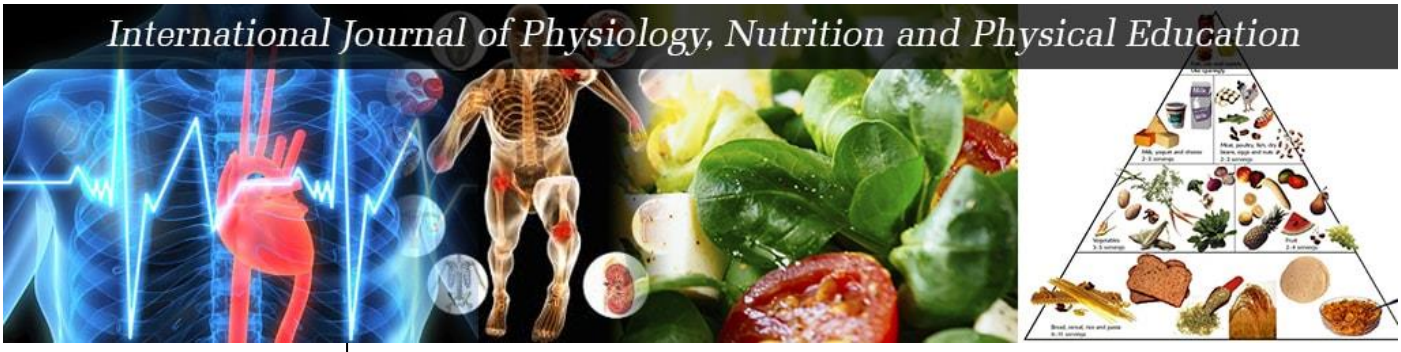

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A comparative study to evaluate the effectiveness of traditional class room lecture versus computer assisted instruction at senior secondary level

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Abstract
This study was aimed to judge the effectiveness of Traditional Classroom Lecture vs. Computer Assisted Instruction. The objectives were to check the educational effects between classroom lecture and Computer Assisted Instructions finding out a similar program and also the effects of same in terms of psychological feature development. Hypothesis of this analysis were supported six levels of blooms taxonomy as there was one major hypothesis: there's no important distinction exist for Computer Assisted Instructions student in gaining a high psychological feature action than students of same level having ancient Traditional Classroom Learning. It a designed to hide the all levels of psychological feature domain delineate by B. S. Blooms. A multiple choice questionnaire was compiled for this study. This study complete that the abilities of data, analysis and synthesis assured important increase. The Computer Assisted Instructions proven to be greatly effective in increasing the analysis and application skills of scholars to experimental cluster. Comprehension ability, however, not abundant full of the Computer Assisted Instructions. The results of this study it had been prompt that Computer Assisted Instructions as a good method to be applied to enhance teaching quality and by victimization Computer Assisted Instructions.

Keywords: Computer assisted instructions, traditional classroom lectures, cognitive domain

Introduction
Computer Aided Instruction has existed for over four decades, however it absolutely was not wide used till the arrival of the personal PC. Computer Aided Instruction started creating inroads within the geographic point once network personal computers started changing into widespread within the late 1980s. In early 90s Computer Aided Instruction as another to the normal room coaching has been enforced by massive businesses with sturdy tutorial budgets, nevertheless there remains a desire for little to medium size leader to seek out an economical technique for delivering effective, within your means instruction to their students.
Computer Aided Instruction may gain advantage the human resources by gap up a larger variety of coaching topics needed for job advancement and supply new skills in mistreatment technology within the learning processes. Initially, the employment of computer assisted tutorial material to boost ancient teaching was a completely unique thought. However, increasing pressures in the slightest degree levels of education perpetuated a desire for time-efficient, effective teaching modalities that maintained the standard of teaching. Computer Aided Instruction was thought-about to be a viable answer to those issues.

Computer Assistant Instructions
Computer Assistant Instructions grew into bigger favor within the mid-1990s, once the US Department of Labor-sponsored National Alliance of Business rumored little and mid-sized corporations ought to embrace new technologies equivalent to CAI, in order that they could use technology to cause required change; instead of reacting as technology changes have an effect on them. (Bergman & Kaufmann).
Studies by alphabetic character Wilson, shows that thoughtfully designed personal computer code will gift multiple, dynamically joined illustration in ways in which square measure not possible with static, inert media equivalent to books and chalkboards.

CAI has the potential to serve a twin purpose by enhancing the training expertise for resident students, whereas gap the academic expertise up to distance students (Brahler).

