

ANALYSIS OF THE APPLICATION OF INSTRUCTIONAL ACTIVITIES FOR PROMOTING HIGHER ORDER THINKING OF GRADUATE STUDENTS AT KFUEIT

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ABSTRACT

The use of latest tools, techniques, and activities for the enhancement of students' learning can lead to the quality of teaching. According to the demands of 21st century direct and conventional instructional methods and activities are unable to promote higher-order thinking of students especially at higher education level. The study entitled, "Analysis of the application of instructional activities for promoting higher order thinking of graduate students at KFUEIT" aimed to: 1) To find out the usage of instructional activities for promoting higher order thinking of graduate students 2) To identify the challenges that university teachers face in promoting higher order thinking of graduate students 3) To identify the challenges that graduate students face in developing higher order thinking. The study was descriptive and survey techniques were used and. Quan-qual method of research was adopted for the current study. Population of the study was all the head of departments (HoDs), university teachers and graduate students of all the departments of KFUEIT. The multistage randomized cluster sampling method was applied for the study. The total sample of the study was four hundred and sixteen (416) which was comprised of sixteen (16) HoDs, eighty (80) university teachers and forty (320) graduate students. A questionnaire on five-point Likert scale (1 Not at all, 2 Rarely, 3 Occasionally, 4 Frequently, 5 Always) was developed having 20 close ended statements and one open ended question. The major findings of the study were the the mean and standard deviation of responses of HoDs, university teachers and graduate students were (81.94, 8.96), (82.16, 7.78) and (77.17, 15.35) respectively and degree of freedom ranges from 2 to 413 and sig value $p = 0.010$ is $< \alpha = 0.05$. Major challenges pointed out by university teachers and graduate students were, trend of rote learning, lack of awareness of HOTs and limited training about the utilization of higher order thinking based instructional activities. Major recommendations of the study were the higher order thinking based instructional methods, strategies and activities should be included in the course contents. It is further recommended that a Continuous Professional Development Program (CPDP) should be launched for university teachers.

Key Words: Instructional Activities, Higher Order Thinking (HOT), Graduate Students, Khwaja Fareed University of Engineering and Information Technology (KFUEIT)

INTRODUCTION

In perspective of the sustainable development and innovation in higher education, professionals are thinking about new ways of quality of teaching and

learning for students. The teaching atmosphere of higher education institutions can also result in improvement of teaching quality in higher education

by applying a variety of teaching strategies, methods and activities (Rapanta et al., 2021). Teachers' professional development seeks to improve their instructional strategies, practices, and skills.

The instructional methods and activities used by teachers are one of the most significant aspects that influence the learning process. Basic issues in teaching and learning process are how educators run their classes, prepare lessons, set up learning activities, control time, distribute work, select the appropriate questions, and evaluate students' comprehension (Rapanta et al., 2021). The effect of instructional approaches on teaching and learning has been the subject of numerous research studies over the past few decades. Numerous research studies have been conducted to look into how teaching strategies affect students' learning outcomes (Day, Gu, & Sammons, 2016).

It is the dire need of 21st century that a student should have critical thinking and industrial skills, innovate and solve problems through teamwork and capability to communicate efficiently (UNESCO, 2013; Scotts, 2015; Pretorius et al., 2017).

The Ministry of Education and Training of Eswatini in 2018 emphasized that teachers should use interactive techniques such as problem-solving and role-play, collaborative learning through group tasks field trips and projects (Ndlela, Pereira, & Oloyede, 2020). In 21st century innovative instructional methods are required in which students are given chances to use fresh knowledge in diverse conditions (Shepherd, 2018). These instructional methods should be skill-oriented and job-related to develop the creative thinking, problem-solving, critical thinking, and the shift of knowledge in the indecisive flexible productive situation. In the classroom higher order thinking skills are promoted by providing opportunity to students to apply higher-order thinking skills by interpreting, reasoning out, analyzing, synthesizing, evaluating and creating new knowledge in novel condition (Ndlela et al., 2020).

Higher-order thinking is important in preparing students for the issues they will encounter in the future (Baharin, Kamarudin, Manaf, & Sciences, 2018). Critical and creative thinking skills are increasingly important as technology develops and automation replaces conventional tasks. Higher-order thinking has a good effect on problem-solving and decision-making skills (Alkhatib, 2019). These

abilities are required for people to handle complex situations and reach wise decisions.

