

Original Research Article

<https://doi.org/10.20546/ijcmas.2022.1101.005>

Meta Cognitive Skills Affecting Academic Achievements amongst Students of SDAU

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ABSTRACT

The study was undertaken under AGRESCO project for the year 2020-2021, at Sardarkrushinagar Dantiwada Agricultural University of Gujarat state; with the aim to find meta-cognitive skills amongst boys and girls of SDAU students. Representative samples of 160 respondents were proportionately selected from all the colleges of SDAU. Standardized scale namely “Meta-cognitive skills scale MCSS-GMS” developed by Dr. Madhu Gupta and Ms. Suman was used for data collection. Due to covid-19, the data was collected by questionnaire method. Statistical analysis was done by computing, frequency, percentage, standard deviation, and correlation co-efficient. The results shows that 67.50 per cent of the respondents belonged to ‘Average Meta-cognitive Level’, When Meta-cognitive skills amongst boys and girls of SDAU students were compared it was found that there is statistically high difference of $z= 4.61$ ($P<0.0001$) and boys (Mean=153.21) has significantly higher Meta-cognitive skill in comparison to girl students (Mean=143.44). All the students plan and monitor their learning in same manner, irrespective of their gender but boys showed higher implementation skill and evaluation skill, in comparison to girls. It can be concluded from the table that gender and CGPA shows positive and significant correlation. It can be concluded from the study that Meta Cognitive Skills affects academic achievements amongst students of SDAU.

Keywords

Meta-cognitive, skills, academic achievements, students

Article Info

Received:
09 December 2021
Accepted:
31 December 2021
Available Online:
10 January 2022

Introduction

Meta cognitive skill means ability that controls one’s own learning process. Metacognitive skills are strategies applied consciously or automatically during learning, cognitive activity, and communication to manipulate cognitive processes before, during, or after a cognitive activity (Flavell,

1976, 1979). It is one's ability to use prior knowledge to plan a strategy for approaching a learning task; take necessary steps to problem solve, reflect on and evaluate results, and modify one's approach as needed for learning. The four dimensions of meta-cognitive skills are: Planning skill, Implementation Skill, Monitoring Skill and Evaluation skill. A learner with good meta-

cognitive skill can focus on his/her attention on learning unit such as making distinction between important and unnecessary information, using strategy for keeping information in long term memory and retrieving it when necessary and finally making necessary changes in meta-cognitive skill as learning is accomplished. Meta cognitive skill make learner aware of his own understanding of one's own thought processes.

Operational Definition

Meta-cognitive skill

Meta-cognitive skill is operationized as ability used by students in one's own learning process; which were studied as planning, implementation, monitoring and evaluation of their own learning.

Planning skill

Planning skill was studied as ability of students' in managing self by analyzing information, allocation of resources (time and surrounding circumstances), organizing one's own thought and activities to complete a task.

Implementation skill

Implementation skill was studied as capability of students' to organize and execute the learning plan, independently use the resources and with less of guidance and support of teachers they can implement their learning plans.

Monitoring skill

Monitoring skill was studied as one's awareness of comprehension and task fulfillment together with ability to engage in periodic self-testing while learning.

Evaluation skill

Evaluation skill was studied as ability to assess and reflect on both the process employed and the

finished product after task completion. It can be done by comparing learner's current level of skills in the goals they set for themselves with skill levels they set for themselves during the planning process.

Academic achievements

Academic achievements will be studied as OGPA/GPA obtained during the last semester.

Objectives

To study personal characteristics and academic achievements of SDAU students

To assess meta-cognitive skills amongst boys and girls of SDAU students

To find association between personal, academic achievements and cognitive skills amongst boys and girls of SDAU students

Materials and Methods

The present study aims to investigate the "Meta Cognitive Skills affecting academic achievements amongst students of SDAU". The present study was conducted in six colleges of SDAU of Gujarat State. The present study is descriptive type of research which is used to describe characteristics of a population or phenomenon being studied. Representative samples of 160 respondents were proportionately selected from all the colleges of SDAU.

Considering the suitability of the variables for the present topic of research the following independent variables were studied: Age, sex, college, semester, CGPA. Meta - cognitive skills was studied as dependent variable. Standardized scale namely "Meta-cognitive skills scale MCSS-GMS" developed by Dr. Madhu Gupta and Ms. Suman was used for data collection. Due to covid-19, the data was collected by questionnaire method. Questionnaire was send to students as Google form for data collection. Statistical analysis was done by

computing, frequency, percentage, standard deviation, and correlation co-efficient (Rangaswamy, 2010).

