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Research Article

Factors Promoting Critical Thinking among Students at Secondary School Level in Swabi

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Abstract

The study sought to find out the factors that promote critical thinking among students at the secondary school level in Swabi. There were 49 Government Girls High Schools in the district of Swabi. 819 female teachers constituted the population of the study. A cluster random sampling technique was used for sample selection. Ten government girls' high schools were randomly selected. From each school, 10 teachers were randomly selected as the sample of the study. The total number of participants was 100. A closed-ended questionnaire with 14 items on a Likert scale was created with the supervisor's input in regard to the subject's purpose in order to gather data from the respondents. The gathered information was displayed in tabular form. As a statistical tool, frequency and percentage were employed to assess the data. The study's findings showed that the majority of respondents used problem-based learning activities to encourage students' critical thinking. Most of the respondents viewed that asking the right questions helps in fostering students' critical thinking skills. Maximum number of respondents promoting Collaborative learning for the critical thinking of students. A great number of respondents were focusing on project-based learning for developing critical thinking skills.

Key Words

Students, Secondary School Level, Swabi, KP, Pakistan, Education

Introduction

Background of the Study

One of the required tasks for any teacher or instructor is to be familiar with those techniques and strategies which may be very useful if applied properly in the teaching-learning environment. It is observed that teachers mostly teach different concepts in traditional ways and they don't focus towards students' interaction which in turn provides numerous benefits if applied accordingly (Brookfield, 2011). In addition, numerous research shows a beneficial relationship between critical thinking and student engagement (Barkley, 2009; Behar-Horenstein & Niu, 2011; Carini, Kuh & Klein, 2006). Furthermore, critical thinking may be beneficial in fostering skills which are very useful for students to think logically and to be professional in practical life by analyzing every task and situation more accurately and logically (Bensley, 2010). Moreover, it is the responsibility of teachers or instructors to provide such an environment full of curiosity and

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logical thinking to promote critical thinking among students in a classroom situation as well as an outside classroom to get maximum results.

Critical thinking depends upon many factors including one should be reflective, authentic and reasonable (Nosich, 2012). Moreover, asking the right question at right time and reply those questions logically and with reason also make someone a critical thinker. There may be more strategies for developing critical thinking among students if applied accurately and accordingly. Discussions, Problem-solving techniques and argumentative practices may also provide greater results in fostering critical thinking among students.

Statement of the Problem

The present study was designed to find out the factors that promote critical thinking among students at the secondary school level in Swabi

Objective of the Study

1. To identify the factors promoting critical thinking among the students at the secondary school level in Swabi.
2. To determine possible recommendations for promoting critical thinking among students at the secondary school level in Swabi.

Research Question

1. Which factors promote critical thinking among the students at the secondary school level in Swabi?
2. What are the possible recommendations for promoting critical thinking among students at the secondary school level in Swabi?

Significance of the Study

The results of this study would be valuable to a range of specialists who might find the research to some extent trustworthy in their own sector or even just for a straightforward discussion and citation in research.

Delimitation of the Study

The study was delimited to the public sector female secondary school teachers in the district of Swabi.

Review of Related Literature

Critical thinking skills are of utmost importance for both teachers as well as students in the 21st century for getting a good job, making progressive advancement in practical life and becoming a useful member of society (Koenig et al., 2011). A consensus definition of CT derived from a panel of 46 critical thinking experts is "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as an explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 1990, p. 2).

In this competitive world, everyone needs such skills which help them to make their future more secure and successful. For this reason, one can achieve this by utilizing critical thinking skills properly and accurately in every sphere of life. These skills are considered more important in the teaching-learning environment for helping students to use these skills properly for

advancement and for teachers to become more successful in their teaching. A study reported that teachers are of the view that teaching critical thinking and fostering this skill among students is very much needed for students of higher education levels mentioning it over 99% as "very important" or "essential" (DeAngelo et al., 2009, p. 3). In another study conducted by Arum and Roksa (2011), shocking research findings observed 45% of college students had no significant critical thinking skills which ultimately indicate to change in teaching strategies and practices, making necessary improvements in the curriculum as well as the environmental changes.

