Indian Educational Review

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CONTENTS

Indian Educational Review

The *Indian Educational Review* is a bi-annual journal, brought out by the National Council of Educational Research and Training (NCERT), New Delhi. The journal publishes articles and researches on educational policies and practices and values material that is useful to practitioners in the contemporary times. The Journal also provides a forum for teachers to share their experiences and concerns about schooling processes, curriculum, textbooks, teaching-learning and assessment practices.

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EDITORIAL

The current issue of the *Indian Educational Review* carries one research review article on the theme of social science education in Indian schools, three research papers, and summary of two ERIC projects. In this issue, a new feature has been added by giving the Hindi version of the abstracts of the review articles and research papers.

Beginning with January 2018 issue, the Indian Educational Review has started bringing out surveys of research of Indian studies conducted during 2000 to 2015 on a specific theme concerning school education and teacher education. The January and July 2018 issue carried out the research surveys on the themes of environmental education and education of children with disabilities, respectively. The current issue carries the research review on 'Social Science Education in Indian Schools: Review of Research and Public Discourse' by M. V. Srinivasan. The review shows that while in the past, social science curriculum and material were examined only from structural point of view, now researchers have made attempts to study the social science classrooms. The author reports a 'wide gap between the expectations of curricular policies and the capacity and acceptance level of social science teachers'.

Three research papers have been included in this issue. The first paper 'Statistical Audit of Data Analysis of Educational Researches' by S. K. Tyagi examines the extent to which statistical techniques are appropriately used in educational research in India. Sudarshan Mishra and Tapaswini Moharana in their paper, 'Awareness of Elementary School Teachers about Assessment of Personal social Qualities of Learners' report that teachers are highly aware about assessing the personal-social qualities of learners at the elementary level. The third paper by Chandra B. P. Singh titled 'Students' Learning Style of an Elite Professional College' reports that student-centric approach to teaching develops deep learning style while teacher-centric approach leads to surface learning style.

The summary of two ERIC projects, namely (a) 'Pedagogical Content Knowledge of Science in the Teacher Education Sector: A Developmental and Research Project' by Padma M. Sarangapani and Mythili Ramchand, and (b) 'उच्च प्राथमिक स्तर पर संस्कृत भाषा शिक्षा पाठ्यक्रम के क्रियान्वयन का गहन अध्ययन' ('An In-depth Study of Implementation of

Sanskrit Language Curriculum at the Upper Primary Stage') by Krishna Chandra Tripathi, Jatindra Mohan Mishra, and Ranjit Kumar Behera have also been included in this issue.

The Indian Educational Review focuses on enriching the discipline of education by disseminating findings of educational research, providing opportunities for exchanging research experience among fellow researchers, motivating academicians and providing inputs to all those involved in policy making and planning. Contributions of academicians, researchers, and freelancers are cordially invited for the next issue. We seek your suggestions and views on improvement of the journal and research initiatives.

Academic Editor

Social Science Education in Indian Schools: Review of Research and Public Discourse

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School social science curriculum includes the study of history, geography, economics, political science and sociology. This review attempts to bring together the review of research as well as the major debates that took place in the curricular history of school social sciences during 2000–2015. Social science education is in a paradoxical situation today. People, media and the government find teaching social sciences in schools as very important. But only a small section of the society gives importance to study social science as a curricular choice. Social science curriculum development process is now well documented. In the past, researchers examined social science and curricular materials only from structural aspects. Today, many social science concepts and tools, advanced research methods have begun to be applied to explore Indian school social science classrooms.

This period has witnessed serious public discourse on school social science. Both social and educational philosophical battles drove social science curriculum formulation. Model children-friendly social science curricular materials and information communication technologies are available for learners but social science teachers are not yet ready. This is due to prevalence of wide gap between the expectations of curricular policies and the capacity, and acceptance level of social science teachers. Today, the civil society organisations and media are vigilant with regard to what goes into social science textbooks. This is a welcome development.