In 2019, educators recognized that higher-order thinking fosters intellectual curiosity and a love for learning (Healey-Benson, 2022). By encouraging students to think deeply and critically, they develop a desire to explore new ideas and engage in lifelong learning. Higher-order thinking also enables people to analyze and assess data from a variety of sources, which helps them participate actively in society (Abosalem, 2016).

In Pakistan, the quality of higher education poses a significant challenge, particularly in regards to the quality of teaching and learning. Sultana (2016), concluded that higher the quality of teaching, higher the quality of learning. The quality of teaching depends on the teachers' professional development and teachers' professional development seeks to improve their instructional knowledge, strategies, methods and skills. One of the most important factors that affect learning is teachers' instructional methods (Sultana, Ambreen, Afzal, & Learning, 2016).

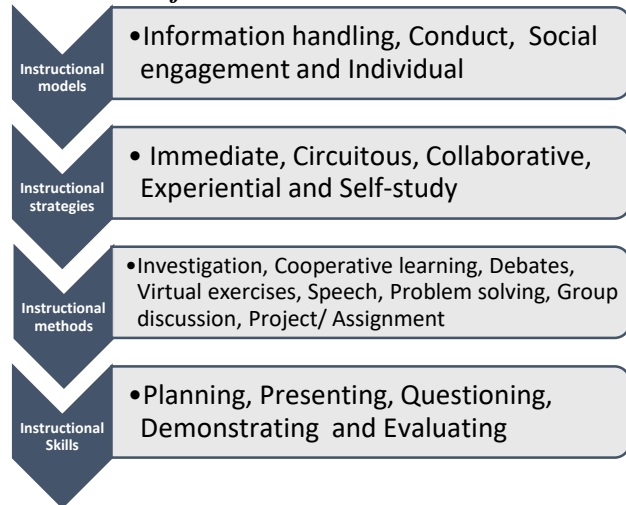
The use of latest tools, techniques, and strategies for the enhancement of students' learning can lead to the quality of teaching. Students' outcomes closely depend on teachers' Instructional design, teaching method selection, and a wide range of learning activities. A successful coaching approach enables learners to accomplish their targets and feat. According to the demands of 21st century direct and conventional teaching methods are unable to promote higher-order thinking of students especially at higher education level. So, there is need to identify the instructional methods that are helpful for promoting higher-order thinking of graduate students.

INSTRUCTIONAL FRAMEWORK

According to the instructional framework developed by University of Idaho the teaching learning process is sequential from broadest to narrowest. The successful process of teaching includes the selection of appropriate instructional models, instructional strategies, instructional methods and instructional skills according to the requirement of subject, topic and context (Bohlscheid & Davis, 2012).

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Instructional framework



Source: Adapted from the instructional framework developed by University of Idaho

THEORETICAL FRAMEWORK

In American education, higher-order thinking is a popular concept. It differentiates higher-order thinking from low order learning. This concept originated from the Blooms' Taxonomy (1956) which was based on the constructivist theory of education. This Taxonomy was revised by Anderson and Krathwohl in 2001, according to them thinking skills are grouped into six levels such as, remember, understand, apply, analyze, evaluate, and create (Mahmud, Yaacob, Ramachandiran, Ching, & Ismail, 2018). The last three skills (analyze, evaluate and create) are considered the higher-order thinking skills and the first three skills (remember, understand and apply) are considered to be lower order thinking skills.

Higher-order thinking skills are considered more complicated and challenging to achieve than the lower order thinking skills. There is no agreement of what comprises higher-order thinking skills, however, according to Scully & Evaluation (2017) majority of researchers viewed that higher-order thinking skills involve 'complex cognitive actions such as developing arguments formulating hypotheses, making comparisons and inferences, elaborating, interpreting and analyzing information, applying multiple criteria, integrating and synthesizing information, and sorting multiple

solutions (Scully & Evaluation, 2017). Higher-order thinking skills are consisted of such thinking processes that go beyond knowledge and understanding. According to another definition higher-order thinking skills include skills such as critical thinking, evaluative and problem-solving skills (Alkhatib, 2019).