Bloom`s Taxonomy

Bloom's taxonomy was developed to supply a typical language for academics to debate and exchange learning and assessment ways. Specific learning objectives is derived from the taxonomy, though it's most typically wont to assess learning on a spread of psychological feature levels. The table defines every psychological feature level from higher- to lower-order thinking. The goal of a lecturer mistreatment Bloom's taxonomy is to encourage higher-order thought in their students by buildup from lower-level psychological feature skills. Activity and psychological feature learning objectives square measure given to spotlight however Bloom's taxonomy is incorporated into larger-scale instructional goals or pointers. The key phrases is used (e.g., Example Assessments) to prompt for these skills throughout the assessment method.

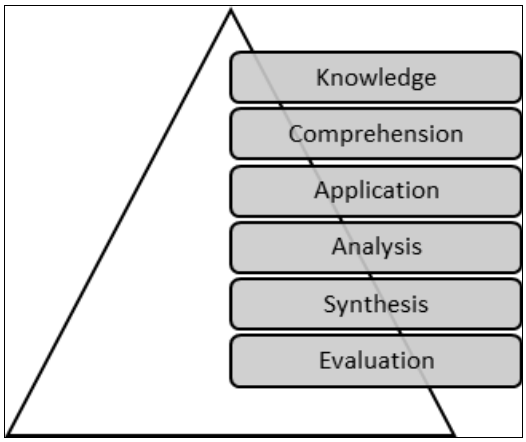

Fig 1: Cognitive Parameters of Bloom's Taxonomy

Cogitative development and Computer Assisted Learning

Wright and Forcier explains CAI as a learning surroundings characterized by educational interaction between Computer and Student, sets up the educational surroundings, ensures that every student has the required skills to interact in an exceedingly explicit psychological feature activity, and adjusts the educational activities in line with the students' wants. The instructional goal of the educational material could have an effect on development time also. Development time will increase because the learning goals for the materials ascend bloom's learning taxonomy from information to talent to angle and because the technical quality of the computer work will increase from basic to intermediate, to high (Golas, 1993). Clearly more hours would be needed to develop a whole course.

Educational science provides several theoretical principles to be applied within the development and analysis of pc power-assisted educational technology. Milheim and Martin (1991) [10] in learning learner management motivation, attribution and informational process theory, establish learner management as a very important variable in developing the pedagogy of soppy wares. It is helpful to usually maximize learner management because it will increase the connation of learning, expectations for fulfillment and general satisfaction tributary to heightened motivation (Keller & Knopp).

Spiro and Jehng classified in following manner which seem to be most often utilized for educational purposes. Which are as listed below:

- Drill and Practice
- Tutorials
- Instructional Games
- Simulations
- Problem-solving
- Discovery-environment

Computer Assisted Instructions as a Teaching Method and its Effects

A comparative study conducted in 1996 on frog dissection during an ancient workplace and by a CAI simulation found users according higher satisfaction levels victimization the simulation. whereas a number of the satisfaction was thanks to the flexibility to perform a dissection while not requiring Associate in Nursing actual animal, users additionally according satisfaction with the branching ability of the instruction, the flexibility to create their own alternative on navigating the dissection, and therefore the ability to copy and proper mistakes (Kinzie, Larsen, Burch, & Boker).When utilizing the CAI as an instructor, involving the scholar within the learning method interactively is of utmost importance. Computers don't seem to be affected to the one-dimensionality proved in textbooks or earlier tutorial computer code. The utilization of machine-readable text and hyper linking permits the scholar to see his/her own presentation sequence, at intervals limits established by the teacher and/or technologist (Scott D. Lipscomb).

The importance of maintaining the 'human interaction' element in Associate in nursing on-line teaching learning surroundings and CAI can't be over-emphasized. Interactions between instructors and students, similarly as peer interactions between students, square measure requisite to facilitating vital thinking and promoting enriched learning (McCormack & Jones).A major advantage of CAI is that, by necessity, it needs the scholar to be an energetic participant within the learning method. It's not solely attainable, however necessary for the scholar to move with the pc instead nothing can happen (Chabay). So as to progress from one screen of knowledge to succeeding, in most cases, the scholar should respond victimization the computer's peripheral hardware (e.g. keyboard, mouse, joystick, or specially-designed devices). As a result, it's not possible for the scholar to assume the role of a mere observer (Lockard, Abrams, & Many).

Low technology strategies of teaching use printed handouts and overhead transparencies. Overhead transparencies are primarily a labor saving device for class instruction. The teacher needn't write identical data when it's used. They permit easy presentation of color and graphics. The common attributes of print and overhead transparencies are affordability, flexibility, reliability, standardization of equipment, and simple creation and use. However, they become unwieldy with giant quantities of curriculum. They're static, and their distribution needs effort and time (Kearsley). Television, videotape, and film have the advantage of simple duplication and distribution to numerous audiences, but share an absence of interaction between the learner and therefore the educator. (Whetzel). Disadvantages to those formats also include high cost, lack of involvement of native instructors, and learner tedium because of the shortage of interaction (Kearsley).