Moreover, the technological world also called the global village needs such skills to help students to become problem solvers and indeed it's the fundamental requirement and a goal of education in every field (Olszewski-Kubilius & Thomson, 2015; Paul & Elder, 2012). When someone performs any activity he or she learns from that particular situation in which many factors contribute including thought process and communication skills. We can develop these talents more effectively if we have the capacity for critical thought and comprehension. In a broader sense, it is the result of a number of elements, including information, skills, procedures, and attitudes that are correctly used in specific situations that arise in everyday life (Lai, 2011). Students must have access to these elements in order to advance, and it is the responsibility of educators to create an environment that allows for the development of these talents. Furthermore, it's also a duty for students to prepare themselves full of critical thinking skills to apply them in real-life situations to be successful individuals to cope with the difficulties of life and make sensible decision making accordingly.

It is worth noting that in addition to learning how to read, write, and execute fundamental math operations, one should be aware of how to use the right thinking techniques in order to reap the greatest rewards (Rhodes, 1961; Runco, 2014). The ability to deal with various issues that arise in every sector must also be addressed (Segal, Chipman & Glaser, 1985). Scientific knowledge and the application of literacy skills in this technologically advanced world are also very much needed (Lawless &Brown, 2015; Tortop, 2013). The focus of the teaching-learning process should be towards developing and foresting these sorts of skills and accurate measures be taken to make necessary changes in curriculum, methods of teaching and the teaching-learning environment. Learners should be trained to utilize proper thinking skills and to solve their problems and issues by using critical thinking to get maximum results. This can be achieved only if teachers play a vital role in shaping and developing these critical thinking skills among students. Critical thinking is one of the leading skills required for everyone in this technologically advanced era and in the 21st century (Kharbach, 2012). Furthermore, developing critical thinking among students helps shape students thought processes resulting in numerous benefits (Hashemi, 2011).

Indeed, there are many teaching strategies and practices which can result in developing critical thinking among students, inquiry learning is one of the strategies to foster critical thinking (Prince & Felder, 2006; Kazempour, 2013). Moreover, this strategy helps to make the thought process more effective by designing accurate questions according to the situation and to find out real solutions to those issues (Arends, 2012). It's up to the teachers how to apply proper teaching strategy which ultimately results in fostering critical thinking.

Likewise, mind mapping is another technique for students to make proper use of their cognitive potential. Both left and right brain functions may be helped by it. Also, it helps students connect relevant pieces of knowledge, which promotes critical thinking. Carlson and Long (2011). Similarly to this, experts believe that using the mind-mapping approach to learning will increase the effectiveness and efficiency of the learning process. This approach also fosters critical thinking in students (D'Antoni et al., 2010; Pudelko et al., 2012). Information and communication technologies can be used in an online setting to help students develop their critical thinking skills (Haghparast et al., 2013).

The aim of this study was to find out teaching strategies applied by teachers for developing critical thinking among students at higher education levels as exploring various practices applied in teaching learning may be most effective to help learners for fostering these skills. Questioning

is another strategy to motivate students to think and analyse situations critically. The level of learners' thinking depends upon different factors including the nature of the questions. Teachers may use this strategy to maximize the critical thinking abilities of students if used properly and accordingly (Orlich et al., 2013). A cooperative learning strategy can also benefit learners to share their ideas with peers and teachers, becoming more responsible individuals and critical thinkers (Slavin, 2011). Likewise, Role-playing and Simulations may also be effective and they should be applied in real-life situations for helping students to think logically and analyzing different issues critically (Dennicka & Exley, 1998). Debate may be another option for teachers to apply in classroom situations for enhancing the critical thinking of students. This strategy may be more useful as learners react as active learners not passive by asking questions, thinking logically, finding out errors and most importantly formulating arguments by applying cognitive abilities. Halvorsen (2005) and Rybold (2011) also suggest that debate strategy be applied to students for developing critical thinking skills.

Studies by Masek and Yamin (2011) and Burris (2005) that demonstrate connections between critical thinking abilities and problem-based learning have favourable results for students. Problem-based learning is a method for multidisciplinary learning, according to Stentoft (2017).