STATEMENT OF THE PROBLEM

The quality of teaching and learning at higher education is very important issue in Pakistan. Sultana (2016), concluded that higher the quality of teaching, higher the quality of learning. After the critical and logical review of related literature, it has to be analyzed that at higher education level the instructional methods are not fulfilling the needs of students and demands of 21st century. Most of the teachers are applying direct instructional strategies and using conventional methods and activities of instruction and focusing only on the lower order thinking skills of students. So, there was need to conduct research study on the topic entitled, "Analysis of the application of instructional activities for promoting the higher order thinking of graduate students"

RESEARCH OBJECTIVES

According to nature of the topic, the specific objectives of the study were:

- i. To find out the usage of instructional activities for promoting higher order thinking of graduate students
- ii. To identify the challenges that university teachers face in promoting higher order thinking of graduate students
- iii. To identify the challenges that graduate students face in developing higher order thinking

RESEARCH QUESTIONS

According to the alignment of research objectives, the research questions of the study were:

- i. To what extent teachers use instructional activities for promoting higher order thinking of graduate students
- ii. To what extent teachers use instructional activities for promoting applicative thinking of graduate students

- iii. To what extent teachers use instructional activities for promoting analytical thinking of graduate students
- iv. To what extent teachers use instructional activities for promoting critical thinking of graduate students
- v. To what extent teachers use instructional activities for promoting creative thinking of graduate students
- vi. Which challenges teachers face in promoting higher order thinking?
- vii. Which challenges graduates face in achieving higher order thinking?

Stage-2

At 2nd stage one subject from each department was randomly selected.

Stage-3

At 3rd stage teachers and graduate (M Phil & Ph D) students through equal random sampling were selected from each faculty of KFUEIT R Y Khan.

METHODOLOGY

“Research methodology is the part of the research study in which researchers give an account of the research methods, which they have used to conduct their research” (Ahmad, Maitlo & Jeevan, 2023). The methodology of the present research contains on research design, population and sampling used in the research, research instruments, followed by data collection and data analysis process.

DESIGN OF THE STUDY

The study was descriptive and survey techniques were used for the study. The Quan-qual method of research was adopted for the current study



POPULATION OF THE STUDY

“The population is defined as a set of individuals, data, or items from which a statistical sample is taken” (Younus, Farhat & Ahmad, 2023). Population of the study was all the HoDs, university teachers and graduate students of all the departments of KH. Freed University of Engineering and Information Technology, RY Khan, Punjab.

SAMPLE, SAMPLING AND SAMPLE SIZE

The multistage randomized cluster sampling method was applied for the study.

Phase I

For the 1st Phase of the study sample was selected from the eight (8) faculties of KFUEIT R Y Khan

Stage-1

At 1st stage two departments from each faculty were selected by cluster random sampling.

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Samples of Faculties Departments and Subjects

S#	Faculty	Department	Subject	Department	Subject
1	Admin & Manag. Sci	Account & Finance	Management Sciences	Business Admin	Business Admin
2	Chem, Civil & Envir. Eng	Civil Eng	Civil Eng	Chem & Enviro. Eng	Enviro. Science
3	Inf. Tech	Comp. Sci	Comp. Sci	Inf. Tech	Inf. Tech
4	Elect & Comp. Eng	Elect & Biomed Eng	Electrical Eng	Comp. & Software Eng	Comp. Eng
5	Food, Health Sci. & Tech	Food Sci. & Tech	Food Tech	Heath Sci.	Health Care & Manage
6	HUSS	Education	Education	HUSS	Eng. Isl,
7	Mech. & Agri. Eng	Agricultural Eng	Agricultural Eng	Mechanical Eng	Mechanical Eng
8	Natural & Applied Sci.	Chem,	Chem	Phy, Maths	Phy, Maths

The total sample of the study was four hundred and sixteen (416), 20% of total population (2050) which was calculated by applying the L.R Gay (2000)' sampling formula. Further the sample was comprised of two (2) head of department (HoDs), ten (10) teachers and forty (40) students from each faculty were selected through cluster random sampling.