Results and Discussion

Personal characteristics and academic achievements of SDAU students

It can be revealed from the table1 that 128 respondents (80 %) belonged to the age 17-23 years of age. Half of the respondents were male and other half were female. Seventy five respondents (46.88 %) belonged to CP College of Agriculture, followed by 23 respondents (14.38 %) from College of veterinary Science & Animal Husbandry and 23 respondents (14.38 %) from ASPEE College of Home Science.

There were 109 respondents (68.12 %) who were pursuing UG and 51 respondents (31.88 %) were pursuing PG/ PhD from Sardarkrushinagr Dantiwada Agricultural University. Maximum number of respondents (39.38 %) was in Second Year (IV semester) and 60 percent of the respondents had CGPA (Cumulative Grade Point Accumulated) between: 6.1-7.0

Overall Meta-cognitive skills amongst boys and girls of SDAU students

The Meta cognitive scale is categorized into seven levels such as: Very high, high, above average, average, below average, low and very low level. It can be observed from the table2 that 67.50 per cent of the respondents belonged to 'Average Meta-cognitive Level', followed by 16.25 per cent belonged to 'Below Average Meta-cognitive Level' and 10 per cent of the respondents belong to 'Above Average Meta-cognitive Level'.

None of the respondents belonged to Very high and very low level of Meta cognition.

The similar findings were reported by (Talekar and Fernandes, 2016) and (Jaleel and Premachandran,

2016) who found that majority of respondents were having average Meta-cognitive skill.

Comparison and Ranking of different dimensions of Meta-cognitive skills

When Meta-cognitive skills amongst boys and girls of SDAU students were compared it was found that there is statistically high difference of $z= 4.61$ ($P<0.0001$). Thus, we can say that boys (Mean=153.21) has significantly higher Meta-cognitive skill in comparison to girl students (Mean=143.44) of SDAU.

The findings differ from the findings of (Talekar and Fernandes, 2016) and (Jaleel and Premachandran, 2016) who found no significant difference in Meta-cognitive skill among boys and girls.

This means that boys have higher ability that controls one's own learning process, they make distinction between important and unnecessary information, and they use strategy for keeping information in long term memory and retrieving it when necessary.

There are four dimensions of meta-cognitive skills are: Planning skill, Implementation Skill, Monitoring Skill and Evaluation skill. The table below finds out the comparison and ranking of all the four dimensions among boys and girls of SDAU.

It can be observed from the table that 'Implementation skill' and 'Evaluation Skill' showed highly significant difference among boys and girls; but 'Planning Skill' and 'Monitoring Skill' showed no significant difference among boys and girls.

This means, all the students plan and monitor their learning in same manner, irrespective of their gender. Boys showed higher implementation skill and evaluation skill, in comparison to girls. Ranking shows that, Boys have higher implementation skill (rank 1) and girls have higher planning skill (rank 1) individually.

Table.1 Distribution of respondents according to their personal characteristics and academic achievements of SDAU students

n =160

Variables		Frequency	Per cent
Age (Years)	17- 23	128	80
	24 - 31	32	20
Gender	Male	80	50
	Female	80	50
Name of College	C P College of Agriculture	75	46.88
	College of Veterinary Science and Animal Husbandry	23	14.38
	ASPEE College of Home Science & Nutrition	23	14.38
	College of basic Science and Humanities(biotech and microbiology and bio-chemistry)	7	04.37
	College of Horticulture, Jagudan	21	13.12
	MBA in Agribusiness	11	6.87
	UG/PG/PhD	UG	109
	PG/PhD	51	31.88
Semester	I/II	41	25.62
	III/IV	63	39.38
	V/VI	36	22.50
	VII/IX	20	12.50
CGPA	≤ 6.0	09	5.62
	6.1 – 7.0	96	60.0
	≥7.1	55	34.38

Table.2 Distribution of the respondents according to Overall Meta-cognitive skills

Sr. No	Meta-cognitive skill range	Meta-cognitive Level	Boys (n=80)		Girls (n=80)		Overall (n=160)	
			f	%	f	%	f	%
1.	202 & above	Very High	0	0	0	0	0	0
2.	183-201	High	3	3.75	0	0	3	01.88
3.	164-182	Above Average	14	17.50	02	02.50	16	10.00
4.	138-163	Average	52	65.00	56	70.00	108	67.50
5.	119-137	Below Average	07	8.75	19	23.75	26	16.25
6.	100-118	Low	04	5.00	03	03.75	07	04.37
7.	99 & below	Very Low	0	0	0	0	0	0