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सार

विद्यालय स्तर पर सामाजिक विज्ञान पाठ्यक्रम में इतिहास, भूगोल, राजनीति विज्ञान और समाजशास्त्र का अध्ययन सम्मिलित है। यह शोधपत्र 2000–2015 की अवधि में विद्यालयों स्तर के सामाजिक विज्ञान के संदर्भ में किए गए शोध की समीक्षा के साथ-साथ उत्पन्न प्रमुख मतभेदों को भी सामने लाने का प्रयास करती है। सामाजिक विज्ञान शिक्षा आज एक विरोधाभास की स्थिति में है। जनता, मीडिया और सरकारें स्कूलों में सामाजिक विज्ञान शिक्षण को बहुत महत्वपूर्ण मानते हैं। लेकिन समाज का केवल एक छोटा वर्ग, एक विकल्प के रूप में सामाजिक विज्ञान के पाठ्यक्रम का अध्ययन करता है। आज के समय में सामाजिक विज्ञान पाठ्यक्रम विकास प्रक्रिया अच्छी तरह से प्रलेखित है। अतीत में, शोधकर्ताओं ने केवल संरचनात्मक पहलुओं से सामाजिक विज्ञान पाठ्यक्रम और पाठ्यक्रम सामग्री की जाँच की थी। आज कई सामाजिक अवधारणाओं और उपकरणों तथा उन्नत अनुसंधान विधियों को भारत में स्कूल सामाजिक विज्ञान कक्षाओं का अन्वेषण करने के लिए प्रयुक्त किया जा रहा है।

इस अवधि को स्कूल सामाजिक विज्ञान पर गंभीर सार्वजनिक विवेचना के साथ देखा गया है। सामाजिक और शैक्षिक दार्शनिक के मतभेदों को ध्यान में रखते हुए सामाजिक विज्ञान का पाठ्यक्रम तैयार किया गया है। मॉडल सामाजिक विज्ञान पाठ्यक्रम सामग्री और सूचना संचार तकनीकें शिक्षार्थियों के लिए उपलब्ध है, लेकिन सामाजिक विज्ञान शिक्षक अभी भी इसके लिए तैयार नहीं है। यह पाठ्यक्रम नीतियों की अपेक्षाओं और सामाजिक विज्ञान शिक्षकों की क्षमता और स्वीकृति स्तर के बीच व्यापक अंतर के कारण है। आज सामाजिक विज्ञान की पाठ्य-पुस्तकों में क्या सम्मिलित किया जाना चाहिए, इसके लिए नागरिक संगठन तथा मीडिया पुरी तरह से सतर्क है। एक स्वागत योग्य कदम है।

Introduction

Social Science is a category of academic disciplines that include the study of history, geography, economics, political science and sociology. When compared with other disciplines such as languages and mathematics, etc., it is one of the young disciplines taught in formal education system. This makes the social science an evolutionary discipline and continues to get its share of controversies. Social science produces new concepts and methods of investigation continuously making it a vibrant one. According to Max Weber, as analytical tools, social science concepts help to understand the 'meaning of and causal relations between elements of social and cultural life' (Root, 1994, p.47). In school systems, children are expected to understand basic social science concepts. This helps them, later as citizens and as members of the society,

to comprehend socio-economic and political issues and events that shaped the world. Also, social science as a school discipline carries the responsibility to help children develop national identity.

This chapter is divided into five sections. The first section deals with the scope of the present review, an introduction to school social science curriculum in India and the difference between social science and social studies. Three aspects of social science education in India: (a) curriculum development process; (b) understanding social science textbooks and (c) methods, materials and social science teachers have been discussed in the second section. The third section provides an account of assessment of social science learning. The fourth section gives a brief introduction to organisations working in India to promote social science beyond the walls of classrooms. The summary of research studies and public discourse in social science education in India and hints at the gaps that are required to be researched in future are given in the last section.

Scope of the Present Review

This review includes major published works in and outside India, books and unpublished dissertations submitted to Indian universities during 2000–2015 in social science education. This period also witnessed a good amount of public discourse on school social science. Hence, the review contains two types of materials: (a) issues emerged in the public discourse—scholars' reflections and reactions particularly in print media, and (b) research responses to the issues emerged in the public discourse. In this review, emphasis is laid on (b) though important arguments of (a) will also be discussed.

A brief account about the processes followed by researchers of studies included in this paper would help in understanding the quality of what they attempted to convey. Some went to schools, collected data from students and teachers. A few researched in-house (did not go to the 'field'—schools and classrooms), but studied the textbooks, question papers and examined them with reference to a particular issue at stake. They collected the materials used in schools and classrooms. A number of researchers suggested alternative curricular topics, pedagogies and reflected on what should be taught as social science in schools and why. Concerns have also been raised over the usefulness of a particular

educational philosophy followed to develop policy documents and social science curriculum. Efforts have been made to incorporate all the findings, views and suggestions that caught the attention of the present reviewer.

