

Action Research on Improving Third Year Regular Information Technology Students' Academic Achievement in Multimedia System Course

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Abstract

Education is the vital requirement of every individual to go further in life and the only means by which one can get success and reach the top of the destination and builds a strong nation. It is the key element for individuals' to bring behavioral issues, good economic status, social interest and political aspect change in a given state. In Ethiopia, group learning strategy is implemented as a means of instruction in all levels of education from upper primary schools to colleges and universities since 2010. In higher education, improving the academic achievement performance of students need more attention by the concerned institution elites. Due to this fact, evaluating students by their academic achievement performance is considered as a key element. The objective of the study is to investigate an action research to improve third year regular information technology department students' academic achievement in multimedia system course. Both primary and secondary data sources were used to collected qualitative and quantitative types of data. Primary data sources are collected through questionnaires, and observations. A total of forty-two students from department of Information Technology were taken for this research and forty-two questionnaires were distributed to the students. To achieve the desired goal, we have used the students skill gaps, like communication, active learning, course delivering style, time management, assessment, cooperative learning, problem solving, creativity thinking, self managing and feedback to assist learning skills to know the knowledge they have on the skills in cooperative learning style. The descriptive study results clearly indicated that the average scores of students had increased from 7.60 and 9.75 as pre-test and post-test in the distributed questions.

Keywords: Action Research, Academic performance, mean score, standard deviation, pre-test, post-test, students, multimedia system

Chapter One

1. Introduction

1.1. Background of the Study

In January 2016, the Ministry of Education (Education Strategy Centre) developed a concept note to reform the education sector in accordance with the national vision and national development goals(MOE, 2018). Understanding the main crucial role of education at schools and universities level, the education sector has passed through a series of successive, rolling Education Sector Development Programs (ESDP I-V). According to the theory of human capital developed by Becker (1964) and formal, education is one of the factors that leading to the development of the population's productive potential and affecting a country's economic growth(Case, 2020).

Education is the vital requirement of every individual to go further in life and the only means by which one can get success and reach the top of the destination and builds a strong nation. It is the key element for individuals' to bring behavioral issues, good economic status, social interest and political aspect change in a given state. Also, it determines the development of the country. A well-educated country results to a well-developed country. Thus, major education reform known as kage to university level programs had been applied. Its core purpose is to provide quality education, globally competitive, and bring the country up to international standard. To fill education gap and make students more competitive academic achievement is taken into consideration by the universities.

Academic achievement is calculated by school grades in most of the previously conducted studies, and commutative GPA is more valuable for assessing student academic success at university level. Student's academic performance and graduation rates have been the area of interest for higher education institutions(Kim et al., 2019). Investigation of factors related to the academic performance of university students become a topic of growing interest in higher educational circle.

Assosa University is also engaging in various developmental activities to achieve the country's growth and transformation plan. College of computing and informatics is one of the the college in Assosa University which has three departments, namely computer science, information technology and information science. Information technology department is the department we are focused to our study. In addition to the stated objectives, ASU has the aim to build creativity and more

competete students in information technology department throught the country, especially multimedia system applications has various oppurtunties for the information technology students which is given for third year regular information technology students.

1.2.An Overview of Multimedia System

Education and learning are thought to be most crucial foundations of a growing economy, yet the academic system needs radical transformations and major technological reforms(Iskandar et al., 2018). In education, multimedia system can be used as a source of information. In university, students can search encyclopaedias such as Encarta, which provide facts on a variety of different topics using multimedia presentations. Teachers or instructors can use multimedia presentations to make lessons more attractive by using animations to highlight or demonstrate key points.

Multimedia is a combination of more than one media type such as text (alphabetic or numeric), symbols, images, pictures, audio, video, and animations usually with the aid of technology for the purpose of enhancing understanding or memorization(Grimes & Potel, 1991). Multimedia is the field concerned with the computer controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally. Multimedia is a media that uses multiple form of information content and information processing. Multimedia system is a system which allows its users to interact and manipulate basic multimedia objects like flash macromedia, adobe photoshop, power points and media player.

1.3.Statment of the problem

Assosa university is one of the governmental university which was established to build and create competitive graduate students to achive its main objective. In higher education, improving the academic achievement performance of students need more attention by the concerned institution elities. Due to this fact, evaluating students by their academic achievement performance is considered as a key element. Academic achievement performance of students in higher education and university is descrbed as the final result in which students have gotten after the compeletion of the specified course at the end of the semester(Endalamaw Yigermal, 2017). Currently, group learning strategy is the main concerned issue in primary schools, colleges and higher universities, due to the factor of the students came with various background of diversity(Olufemi et al., 2018).

Students came with diversified practice can incorporated into difficulties in case of communication and way of sharing ideas with their classmate in short time and this makes their academic achievement as poor status.

In Ethiopia, group learning strategy is implemented as a means of instruction in all levels of education from upper primary schools to colleges and universities since 2010(Yuan & Lee, 2015). Although group learning has been implemented for more than ten years in Ethiopian Higher Education Institutes, the program has not been effective as it expected. Department of information technology is one of the department in college of computing and informatics in Assosa University. The department accepted the responsibility for implementing group learning strategy to improve students' learning output. All the students should possess the confidence and competence to use multimedia system concepts in their real life. We are living in a world that is system applications are interactive for use in which they become an interactive, more and more related multimedia job careers.

It is very essential for information technology students as such they become an experts in the 21st century after the completion of the year of study. During the studying class, students must be competitive, success and skilledfull in the current situation and future workplace. These skills include creativity, critical thinking, communication, collaboration, literacy competency, flexibility, initiative, productivity, leadership, and responsibility as they discussed by (Lamas, 2014). However, the main challenges we faced in the identified department is that most of the students have lack of capability to understand examinations easily, because of there is no self confidence and well-organized about the contents of the course. Covid 19 is also an other challenge that collapse the schedule of the students for studying in order to have good time which may hinder psychology of the student .