Table.3 Overall Comparison of Meta-cognitive skills amongst boys and girls of SDAU students

Respondents	Mean	z value
Boys (n ₁ =80)	153.21 ± 14.79	4.61**
Girls (n ₂ =80)	143.44 ± 11.87	
** Statistically highly significant. P < 0.0001		

Table.4 Comparison and Ranking of different dimensions of Meta-cognitive skills as perceived by Boy and Girl respondents

(n = 160)

Sr. No.	Dimensions of Meta-cognitive skills	Boys			Girls			z value
		Weighted mean score	Per cent	Rank	Weighted mean score	Per cent	Rank	
1.	Planning Skill	3508/4800	73.08	III	3398/4800	70.79	I	z= 1.8965 ^{NS} (P=0.0597)
2.	Implementation Skill	2693/3600	74.80	I	2407/3600	66.86	IV	8.3364** (P< 0.0001)
3.	Monitoring Skill	3079/4400	69.97	IV	2994/4400	68.04	II	1.0754 ^{NS} (P=0.2838)
4.	Evaluation Skill	2977/4000	74.42	II	2676/4000	66.90	III	5.7983** (P< 0.0001)

Table.5 Overall Ranking of different dimensions of Meta-cognitive skills as perceived by the respondents

(n = 160)

Sr. No.	Dimensions of Meta-cognitive skills	Weighted mean score	Per cent	Rank
1.	Planning Skill	6906/9600	71.94	I
2.	Implementation Skill	5100/7200	70.83	II
3.	Monitoring Skill	6073/8800	69.01	III
4.	Evaluation Skill	5653/8000	64.24	IV

Table.6 Association personal characteristics, academic achievements and meta-cognitive skills amongst boys and girls of SDAU students

(n = 160)

Sr. No.	Independent variables	Dependent variable
		Meta-cognitive skills (Y ₁)
		Correlation co-efficient of (r ₁) value
1.	Age (X ₁)	0.05 ^{NS}
2.	Gender (X ₂)	0.57*
3.	Name of College (X ₃)	0.09 ^{NS}
4.	UG/PG/PhD (X ₄)	-0.21 ^{NS}
5.	Semester (X ₅)	-0.03 ^{NS}
6.	CGPA (X ₆)	0.52*

* Significant at 5 per cent level;

NS = Not Significant.

Overall Ranking of dimensions of Meta-cognitive skills

It can be inferred from the table that respondents have higher Planning skill, followed by implementation, monitoring and lastly evaluation skill.

This means that students have less ability to engage in periodic self-testing and have less ability to compare learner's current level of skills in the goals they set for themselves with skill levels they set for themselves during the planning process.

Association between personal characteristics, academic achievements and meta-cognitive skills amongst boys and girls of SDAU students

The gender and CGPA shows positive and significant correlation. This means Meta Cognitive Skills affects academic achievements amongst students of SDAU. As the meta-cognitive skill will improve, student's learning ability will also improve.

Similar finding was observed by Isa (2016) for high school students and Eluemuno (2013) for senior secondary school students. Taraban *et al.*, (2000) examined relationship between Meta Cognitive Skills and academic achievements among university freshmen.

Maximum (67.50 per cent) number of respondents from SDAU belonged to 'Average Meta-cognitive Level'. Boys have significantly higher Meta-cognitive skill in comparison to girl students.

When varied dimensions of Meta-cognitive skill were compared among boys and girls of SDAU, it was found that 'Implementation skill' and 'Evaluation Skill' was significantly higher among boys. Ranking showed that, boys had higher implementation skill and girls had higher planning skill. Gender and CGPA shows positive and significant correlation with Meta-cognitive skill. It

can be concluded from the study that Meta Cognitive Skills affects academic achievements amongst students of SDAU.

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How to cite this article:

Serene Shekhar and Sarita Sanwal. 2022. Meta Cognitive Skills Affecting Academic Achievements amongst Students of SDAU. *Int.J.Curr.Microbiol.App.Sci.* 11(01): 27-33.
doi: <https://doi.org/10.20546/ijcmas.2022.1101.005>