



ANALYSIS OF TEACHERS' PERCEIVED SELF-EFFICACY IN IMPLEMENTING GENERAL SCIENCE SINGLE NATIONAL CURRICULUM 2020 AT PRIMARY LEVEL

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Abstract:

The purpose of this study was to analyze the self-efficacy of general science teachers during the implementation of Single National Curriculum 2020 (SNC 2020) of 5th grade in three district of Hazara division. A questionnaire to explore the perceived self-efficacy of primary school teacher was constructed in line with the guideline provided by Bandura. There were 40 items in the survey represent the each benchmarks of the curriculum. Data was collected from 300 general science teachers of 5th class from public sector primary schools. Mean was used to measure the central tendency. Results found that general science teachers' assessed self-efficacy with relation to implementing the grade 5 general science SNC 2020 was moderate. The results of the study suggest that primary school class 5th general science teachers need further assistance and training to advance their self-efficacy in putting the Benchmarks of SNC 2020 into practice. . Thus, it is crucial to take necessary measures on the part of the education department for improving the self-efficacy of general science teachers to execute the General Science SNC 2020 successfully in public schools Hazara division Pakistan.

INTRODUCTION

Self-efficacy as a construct emerged from social cognitive theory. The theory stated that behavior, cognition and environment effect each other in a dynamic fashion (Bandura, 1986). According to Wood & Bandura (1989); Tahir, T, U Ishfaq, S Begum, G Shaheen (2021) self-efficacy is the beliefs of capabilities for mobilizing the motivation, cognitive resources and course of action required for managing given situational difficulties.

Self-efficacy play very important role in one's thinking, feeling and behaving in a specific task. According to Bandura, (1997) self-efficacy is a belief of someone to do something successfully. He further argued that self-efficacy influence the practices chosen for doing something, prepare someone to face problems, level of efforts to accomplish the assignment. It is a belief of having an ability to accomplish a task in a particular situation. He stated that mastery and vicarious experiences, verbal or social encouragement, or physiological and emotional conditions caused efficacy beliefs.

Perceived self-efficacy is concerned with people's beliefs in their abilities to attain given tasks (Gul, R., Batool, S., Khan, S. I., & Jabeen, F. 2023). In relation to recommendation of examining science teacher's self-efficacy he specifically stated that "teacher efficacy in science education is of particular concern, given the increasing importance of scientific literacy and competency in the technological transformations occurring in society" (Gul, R., & Khilji, G. K. 2023).

The studies exploring the teachers' perceived self-efficacy stated that there existed significant relationship between self-efficacy of teachers and implementation of new curriculum reforms. According to Fogleman et al. (2011, Gul, R., Ahmad, I., Tahir, T., Ishfaq, U. (2022). Gul, R., Tahir, T, Ishfaq, U., Batool, S. 2021. Tahir, T, K. Khan, Aurangzeb, W. (2019) the implementation of curriculum with true spirit is determined by the beliefs of teachers about teaching and learning. If teachers' believe that they are able to achieve the desired goals of new curriculum than they show more willing to implement it in the classroom. A qualitative case study carried out by Whitacre,



(2019); Batool, S., Tahir, T., Gul, R. & Nawaz, H. (2022) probing the importance self-efficacy in implementation of a middle and high school science writing initiative observed that the teacher having high level of self-efficacy was more successful in the accomplishment of desired goals as compared to one who possessed low self-efficacy level. Hodges, et al., (2016); Gul, R., Ahmad, I., Tahir, T., Ishfaq, U. 2022; Batool, S., Tahir. T., Gul, R., Ishfaq, U. 2021 concluded that successful science teaching is closely related to teachers' self-efficacy. Teacher with low self-efficacy relied only on textbook while teacher with high self-efficacy used a variety of teaching strategies. Teacher possessing high level of self-efficacy make student learning and understanding of the scientific content and skills more effective by thorough explanation, asking open ended question, connecting content to daily life as compared to teachers having low self- efficacy