Satellite training could be a technique of broadcasting curriculum to people in several locations at the same time. Some systems don't have any feedback, some have audio feedback through a telephone line; that works well for

question and answer periods. The feedback side solves a number of the issues of unidirectional television broadcast. This method is suited to delivering consistent curriculum to wide scattered personnel, and is employed by the communicating, the military and large financial companies (Collis, Vingerhoets, & Moonen). Teleconference consists of two-way communication. Audio-conferencing could be a low cost, simply enforced system, and may be set up using existing telephone equipment. Videoconferencing is more technically difficult and needs more specialized equipment (Whetzel, D., Felker, D., & Williams, K.). Computer conferencing uses existing computer equipment with the addition of microphones, however has been severely restricted by bandwidth considerations (Kearsley).

Objectives

- To compare the effects of Computer Assisted Instructions and Traditional Classroom Learning for cognitive learning.
- To find the results of learner knowledge gained through Computer Assisted Instructions and Traditional Classroom Learning.
- To measure the development of comprehension skill by Computer Assisted Instructions and Traditional Classroom Learning.
- To analyze the effect of Computer Assisted Instructions and Traditional Classroom Learning on the application skills of students.
- To take apart the effects of Computer Assisted Instructions and Traditional Classroom Learning with respect to analysis and synthesis skills of students.
- To assess the effectiveness of Computer Assisted Instructions to enhance learner's ability of evaluation in comparison of Traditional Classroom Learning.

Hypothesis

- There is no significant difference exist for Computer Assisted Instructions student in gaining a high cognitive achievement than students of same level having Traditional Classroom Learning.
- Computer Assisted Instructions students have a significant comprehension skill then Traditional Classroom Learning students.
- Significant difference existed in Computer Assisted Instructions' developmental ability of increasing application skills in students effectively then Traditional Classroom Learning.
- Computer Assisted Instructions is significantly stronger by analysis and synthesis skill of students then Traditional Classroom Learning.
- Evaluation skill is significantly better developed in students by Computer Assisted Instructions in comparison of Traditional Classroom Learning.

Methodology

The analysis was true- experimental in nature as a result of the equivalence of the management and experimental teams were provided by random assignment of subjects to experimental and management treatments. Each teams have average score twelve points one thing in pre-test. The analysis style followed by research worker is that the Pre-test, Post take a look at Equivalent teams act.

Delimitations

The present study had been delimited in the following manner:

- The study was delimited to the Ludhiana district only.
- The representative 40 students of age group from 12-17 years was taken for this study.
- The use of computer was limited for the presentation purpose only.

Sample

This study surrounded the city of Ludhiana as the population of the study. The subject students of Senior Secondary level were selected at stratified basis. In order to get wide random samples 20 students were selected for this study.

Procedure of the study

This study is a Comparison between Computer Assisted Instructions and Traditional Classroom Learning for age group between 12-17 years. A test containing 30 items multiple choice questions. The test was given as a pretest to all students in the beginning. The students were asked to fill this test after the both teaching methods had been finished. The weightage for each item was given according to the following table.

Table 1: Cognitive parameters weight age of the test

S. No.	Parameter	Number of questions	% Weightage
1	Knowledge	9	30%
2	Comprehension	5	16.6%
3	Application	4	13.4%
4	Analysis and synthesis	4	13.4%
5	Evaluation	8	26.6%

The same test was used for analysis at post-test stage. It had been given to all students following completion of experimental study. Upon completion, the students were informed of their score and also the incorrect answers were reviewed if requested. At now, the pretest was additionally offered for review if requested.

Data Collection

Data was collected from each of the groups by giving them a test consisted of 30 items, which was further divided into the parameters of cognitive domain.

Data Analysis

Collected data was tabulated and analyzed in terms of mean scores and two way analysis of variance followed by Dunkun Multiple Range Test (DMRT) was used as data analysis tool.

Findings

The outcomes drawn after the analysis of data are as follows:

Table 2: Showing ANOVA on total cognitive achievement

Source of variation	DF	SS	MSS	F-Value	P-Value
Student	19	653.74	34.407	1.46 NS	0.1360
Teaching M	3	1743.44	581.146	24.79 **	0.0000
Error	57	1341.81	23.541		
Non-additivity	1	223.96	223.958	11.22	
Residual	56	1117.85	19.962		
Total	79	3738.99			

The results are given in table 2, the intra-student variations were non-significant with very little F-value. Each of the student groups obtained 12.5 to 20.1 marks in pre-experiment test however the variations were not important. After the treatment, there was 60-70% rise in total cognitive achievement of students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post-experiment analysis, however, there have been no significant variation in 'acquiring of knowledge' by both Traditional Classroom Learning and Computer Assisted Instructions teams with respect to pre-test analysis. The variation between both methods were extremely significant with respect to the other pre-fixed objectives.