1.4. Research Questions

The researchers intended to have the following basic questions to investigate the problems and make proper intervention to improve student academic achievement in case of multimedia system course for third year regular information technology students; this action research will answer the following basic questions:

- What are the factors affecting the habit of group learning in the multimedia system course?

- How cooperative learning practices will be improved for the future?
- How to improve the academic performance of the students?

1.5.Objective of the study

1.5.1. General objective of the study

The general objective of the study is to investigate an action research to improve third year regular information technology department students' academic achievement in multimedia system course.

1.5.2. Specific objective of the study

To accomplish the general objective, the following tasks are taken into consideration:

- To show the students benefits and importance of working in group
- To identify the factors affecting group working and studying in the students
- To develop way of sharing knowledge by students during group discussion
- To find out the most appropriate approaches to improve self-confidence in students

1.6.Approach of the study

In this action research study, we used group studying and learning approach to create a comfortable environment among students to improve their achievement.

1.7.Significance of the Study

The significance of the research findings is to benefit primarily the students and researchers for future research study as an input.

1.8.Limitation of the Study

The limitation of the study was constraints to budget and time duration (COVID-19).

1.9.Methodology of the study

In this study, we have used both primary and secondary data collection methods to conduct the action research. Primary data collection methods were conducted by questionnaires and interviews and secondary data collection methods are literature reviews and written documents analysis and also the students 2013 E.C first semester grade reports.

2. Literature Review

The purpose of this action research study is to examine the literature to discern how students' perceptions of multimedia system impacts their academic performance. Additionally, the study will explore effective formative strategies that can be implemented to help improve students' academic performance.

2.1. Concepts of Academic performance

Academic performance is the way of measuring the status of the students related to various academic subjects in high schools and higher governmental institutions like universities. Teachers and education officials typically measure achievements of students by using classroom performance, graduate rates and results from standard examinations and practical laboratories assessments methods (Shahzadi & Ahmad, 2011). Academic achievement is one of the major factors considered by employers in hiring workers especially for the fresh graduates (Maziah Wan Ab Razak et al., 2019). Academic performance in the colleges of education determines whether the students will proceed to university for higher degree or be able to secure a teaching job. Students' performance also determines quality of education that will be passing to the students by the potential teachers at university levels.

The academic performance involves factors such as the intellectual level, personality, motivation, skills, interests, study habits, self-esteem or the teacher-student relationship. When a gap between the academic performance and the student's expected performance occurs, it refers to a diverging performance (Dhaqane & Afrah, 2016).

2.1.1. Students' Academic Performance Factors

Students' academic performance is important for an institution for the good achievement that leads to the job performance in the future life. The academic performance is not affected by age, gender, and place of residence but they also said those who live near to university can perform much better than others who live far from university. According to (Maziah Wan Ab Razak et al., 2019), the students' academic performance is affected by the following factor:

- a) Teaching and learning process:- It communicates between both parties, students and teachers or lectures. Someone performed their lectures in front called teaching

- b) Infrastructure of the university:- Infrastructure can be viewed as related to education such as classrooms, libraries, sports and recreation centres, furniture, laboratories; administrative blocks such as electricity and water.
- c) Family and peers influence:- Some study said, parents with no qualification but if the mother's education are strong than it will influence to their sons to finish their study on time.
- d) Students' financial:- The family income of students is likely to affect the college choice decision in terms of public-private institutions.

2.2.Action Research

The process of studying a real school or classroom situation in order to understand and improve the quality of actions or instructions is termed as action research(Khasinah, 2013). Action research is a collaborative,cyclical process done by instructors or lecturers to gather information about and subsequently improve the ways their particular educational setting operates their teaching,and students' learning ability.

Action research is the application of fact-finding to solving of practical problems in actual situation with a view to improving the quality of action within it involving the collaboration and operation of researchers, practitioners and learners(Saramunee, 2021).According to goods,"Action Research is a research conducted by teachers,supervisors and administrators to improve the quality of their decision and action." Thus,action research is a total process in which a problem is diagnosed,remedial action is planned,implemented and its effects monitored. .

2.2.1. Applications of Action Research

Action research is an attractive alternative for teacher researchers, school administrative staff, and other stakeholders in the teaching and learning environment to consider situations in detail(Jefferson, 2014). Within education, the main goal of action research is to determine ways to improve the lives of skill of students. At the same time, action research can advance the lives of those professionals who work within educational systems especially university students.

3. Methodology of the Study

3.1. Research Methodology

3.2. Research Design

The researchers use the descriptive research design. This method is selected because it enables to investigate the way how to improve students academic performance awareness, about group studying strategy, challenges of group discussion learning based on the finding. It is implemented according to the information secured from the respondents under the specified department course.

3.3. Sources of Data and Methods Collection

Both primary and secondary data sources were used to collect qualitative and quantitative types of data. Primary data sources are collected through questionnaires, and observations. The weakness of one data collection method would be improved by the strength of another. The questionnaire is containing both close and open ended types to collect data from the students. The questionnaire is distributed for all the students who are attending and learning the multimedia system course in the identified department. Direct classroom observation is taken into account to identify the existing challenges that hinder the students in group learning and motivating their communication skills during the learning teaching process for having an outstanding achievements.

3.4. Target population, Sample and Sampling Techniques

This action research was conducted in department of Information Technology College of Computing and Informatics at Assosa University as studying area. The target population of this study was regular third year undergraduate Information Technology students. Regarding sample, all third year students of Information Technology department were participated in the research. Sample is a set data collected or the observation drawn from the population. The total population and sample for the research is taken from the third year regular information technology students in case of multimedia system course.

3.5. Background information of students

A total of forty-two students from department of Information Technology were taken for this research and forty-two questionnaires were distributed to the students. From the distributed questionnaires thirty-nine were returned after filled by respondents. This implies that the rate of return of the questioner was 92.9 percent.