School Social Science Curriculum in India

Before discussing school social science curriculum, a brief introduction to the terms, 'curriculum' and 'syllabus' is necessary. The term, 'curriculum' refers to a "set of planned activities which are designed to implement particular educational aim—a set of such aims–in terms of the content of what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered together with statements of criteria for selection of content, and choices in methods, materials and evaluation" (NCERT 2006, p.12.). In other words, curriculum is a 'plan of facilitating learning for the child' (NCERT, 2006, p.vi) and includes syllabus and textbooks, plans formulated for effective use of syllabus and textbooks and carrying out assessment for certification by curriculum developers, school administration, teachers, parents, publishers, examination boards and others. School social science curriculum mainly includes teaching learning of social sciences syllabus, topics and textbooks used in schools for Classes I to XII, utilisation of support materials available for students and teachers, classroom policies of schools, classroom practices by social science teachers, school administrators, examination plan of schools and boards.

Syllabus, according to the *National Curriculum Framework* (NCF) 2005, refers to a list of 'what is to be taught and the knowledge, skills and attitudes which are to be deliberately fostered and stage specific objectives' (NCF, 2006c). Each social science has its own epistemology, information, skills, perspectives and methods of investigation. Due to this, developing one common syllabus under the title of 'social science' or 'social studies' course is a major challenge for curriculum developers.

In India, Committees and Commissions set up by the governments spell out the reasons to introduce social sciences in schools (Hindustani Talimi Sangh, 1938, p.22; Government of India, 1962, p.76; NCERT, 1970, p.349). Indian schools teach social science to promote the idea of national development, and India's physical and political structures—social, economic, geographical and cultural aspects. Schools also expect learners to help India to overcome its socio-economic challenges, appreciate its past and

develop patriotism and strive for national integration. Learners are also expected to be aware of how democratic polity based on India's Constitution is used for self-rule in India. Nirantar (2010) examined how these perspectives were incorporated in social science textbooks used in some select Indian states.

The central and state governments have established curriculum development organisations such as National Council of Educational Research and Training (NCERT), State Councils of Educational Research and Training (SCERTs) and State Institutes of Education (SIEs) to develop syllabi and model curricular materials such as textbooks. Since India's independence and up to 1960s, state level curriculum developers used the policy documents (Hindustani Talimi Sangh, 1938; Government of India, 1962 and NCERT, 1970) to identify topics, and develop or revise the social science syllabi for different classes. Since 1970s, they used curriculum framework documents published by the NCERT in 1976, 1988, 2000, 2005 and by the SCERTs. This has taken place particularly after 1976 when education was included in the Concurrent List of the Indian Constitution. The States and Union Territories also adopt or adapt the NCERT syllabi (NCERT, 2000, p.37). This may be due to many reasons including willingness of the state government, lack of professional capacity, etc.

The school social science curriculum for Classes I to X includes topics from history, economics, geography and political science. In Classes XI and XII, social sciences are introduced as elective subjects. In Classes I and II, social science concepts are included as part of language or mathematics courses; in Classes III to V they are introduced along with natural science concepts as part of environmental studies. Social science concepts are introduced from Class VI onwards as part of a separate course, Social Science.

While NCERT and SCERTs and State Institutes of Education develop syllabi for Classes I to XII, examination boards adopt or adapt these syllabi for Classes IX to XII and conduct examinations.

Traditionally, topics from history and geography formed a major share of school social science syllabus in India. Over the last six decades, school-going children are increasingly introduced to India's polity and economy. In 1988, Indian Constitution was amended to reduce the age for voting in Indian public elections from 21 to 18 years. This means, Indian citizens exercise democratic rights just after their schooling—just after the completion of 12 years of schooling. Due to this and the arrival of information

and communication technologies, there has been an increased awareness of political and economic issues in India. This has led the curriculum developers to increase the curricular space available for political science and economics. For example, two national level boards, namely the National Institute of Open Schooling and Council for the Indian School Certificate Examinations (ICSE), offer Economics as a separate course in Class X. Yet there are a few exceptions as the West Bengal Secondary Education Board offer History as a separate course in Classes IX and X and the ICSE offers History, Civics and Geography as one course with two papers and economics and commerce as optional papers.

To conclude, social science concepts, topics and social issues are introduced from Class VI onwards. The opening up of disciplinary boundaries begins from Class IX onwards. In Class X, students are assessed for certification by the Boards as part of one composite course—social science or social studies. The curricular space of social science education was traditionally occupied by history and geography, and over the last six decades, other subjects such as economics and political science also have begun to be considered in schools.

Social Science versus Social Studies

Another term used to denote the course of study of social science concepts in Indian schools is 'Social Studies.' Many Indian secondary level boards and curriculum development organisations use this as a course title. There is a subtle difference between these two terms. While the term 'social studies' emphasises on the study of socio-economic and political issues through thematic (Levstik & Tyson, 2008) and inter-disciplinary approaches, the term 'social sciences' emphasises the study of issues, events and concepts using one disciplinary approach—be it economics, history, sociology or political science. Thematic approach is also used within the disciplinary approach.

