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CHALLENGES FACED BY SSTs FOR CREATING HOTS OF STUDENTS: A DEMOGRAPHIC ANALYSIS

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Article Info

Abstract

The main purpose of this research was to investigate the challenges faced by secondary school teachers for creating higher order thinking skills of students in subject of mathematics. The study is descriptive based on quantitative research approach. The target population of this study was secondary school teachers from Rajanpur who teach the subject of Math. The 289 (Male= 158, Female= 131) respondents were selected as sample of the study which were administered through simple random sampling technique. A questionnaire based on five points Likert scale was administered to collect the data from the participants through survey method. The collected data was evaluated by applying descriptive and inferential statistics to assist the Statistical Package for Social Science (SPSS). The findings of the study revealed that there was found significant difference between the male and female teachers regarding the dimensions of instructional skills, students' attitude, and examination system. Furthermore, there was significant difference found among professional experience of the participants for developing higher order thinking skills of students. The study is beneficial for the educationists to adopt the new strategies for developing higher order thinking skills among the students.

Keywords: *Challenges and Issues, Higher Order Thinking Skills, Secondary Level*

Introduction

In the present era the students' achievement has become the most important debate to make them successful members of the society in future. To achieve this objective the development of higher order thinking skills among students is necessary. Whereas, Teachers play a vital role for the successful completion of teaching-learning process and make their enthusiastic efforts to share their abilities to their students. For this purpose to develop the higher order skills contribute a lot to get maximum achievement for students. Through this activities students enhance their competencies by solving logical and quantitative reasoning (Ali et al., 2021; Fareed et al., 2018). In modern era students mostly focused to achieve maximum grades in the examination so that they can get admission in the best higher education institution. It can only be possible when they focus to develop their higher order thinking skills (Wilson & Narasuman, 2020). The subject of Mathematics at secondary level is considered as compulsory that is why it has more advantage to accumulate more numbers in overall exam. Additionally, stress on rule is not the only way to learn the mathematics. Students of educational institutions learn the regulations but give less importance to this subject. By doing this, failed to overcome the basic issues (Parveen et al., 2021).

Additionally, also exist various issues in developing the curriculum, the current standard of mathematics does not fulfill the criteria of modern mathematics and also teachers face various challenges to enhance the thinking skills of students. The syllabus is not meet the level of international standards. It is evident that there is a big space between mathematics and other social subjects. Social subjects deal with values, cultures, history and many more while these values do not exist in mathematics. Mathematics deals with analytical solving problems. Therefore, it is essential for teaching faculty to increase the critical thinking skills of pupils for progress (Ibrahim et al., 2019; Malik et al., 2016).

Research Hypotheses

1. There is a significance difference between male and female teachers regarding the development of Higher thinking skills of students.
2. There is a significance difference among the professional qualification of respondents about the development of Higher thinking skills among students.

LITERATURE REVIEW

Critical thinking is an ability for the development of cognitive ability of students while in learning mathematics the students suffer from psychological feelings due to fear of tough subjects. It has been considered that the students enhance their thinking skills from the subject of mathematics. From the previous decades where it has been seen number of innovative changes in education sector there is highlighted an issues to create higher thinking skills of the students in order to achieve maximum grades of students (Ali et al., 2021; McKenney, & Reeves, 2014). Within the passage of time it has been brought numerous changes in the development of curriculum regarding mathematics to meet the international standards. To update the curriculum is a need of the time but is important for the teachers to have professional competencies to the subject of mathematics (Hadi et al., 2018).