From the total sample size of respondents filled the questionnaire properly, 71.8% of the respondents were male and the remaining 28.2% of them were female (Table 1). This showed that the number of females were less than number males by 2/3. As depicted in the item 2 of the same table, pertaining to student's age, majority 28 (71.8%) of them were found in below the age group of 18 to 25 and where as about 5(12.8%) and 6(15.4%) of them were found above 26 and below 40, respectively. This implied that students were at a good age status to understand each other while they carried out their tasks by using group studying and learning methods in order to make clear collaboration of working environment. As it indicated from the last row of table 1, regarding to their marital status, about 38(97.4%) students were single and only one(2.6%) student was married. This implied that, most of the students were at good stage for having an habit of receiving the lectures and notes from the class easily.

Table 1. Personal Information

No	Characterstics		Sample respondents (thirty-nine)		
			Frequency	Percent	Mean
1.	Gender	Male	28	71.8	19.5
		Female	11	28.2	
2.	Age	Below 25	28	71.8	9.75
		Between 26-30	5	12.8	
		Between 31-40	6	15.4	
		Above 41	0	0	
3.	Marital Status	Single	38	97.4	19.5
		Married	1	2.6	

Table 2. Students Grade Point Average(GPA) Result By gender

No	Student GPA score	Male		Female	
		Frequency	Percent	Frequency	Percent
1)	Below 2.49	0	0	0	0
2)	Between 2.5 and 2.99	13	33.33	4	10.26
3)	Between 3.00 and 3.49	4	10.26	5	12.82
4)	3.5 and above	11	28.21	2	5.13
Mean		7	17.95	2.75	7.05

Source: survey result, 2021 first semester grade report

The above table indicated that, only thirteen (13) students have scored below 2.6 GPA. It still needs an additional improvement to the students' grade achievement to become competitive in every life equally with other university students as much as possible.

Table 3. Students' Communication Skill

No	Questions on students' communication	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I think, I have developed my ability to communicate effectively with others	0	10	8	11	10
2.	I understand fluently while my teacher is teaching.	4	5	7	6	17
3.	I think, I have improved my ability to convey ideas.	0	4	4	11	20
Average		1.33	6.33	6.33	9	15.66

Where as VL is very low, L is Low, M is medium, H is High, VH is Very High

As it is indicated from table above (table 3), three questions are asked to the respondents (students) concerning to their communication skill to improve the learning and study cooperatively. Based on their response the researchers gave the weight and showed the rank position of the question (i.e. the third question is first in rank).

Table 4.Students' Active Learning skill

No	Questions on students' active learning	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	My learning method uses a variety of learning methods	3	5	10	11	10
2.	I think, I have the chance to participate actively during the class session	0	10	5	5	19
3.	I think, I have short notes on the lecture time	1	2	10	14	12
4.	I think, the course design helps me to understand the course content	1	1	5	12	20
Average		1.25	4.25	7.5	10.5	15.25

Table 5.Delivering style of course content to students

No	Questions description of course content	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I think, the lecturer in this course is extremely good at explaining things	2	2	3	13	19
2.	I think the academic expectations of me on this course were too high	1	5	1	14	18
3.	This course has helped me develop my ability to work as part of a group	1	4	6	8	20
4.	I think, the courses contents were well organized	0	4	3	12	18
5.	This course has improved my communication skills	0	3	2	16	12

Average	0.8	3.6	3.0	10.6	17.4
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Table 6.Students' Time Management Skill

No	Questions time management skill	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I use my time properly to study the course	3	5	6	9	16
2.	The course contents are matched with schedule assigned to it properly	6	1	10	5	17
Average		4.5	3.0	8.0	7.0	16.5

Table 7.Assessment Methods

No	Questions assessment methods	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	The program uses a variety of assessment methods	0	2	8	16	12
2.	To do well in assessment in this program	0	1	3	15	20
3.	I think, the assessment followed the university's guidelines	0	1	3	10	25
4.	I think, the assessment tested my understanding of key concepts in this program	1	1	5	13	19
Average		0.25	1.25	4.75	13.5	19.0

Table 8.Students' Cooperative Learning Skill

	Responses by respondents
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No	Questions cooperative learning skill	VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I think, I have frequently discussed ideas from courses with other students' out-of-class	1	2	13	8	11
2.	I think, I have found that discussing course material with other students outside classes has helped me to reach a better understanding of the material	2	1	7	12	15
Average		1.5	1.5	10.0	10.0	13.0

Table 9.Problem-Solving Skill by students

No	Questions problem-solving skill	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I think, I have improved my ability to use knowledge to solve problems in my studies	2	3	7	10	17
2.	I think, I am able to bring information and different ideas together to solve problems	0	5	8	12	14
Average		1.0	4.0	7.5	11.0	15.5

Table 10.Students' Creativity Thinking Skill

No	Questions to creativity thinking skill	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)

1.	I think, I have been able to come up with new ideas	1	3	4	10	20
2.	I think, I have been encouraged to apply my own ideas in my studies	0	4	5	12	18
Average		0.5	3.5	4.5	11.0	19.0

Table 11. Self-Managed Learning Skill

No	Questions to self-manage learning	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)
1.	I think, I take responsibility for my own learning	1	2	2	16	18
2.	I think, I am more confident of my ability to pursue further learning in the course	1	2	6	12	18
3.	I think, my instructor used effectively way of teaching the course	0	2	2	16	19
4.	My instructor has the ability to treat students equal during the teaching-learning process	2	3	5	13	16
5.	I think, my instructor would demonstrate me the laboratory session	1	3	2	16	17
Average		1.0	2.4	3.4	14.6	17.6

Table 12. Feedback to assist learning skill

No	Questions to feedback to assist learning	Responses by respondents				
		VL(1)	L(2)	M(3)	H(4)	VH(5)

1.	When I have difficulty with course materials, I find the explanations provided by my instructor	2	0	8	13	16
2.	If there is sufficient feedback on activities and assignments to ensure that I learn from the work I do	2	0	9	11	17
3.	I take the feedback given to me from my instructor	0	1	5	13	20
Average		1.33	0.33	10.66	12.33	17.66

