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DEVELOPING PROBLEM-SOLVING SKILLS THROUGH ICT TOOLS

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Introduction:

This study was started with the intention to design a computer aided learning tool consist of carefully selected worked out examples. This may foster the understanding the subject. This study was carried out to investigate the extent to which the instructional format in terms of worked out examples had an impact on learning efficiency among undergraduate students in understanding correlation & regression concepts in statistics.

It was hypothesized that studying correlation & regression analysis topic with the help of 'worked out examples illustrated using computer aided multimedia tool' is more efficient than studying it by traditional chalk blackboard method. On the basis of this objectives, following hypothesis were formulated. The null hypothesis is there is no significant difference between two teaching methods verses learning with the help of the worked out examples students can learn more efficiently.

Other objectives are

- To provide numerous self paced practice examples to students,
- To facilitates independent learning.
- To foster the development of self motivation.

Sample

Sixty six undergraduate students of science faculty (Mean age 18.8, 34 Female, 22 Male) are divided in to two homogeneous groups. Half of the participants are involved in Learning with computer aided worked out examples (n_1=33) called as experimental group, the other half in learning by traditional method (n_2=33) called as control group.

Methods

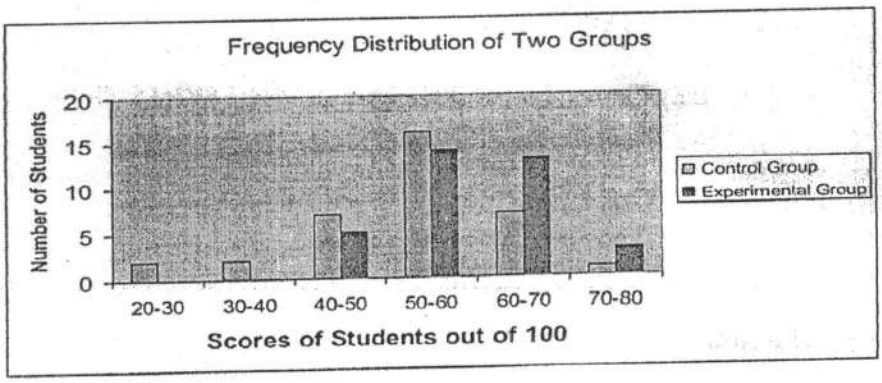
- Design and develop computer aided learning tool by applying cognitive theory of multimedia learning with special application principal ' The worked out example effect.'
- Participants of experimental group are trained using multimedia tools (Based on combination of multiple examples which are interrelated type) and participants of control group were trained by conventional method of teaching. Subsequently, they had to solve a series of two test papers. Dependent variables were perceived as performance of the test results.

Analysis of data and interpretation

Descriptive statistics regarding test score of students-Comparison of frequency distribution of (CG) and Experimental group (EG) implies that Experimental group (EG) has achieved comparatively high scores as compare to control group. Frequency distribution of CG shows positive sleekness, means scores are clustered at lower side of range. While that of EG shows negative skewness which implies that scores are concentrated around high values. This in turn implies that understanding the topic efficiently with 'worked out examples illustrated using computer aided multimedia tool'

Analysis of scores of control & experimental group

Group	Size	Mean	SD	coefficient of skewness	Coefficient of Kurtosis	Coefficient of Variation	Range
Control	33	44.6	11.031	0.165	- 0.843	0.247	41.0
Experimental	33	57.0	10.016	- 0.683	0.666	0.173	45.0



2. a. Inferential Statistics

Ho: $\sigma_1^2 = \sigma_2^2$ *Verses H1:* $\sigma_1^2 \neq \sigma_2^2$

to test Ho: Equality of Two Variances,

F test is

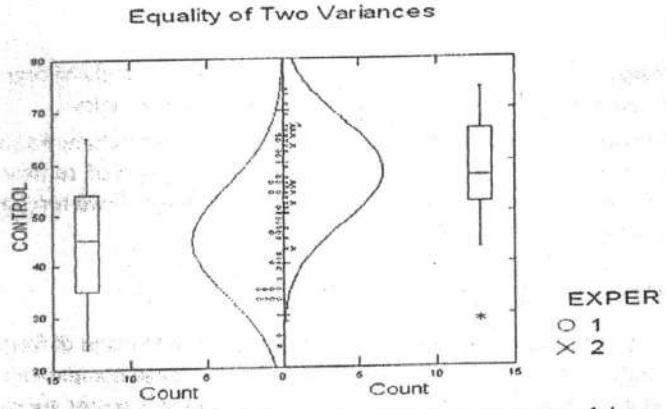
GROUP	N	Mean	Variance	F-ratio	p-value
1	33	44.606	121.684	1.213	0.588
2	33	58.000	100.313		

Equality of variances is established (p-value = 0.588)

2.b. Inferential Statistics

Testing equality of two means

Group	n	Mean	Standard Deviation	Difference in Means	t-value	p-value
1	33	44.606	11.031	13.394	5.164	0.000
2	33	58.000	10.016			



The H 1 (i.e. average score of the experimental group is greater than average score of the control group) is accepted.

Inferential Statistics- The difference between two methods of teaching as discussed above are highly significant. The alternative hypothesis i.e average scores of the experimental group is greater than average scores of the control group is accepted.

Results

Worked examples are more efficient for learning new tasks because they reduce the load in working memory, thereby allowing the learner to learn the steps in problem solving. Learning from worked out examples is faster way of learning which plays important role in the education process.It also develop reasoning process of learner

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