Table 2

Sampling table for the study

Respondents	A&MS	CC&EE	E&C	FSH&T	H&SS	IT	M&AE	N&AS	Total
HoDs	2	2	2	2	2	2	2	2	16
Teachers	10	10	10	10	10	10	10	10	80
Students	40	40	40	40	40	40	40	40	320
Total	52	52	52	52	52	52	52	52	416

RESEARCH TOOLS

“Instrumentation performs significant part and helps to assemble accurate information from the contributors” (Ahmad, Shahid & Farhat, 2023). So, in the present research study researchers used following research tools:

Instructional Activities for Higher Order Thinking Questionnaire (IAHOTQ)

The questionnaire was developed on a five-point Likert scale and included both closed-ended and open-ended statements. The questionnaire centered around four higher order thinking activities (application, analytical, critical and creative activities). The questionnaire comprised of twenty (20) closed ended statements regarding the higher order thinking based instructional activities and one open ended question. The questionnaire was

administered on graduate students and head of departments (HoDs). The questionnaire included 4 constructs and 20 items on a five-point Likert scale, ranging from 1 (Not at all) to 5 (Always).

1 Not at all, 2 Rarely, 3 Occasionally, 4 Frequently, 5 Always

Note: Same questionnaire with little changes was administered on teachers.

DATA ANALYSIS

The study was descriptive and survey techniques were used for data collection. Two questionnaires, one for graduate students and HoDs and one for university teachers were developed covering higher thinking based instructional activities. Data was collected from HoDs, teachers and graduate students

of the 16 departments of 8 faculties of KHUEIT R Y Khan. Data was coded and feeded in SPSS version 27 and data was analyzed by applying a statistical test, one way ANOVA to find and compare the means of responses of HoDs, teachers and graduate students about the utilization of higher order thinking based instructional activities for promoting the higher order thinking in graduate students.

Table 3
 Comparison of means of responses about applicative activities

Variable	Resp	N	M	SD	Sum of Sq	df	Mean Sq	F	Sig
Applicative activities	HoDs	16	20.6	3.01	161.17	2	80.584	5.056	0.007
	Teachers	80	20.7	2.88	6582.1	413	15.937		
	Graduates	320	19.2	4.26	6743.305	415			
	Total	416	19.5	4.03					

Table 3 indicates that the mean and standard deviation of responses of HoDs is (20.63, 3.008), mean and standard deviation of responses of Teachers is (20.69, 2.875) and mean and standard deviation of responses of Graduates is (19.20, 4.262). According to the responses of Graduates, applicative activities are less utilized by university teachers than the responses of HoDs and Teachers.

Table 3 also represents that degree of freedom ranges from 2 to 413 and sig value $p = 0.007$ is $< \alpha = 0.05$. Hence it is concluded that there is a significant difference between the responses of teachers and graduate students about the use of applicative activities for promoting higher order thinking.

On the bases of mean responses of graduate students, it is recommended that university teachers should use applicative activities frequently for the development of higher order thinking in graduate students.

Figure 2
 Comparison of means of responses about applicative activities

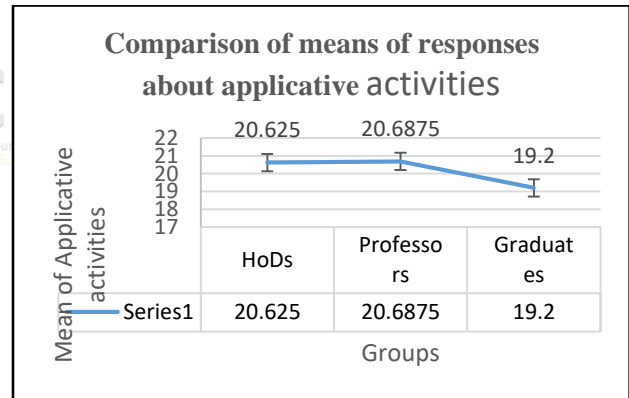


Figure 2 shows that teachers responded highest about the utilization of applicative activities and graduates responded lowest. On the bases of findings, it is concluded that the applicative activities are most used by university teachers and according to graduate applicative activities less used.

Table 4:
 Comparison of means of responses about analytical activities

Variable	Resp	N	M	SD	Sum of Sq	df	Mean Sq	F	Sig
Analytical activities	HoDs	16	19.38	2.680	47.326	2	23.663	1.784	0.169
	Teachers	80	20.13	2.477	5478.922	413	13.266		
	Graduates	320	19.27	3.914	5526.248	415			
	Total	416	19.44	3.649					

Table 4 indicates that the mean and standard deviation of responses of HoDs is (19.38, 2.680), mean and standard deviation of responses of teachers is (20.13, 2.477) and mean and standard deviation of responses of Graduates is (19.27, 3.914). According to the responses of graduates, analytical activities are less utilized by university teachers than the responses of HoDs and professors.