Table 13. Summary of mean scores to the skills of the students

No	Skills of students	Respondents average rate scales					
		VL(1)	L(2)	M(3)	H(4)	VH(5)	
1.	Students' Communication	1.33	6.33	6.33	9	15.66	Grand mean and standard deviation
2.	Students' Active Learning	1.25	4.25	7.5	10.5	15.25	
3.	Delivering style of course content	0.8	3.6	3.0	10.6	17.4	
4.	Students' Time Management	4.5	3.0	8.0	7.0	16.5	
5.	Assessment Methods	0.25	1.25	4.75	13.5	19.0	
6.	Students' Cooperative Learning	1.5	1.5	10.0	10.0	13.0	
7.	Problem-Solving Skill	1.0	4.0	7.5	11.0	15.5	
8.	Students' Creativity Thinking	0.5	3.5	4.5	11.0	19.0	
9.	Self-Managed Learning	1.0	2.4	3.4	14.6	17.6	
10.	Feedback to assist learning skill	1.33	0.33	10.66	12.33	17.66	
Overall Mean score for each scales		0.31	1.54	5.05	11.23	19.72	7.6
Standard deviation		1.55	2.21	2.93	2.08	3.54	2.5

The table 13 indicated the summary of respondents' responses on mean score and standard deviation for each skill which students have as prior knowledge.