In New Zealand a study conducted by Locke and Johnston (2016); Khan,K., Aurangzeb,W,Tahir,T.(2020)& Batool.S. , Tahir. T, Gul .R, Nawaz2022, suggest that the self-efficacy of language based subject teachers were considerably higher in writing as compared to other subject teachers like math and science. Tschannen-Moran and Barr (2004; Bashir S, Ishfaq; Tahir.T, 2022; Batool, S., Tahir, T., Gul, R., & Ishfaq, U. (2021) concluded that there existed significant positive relationship between teachers' perceived efficacy and the success of mathematics students in 5th Grade. Many factors influence learning achievement but quality of teachers is considered the single most important variable which influence learners achievement (OECD, 2005). McNeill et al. 2016 observed that classroom instruction is greatly influenced by teachers' beliefs. To ensure the accurate implementation of new curriculum teacher must be confident in delivery and purpose of material in use (Tahir, T., Batool, S., Gul, R., & Ishfaq, U. (2023). Their professional practice in classroom is determined by their belief about a particular situation. They translate curriculum themes in light of their own definitions and belief which result in unexpected utilization problem (Tawana, 2009; Gul, N., Tahir, T., Gul, R., Batool, S. 2022; Batool, S., Tahir. T., Gul, R., Ishfaq, U. 2021).

The General Science Single National Curriculum 2020 focuses on various issues pertaining to the current state of science education in the country, including General Science curriculum, textbooks, teaching, assessment, and schools' infrastructure. The existing General Science Curriculum was reviewed in the light of ground realities and study of best practices from around the world including several documents, foreign curricula, standards for science teachings, STEM and TIMSS content requirements (Gul, R., Zakir, S., Ali, I., Karim, H., & Hussain, R. 2021; Khan, H., Gul, R., & Zeb, M. 2023).

Development of the Single National Curriculum (SNC) 2020 for grade 1-5 has been completed under a broad-based consultative process with the engagement of experts from all provinces and areas. The key considerations in the development of SNC 2020 related to General Science included: national policies; international commitments, including Sustainable Development Goals (SDGs); latest trends in education; societal values; inclusive education; human rights and child protection; hygiene and sanitation; environment and climate change; global citizenship; life skills based and civic education; respect for religious and cultural diversity; move away from rote learning; activities and project based learning; 21st century skills; use of information and communication technology; and the ever evolving challenges and trends of the new era (Ahmad, I., & Gul, R. 2021; Ahmad, I., Gul, R., & Imtiaz, U. 2022). This study is designed to explore the beliefs of teachers about their abilities to implement the Benchmarks Grade-V General Science SNC 2020 at primary level is significant due to several reasons (Gul, R., Muhammad, T., Mumtaz, M., & Shaheen, L. 2021; Gul, R., & Rafique, M. 2017; Gul, R., & Reba, A. (2017). The implementers of CPD (Continuous Professional Development) program started by provisional government for the implementation of SNC 2020 will be able to address those areas of curriculum where improvement is needed for enhancing the abilities of teacher by providing adequate training sessions. Principals will be able to focus on those areas of curriculum needed consideration for improving teachers' self-efficacy (Ahmad, I., Gul, R., & Kashif, M. 2022). At management level the manager will be



assisted by the finding of the study in providing proper facilitation for implementing the General Science SNC 2020 at primary level (Ahmad, I., Gul, R., & Zeb, M. 2022; Gul, R., & Khilji, G. 2021).

Conceptual Framework

The conceptual framework used for perceived self-efficacy of teacher in this study is based on Bandura (1977, Abdullah, Tahir.T;Ishfaq,U,2022, Gul, R., Kanwal, S., & Khan, S. S. 2020; Tahir,T,, W. Ahmed, S. Batool, U Ishfaq 2021; Ahmad, I., Gul, R., & Zeb, M. 2022; Tahir,T,, K Khan, W, Aurangzeb (2019) theory that when facing new challenges, the self-efficacy beliefs of teachers influence their course of action, ambitions, and sense of resilience. The self-efficacy beliefs of general science primary school teachers do influence on the teachers working and efforts to implement General Science Grade-v SNC 2020 within the context of their school and classroom environment (Ali, I., Gul, R., & Khan, S. S., Karim 2021; Gul, & Khilji, G. K. 2023; Gul, R., Ayub, A., Mazhar, S., Uddin, S. S., & Khanum, M. 2021).

