Effect Of Information Processing Approach On Self-Concept In Physics Among Pre-University College Students.

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Abstract:

Education has always been seen as a tool for bringing about societal change. It is impossible to achieve this goal without first enhancing classroom procedures. Teaching is an activity that is planned and carried out with the goal of achieving many different goals, including behavioral changes in the students. Teachers that are effective are aware of how their pupils think and learn. "The key takeaway is that students can acquire social skills and academic knowledge, but they can also learn how to develop into integrated individuals who engage with the outside world, benefit from it, and contribute in return." (Weil, Joyce, and Calhoun, 2009).Without the ability to collaborate with others, engage in democratic processes, and exhibit empathy, a student's education is not complete.

Communication researchers need to understand the ideas of the self and self-concept. Theorists began to acknowledge the part that individuals play in communication in the 1970s and 1980s. One mechanism that has been recognized as providing regularity to interpersonal communication is the self-concept. Studies have looked into a variety of topics, including ethnic identities, technology use and self-perception, communication anxiety at the individual level, and the function of speech in the formation of one's self-concept. According to this research and theory, communication and information processing are mediated by factors pertaining to the self and self-concept. The information processing approach places a strong emphasis on how kids manage, track, and plan with information. The thought and memory processes are at the heart of this strategy. The information-processing approach holds that children acquire progressively more complicated knowledge and abilities as a result of their ever-growing capacity to process information (Halford, 2008).Through improving

the processing of self-relevant information, improving the retrieval of pertinent information, and influencing information interpretations, self-concept plays a significant role in information processing. "Self" is a more inclusive construct that encompasses ideas of agency and consciousness in addition to identification, relationships, roles, personality, and the physical body. The term "self-concept" describes a person's sense of self or the collection of beliefs they have about themselves, such as their sense of self-worth or self-evaluation. Differing responses in social contexts can be explained by different characteristics and self-concepts.

Key words: Self-Concept, Information Processing Approach, Physics.

INTRODUCTION:

Symbolic interactionists in the early 1900s are typically credited with addressing issues related to the self and self-concept. Cooley (1902) presented the idea of the "looking glass self," which emerges in reaction to other people's perceptions of the self, in Human Nature and the Social Order. When creating a self, a person imagines their image in the eyes of another, imagines the other person judging them, and reacts emotionally in either a favorable or negative way. In his 1934 book Mind, Self, and Society, George Herbert Mead made the case that social processes are reflected in the constitution of the self. Because each interaction partner communicates a distinct response, each calls forth a distinctive "self." A person's perception of themselves is, at least partially, shaped by how they think other people see them. The 1966 book Identities and Interactions.

NEED AND SIGNIFICANCE OF THE STUDY

"Teaching for Reaching" teaches us that instructional models are actually learning models. We teach students how to learn while also assisting them in acquiring knowledge, concepts, abilities, morals, and modes of expression. The ability of students to learn more quickly and efficiently in the future, both as a result of their newly acquired knowledge and skills and their mastery of learning processes, may really be the most significant long-term result of education.

For the previous fifteen years, the investigator has been a Physics instructor at an educational institution. According to him, students' performance in Physics falls short of what is expected. A significant portion of university students fail their physics exams. During the classroom discussion, it was learned that low achievement results from both a lack of intelligence and an incapacity to function well due to outside influences. He surmised that one such element might be instructional technique. Consequently, it was concluded that, in order to help students, innovative techniques to teaching physics must be developed and implemented immediately.

STATEMENT OF THE PROBLEM

"**Effectiveness of Information Processing Approach on Academic Achievement in Physics among Pre–University College Students**"

OBJECTIVES

1. To examine the effectiveness of information processing Approach of teaching on the self-concept of Pre-University college students.

2. To compare the influence of Information Processing Approach of teaching on self-concept among the boys and girls of Pre-University college students.

HYPOTHESIS

Hypothesis 1: There is no significance difference between the mean value of pre-test in the Self-Concept of Physics among the control group and experimental group.

Hypothesis 2: There is no significance difference between the mean value of post-test in the Self-Concept of Physics among the control group and experimental group.

Hypothesis 3: There is no significance difference between the mean value of pre-test and post-test in the Self-Concept of Physics among the control group.

Hypothesis 4: There is no significance difference between the mean value of pre-test and post-test in the Self-Concept of Physics among the experimental group.

Hypothesis 5: There is no significance difference between the mean value of post-test and delayed post-test in the Self- Concept of Physics among the experimental group.

Hypothesis 6: There is no significance difference between the pre-test mean value of self-concept in physics among the boys and girls of the experimental group.