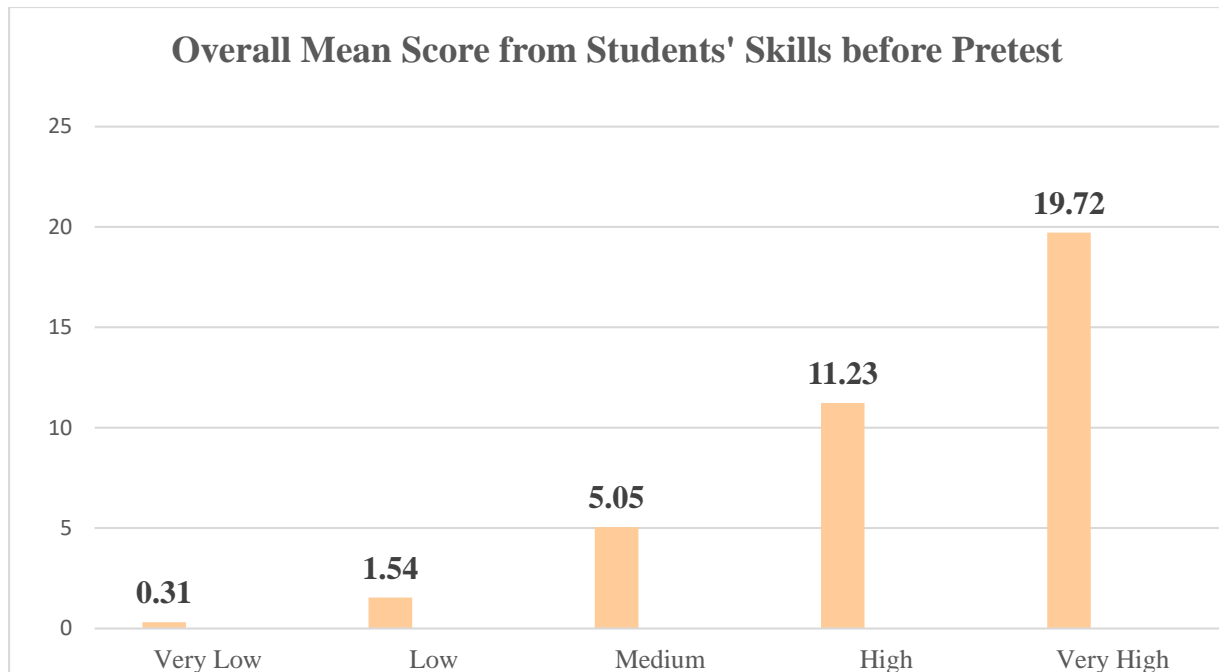


Figure 1.Overall Mean Score from Students' Skill befor Pretest

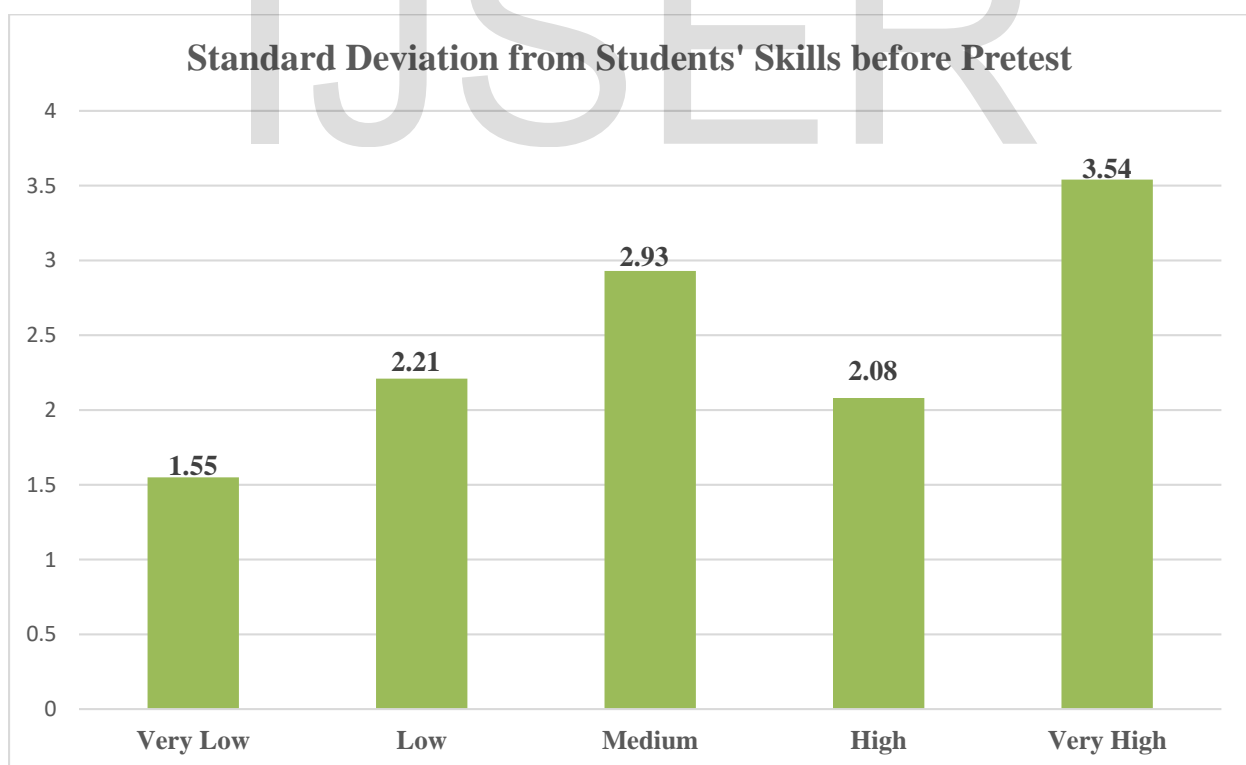


Figure 2.Standard Deviation from Students' Skill before Pretest

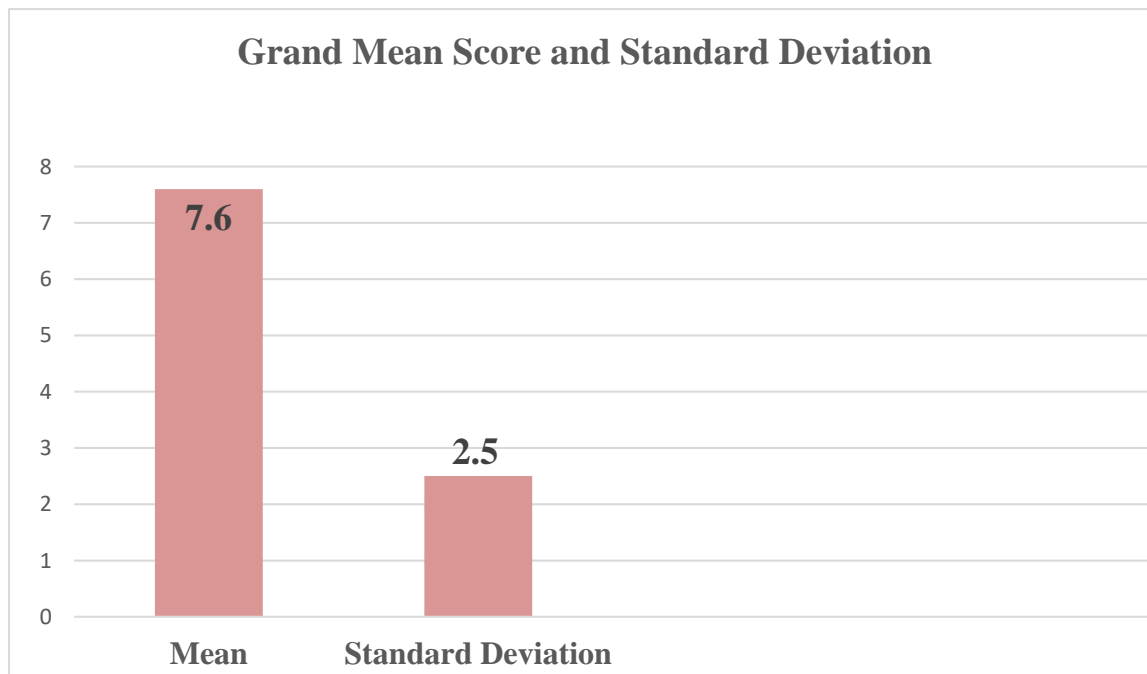


Figure 3. Grand Mean Score and Standard Deviation

Table 14. Challenges in group studying and learning skills by the students

No	Challenges	Average scales found from the respondents						
		Very Low(1)	Low (2)	Medium (3)	High (4)	Very High (5)	Total Weight	Rank Position
1.	Communication skill	1.33	6.33	6.33	9.0	15.66	157.3	5 th
2.	Active learning skill	1.25	4.25	7.5	10.5	15.25	150.5	7 th
3.	Course delivering style	0.8	3.6	3.0	10.6	17.4	146.4	8 th
4.	Time management skill	4.5	3.0	8.0	7.0	16.5	145.0	9 th
5.	Assessment methods	0.25	1.25	4.75	13.5	19.0	166.0	2 nd
6.	Cooperative learning skill	1.5	1.5	10.0	10.0	13.0	139.5	10 th

7.	Problem solving skill	1.0	4.0	7.5	11.0	15.5	153.0	6th
8.	Creativity thinking skill	0.5	3.5	4.5	11.0	19.0	160.0	4th
9.	Self managing skill	1.0	2.4	3.4	14.6	17.6	162.4	3rd
10.	Feedback to assist learning	1.33	0.33	10.66	12.33	17.66	171.6	1st

As it is indicted from table above(table 14),ten question were asked to the respondents(students) concnecing to their problems in group studying and learning skill to improve the learning and study cooperatively. Based on their response the researchers gave the weight and showed the rank position of the question(i.e the last question is first in rank).

As indicated in Table 14 above, the result of the study showed that from about ten expected problems in group studying and learning the students have been stated frequently the following factors as challenges that hinder learners not to improve the academic performance achviement by the students:

- 1st Feedback to assist learning
- 2nd Assessment methods
- 3rd Self managing skill
- 4th Creativity thinking skill
- 5th Communication skill
- 6th Problem-solving skill
- 7th Active learning skill
- 8th Course delivering style
- 9th Time management skill
- 10th Cooperative learning skill

4. Proposed Intervention Mechanism

Based on these findings the research team proposed different actions to be taken in order to improve the participation of students in general and their academic achievement in particular under the next section. The possible solution identified from the practical experience of students were the following to improve the effectiveness of cooperative learning that promote student social interaction, positive interdependence, confidence, self-esteem and achievement.