In India, the two terms are used interchangeably. Social sciences are introduced to learners as a prior training to the scholarly pursuit of disciplines in their latter part of life. Though the NCF 2005 recommends softening of subject boundaries (NCERT, 2006a), learning through disciplinary framework is also considered as an 'appropriate' way to learn social sciences (Batra, 2010; NCERT, 2006d). The social studies curriculum is supposed to draw contents from each social science discipline and organised

for instructional purposes in accordance with the objectives envisaged in the policy documents. The topics are to be selected, organised and presented keeping in view the established principles of the learning theories and socio-cultural context of the learners. It mainly attempts to improve the understanding of socio-economic and political issues. However, social studies curriculum in India is not conceptualised in its true sense, rather social scientists belonging to different subjects identify topics from their areas and develop syllabi and textbooks contents and name according to their convenience as social studies or social science. Otherwise, there is little difference between the contents of social science and social studies syllabi and textbooks brought out in India. Such nuanced distinction between 'social science' and 'social studies' is found in higher education institutions where social science has been associated with explanation and social studies with understanding. This is also connected with opposition between positivism and hermaneutics as the epistemological approach to study these curricular areas (Mahajan, 1992). For the present study, we will consider research works conducted in the area of both school social science and social studies education together as one and the same.

Issues in School Social Science Education

The 15 years period covered in the present review met with many events in the curricular life in India and social science education in particular. At the national level, the NCERT brought out *National Curriculum Framework for School Education* (NCFSE) 2000 and *National Curriculum Framework* (NCF) 2005 and revised syllabi and textbooks twice; first during 2000–2002 and second during 2005–2008. This led SCERTs and SIEs of most States revising their syllabi and curricular materials. During 2009, the Indian Parliament passed a law—The *Right of Children to Free* and *Compulsory Education (RTE) Act 2009*. This led examination boards and state education departments to come out with Continuous and Comprehensive Evaluation (CCE) for students studying in Classes I to VIII.

Curriculum Development Process

Curriculum development process encompasses the systematic organisation of determining what will be taught, who will be taught and how will be taught in the institutional system. These may be

schools, colleges, universities, formal and non-formal institutions. At the school level, to put in simple terms, it mainly involves formulation of syllabi and preparation of textbooks.

Although the rationale to introduce social science in schools is available in various documents reported earlier, one may ask – how these are translated into social science syllabi and textbooks for use in schools? What administrative mechanisms are formulated to carry out this exercise? Social science curriculum development is a continuous process and various factors trigger for change. Until 2000, no sufficient details were available in India. Today, one can confidently claim that some aspects—the administrative and academic dimensions of curriculum development process—are available in the public domain (Pathak, 2002; Government of India, 2005; Agnihotri et al, 2008; Srinivasan, 2008, 2015; Batra, 2010).

As pointed out earlier, SCERTs and NCERT bring out textbooks. During 2004, for example, under the programme, *Indradhanush*, the SCERT at Delhi developed syllabi and textbooks for Classes I to VIII which also included the development of history, geography and civics textbooks for Classes VI, VII and VIII (Agnihotri et al 2008). These textbooks were used in the schools run and funded by the Delhi state government. During 2005-08, NCERT came out with revised syllabi and textbooks for Classes I to XII (Srinivasan, 2008, 2015; Haydock, 2015). Prior to these initiatives, Eklavya, a voluntary organisation, worked with Madhya Pradesh Government to bring out social studies textbooks for Classes VI to VIII (Batra, 2010).

Social science syllabi and textbooks are usually developed by involving academicians specialised in subjects such as history, geography, economics and political science and working in colleges and universities as well as the school teachers. The common administrative structure was that SCERT and NCERT faculty members with social science background worked as coordinators and all others worked as part of the committees set up to develop specific syllabus or textbook.

There has been a considerable change in the textbook contents today. One distinct feature of social science textbooks prepared by Delhi SCERT and NCERT is the use of a number of visual materials —a variety of primary sources in history chapters, photographs and textual materials. Delhi SCERT Social Studies textbooks were published in black and white whereas the NCERT textbooks are published in four colours. Many of these are copyrighted material, However, most of the materials' proprietors gave permission to use

these materials freely (Agnihotri, 2008; Srinivasan, 2008). One may wonder whether this is possible in the private sector, and this also explains why there is a wide gap in the quality of textbook contents brought out by the private and public sector publishers.

