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# Perceptions of Teachers Regarding the Marks' Reduction of Practical/Laboratory Work at the Secondary School Level

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**Abstract:** Perceptions of teachers regarding the marks' reduction of practical/laboratory work at the secondary school level were designed to achieve the objectives of exploring the perceptions of teachers regarding the marks' reduction of practical/laboratory work at the secondary school level and to investigate the influence of marks' reduction on students learning at secondary school level. The study was descriptive in nature, in which the current status of the subject was studied. All the female teachers in government girls' high schools of district Swabi comprise the population of the study. Twenty female secondary school teachers were purposefully selected from the population. A closed-ended questionnaire for teachers was developed on a 3-point scale. The percentage was used as a statistical tool for the analysis of collected data. Based on findings, it was concluded that most teachers believed practical/lab work has much importance in science subjects. Respondents agreed that it is the only way to demonstrate the anatomy of different organisms and plants. Reduced marks may affect students' grades in SSC examinations. Students also take less interest due to reduced marks in practical work. Less lab work affects teachers' own talent. Less lab work also wastes precious lab material. Most of the teachers were in favor of increasing practical marks to 25.

**Keywords:** Practical/Laboratory Work, Marks' Reduction, Teachers Perceptions

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## Introduction

Scholars and educators have studied the value of experiential learning and its role in scientific fields such as chemistry and biology since the early 1700s. Several studies have shown the many advantages of hands-on learning, such as the growth of scientific knowledge and laboratory skills, together with an understanding of science theories and concepts (Fadzil & Saat, 2013; Schwichow et al., 2016). Roberts (2008) wrote in a booklet on high-quality, practical activities in science to support practical work in the scientific fields, "Students achieve a deeper level of understanding by finding things out for themselves and by experimenting with techniques and methods that have enabled the secrets of our bodies, our environment, and the whole universe – to be discovered."

According to Okam and Zakari (2017), students' positive attitudes and motivation for successful science learning have been shown to be enhanced by practical practice. Thus, students' progress in science is significantly impacted by a favorable attitude toward the significance of practical work (Hinneh, 2017).

Research has also shown that practical work can improve students' communication skills, which in turn helps them solve scientific problems and, eventually, increase their motivation to study science. Additionally, practical involvement increases and stimulates students' enthusiasm for science, promoting science as an engaging topic. When students undertake chemical processes, for example, they discover that science and chemistry are applied domains as well as theoretical subjects.

Science education greatly benefits from laboratory practice (Hofstein & Lunetta, 1982; Hofstein & Mamlok-Naaman, 2007). Laboratories can be utilized in the teaching process to generate scientific notations and build models to test theories. Understanding the distinction between data presentation and observation is another benefit of laboratory work (Lawson, 1995). According to recorded evidence, laboratory activities are appealing because they enable students to learn with comprehension and participate in the process of creating knowledge through science (Tobin, 1990). Laboratory experiments are essential in order to fully understand all scientific areas, including chemistry, physics, and biology.

## Problem Statement

The present study is to investigate the perceptions of teachers regarding the marks' reduction of practical/laboratory work at the secondary school level in Swabi.

## Objectives of the study

1. To explore the perceptions of teachers regarding the marks' reduction of practical/laboratory work at the secondary school level.
2. To investigate the influence of marks' reduction on students learning at the secondary school level.

## Research Questions

1. What are the perceptions of teachers regarding the marks' reduction of practical/laboratory work at the secondary school level?
2. What is the influence of mark reduction on students learning at the secondary school level?

## Study's Significance

This study is carried out especially for the students of classes 9th and 10th who are enrolled in the science group. Due to reduced marks for practical work, they fail to perform practical work in the lab because, for only ten marks, no one is interested in practical work. So, it will help to make students and teachers aware of the importance of practical work. It will also serve as a guiding map for the policymaker to think about the practical marks policy.

## Study Scope

The study was delimited to the secondary school for girls in the district of Swabi.

## Review of Related Literature

Worldwide, the paradigm shift in education has been from teacher-centred to student-centred, emphasizing the importance of empowering students to become more self-sufficient and take ownership of their education. Many teachers still use antiquated techniques such as reading lectures directly from textbooks, making pupils use them as their only source of knowledge, and rarely adapting their teachings to fit into practical contexts. Yore (2001) claims that this undervalues the development of complete concepts and critical thinking skills, both of which are essential for science literacy.