- a. Improve the awareness of all students about cooperative learning
- b. Re-organize students into groups for a particular topic and rotating responsibility
- c. Give clear instructions, and explain how them work together and asses effectively
- d. Each member of the group will have a specific task to complete within the group
- e. Assign different tasks like facilitator, note taker, timekeeper, leader, observer, reporter or tasks specific to the topic
- f. Provide material and academics Support to the student to improve their self-esteem and confidence to reduce dependence.

4.1. Action Plan, Implementation and Evaluation

When we were conducting this action research, we have developed strategies that clearly identified the role of teacher and the role of the students. The teacher's role in cooperative learning is fundamentally different from that in a more traditional model. It is vital at the teacher first provides the supportive classroom to encourage cooperative learning and opportunities for team building. The instructors play indispensable roles for the success of the programme among the fundamental roles undertake by the teachers see the following action plan table.

The role of the student's in Cooperative learning is different from traditional classrooms is the inclusion of cooperative student-to-student interaction over subject matter as an integral part of the learning process. In contrast, the traditional classroom consists primarily of teacher -fronted lessons, independent work, and competition. Based on the major findings of the analysis result, the following action plan is designed for implementation.

Table 15.Action Plan, Implementation and Evaluation

Activities	Roles of Students and Instructors	Time required	Expected output
Creating awareness cooperative Learning	Instructor provides training for students. Student actively participate in the training	2hrs	All student have good understanding about cooperative learning
Reorganizing group	Instructor restructures the organization of group members based on achievement. Student should participate in new group.	2hrs	Well organized group will be formed
Providing roles for each group members like facilitator, note taker, leader, observer, reporter, to the topic.	Instructor develops cooperative learning models, which comprises different roles. Student should perform their role	1hr	Each group member will feel responsible for his/her roles
Determine number of students who will be assigned to each group with a range of levels, mixed by intellectual ability.	Instructor Organize students based on achievement and participation	1hr	Create mixed ability group of students
Develop a cooperative climate and spirit in the classroom and positive classroom environment	Instructor should inspire students about cooperative learning. Students should develop positive interdependence	1/2hr	Created cooperative learning climate
Present and clearly explain the Activities that will student take parts to complete.	Instructor should provide clear direction and students should follow the direction	½ hr	Student which follow the instruction properly
Evaluate each group's performance	Make ready themselves to the exam and done the assignment cooperatively	3 hrs	A high student academic achievement

4.1.1. Implementation of the Action Plan

Activity-1- Creating Awareness about Cooperative Learning For Students

Lack of awareness about cooperative learning was one of the major factors affecting the participation of students in cooperative learning and hence it has been one of the causes for low achievement of students in the department of Information Technology 3rd year Regular students. As a result, awareness creation discussion was held with students for two periods (2 hours) on Tuesday 15/09/2013 and Thursday 17/09/ 2013 E.C

Activity -2- Re-organize and Re-structuring the group

Since group arrangement of students was found to be one of the factors affecting cooperative learning, reorganization of groups was conducted based on three semesters commutative GPA of students on May 2, 2013/2021. After this, the research team members developed a model that enhance cooperative learning environment by providing responsibility for each and every member of the group as indicated here under.

- **Leader:** provides direction, instructions and guidance to a group of individuals, for achieving a certain goal.
- **Facilitator:** helps a group members to understand their common objectives and assists them to plan how to achieve these objectives; in doing so, the facilitator remains "neutral" meaning he/she does not take a particular position in the discussion. Responsible for getting the group started, keeping it on task, and involving all members.
- **Note taker:** a student who takes notes during cooperative learning activities
- **Reporter:** a student who is responsible for summarizing group decisions for the larger class
- **Timekeeper:** a student who is responsible for keeping group on task and on time particularly with in-class and other activities
- **Observer:** a student who pays close attention to cooperative learning activities

Based on each member of the group was assigned for a specific responsibility. This was held on May 6,2013/2021. The summary of responsibility given for every member of the group is described as follows; for the sake of consent, we cannot write the name of students.

Table 16. Provide Different Role for Newly Re-Organized Group

Group One		Group Two		Group Three		Academic Advisor
Student A1	Reporter	Student B1	Leader	Student C1	Time keeper	Mr.A and B
Student A2	Leader	Student B2	Reporter	Student C2	Note taker	
Student A3	Time keeper	Student B3	Observer	Student C3	Reporter	
Student A4	Observer	Student B4	Timekeeper	Student C4	Leader	
Student A5	Facilitator	Student B5	Facilitator	Student C5	Facilitator	
Student A6	Notetaker	Student B6	Notetaker	Student C6	Observer	
Student A7	Member	Student B7	Member	Student C7	Member	
Group Four		Group Five		Group Six		Mr.A and B
Student D1	Leader	Student E1	Note taker	Student F1	Note taker	
Student D2	Note taker	Student E2	Observer	Student F2	Time keeper	
Student D3	Reporter	Student E3	Reporter	Student F3	Reporter	
Student D4	Observer	Student E4	Leader	Student F4	Leader	
Student D5	Facilitator	Student E5	Facilitator	Student F5	Facilitator	
Student D6	Time keeper	Student D6	Time keeper	Student F6	Observer	

Activity-3. Monitoring and assisting each group members as needed after providing the task to be performed.

The instructor started to provide task to be done in cooperative learning groups based on the above newly arranged grouping system. In doing so, the instructors also provided all the

necessary support as needed by all group members as much as possible. The instructor conducted this activity for almost one month starting from May 9, 2013 to May 20, 2013. The following pictures highlight some of the activities that were conducted while assisting each group of learners.