Hypothesis 7: There is no significance difference between the post-test mean value of self-concept in physics among the boys and girls of the experimental group.

SCOPE OF THE STUDY

The study is limited to the 100 students of Pre–University college science students of Ballari District.

TECHNICAL TERMS

SELF CONCEPT:

A person's self-concept encompasses all of their actions, convictions, and aptitudes as well as what they infer from other people's reactions. The capacity to comprehend one's own actions, reactions, and behaviors is known as self-awareness.

INFORMATION PROCESSING APPRAOCH

Information processing is a concept that cognitive psychologists utilized to model human thought processes. Therefore, thinking is described by the information processing approach as the world providing data input that is then modified by our sensory systems.

PHYSICS

The area of study in science that looks at the composition and characteristics of matter and energy. The subjects of mechanics, heat, light and other radiation, sound, electricity, magnetism, and atomic structure are all included in physics.

RESEARCH DESIGN

The present study was experimental study.. The design followed by pre-test, post-test and delayed post-test for experimental group and pre-test, post-test for control group The sample was administered by treatment and controlled the variations with reference to control variable. The effect of treatment can be studied by this deign also through this design we can directly control the 'standard' errors'.

So, because of all the facts pre-test, post-test and delayed post-test in experimental group and pre-test, post-test in control group design was selected for the present study.

DESIGN OF THE STUDY

	Pre-Test	Treatment	Post-Test	Delayed Post-Test.
Experimental Group	Self-Concept	Information Processing Approach	Self-Concept	Self-Concept
Control Group	Self-Concept	Conventional Method of Teaching.	Self-Concept	---

SAMPLING

In the present experimental study, the population for the purpose of the study has been defined as the students studying in Karnataka State Pre-University College Students in English medium First Pre-University Students at Ballari formed the population.

TOOLS USED FOR THE STUDY

Researcher used standard tool of Self-Concept by Dr. Raj Kumar Saraswath

STATISTICAL TECHNIQUES USED IN THE STUDY

The researcher used SPSS-20 package for the analysis and interpretation of the data. Mean is average of a group scores. 't'-Test was used. The hypothesis was tested to draw inferences regarding study.

ANALYSIS AND INTERPRETATION OF THE DATA
HYPOTHESIS-WISE ANALYSIS AND INTERPRETATION OF DATA

Hypothesis 1: There is no significance difference between the mean value of pre-test in the Self-Concept of Physics among the control group and experimental group.

Table 1. Shows mean SD and t-value of pre-test self-concept scores between control and experimental group.

Self-Concept (Pre-test)					
Group	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Control	50	181.9400	18.86949	0.234	Not significant
Experimental	50	181.1400	15.14557		

The above table 1 reveals that the obtained t-value 0.234 is less than the critical t-value 1.984 at 0.01 level of significance. It means that the observed pre-test self-concept mean difference between control and experimental groups is not large enough to be considered statistically significant at the 0.01 significance level. In other words, there is insufficient evidence to reject the null hypothesis, which typically states that there is no significance difference between the mean value of pre-test in the Self-Concept of Physics among the control group and experimental group. The control group has a mean score of 181.94 with the standard deviation 18.86, while the experimental group has a mean score of 181.14 with the standard deviation 15.14.

Hypothesis 2: There is no significance difference between the mean value of post-test in the Self-Concept of Physics among the control group and experimental group.

Table 2. Shows mean SD and t-value of post-test self-concept scores between control and experimental group.

Self-Concept (Post-test)					
Group	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Control	50	183.3200	18.89870	1.997	Significant
Experimental	50	189.8800	15.23642		

The above table 2 reveals that the obtained t-value 1.997 is greater than the critical t-value 1.984 at 0.01 level of significance. It means that the observed mean difference between control and experimental groups is large enough to be considered statistically significant at the 0.01 significance level. In other words, there is no evidence to accept the null hypothesis, which typically states that there is no significance difference between the mean value of post-test in the Self-Concept of Physics among the control group and experimental group. Hence, the null hypothesis is rejected and the alternative hypothesis 'there is a significance difference between

the mean value of post-test in the Self-Concept of Physics among the control group and experimental group.' is formulated. The control group has a mean score of 183.32 with the standard deviation 18.89, while the experimental group has a mean score of 189.88with the standard deviation 15.23.