Table 4 also represents that degree of freedom ranges from 2 to 413 and sig value $p = 0.169$ is $> \alpha = 0.05$. Hence it is concluded that there is no significant difference between the responses of teachers and graduate students about the use of analytical activities for promoting higher order thinking. On the bases of mean responses of HoDs, it is recommended that university teachers should use analytical activities frequently for the development of higher order thinking in graduate students.

Figure 3: Comparison of means of responses about analytical activities

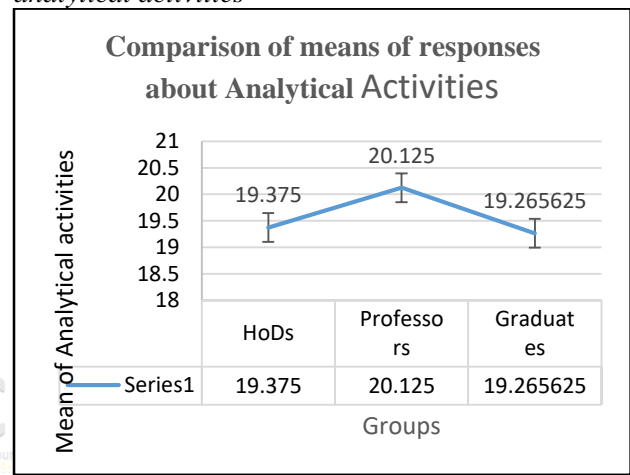


Figure 3 shows that teachers responded highest about the utilization of analytical activities and graduates responded lowest. On the bases of findings, it is concluded that the analytical activities are most used by university teachers and according to graduate analytical activities is less used.

Table 5:
 Comparison of means of responses about critical activities

Variable	Resp	N	M	SD	Sum of Sq	Df	Mean Sq	F	Sig
Critical activities	HoDs	16	21.00	2.221	125.269	2	62.634	4.712	0.009
	Teachers	80	20.81	1.842	5489.575	413	13.292		
	Graduates	320	19.54	4.017	5614.844	415			
	Total	416	19.84	3.678					

Table 5 indicates that the mean and standard deviation of responses of HoDs is (21.00, 2.221), mean and standard deviation of responses of teachers is (20.81, 1.842) and mean and standard deviation of responses of Graduates is (19.54, 4.017). According

to the responses of graduates, critical activities is less utilized by university teachers than the responses of HoDs and teachers.

Table 5 also represents that degree of freedom ranges from 2 to 413 and sig value $p = 0.009$ is $< \alpha = 0.05$.

Hence it is concluded that there is a significant difference between the responses of HoDs and graduate students about the use of critical activities for promoting higher order thinking.

On the bases of mean responses of graduate students, it is recommended that university teachers should use critical activities frequently for the development of higher order thinking in graduate students.

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 Comparison of means of responses about Critical activities

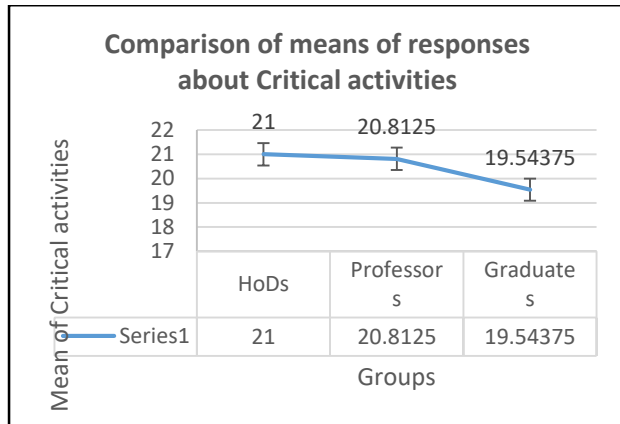


Figure 4 shows that teachers responded highest about the utilization of critical activities and graduates responded lowest. On the bases of findings, it is concluded that critical activities is most used by university teachers and according to graduate critical activities is less used.

Table 6:
 Comparison of means of responses about creative activities

Variable	Resp	N	M	SD	Sum of Sq	df	Mean Sq	F	Sig
Creative activities	HoDs	16	20.94	2.265	156.95	2	78.475	5.022	0.007
	Teachers	80	20.54	2.418	6453.01	413	15.625		
	Graduates	320	19.16	4.306	6609.96	415			
	Total	416	19.49	3.991					

Table 6 indicates that the mean and standard deviation of responses of HoDs is (20.94, 2.265), mean and standard deviation of responses of teachers are (20.54, 2.418) and mean and standard deviation of responses of Graduates is (19.16, 4.306).