Activity -3- Providing different activities and tasks for newly organized groups



Figure 4.Cooperative Learning Practice in Groups in the Actual Classroom



Figure 5.Reading Assignment in the Classroom Sitting Arrangement in the Classroom Student in doing assignments

Activity 4. Evaluating the performance of each group's

To evaluate the performance of each group the instructor used two techniques. The first one is by observing the number of students who participate and try to answer the questions raised by the

instructor while the instructor was rotating around all groups to provide feedback. The second technique was by providing a post-test from the topics which are totally covered through cooperative learning for one month. The result of pre test and post test which were scored out of ten are presented under action evaluation.

No	Skills and its Challenges	Scales found from the respondents after intervention					
		Very Low(1)	Low (2)	Medium (3)	High (4)	Very High (5)	
1.	Communication skill	0	2	7.5	9.5	18.5	Grand mean and standard deviation
2.	Active learning skill	0	2.5	8.5	8.75	16.5	
3.	Course delivering style	0	4.5	9.5	8.25	17.5	
4.	Time management skill	0.5	3.5	10	8.55	16.5	
5.	Assessment methods	0.25	6.5	11.5	7.5	20	
6.	Cooperative learning skill	0.15	7.5	12.5	10.5	21.5	
7.	Problem solving skill	1	8	13.5	11.5	20.5	
8.	Creativeity thinking skill	0.25	8.5	5.5	12.55	22.5	
9.	Self managing skill	0.5	1.5	6.5	17.5	21.5	
10.	Feedback to assist learning	1	1.75	7.5	18.5	20.5	
Mean score for each scales		0.09	6.99	7.12	11.6	22.95	9.75
Standard deviation for each scales		0.46	3.53	3.29	3.66	3.97	2.98