Problem-based Learning

Problem-based Learning can derive a variety of effects and impacts on both students and teachers. PBL can be an efficient learning strategy (Gorghiu, Draghicescu, Cristea, Petrescu & Gorghiu, 2014; Fatade, Mogari, and

Arigbabu, 2013; Mustafa, 2016; Sindelar, 2010); has positive effects on teaching (Padmavathy & Mareesh, 2013); problem-solving skills and self-efficacy (Rokhmawati, Djatmika, and Wardana, 2016; Padmavathy & Mareesh, 2013); enhanced student performance (Polanco, Calderon, and Delgado, 2004); and an effective instructional approach (Mergendoller, Maxwell, and Bellisimo, 2000). Further, in the research of Sungur and Tekkaya (2006), they stated that class learning with problem-based learning has high intrinsic motivation, influences meaning in doing the job, increases the ability to think and, has metacognitive and self-regulated learning if compared with the class applying conventional learning. Furthermore, Salandanan (2012) claims that when kids complete a task or issue, their learning is permanently retained because it fosters critical thinking, instils systematic work habits throughout adulthood, and increases students' feelings of accountability, creativity, and resourcefulness. Sahin and Yorek (2009) contend, in contrast to other studies, that the PBL technique has no beneficial effect on students' performance and expectations for studying physics for this particular group of students. Demirel and Dagyar (2016) discovered a low-positive effect of PBL on a student's attitudes, which is corroborative. A similar observation was made by Anazifa and Djukri (2017), who concluded that PBL has no distinct effects on students' critical thinking. In the study of Dochy, Segers, van den Bossche, and Gijbels (2003), results show that there is a difference in the reported effects of PBL between each of the three levels in the knowledge structure. The team of Argaw, Haile, Ayalew and Kuma (2017) also argued that there was no significant difference in motivating students when they used PBL instruction.

Critical Thinking Skills

The key to raising the calibre of human resources is education. One action that educators can do to raise the standard of their human resources is to adapt education to the requirements of the time. It demonstrated how critical thinking was taught by Greek philosophers including Socrates, Plato, and Aristotle (Staib, 2003; Burbach, Matkin, & Fritz, 2004). Utami, Saputro, Ashadi, Masykuri, and Widoretno (2017) contend that critical thinking abilities should take precedence over all other educational objectives. When the critical thinking scores and their constituent parts were compared across college classification, high school GPA, high school rank, SAT verbal, SAT mathematical, gender, race, and major, Whitten and Brahmasrene (2011) discovered significant

variances and connections. Organizational learning culture affects the critical thinking skills of female higher education female teachers (Sabri, Ilyas & Amjad, 2015). In the study of Ozyurt (2015), there was a low level of a significant relationship between the critical thinking disposition and problem-solving skills of students.

Horenstein and Niu (2011), however, found that the execution of the same instructional strategies could have various outcomes. These were the student characteristics that were used in the study to determine if the pupils had critical thinking abilities based on the teacher's observations.

Solomon (2005) cites contextual learning, information processing theory, and cooperative learning as the theoretical foundations of PBL. Superior problem-solving abilities are the result. According to Pagander and Read's (2014) research, PBL is "student-centred" and anchors with constructivism. PBL entails bargaining with students, focusing on the beginning point that each one brings to the process, and giving them more choice over the course and substance of their education. As a result, different tasks emphasise these elements in different ways. According to Orig (n.d.), a modern approach to education can incorporate problem-based learning through Socratic questioning. A problem comprises several questions that students encounter during class. A question will serve as a pivotal quandary from which other ideas and questions spring.

Methods and Procedure

Nature of the Study

A descriptive research design was adopted for the study. The data was collected from primary sources through a questionnaire. The responses of the participants were quantified and presented in tabulated form.

The population of the Study

There were 49 Government Girls High Schools in the district of Swabi. 819 female school teachers constituted the population of the study.

Sample of the Study

A cluster random sampling technique was used for sample selection. Ten government girls' high schools were randomly selected. From each school, 10 teachers were randomly selected as the sample of the study. The total number of participants was 100.