From the couple of decades there are many changes in the development of curricula development so, for the achievement of learning objectives it is necessary to meet the international standards and make the innovative strategies. The previous findings indicated that there is a significant correlation between the content knowledge of the teacher and enhance the higher order skills of the students whereas effective curricula is a key of success for learning process (Confrey et al., 2012; Saido et al., 2018). Moreover, effective curriculum provide strategic instructions to the teacher for teaching a specific subject. It also include the curriculum and extra-curriculum activities within a classroom. Moreover, the content knowledge of the teacher must best fit according to the curriculum and instructions to deliver it appropriately, then

teachers can make it more effective for the learners. Thus, effective curriculum and its sharing provides a proper guidelines to the students to achieve their maximum grades and enhance the academic competencies (Kwangmuang et al., 2021).

The appropriate curriculum is required to deliver with efficiently and efficacy. Therefore, it is important to provide the effective instructional and learning environment. The teaching learning process can be successful with the positive interaction of teacher and students. The students perform numerous activities during learning process whereas, teachers provide them useful instruction to eradicate the problem while they are doing work on logical and quantitative reasoning (Chamosa, et al., 2012; McKenney, & Reeves, 2014). Due to effective practices and instruction, students make them able to complete the assignment within short time. Diversely, due to the large number of class teachers face problem to give insufficient attraction to individual student. That is why students also face issues in developing higher order thinking skills in specific area or subject. Thus, logical and analytical reasoning required proper time and instructions to solve them appropriately (Purnomo, 2017).

Past studies concluded that the instructional skills of teacher play a pivotal role for the enhancement of HOCT skills of learners. So, effective learning and instructional environment is the best tool to transform the knowledge to students. The teachers demonstrate various activities during class, these can be useful for students if teachers has sound academic and professional education, and proper command on subject content knowledge ((Bielaczyc, 2013). The instructional skills are considered a practical skills which teachers perform in classroom and help out the learner to do all these activities which were performed by the teachers and other students. This kind of instructional environment has major contribution to enhance the skills and academic competencies of the learners with problem solving (English, & Kirshner, 2016).

Moreover, it is also necessary to observe the students attitude during learning process. Mostly, students take less interest in the subject which is difficult to understand which create number of problem for the teachers in classroom. Therefore, it is important to the teachers to motivate the students while teach the specific subject because classroom is the best place where individuals can learn and enhance their abilities for future success (Drijvers et al., 2010). The achievement of the students mostly depends upon their behavior which they show during learning process in classroom because classroom is a place where students and teachers fulfill their thrust for getting new knowledge. Thus, positive and negative attitude of the students direct impact on the development of their thinking skills (English, & Kirshner, 2016).

Additionally, the examination system is also a major barrier in the development of academic and practical competencies of the students. The education system at secondary level in developing countries depends on cramming system and maximum numbers and grades are considered a success of the learning process. There is lack of creativity-based learning where students are unable to develop their skills by practicing various activities. At the result they are failed when they entered professional life in future (Furtak, 2009; Irwin, 2003). There is also a lack of effective professional training of the teachers to know how to face and solve the problem which learner face during process. The assessment and evaluation system on project based can be resulted more appropriate for the enhancement of learner abilities. The feedback and monthly assessment technique also can be more effective for this concern (Ruthven, 2014).

METHODOLOGY

This research is quantitative based on casual comparative research design. The teachers of public secondary schools which teach mathematics from Hafizabad were the population and 289 (Male= 158, Female= 131) respondents were selected as sample by applying simple random sampling technique. A self-administered questionnaire was administered based on the factors; instructional environment, students' attitude, incompatible curriculum, instructional skills and examination system. Whereas, primary

research data was gathered by using research tool through survey method and five points Likert scale from strongly disagree to strongly agree was selected. In order to analyze the consistency of the questionnaire, Cronbach's Alpha test was applied which showed the coefficient value greater than 0.7 (Cronbach, 1951, Nunnly, 1978). Additionally, face and content validity was also ensured with the help of experts (Creswell, 2014; Gray, 2014). The descriptive (M, SD) and inferential statistics (independent sample t-test and ANOVA) were applied by using SPSS.