Cobb et al. (2003) assert that through methodically researching those modes of learning and the resources that enable them, "design experiments have both a pragmatic bent and a theoretical orientation developing domain-specific theories." By simulating the activities of scientists, practical work aims to enhance students' comprehension, sharpen their problem-solving abilities, and help them comprehend the nature of science.

Sotiriou et al. (2017) assert that when addressing a scientific problem, students ought to behave like scientists and adhere to scientific procedures. According to Hodson (1990), experiential learning has the power to uplift students, stimulate their interest in science, enhance their understanding of the subject, give them practice using it, and extend their horizons.

Tsakeni (2018) looked into the possible ways that two South African high school physical science students could benefit from practical experience. The results demonstrated how the absence of practical tests caused the practical work in physical science lectures to be undervalued, which in turn disenfranchised students. According to Tsakeni, the agenda for social justice emerged as a result of the restricted access due to the high requirements connected with studying the physical sciences. Tsakeni recommended utilizing assessment techniques and instructional leadership tools to support hands-on learning.

Dillon (2008) provides a plethora of arguments in support of the curriculum-required practical assignments that science classes in schools assign. The necessity to retain students' excitement for scientific inquiry, convert theories into real-world applications, support accurate observations and descriptions, and promote a logical and rational way of thinking are a few of the arguments put forth. According to Bryson et al. (2002), practical work also improves students' scientific understanding.

During an eight-week study, including forty fifth-graders from two different classes selected by purposive sampling, it was discovered that students getting taught through inquiry-based learning outperformed those receiving instruction through traditional techniques in terms of test results (Abdi, 2014).

Numerous research investigating the effect of practical work on student attainment looked at various aspects of the quality of the practical work, such as the problem design that helps students to make connections between the theoretical and practical sides. The results of a study on a sample of 25 science lessons in English secondary schools, including practical work, indicate that the practical work enhanced the direction of the lesson by assisting students in maintaining concentration on their assignments and finishing the hands-on work. However, research indicates that practical work was less effective in assisting those students in making the connections between ideas and lab applications, as well as in encouraging them to think critically about the knowledge they had acquired (Abrahams & Millar, 2008). The inquiry came to the conclusion that there wasn't enough data to back up the assertion that people in charge of designing the scientific lesson activities also considered the idea of linking ideas to observables.

Before starting any practical assignment, Millar (2004) suggests that students' minds be stimulated by providing them with some background information on the topic of their inquiry. Furthermore, students' attempts to make links between the two knowledge areas must be guided by the task design. Therefore, in order to adjust their teaching strategies and commit more time and effort to thinking about how to relate scientific concepts to the real world, science instructors need to undergo training that is based on the most recent research findings (Jokiranta, 2014).

## Methods and Procedure

The study was descriptive in nature, in which the current status of the subject was studied. All the female teachers in government schools of district Swabi comprise the population of the study. Twenty female secondary school teachers were randomly selected from the population. For the purpose of data collection, a closed-ended questionnaire was developed on a three 3-point scale for teachers and students containing ten items with the help of a supervisor. The percentage was used as a statistical tool for the analysis of collected data.

## Presentation and Data Analysis

Table 1

*Q1. Does practical/lab work have any importance in science subjects?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 18 | 90 |
| No | 0 | 0 |
| Undecided | 2 | 10 |
| Total | 20 | 100 |

Table 1 shows that 90% of respondents were of the opinion that practical/lab work has much importance in science subjects.

Table 4

*Q2. Do you think that practical/lab work is the only way to demonstrate the anatomy of organisms or plants?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 20 | 100 |
| No | 0 | 0 |
| Undecided | 0 | 0 |
| Total | 20 | 100 |

Table 2 shows that 100% of respondents agreed that it is the only way to demonstrate the anatomy of different organisms and plants.

Table 3

*Q.3 Did students take an interest in practical/lab work rather than theory?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 18 | 90 |
| No | 0 | 0 |
| Undecided | 2 | 10 |
| Total | 20 | 100 |

Table 3 shows that 90% of respondents say that students take much more interest in theory.