Research Instrument

To collect data from the respondents, a closed-ended questionnaire containing 14 items based on the Likert scale was developed with the consultation of the supervisor in relation to the objective of the subject.

Data Collection

The researcher personally visited the sample schools for collecting data. The questionnaire was distributed among the respondents.

Data Analysis Tool

The collected data were presented in tabulated form. Frequency and percentage were used as statistical tools to analyse data.

Analysis of Data

Table 1.

I use Problem-based learning activities to promote critical thinking among students

	Always	Often	Sometime	Rarely	Never
Frequency	50	45	5	0	0
Percentage	50%	45%	5%	0%	0%

Table 1 shows 77% of respondents were using problem-based learning activities to promote critical thinking among students.

Table 2.

I ask the right questions to help in fostering students' critical thinking skills.

	Always	Often	Sometime	Rarely	Never
Frequency	48	42	10	0	0
Percentage	48%	42%	10%	0%	0%

Table 2 shows 90% of respondents viewed that asking the right questions helps in fostering students' critical thinking skills.

Table 3.

I promote Collaborative learning for the critical thinking of students.

	Always	Often	Sometime	Rarely	Never
Frequency	46	38	14	0	0
Percentage	46%	38%	14%	0%	0%

Table 3. shows 86% of respondents were promoting Collaborative learning for the critical thinking of students.

Table 4.

I focus on project-based learning for developing critical thinking skills.

	Always	Often	Sometime	Rarely	Never
Frequency	40	40	10	0	0
Percentage	40%	40%	10%	0%	0%

Table 4. shows 80% of respondents were focusing on project-based learning for developing critical thinking skills

Table 5.

I use a teaching strategy that works in groups to enhance the critical thinking abilities of students.

	Always	Often	Sometime	Rarely	Never
Frequency	38	32	30	0	0
Percentage	38%	32%	30%	0%	0%

Table 5 shows 70% of respondents were using a teaching strategy that works in groups to enhance the critical thinking abilities of students.

Table 6.
I prefer writing assignments focusing on reflection and reasoning.

	Always	Often	Sometime	Rarely	Never
Frequency	40	48	12	0	0
Percentage	40%	48%	12%	0%	0%

Table 6 shows 88% of respondents preferred writing assignments focusing on reflection and reasoning.

Table 7.
I utilize discussion methods for developing critical thinking among students.

	Always	Often	Sometime	Rarely	Never
Frequency	35	65	0	0	0
Percentage	35%	65%	0%	0%	0%

Table 7 shows 100% of respondents were utilizing the discussion method for developing critical thinking among students.

Table 8.
I apply teaching strategies promoting the decision-making ability of students for critical thinking.

	Always	Often	Sometime	Rarely	Never
Frequency	49	31	20	0	0
Percentage	49%	31%	20%	0%	0%

Table 8 shows 80% of respondents were applying teaching strategies promoting the decision-making ability of students for critical thinking.

Table 9.
I focus on debate strategy for enhancing critical thinking among students.

	Always	Often	Sometime	Rarely	Never
Frequency	46	38	16	0	0
Percentage	46%	38%	16%	0%	0%

Table 9 shows 84% of respondents were focusing on debate strategy for enhancing critical thinking among students.

Table 10.
I apply mind mapping to enhance critical thinking among students.

	Always	Often	Sometime	Rarely	Never
Frequency	40	45	15	0	0
Percentage	40%	45%	15%	0%	0%

Table 10 shows 85% of respondents were applying mind mapping to enhance critical thinking among students.

Table 11.

I prefer using information and communication technology to promote critical thinking skills.

	Always	Often	Sometime	Rarely	Never
Frequency	40	48	12	0	0
Percentage	40%	48%	12%	0%	0%

Table 11 shows 88% of respondents preferred using information and communication technology to promote critical thinking skills.

Table 12.

I use a cooperative learning strategy for fostering critical thinking skills.

	Always	Often	Sometime	Rarely	Never
Frequency	61	39	0	0	0
Percentage	61%	39%	0%	0%	0%

Table 12 shows 100% of respondents were using cooperative learning strategies for fostering critical thinking skills.