RESULTS

Table 1. *Descriptive analysis*

Dimensions	*M*	*SD*
Incompatible Curriculum	3.82	.92
Instructional Environment	3.64	.98
Instructional Skills	3.70	.95
Students' Attitude	3.54	.99
Examination System	3.62	.97
Overall	*3.66*	*.96*

Overall= M= 3.66, SD= .96

To assess the level of the respondents about study construct, it was indicated that the mean score of the factors was 3.54 to 3.82, and standard deviation .92 to .98 and over mean was 3.66 which highlighted that the repondents were agreed about all the dimensions of study construct challenges for the development of higher order thinking skills of students.

Table 2. *Independent Sample t-test between Male and Female Teachers Regarding Challenges to Develop HOTS (Male= 158, Female= 131)*

Dimensions	*Gender*	*M*	*SD*	*t*	*Sig.*
Incompatible Curriculum	Female	3.69	1.14	.58	.35
	Male	3.93	.99		
Instructional Environment	Female	3.80	.99	.47	.48
	Male	4.08	.89		
Instructional Skills	Female	3.57	1.27	1.80	.05*
	Male	3.81	1.13		
Students' Attitude	Female	3.35	1.25	1.39	.03*
	Male	3.80	1.08		
Examination System	Female	3.31	1.33	1.16	.04*
	Male	3.78	1.12		
Overall	*Female*	*3.54*	*1.19*	*1.08*	*.19*
	Male	*3.88*	*1.04*		

Significance level <.05

To examine the difference of opinion of respondents regarding enhancement of HOTS of students. The statistical analysis showed that there was not found significance difference about incompatible curriculum whereas, the mean score of female (M= 3.69, SD= 1.14) was less than male (M= 3.93, SD= .99).

To evaluate the difference of opinion of respondents regarding enhancement of HOTS of students. The statistical analysis was not indicated a significance difference about instructional environment whereas, the mean score of female (M= 3.69, SD= 1.14) was less than male (M= 3.93, SD= .99).

To determine the difference of opinion of respondents regarding enhancement of HOTS of students. The statistical analysis indicated a significance difference about instructional skills while the mean score of female (M= 3.57, SD= 1.27) was less than male (M= 3.81, SD= 1.13).

To examine the difference of opinion of respondents regarding enhancement of HOTS of students. The statistical analysis indicated a significance difference about students' attitude while the mean score of female (M= 3.57, SD= 1.27) was less than male (M= 3.81, SD= 1.13).

To examine the difference of opinion of respondents regarding enhancement of HOTS of students. The statistical analysis indicated a significance difference about examination system while the mean score of female (M= 3.31, SD= 1.33) was less than male (M= 3.78, SD= 1.12).

Table 3. *ANOVA among different groups of teachers regarding professional experience about issues faced by teachers*

	SS	*df*	*M. Sq*	*f*	*Sig*
Between Groups	3.41	3	1.71	2.91	.02*
Within Groups	55.55	95	.56		
Total	58.95	97			

Significance Level P<0.05

To administer the difference opinion of the respondents regarding their professional experience (1-5 Y, 6-10 Y, 11-15 Y, >15 Y). The statistical findings revealed that there was found a positive difference among these groups about professional experience because p value was less than 0.05.

Conclusions

It concluded that the respondents were agreed about the study variable such as; challenges for the development of higher order thinking skills of students. Moreover, rest of factors incompatible curriculum and instructional environment there was found significant difference in instructional skills, students' attitude and examination system for the development of HOTS of students.

Discussion and Recommendations

The previous researches have showed that the curriculum of mathematics in Pakistan does not meet the international standards there is also lack of instructional skills. Keeping in consideration the discussion above, the study intends to explore difficulties confronted by mathematics teachers to create thinking skills in mathematics pupil at secondary level. It has been realized that compatible curriculum is a key of success for learning process. Moreover, instructional skills of teachers and students' attitude play a significant role for boost the academic competencies of students. There is also need to update the system of examination.

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