Research Question

What is perceived self-efficacy of primary school teachers in implementing general science Single National Curriculum 2020?

1. RESEARCH METHODOLOGY

The following methodological approach was deduced to solve the research problem;

Research Design

The current research was quantitative in nature and descriptive survey research design was used. Perceptions of teachers' efficacy were obtained by using a self-constructed questionnaire. All 3950 government primary schools (2390 male and 1560 female) of district Haripur, Abbottabad and Mansehra were constituted as population of study (Department of Elementary & Secondary Education, 2021).

To assure the adequate representation of different strata of the population, stratified random sampling technique was used (Ayub, A., Gul, R., Ali, A., & Rauf, B. M. (2021); Tahir,T, U Ishfaq, S Begum, G Shaheen (2021); Tahir,T,, S. Batool, Gul,R, Ishfaq,U, (2023) . For this research study 300 public sector primary Schools consisted on 150 urban and 150 rural schools were obtained. These schools were further divided in to 75 male and 75 female schools. From each school one general science teacher teaching at primary level was taken as sample for data collection.

Research Instruments

To ascertain the perceptions of teachers' self-efficacy regarding SNC 2021 a questionnaire was developed on 0 to 10-point rating scale for the collection of data from respondents. There are 40 Benchmarks appeared in the curriculum to be implemented in the general science 5th class Questionnaire has items to obtain perception of teachers about their ability to teach the Benchmarks grade-v General Science SNC 2020. There were 40 items in the questionnaire representing 40 Benchmarks of General Science Curriculum. Each item of the questionnaire represented the one Benchmark of the curriculum. There were 7 items for benchmarks of life sciences, 13 items for physical sciences benchmarks, 7 items for earth and space sciences benchmarks and 13 items for the benchmarks of cross-cutting elements i.e. skills, attitudes and science technology, engineering and mathematics STEM. Participants were directed to write their level of confidence for the implementation of each benchmarks based on their present capabilities and the environment of school and classroom.

Scale of research instrument was setup in line with the suggestion offered by Bandura to construct self-efficacy scale for teachers. Curriculum experts' opinions were also considered for formulation of test items. The instrument was piloted obtaining data from teachers other than sampled ones. To establish the reliability of the instrument the Cronbach alpha method was used. The result of test was 0.98 considered as significant.

Data Collection and Analysis

Data was collected personally by the researcher as well as with the help of facilitators. Facilitators were trained in this regard. Data was collected from the teachers after they have completed the course of general science 5th grade. Fortunately teachers were approached easily during the last

three PD Days (Professional Development Day) conducted by DPD (Directorate of Professional Development) in whole province. The collected data was analyzed by using the measures of central tendency for obtaining sample means.

Interpretation index value

Mean value index	Interpretation
100-76	High self-efficacy
75-51	Moderate self-efficacy
50-26	Considerable self-efficacy
25-01	Low self-efficacy

2. RESULT

The following table represented perceived self-efficacy of primary school teachers regarding implementation of General Science SNC 2020.