According to the responses of graduates, Creative Skill is less utilized by university teachers than the responses of HoDs and professors.

Table 6 also represents that degree of freedom ranges from 2 to 413 and sig value $p = 0.007$ is $< \alpha = 0.05$.

Hence it is concluded that there is a significant difference between the responses of teachers and graduate students about the use of creative activities for promoting higher order thinking.

On the bases of mean responses of graduate students, it is recommended that university teachers should use creative activities frequently for the development of higher order thinking in graduate students.

Figure 5:
 Comparison of means of responses about creative activities

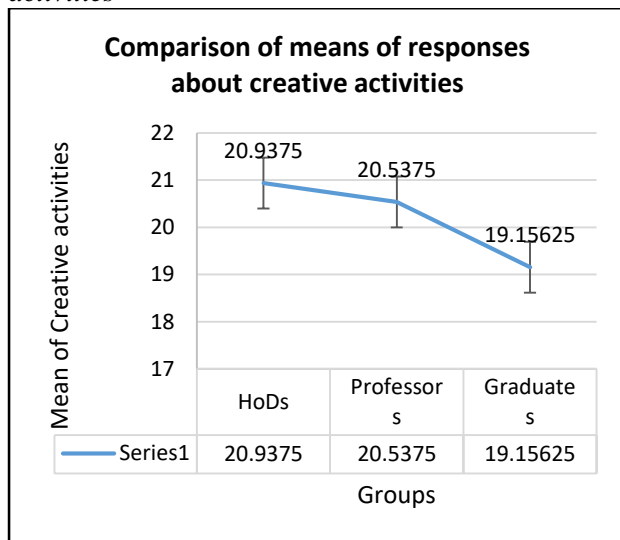


Figure 5 shows that HoDs responded highest about the utilization of creative activities and graduates responded lowest. On the bases of findings, it is concluded that the creative activities are most used by university teachers and according to graduate creative activities are less used.

Table 7:
 Comparison of means of responses about All activities

Variable	Resp	N	M	SD	Sum of Sq	df	Mean Sq	F	Sig
All activities	HoDs	16	81.94	8.96	1816.95	2	908.48	4.63	0.010
	Teachers	80	82.16	7.78	81114.05	413	196.40		
	Graduates	320	77.17	15.35	82930.99	415			
	Total	416	78.31	14.14					

Table 7 indicates that the mean and standard deviation of responses of HoDs is (81.94, 8.96),

mean and standard deviation of responses of teachers are (82.16, 7.78) and mean and standard deviation of

responses of Graduates is (77.17, 15.35). According to the responses of graduates, Creative Skill is less utilized by university teachers than the responses of HoDs and professors.

Table 7 also represents that degree of freedom ranges from 2 to 413 and sig value $p = 0.010$ is $< \alpha = 0.05$. Hence it is concluded that there is a significant difference between the responses of teachers and graduate students about the use of instructional activities for promoting higher order thinking.

On the bases of mean responses of graduate students, it is recommended that higher order thinking based instructional activities should be used frequently for the development of higher order thinking in graduate students.

Figure 6:
 Comparison of means of responses about All activities

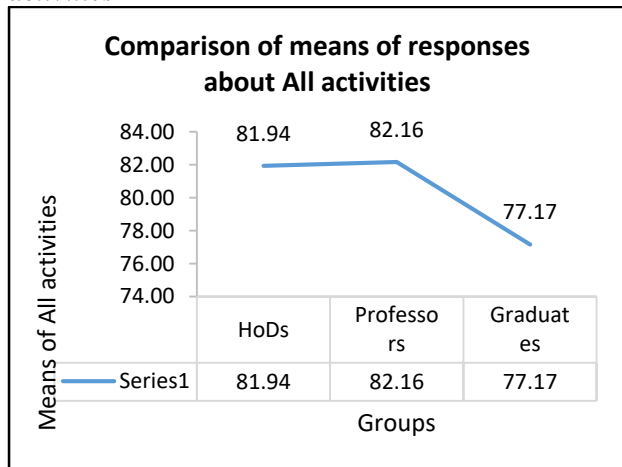


Figure 6 shows that teachers responded highest about the utilization of All activities and graduates responded lowest. On the bases of findings, it is concluded that the all activities are most used by university teachers and according to graduate all activities are less used.