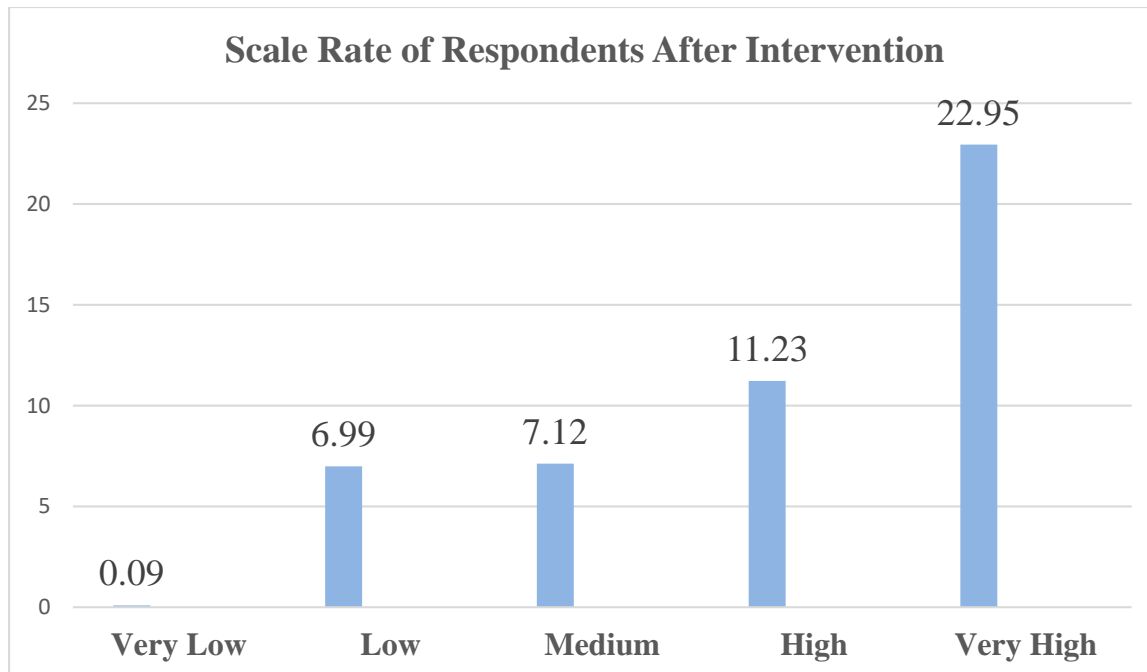


Figure 6. Scale Rate of Respondents After Intervention

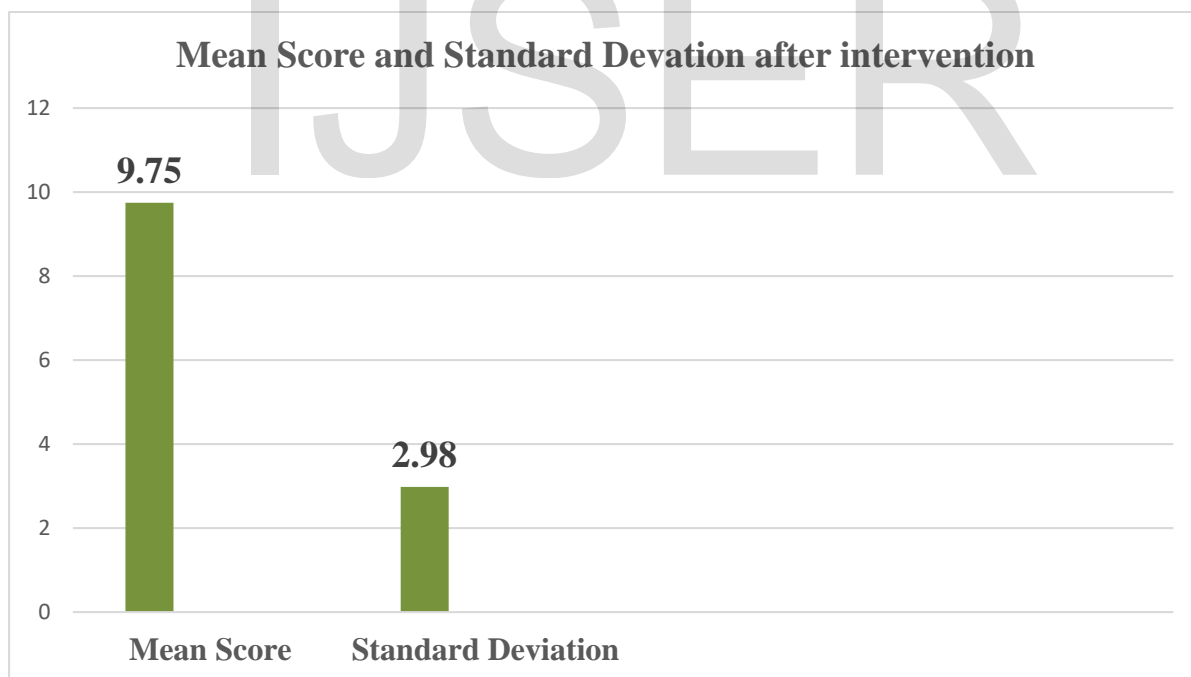


Figure 7. Mean Score and Standard Deviation after intervention

4.1.2. Action Evaluation

After intervention had take place, the research team evaluate what change occurred. Some of the major changes that have been observed are briefly presented as follows;

1. After two hours, training and interactive discussion with Information Technology Department students about their awareness regarding to cooperative learning methods 29 (69.05%), of student's rate their awareness about cooperative learning was high and the rest 13(30.95%) rate their awareness about cooperative learning was medium.
2. Re-organize and Re-structuring of the group: After rearranging their group almost all students become happy and asked the department of Information Technology Department students in order to have continuity for other courses to be taken in the next year beyond using it for only this research purpose.
3. Providing different roles: Regarding the provision of a specific task for every member of the group most students (>93%) agreed that it enhanced their feeling of responsibility for their task as it mandates every student to participate in cooperative learning. At the end of taking all the actions discussed above the research team observed slight improvement on student's achievement. Look at the table below.

Table 17.Results of Students on Pre-test and Post-test

Score of Students	In pre test		In post test	
	Frequency	percentage	Freguncey	Percentage
5 and below 5 Mark	9	21.43%	4	9.52%
Between 5 and 8 Mark	28	66.67%	26	61.91%
Above 8 Mark	5	11.91%	12	28.57%

As indicated from the above table , the number students who scored below 5 reduced from 9 (21.43%) to 4 (9.52%). In addition to this, the number of students who scored above 8 increased from 5 (11.91%) to 12 (28.57%). This change indicates that the implementation of the identified actions has great role in improving the achievement of students.

Table 18. Values of Independent Samples t-test for Pre & Post Test

Group	Number of Students	Mean Score	Standard Deviation	Difference	P value at $\alpha=0.25$ level
Pre test	42	7.60	2.50	2.15	
Post test	42	9.75	2.98	0.48	

As indicated in table 18 above, the mean score of students in pre-test and post-test is 7.60 and 9.75 respectively. This indicated that, planned and well-organized implementation of cooperative learning improves the achievement of students academic performance. In supporting this, the analysis of data obtained through observation indicated that, the number of students who participate during cooperative learning at the time of classroom discussion was also high.as we have seen from the above discussion, there is significant difference in the score of students at pre -test and post-test. In multimedia system course, we can observed change in pre-test and post-test cooperative learning implementation, let see the following table 19 about the main differnce.

Table 19. Change in Score Pre-implementation and Post-implementation

Number	Pre test		Post test	
Course Name Multimedia System Evaluation in Information Technology Department 3 rd year regular students				
1.	Quiz	6.5/10	Quiz	7.5/10
2.	Mid	23.5/30	Mid	25/30
3.	Assignment	16/20	Assignment	17.5/20
4.	Final	27.75/40	Final	29.5/40
5.	Total	73.75/100	Total	79.5/100

As we observed from the above table in 1st semester, Multimedia System course the average score of the student was 73.75/100. However, after the implementation in 2nd semester students score 79.5/100 in Multimedia System Evaluation in Information Technology Department 3rd year regular students. This indicated that there was a positive change after the implementation of cooperative learning.

5. Conclusion and Recommendation

5.1. Conclusion

The finding of this action research was important for the implementation of cooperative learning and studying at the university level. Especially, the study focused on 3rd year regular Information Technology students as the targeted area. To achieve the desired goal, we have used the students' skill gaps, like communication, active learning, course delivering style, time management, assessment, cooperative learning, problem solving, creativity thinking, self managing and feedback to assist learning skills to know the knowledge they have on the skills in cooperative learning style. This action research was undertaken to improve student participation through group activities in large classes. The results of observation indicated that the students' participation increases with group activity strategy. The increased students' participation had an impact on their academic achievement. The descriptive study results clearly indicated that the average scores of students had increased from 7.60 and 9.75 as pre-test and post-test in the distributed questions.

Action research programs are generally created from a problem found within an entire school. Action research is essentially the scientific method of teaching. Teachers use action research to figure out exactly what works in the classroom and what does not. With so many teaching strategies at their disposal, teachers need to determine which ones best work for them and for their students, rather than simply going along with the newest educational trend. To evaluate the performance of each group the instructor used two techniques. The first one is by observing the number of students who participate and try to answer the questions raised by the instructor while the instructor was rotating around all groups to provide feedback. The second technique was by providing a post-test from the topics which are totally covered through cooperative learning for one month.

5.2. Recommendation

Improving the quality of education is a priority for most developing countries. Policymakers usually agree that such improvements could lead to structural shifts in productivity and boost long-term economic growth. Governments face the challenge of identifying efficient ways to use their scarce resources and raise the quality of education. The finding of the action research was achieved its objective and forward the following recommendation for the next researchers.

- It is better if the action research will be supported with practical session for improving cooperative learning style by the students.
- Learning styles are very important for the students to improve their knowledge, so it is helpful if the cooperative learning uses various learning methods.

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