Table 13.

I focus on peer reviews in the teaching-learning process to enhance critical thinking.

	Always	Often	Sometime	Rarely	Never
Frequency	40	30	30	0	0
Percentage	40%	30%	30%	0%	0%

Table 13 shows 70% of respondents were focusing on peer reviews in the teaching-learning process to enhance critical thinking

Table 14.

I use argumentative strategies for fostering critical thinking among students.

	Always	Often	Sometime	Rarely	Never
Frequency	46	38	16	0	0
Percentage	46%	38%	16%	0%	0%

Table 14 shows 84% of respondents were using the argumentative strategy for fostering critical thinking among students

Findings

1. Table 1 shows 77% of respondents were using problem-based learning activities to promote critical thinking among students.
2. Table 2 shows 90% of respondents viewed that asking the right questions helps in fostering students' critical thinking skills.
3. Table 3 shows 86% of respondents were promoting Collaborative learning for the critical thinking of students.
4. Table 4 shows 80% of respondents were focusing on project-based learning for developing critical thinking skills
5. Table 5 shows 70% of respondents were using a teaching strategy that works in groups to enhance the critical thinking abilities of students.

6. Table 6 shows 88% of respondents preferred writing assignments focusing on reflection and reasoning.
7. Table 7 shows 100% of respondents were utilizing the discussion method for developing critical thinking among students.
8. Table 8 shows 80% of respondents were applying teaching strategies promoting the decision-making ability of students for critical thinking.
9. Table 9 shows 84% of respondents were focusing on debate strategy for enhancing critical thinking among students.
10. Table 10 shows 85% of respondents were applying mind mapping to enhance critical thinking among students.
11. Table 11 shows 88% of respondents preferred using information and communication technology to promote critical thinking skills.
12. Table 12 shows 100% of respondents were using a cooperative learning strategy for fostering critical thinking skills.
13. Table 13 shows 70% of respondents were focusing on peer reviews in the teaching-learning process to enhance critical thinking
14. Table 14 shows 84% of respondents were using an argumentative strategy for fostering critical thinking among students

Conclusion

The majority of the respondents were using problem-based learning activities to promote critical thinking among students. Most of the respondents viewed that asking the right questions helps in fostering students' critical thinking skills. A maximum number of respondents promoting Collaborative learning for the critical thinking of students. A great number of respondents were focusing on project-based learning for developing critical thinking skills. The majority of the respondents were using a teaching strategy that works in groups to enhance the critical thinking abilities of students. Most of the respondents preferred writing assignments focusing on reflection and reasoning. All of the respondents were utilizing the discussion method for developing critical thinking among students. A maximum number of respondents were applying teaching strategies promoting the decision-making ability of students for critical thinking. Great number of respondents were focused on debate strategy for enhancing critical thinking among students. Most of the respondents were applying mind mapping to enhance critical thinking among students. The bulk of the respondents preferred using information and communication technology to promote critical thinking skills. Huge number of respondents were using cooperative learning strategy for fostering critical thinking skills. Most of the respondents were focused on peer reviews in the teaching-learning process to enhance critical thinking. The majority of the respondents were using the argumentative strategy for fostering critical thinking among students

Recommendations

1. For more understanding of the teaching practices used by the teachers, the sample size can be increased so that more accurate findings be achieved.
2. It's a need for time to conduct studies regarding teaching practices applied by teachers at colleges as well as universities level.
3. Teaching strategies promoting critical thinking abilities should be applied in the teaching-learning process to get maximum benefits.
4. For developing critical thinking among students, ample opportunities should be provided to learners and involve them in different activities to enhance these skills.

5. Curriculum might be according to the current demands of rapid changes in the world to compete and make learners critical thinkers for better decision-making in real-life situations.
6. There is also a major role for parents and society play important parts in shaping the overall personality of the learner.
7. Teachers might be trained in using proper techniques and strategies to foster critical thinking among students for future decision-making.
8. Media may play a vital role to develop these skills and disseminate information necessary for creating a conducive environment in which individuals may progress and utilize their potential accordingly.

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