Graph 1. Shows mean difference of post-test self-concept scores between control and experimental group.
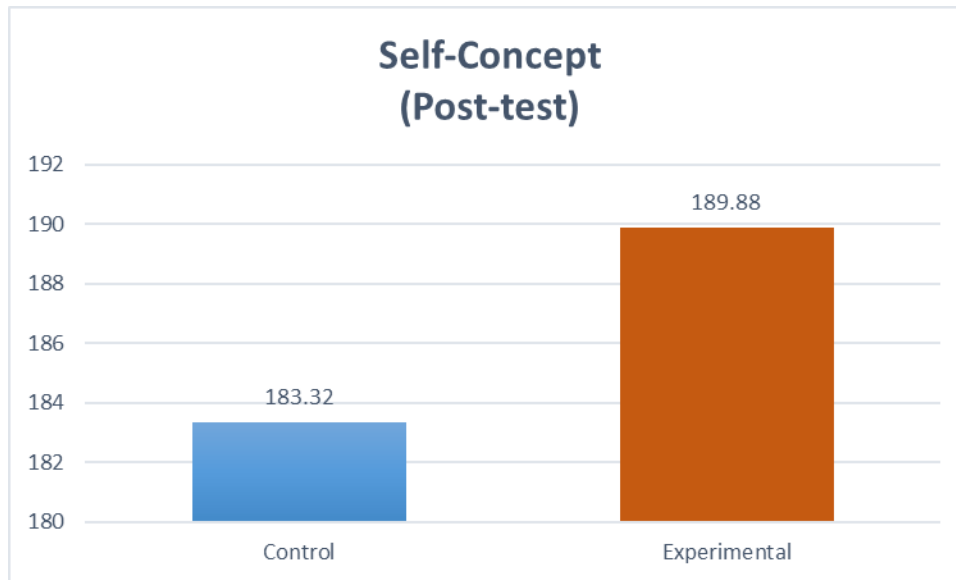
The above graph 1 shows that the experimental group has a higher mean of self-concept (189.88) compared to the control group (183.32). It means, students in the experimental group performed better in self-concept than those in the control group. This difference in means suggests that there may be a positive effect associated with the intervention or treatment applied to the experimental group.

Hypothesis 3: There is no significance difference between the mean value of pre-test and post-test in the Self-Concept of Physics among the control group.

Table 3. shows mean, SD and t-value of pre-test and post-test self-concept scores of control group.

Self- Concept (Control group)					
Test	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Pre-test	50	181.9400	18.86949	0.365	Not Significant
Post-test	50	183.3200	18.89870		

The above table 3 reveals that the obtained t-value 0.365 is less than the critical t-value 1.984 at 0.01 level of significance. It means that the observed mean difference between pre-test and post-test scores of self-concept of the control group is not large enough to be considered statistically significant at the 0.01 significance level. In other words, there is insufficient evidence to reject the null hypothesis, which typically states that there is no significance difference between the mean value of pre-test and post-test in the Self-

Concept of Physics among the control group. Hence, the null hypothesis is accepted. The pre-test self-concept score of the control group has mean of 181.94 with the standard deviation 18.86, while the post-test has a mean score of 183.32 with the standard deviation 18.89.
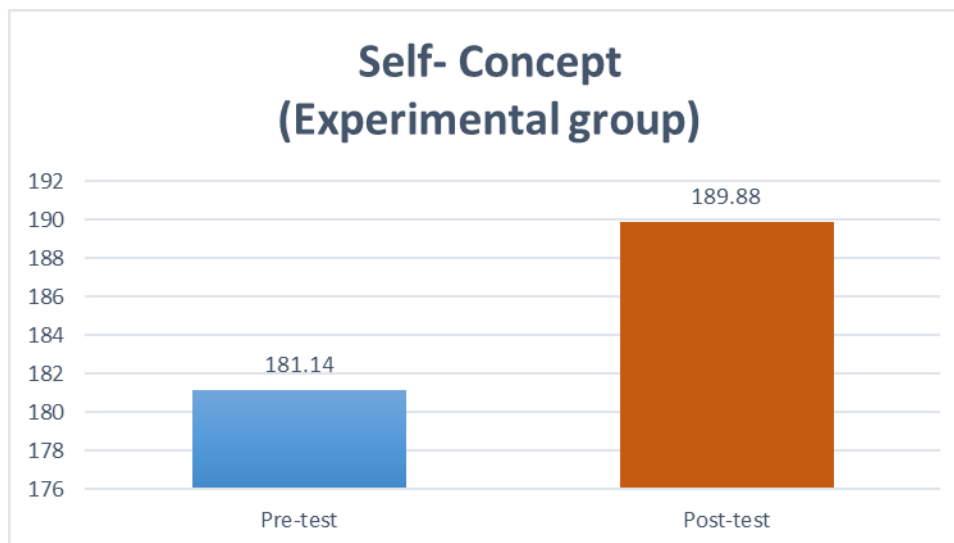
Hypothesis 4: There is no significance difference between the mean value of pre-test and post-test in the Self- Concept of Physics among the experiment group.