Table 4

*Q.4 Do you feel that reduced marks of practical/lab work in the SSC examination will affect its importance?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 20 | 100 |
| No | 0 | 0 |
| Undecided | 0 | 0 |
| Total | 20 | 100 |

Table 4 shows that 100% of respondents were in favor of reduced marks of practical/lab work in the SSC examination, which will affect its importance.

Table 5

*Q5. Did the reduced marks of practical/lab work affect students' grades in the SSC Examination?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 16 | 80 |
| No | 2 | 10 |
| Undecided | 2 | 10 |
| Total | 20 | 100 |

Table 5 shows that 80% of respondents agreed that reduced marks may affect students' grades in the SSC examination.

Table 6

*Q.6 Do you feel that students' interest will become less in practical work due to reduced marks?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 15 | 75 |
| No | 2 | 10 |
| Undecided | 3 | 15 |
| Total | 20 | 100 |

Table 6 shows that 75% of respondents were of the opinion that students will take less interest due to reduced marks in practical work.

Table 7

*Q7. Do you feel that without practical work, students will not be able to compete with the modern world?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 2 | 10 |
| No | 17 | 85 |
| Undecided | 1 | 5 |
| Total | 20 | 100 |

Table 7 shows that 85% of respondents were in favor of the integration of both systems of education.

Table 8

*Q8. Do you feel that less or no lab work affects your own talent?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 18 | 90 |
| No | 0 | 0 |
| Undecided | 2 | 10 |
| Total | 20 | 100 |

Table 8 shows that 90% of respondents agreed that less lab work affects their own talent.

Table 9

*Q9. Do you think less or no lab work wastes the precious lab material?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 16 | 80 |
| No | 1 | 5 |
| Undecided | 3 | 15 |
| Total | 20 | 100 |

Table 9 shows that 80% of respondents were of the opinion that it wastes precious lab material.

Table 10

*Q10. Do you think that practical/lab work marks may be increased to 25?*

| Evaluative Scale | *f* | % |
|---|---|---|
| Yes | 19 | 95 |
| No | 1 | 5 |
| Undecided | 0 | 0 |
| Total | 20 | 100 |

Table 10 shows 95% of respondents were in favor of increasing practical marks to 25.

## Findings, Conclusion, and Recommendations

### Findings

1. Table 1 shows that 90% of respondents believed practical/lab work has much importance in science subjects.
2. Table 2 shows that 100% of respondents agreed that it is the only way to demonstrate the anatomy of different organisms and plants.
3. Table 3 shows that 90% of respondents say that students take much more interest rather than theory.
4. Table 4 shows that 100% of respondents were in favor of reduced marks of practical/lab work in the SSC examination, which will affect its importance.

5. Table 5 shows that 80% of respondents agreed that reduced marks may affect students' grades in the SSC examination.
6. Table 6 shows that 75% of respondents believed students would take less interest due to reduced marks in practical work.
7. Table 7 shows that 81.8% of respondents were in favor of the integration of both systems of education.
8. Table 8 shows that 90% of respondents agreed that less lab work affects their own talent.
9. Table 9 shows that 80% of respondents believed it wastes precious lab material.
10. Table 10 shows 95% of respondents were in favor of increasing practical marks to 25.

## Conclusions

The teachers believed practical/lab work has much importance in science subjects. Respondents agreed that it is the only way to demonstrate the anatomy of different organisms and plants. Most teachers say that students take much more interest rather than theory. Some respondents were in favor of reduced marks for practical/lab work in the SSC examination, which will affect its importance. Reduced marks may affect students' grades in SSC examinations. Students also take less interest due to reduced marks in practical work. Less lab work affects teachers' own talent. Less lab work also wastes precious lab material. Most teachers were in favor of increasing practical marks to 25.

## Recommendations

1. The government may work to modify the curriculum of science subjects and may develop practical-oriented textbooks.
2. The curriculum developer and policy maker may suggest increasing practical/lab marks to 25 or 50% for each theory and practical.
3. In school, there may be a proper schedule for practical work.
4. Arrangements for practical work in the lab may be considered part of the curriculum.

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