Q2: For Teachers

According to your opinion which challenges or difficulties university professors face in promoting Higher Order Thinking (HOT) in graduates?

Figure 7:
 Challenges university teachers face in improving HOTs

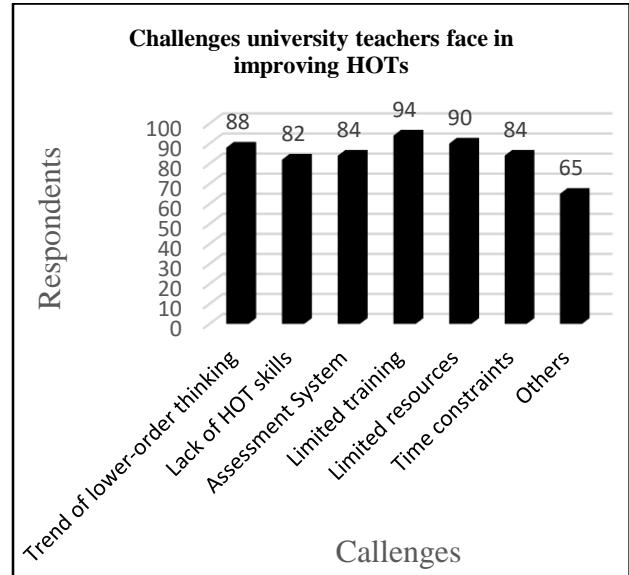


Figure 7 shows that 88 (92%) teachers are of the opinion that trend of lower-order thinking, 82 (85%) teachers are of the opinion that lack of HOT skills, 84 (88%) teachers are of the opinion that assessment system, 94 (98%) teachers are of the opinion that limited training, 90 (94%) teachers are of the opinion that limited resources, 84 (88%) teachers are of the opinion that time constraints and 65 (68%) teachers are of the opinion that some other challenges are the major challenges that university teachers face in promoting higher order thinking in graduates. On the bases of results, it is concluded that most teachers consider limited training as a highest challenge and least teachers consider other challenges the lowest challenge that university teachers face in promoting higher order thinking in graduates.

Q2: For Graduates

According to your opinion which challenges or difficulties university graduates face in achieving Higher Order Thinking (HOT)?

Figure 8:
Challenges graduates face in achieving HOTs

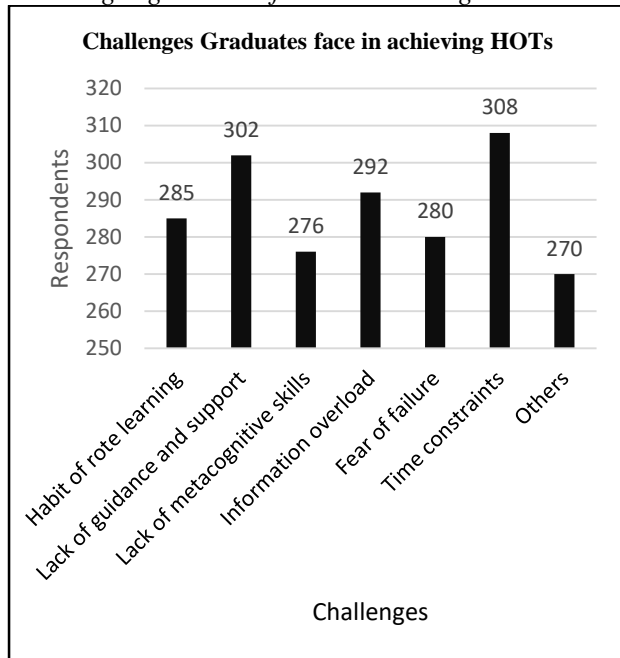


Figure 8 shows that 285 (89%) graduates are of the opinion that habit of rote learning, 302 (94%) graduates are of the opinion that lack of guidance, 276 (86%) graduates are of the opinion that lack of resources, 292 (91%) graduates are of the opinion that information overload, 280 (88%) graduates are of the opinion that fear of failure, 308 (96%) graduates are of the opinion that time constraints and 270 (84%) graduates are of the opinion that some other challenges are the major challenges that university graduates face in promoting higher order thinking in graduates. On the bases of results, it is concluded that most graduates consider limited training as a highest challenge and least graduates consider other challenges the lowest challenge that university graduates face in promoting higher order thinking in graduates.