Table 4. shows mean, SD and t-value of pre-test and post-test self-concept scores of Experimental group.

Self- Concept (Experimental group)					
Test	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Pre-test	50	181.1400	15.14557	2.877	Significant
Post-test	50	189.8800	15.23642		

The above table 4 reveals that the obtained t-value 2.877 is greater than the critical t-value 1.984 at 0.01 level of significance. It means that the observed mean difference between pre-test and post-test scores of self-concept among the experimental group is large enough to be considered statistically significant at the 0.01 significance level. In other words, there is no evidence to accept the null hypothesis, which typically states that there is no significance difference between the mean value of pre-test and post-test in the Self- Concept of Physics among the experiment group. Hence, the null hypothesis is rejected and the alternative hypothesis 'there is significance difference between the mean value of pre-test and post-test in the Self- Concept of Physics among the experiment group' is formulated. The pre-test self-concept mean score of experimental group has a mean of 181.14 with the standard deviation 15.14, while the post-test has a mean score of 189.88 with the standard deviation 15.23.

Graph 2. shows pre-test and post-test self-concept mean scores of Experimental group.

The above graph 2 shows that the post-test has a higher mean of self-concept (189.88) compared to the pre-test (181.14). It means students in the post-test performed better in self-concept than in the pre-test. This difference in means suggests that there may be a positive effect associated with the intervention or treatment applied to the experimental group.

Hypothesis 5: There is no significance difference between the mean value of post-test and delayed post-test in the Self- Concept of Physics among the experiment group.

Table 5. Shows mean, SD and t-value of post-test and delayed post-test self-concept scores of Experimental group.

Self- Concept (Experimental group)					
Test	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Post-test	50	189.8800	15.23642	0.177	Not Significant
Delayed Post-test	50	189.3400	15.23236		

The above table 5 reveals that the obtained t-value 0.177 is less than the critical t-value 1.984 at 0.01 level of significance. It means that the observed mean difference between post-test and delayed post-test scores of self-concept of the experimental group is not large enough to be considered statistically significant at the 0.01 significance level. In other words, there is insufficient evidence to reject the null hypothesis, which typically states that there is no significance difference between the mean values of post-test and delayed post-test in the Self- Concept of Physics among the experiment group. Hence, the null hypothesis is accepted. The post-test self-concept score of the experimental group has mean of 189.88 with the standard deviation 15.23, while the post-test has a mean score of 189.34 with the standard deviation 15.23. It means the treatment has a long-term effect.

Hypothesis 6: There is no significance difference between the pre-test mean value of self-concept in physics among the boys and girls of the experimental group.

Table 6 shows Mean, SD and t-value of pre-test mean difference in terms of Self- Concept between boys and girls of experimental group.

Self- Concept (experimental group)					
Test	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Boys	25	186.1200	14.53249	1.783	Not Significant
Girls	25	193.6400	15.27492		

The above table 6 reveals that the obtained t-value 1.783 is less than the critical t-value 2.06 at 0.01 level of significance. It means that the observed pre-test mean difference between boys and girls scores of self-

concept among the experimental group is not large enough to be considered statistically significant at the 0.01 significance level. In other words, there is insufficient evidence to reject the null hypothesis, which typically states that there is no significance difference between the pre-test mean value of self-concept in physics among the boys and girls of the experimental group. Hence, the null hypothesis is accepted. The pre-test academic achievement score of the boys has mean of 186.12 with the standard deviation 14.53, while the girls has a mean score of 193.64 with the standard deviation 15.27.

Hypothesis 7: There is no significance difference between the post-test mean value of self-concept in physics among the boys and girls of the experimental group.

Table 7 shows Mean, SD and t-value of post-test mean difference in terms of Self- Concept between boys and girls of experimental group.

Self- Concept (post-test experimental group)					
Test	N	Mean	Std. Deviation	t-value	Significance (at 0.01)
Boys	25	176.2000	15.16300	2.418	Significant
Girls	25	186.0800	13.69586		

The above table reveals that the obtained t-value 2.418 is greater than the critical t-value 2.06 at 0.01 level of significance. It means that the observed mean difference of self-concept scores between boys and girls among experimental group is large enough to be consider statistically significant at the 0.01 significance level. In other words, there is sufficient evidence to reject the null hypothesis, which typically states that there is no significance difference between the post-test mean value of self-concept in physics among the boys and girls of the experimental group. Hence, the null hypothesis is rejected and alternative hypothesis 'there is a significance difference between the post-test mean value of self-concept in physics among the boys and girls of the experimental group' is formulated. The post-test self-concept score of the experimental group has mean of 176.20 with the standard deviation 15.16, while the post-test has a mean score of 186.08 with the standard deviation 13.69.