Table 1
Descriptive statistics regarding perceived self-efficacy of PSTs for implementing SNC 2020

	N	Min	Max	Mean	SEM	SD
Life Science	300	17.14	100.00	66.6619	.87793	15.20613
Physical Science	300	30.00	100.00	66.2231	.90485	15.67242
Earth & Space Sciences	300	15.71	100.00	66.8857	.94948	16.44550
Cross-Cutting Elements	300	25.38	100.00	64.5821	.89798	15.55339
Total	300	24.75	100.00	65.8825	.80457	13.93561
Valid N (listwise)	300					

The table 1 depicted the descriptive statistics regarding the implementing of grade V general science SNC 2020. The teachers ($N = 300$, $Min = 17.14$, $Max = 100.0$, $M = 66.66$, $SEM = .87793$ and $SD = 15.20$) showed 67% perceived self-efficacy regarding the implementation of life science. Furthermore, primary school teachers ($N = 300$, $Min = 30$, $Max = 100.0$, $M = 66.22$, $SEM = .90485$ and $SD = 15.67$) showed 66% perceived self-efficacy regarding the implementation of physical science. In addition, the both male and female teachers ($N = 300$, $Min = 15.71$, $Max = 100.0$, $M = 66.88$, $SEM = .94948$ and $SD = 16.44$) showed 67% perceived self-efficacy regarding the implementation of earth and space sciences. Moreover, teachers ($N = 300$, $Min = 25.38$, $Max = 100.0$, $M = 64.58$, $SEM = .89798$ and $SD = 15.55$) showed 64% perceived self-efficacy regarding the implementation of cross cutting elements of SNC 2020 in their respective schools.

4 DISCUSSION AND CONCLUSION

Discussion

Self-efficacy, according to Bandura's social cognitive theory, is a person's confidence in their capacity to carry out a particular activity successfully (Bandura, 1977). Self-efficacy has been proven to be a major predictor of teacher effectiveness and student accomplishment in the setting of education (Tschannen-Moran & Hoy, 2007). SNC 2020's implementation in Pakistan has had a huge impact on the educational landscape, especially how science is taught in the primary grades.

This study intends to look into how primary school teachers feel about their ability to execute the SNC 2020 for general science in grade 5.

Data were gathered for the study utilizing a survey questionnaire and a quantitative research approach. The 300 PSTs from Hazara region of Pakistan made up the sample. The study's findings indicated that primary school teachers' assessed self-efficacy with relation to implementing the grade 5 general science SNC 2020 was moderate ($M = 65.88$, $SD = 13.93$). The results imply that



elementary school teachers require additional assistance and instruction to improve their self-efficacy in putting the SNC into practice.

The study's findings are in line with earlier studies that have demonstrated a beneficial relationship between teacher self-efficacy and student success (Ayub, A., Gul, R., Malik, M., Sharjeel, M. Y., & Rauf, M. B. (2021). Additionally, Aytaç (2021); Bassah (2021) and Cerit (2013); Bukhari, S. K. U. S., Gul, R., Bashir, T., Zakir, S., & Javed, T. (2021) found the same results that teachers' self-efficacy was found moderate in implementation of new curricula. Therefore, it is crucial to give elementary school teachers the support and instruction they need to increase their self-efficacy in executing the SNC. The programs for professional development, coaching, and guidance can help in this regard.

CONCLUSION

Based on the study carried out regarding primary school teachers' perceived self-efficacy for implementing the general science SNC 2020, it can be concluded that teachers generally possess a moderate amount of confidence in their ability to carry out the new curriculum. Despite having some confidence in their competence to teach general science using the new curriculum, this shows that there is still potential for development. The related research also showed that teachers' self-efficacy was influenced by a number of variables, including their degree of education, their past experience teaching science, and the accessibility of resources and support. Higher levels of self-efficacy were noted in teachers who had received training in scientific education and had access to sufficient resources and support.

Recommendations


It is suggested that teacher training programmes be initiated and put into effect in order to improve teachers' expertise in teaching general science according to the new curriculum. Additionally, for teachers to successfully apply the new curriculum, school administrators should give them enough assistance and resources.

The results of this study show that it is critical to address teacher self-efficacy while implementing new curricula since it can have a big influence on the standard of instruction given to pupils. Policymakers and education authorities may ensure that the Single National Curriculum 2020 is properly implemented and that children receive an exquisite science education by investing in teacher training and support.

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