be motivated to develop a positive attitude towards their teaching profession.
- The government should focus and give more time on practice teaching activities of teachers that would help to strengthen their teaching competence.
- Problem-solving, project method, and reflective learning method should be adopted by the teacher educators.
- Quality teaching and possible efforts should be made by the teacher educators to enhance metacognitive awareness and teaching competence from a lower to a higher level.
- Importance should be given to self-development and self-awareness of the teachers about their teaching

competence skills. Motivational classes and group discussions on the concept of metacognition and teaching competence should be done regularly in teacher education institutions.

- Revision of the teacher education curriculum should be made compulsory from time to time based on needs and requirements of future teachers.

### Suggestions for Further Research

- The same kind of study may be undertaken on the other variables like the background of the teachers; Place of Living & socio-economic background of teachers etc.
- It can be suggested that similar studies can be conducted on various levels of teachers' education such as prospective teachers, Primary teachers, Higher Secondary Teachers and University teachers.
- The present study was only delimited to Aligarh District so it suggested covering other districts' secondary school teachers.

### Conclusion

The present study reveals that most teachers have a high level of metacognitive awareness. Further, it could be cleared from the above discussion that the mean scores of various demographic variables of teachers differ insignificantly. Therefore, there is no significant difference on the basis of demographic features. In this changing world, the role of the teacher is to develop various life skills that would help them to confront future problems. These metacognitive strategies are vital in the 21<sup>st</sup> century to create a metacognitive environment having all kinds of resources to make the child a lifelong learner.

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