Table 3: Showing ANOVA on total gain in knowledge

Source of variation	DF	SS	MSS	F. Value	Prob
Student	19	78.24	4.118	0.77 NS	0.7335
Teaching M	3	91.34	30.446	5.67**	0.0018
Error	57	305.91	5.367		
Non-additivity	1	29.88	29.880	6.06	
Residual	56	276.03	4.929		
Total	79	475.49			

The results in table 3 shows that the intra student variations were non-significant with very little F-value. Both of the student groups obtained 3.95 to 4.2 marks in pre-experiment test however the variations were not significant. Once the treatment was done, there was 59% to 45% rise in knowledge of the students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post-experiment analysis, there have been no significant variations between two strategies were extremely significant with 5.67 F-value.

Table 4: Showing ANOVA on total gain in comprehension

Source of variation	DF	SS	MSS	F- Value	P-value
Student	19	26.95	1.418	1.06 NS	0.4162
Teaching M	3	76.55	25.517	19.02**	0.0000
Error	57	76.45	1.341		
Non-additively	1	1.87	1.867	1.40	
Residual	56	74.58	1.332		
Total	79	179.95			

The table 4 shows that the intra student variations were non-significant with very little F-value. Both of the student groups obtained 1.9 to 4 marks in pre-experiment test however the variations were not significant. After that treatment, there was 110% to 85% rise in comprehension of students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post-experiment analysis, there have been no vital variation in acquiring of knowledge by both Traditional Classroom Learning and Computer Assisted Instructions groups. The variations between two methods were extremely significant.

Table 5: Showing ANOVA on total gain in application

Source of variation	DF	SS	MSS	F. Value	P-value
Student	19	20.80	1.095	0.78 NS	0.7153
Teaching M	3	24.40	8.133	5.82**	0.0015
Error	57	79.60	1.396		
Non-additivity	1	10.55	10.547	8.55	
Residual	56	69.05	1.233		
Total	79	124.80			

The above table 5 shows that the intra student variations were non-significant with very small F-value. Both of the student groups obtained 1.9-2.3 marks in pre-experiment test however the variations were not vital. When the treatment, there was 21-77% rise in application ability of students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post-experiment analysis, there have been no vital variations in acquiring of knowledge by both Traditional Classroom Learning and Computer Assisted Instructions groups. The variations between two ways were extremely significant.

Table 6: Showing ANOVA on total gain in analysis and synthesis

Source of variation	DF	SS	MSS	F. Value	P-value
Student	19	25.70	1.353	1.28 NS	0.2323
Teaching M	3	46.30	15.433	14.61 **	0.0000
Error	57	60.20	1.056		
Non-additivity	1	4.49	4.488	4.51	
Residual	56	55.71	0.995		
Total	79	132.20			

The above table 6 shows that the intra student variations were non-significant with very little F-value. Both of the student groups obtained 1.3-3.1 marks in pre-experiment test however the variations were not significant. When the treatment, there was 138% to 56% rise in analysis and synthesis ability of students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post experiment analysis, there have been no vital variations in acquiring of information by each Traditional Classroom Learning and Computer Assisted Instructions teams. The variations between two ways were extremely significant.

Table 7: Showing ANOVA on total gain in evaluation

Source of variation	DF	SS	MSS	F. Value	P-value
Student	19	47.44	2.497	1.02 NS	0.4503
Teaching M	3	132.74	44.246	18.14 **	0.0000
Error	57	139.01	2.439		
Non-additivity	1	13.67	13.672	6.11	
Residual	56	125.34	2.238		
Total	79	319.19			

The table 7 reveals that the intra student variations were non-significant with very little F-value. Both of the student groups obtained 3.35 to 4.75 marks in pre- experiment test however the variations were not significant. After the treatment, there was 37% to 117% rise in analysis ability of students for Traditional Classroom Learning and Computer Assisted Instructions over control. In post experiment analysis, there have been no vital variations in acquiring of knowledge by both Traditional Classroom Learning and Computer Assisted Instructions groups. The variations between two ways were extremely significant.

Conclusion

This study concluded that Computer Assisted Instructions tried to be considerably superior to the Traditional Classroom Learning. The skills of knowledge, synthesis and analysis assured vital increase. The Computer Assisted Instructions tried to be great effective in increasing the analysis and application skills of students to experimental cluster. Comprehension ability, however, not much affected by the Computer Assisted Instructions. Therefore students of experimental group were looking well motivated and ready to learn each day of experimental period of Computer Assisted Instructions treatments than students of Traditional Classroom Learning treatments.

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