FINDINGS

The study shows that in applicative activities the mean and standard deviation of responses of HoDs is (20.63, 3.008), mean and standard deviation of responses of teachers is (20.69, 2.875) and mean and standard deviation of responses of Graduates is (19.20, 4.262).

In analytical activities the mean and standard deviation of responses of HoDs is (19.38, 2.680), mean and standard deviation of responses of teachers is (20.13, 2.477) and mean and standard deviation of responses of Graduates is (19.27, 19.27).

In critical activities the mean and standard deviation of responses of HoDs is (21.00, 2.221), mean and standard deviation of responses of teachers is (20.81, 1.842) and mean and standard deviation of responses of Graduates is (19.54, 4.017).

In creative activities the mean and standard deviation of responses of HoDs is (20.94, 2.265), mean and standard deviation of responses of teachers is (20.54, 2.418) and mean and standard deviation of responses of Graduates is (19.16, 4.306).

In all the instructional activities the mean and standard deviation of responses of HoDs is (81.94, 8.96), mean and standard deviation of responses of teachers are (82.16, 7.78) and mean and standard deviation of responses of Graduates is (77.17, 15.35) and degree of freedom ranges from 2 to 413 and sig value $p = 0.010$ is $< \alpha = 0.05$.

Results show that 88 (92%) teachers are of the opinion that trend of lower-order thinking, 82 (85%) teachers are of the opinion that lack of HOT skills, 84 (88%) teachers are of the opinion that assessment system, 94 (98%) teachers are of the opinion that limited training, 90 (94%) teachers are of the opinion that limited resources, 84 (88%) teachers are of the opinion that time constraints and 65 (68%) teachers are of the opinion that some other challenges are the major challenges that university teachers face in promoting higher order thinking in graduates

Results show that 285 (89%) graduates are of the opinion that habit of rote learning, 302 (94%) graduates are of the opinion that lack of guidance, 276 (86%) graduates are of the opinion that lack of resources, 292 (91%) graduates are of the opinion that information overload, 280 (88%) graduates are of the opinion that fear of failure, 308 (96%) graduates are of the opinion that time constraints and 270 (84%) graduates are of the opinion that some other challenges are the major challenges that university graduates face in promoting higher order thinking in graduates.

CONCLUSIONS

On the bases of findings, it is concluded that the applicative activities are most used by university teachers and according to graduate applicative activities are less used. It is concluded that the analytical activities most used by university teachers and according to graduate analytical activities are less used. It is also concluded that critical activities are most used by university teachers and according to graduate critical activities are less used and the creative activities are most used by university teachers and according to graduate creative activities are less used. It is concluded that there is a significant difference between the responses of teachers and graduate students about the use of instructional activities for promoting higher order thinking.

Further it is concluded that most teachers consider limited training as a highest challenge and least teachers consider other challenges the lowest challenge that university teachers face in promoting higher order thinking in graduates. On the bases of results, it is concluded that most graduates consider limited training as a highest challenge and least graduates consider other challenges the lowest challenge that university graduates face in promoting higher order thinking in graduates.

RECOMMENDATIONS

On the bases of study's findings and conclusion it is recommended that the higher order thinking based instructional methods are more effective in promoting the higher order thinking of graduates especially and university students generally. It is recommended that higher order thinking based instructional activities should be used frequently for the development of higher order thinking in graduate students. It is also recommended that higher order thinking based instructional methods, strategies and activities should be included in the course contents. It is further recommended that a Continuous Professional Development Program (CPDP) should be launched for university teachers.

It is proposed that the QEC of the universities should develop an effective mechanism to observe and ensure the utilization of higher order thinking based instructional strategies and activities in the classroom and also in the planned lectures developed and delivered by teachers in and outside the classrooms. It is further suggested that Board of Advance Studies

should ensure the due wait age of higher order thinking skills in the scheme of studies to ensure the achievement of SLO regarding the higher order thinking skills of university teachers.

SUGGESTIONS FOR FUTURE RESEARCH

It is suggested that there is a space for conducting study on the development of higher order thinking skill based instructional methods training module for university teachers to enhance the quality of teaching of university teachers.

It is also suggested to conduct study on how to deal the challenges faced by university teachers and graduate students in developing higher order thinking.

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