Graph 3 shows pre-test and post-test self-concept mean score of Experimental group.
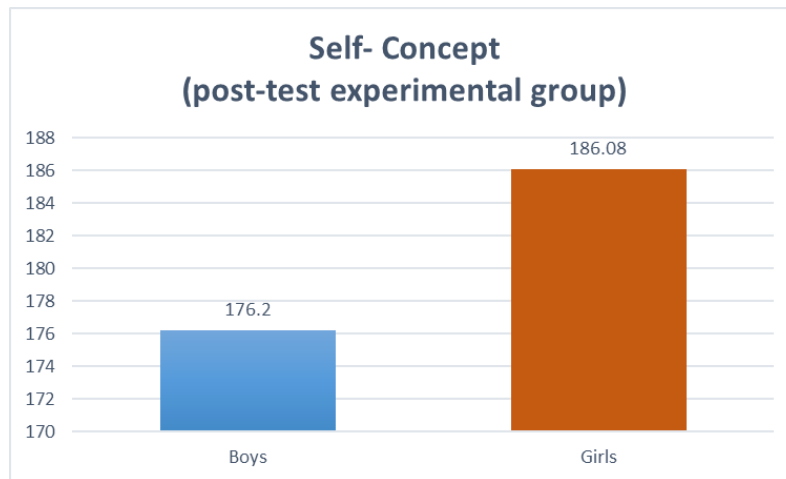
The above graph 3 shows that girls in the post-test has a higher mean of self-concept (186.08) compared to the boys (176.2). It means, girls in the post-test performed better in self-concept than the boys. This difference in means suggests that there may be a positive effect associated with the intervention or treatment applied to the experimental group.

CONCLUSION

The information processing approach technique in teaching Physics was effective in XI standard Students, as per the results obtained through the study. So it was a challenging experience to the teacher. When the investigator adopted the information processing approach the Self-Concept of students was enhanced to a great extent. The traditional approach seems to be a one way process where as the information processing approach is a two way communicating, interacting medium between teacher and learner. Hence all teacher education courses should include this approach to mark the shift from mere pedagogy to technical innovation.

REFERENCE:

1. Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? Psychological Science in the Public Interest, 4, 1– 44.

2. Cooley, C. H. (1902). Human nature and the social order. New York: C. Scribner's Sons.

3. Crocker, J., Brtook, A. T., Niiya, Y., & Villacorta, M. (2006). The pursuit of self-esteem: Contingencies of self-worth and self-regulation. Journal of Personality, 74, 1749 –1771.

4. Edwards, R. (1990). Sensitivity to feedback and the development of self. Communication Quarterly, 38, 101–111.

5. Harrison, K. (2006). Scope of self: Toward a model of television's effects on self-complexity in adolescence. Communication Theory, 16, 251–279.

6. Levine, T. R., Bresnahan, M. J., Par, H. S., et al. (2003). Self-construal scales lack validity. Human Communication Research, 29, 210 –252.

7. Linville, P. W. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. Journal of Personality and Social Psychology, 52, 663 – 676.

8. Markus, H. (1977). Self-schemata and processing information about the self. Journal of Personality and Social Psychology, 35, 63 –78.

9. Psychology, Sixth Edition, Worth Publishers, 2010.

10. Berk, Laura E. Development through the lifespan (Seventh ed., student ed.). Hoboken, NJ. ISBN 0-13-442058-6. OCLC 1012849824.

11. K.Khirade (2012) examined that 70% students have above average self-concept while 30% students have high self concept.

12. Dixit (2014) found that self concept influences adjustment of women positively.

13. Patel .P.A (2014) examined that here is a no significant difference in self-concept of women.

14. Jain (2012) found that low and high groups of academic achievement did not show any remarkable difference with regard to six areas of self-concept.

15. Sidney cooper 2013. Self-concept. Retrieved December 26, 2016, from Sidney cooper & associates, http://www.sidney cooper.co.za/index.php/articles/21-self-concept.

16. Saul McLeod 2008. Self Concept. Retrieved December 27, 2016, from simply psychology, http://www.simply psychology.org/self-concept.html.