Social science textbooks try to help learners to develop concrete images of the past, contemporary issues and abstract natural and social phenomenon through stories, case studies, illustrations, travelogues and other primary sources (Batra, 2010). Thematic approach has been used to develop the new social science course syllabus which led to changes in the social science textbook contents (Srinivasan, 2015). Questions traditionally included at the end of each chapter have undergone considerable change. Their quality has improved and they are placed differently now. They are now reframed to provide teachers and students, opportunity to (a) identify and organise evidence and (b) analyse and synthesise arguments. Teachers can now stop in the middle of teaching a chapter, ask questions and make students think, discuss and debate with them (Batra, 2010, p.289).

Today, a considerable number of textual and multimedia materials are available in the internet promoting school social science education. Khan (2014) reports an account of how economics multimedia support materials are developed in a government initiated portal—National Repository of Open Educational Resources (NROER) in India.

The curriculum development process is a dynamic one in which the topics to be included in the syllabus and textbooks continue to be debated. Also discussed is the answer to the question—how much importance could be given to each subject within the social studies and social science course and new topics within each subject? The Geographic Information System (GIS) is an Information and Communication Technology (ICT) tool which helps to capture, store, manipulate, analyse, manage, and present spatial or geographic data and hence it was suggested to introduce GIS in schools as part of social science curriculum (Pandey, 2011). Some topics suggested in recent times to the curriculum developers are media studies (Yadav, 2011) and migration (Singh, 2003), terrorism and fundamental duties, consumer protection, disaster management, tsunami, road safety, income tax, financial literacy, hygiene and food safety, legal education, human rights education and environmental education. Such suggestions come through media and from civil society organisations and from all the forms of

state— judiciary, bureaucracy and legislature (Srinivasan, 2015). School curriculum is not and cannot be a fixed one, and new issues and ideas which help to develop formation of social science concepts in the minds of learners should be welcomed. However, the topics and ideas which are meant for advocacy, do not gel well with the rest of curricular contents (Bhattacharya, 2009). Textbooks have also incorporated contents on topics such as consumer rights, insurgency and terrorism (NCERT, 2003), media (NCERT, 2006) in NCERT textbooks and migration in Andhra Pradesh and Telangana social science textbooks (Government of Andhra Pradesh, 2014).

Challenges in curriculum revision and renewal to incorporate new issues also suggest the struggle between different points of view and different ways of incorporating the issues into the textbooks by curriculum developers and the stakeholders of education. Srinivasan (2015) argues that as perceptions by the different organs of the government and civil society organisations may be at conflict, the curriculum development process is not a consensual, smooth affair.

Understanding Social Science Textbooks

Social science curriculum is expected to help students, to acquire knowledge and skills, understand and imbibe constitutional values, learn to behave as an Indian citizen and meet the society's expectations. However, it may be interesting to know how social science education is perceived by the stakeholders— particularly by the students and teachers. Among all the curricular materials, textbooks are the important ones about which they wish to express their views. What is their view on social science textbooks, syllabi and examination system? Understanding these has implications for improving the quality of curricular materials.

Though many internal mechanisms were built in government textbook publishers, as of today, there is no statutory body in India to look into textbooks and other curricular materials published by private publishers in schools and other educational institutions. One of the CABE Committees also reported the lack of institutional mechanism to look into what goes into textbooks and suggested the need to critically look at the textbooks published by the private sector (Government of India, 2005). Arunima (2012) suggested that there is a need to have a critical debate on what is being taught, materials used, and agencies producing school textbooks. Though

social scientists and educational researchers examine textbooks and particularly those published by government agencies, media is an important source through which people give their opinion about social science syllabus, textbooks and board level question papers.

The traditional textbook research studies examined the content selection, organisation and its presentation. Guidelines to evaluate textbooks were brought out by government agencies (Singh, et al, 1972; Khanna et al, 1978). They provided suggestions to review textbooks as a whole for their appropriateness in meeting the curricular objectives. At times, guidelines were also brought out to look into a specific issue, for example, national integration and fundamental duties (NCERT, 1986) or gender (NCERT 1982; Kulshreshtha & Kumari, 1984).

Typically social science textbooks were evaluated from two dimensions—academic and physical. Academic dimensions include the rationale and criteria to select, organise and present texts, illustrations, exercises, integration of constitutional values, aims of education and so on. The physical aspects include appropriateness of font, font size, quality, appropriateness and placement of illustrations and their quality, binding, quality of paper and so on.

In recent times, textbooks are evaluated by focusing on a particular aspect be it values, ethics, and dimension (such as gender, caste, etc.). Researchers identify a particular concept, event and process and examine how it is integrated in the textbooks. According to Nawani (2010), an ideal way to review a social science textbook is to analyse the textbook with a set of criteria and research the social science classes in which the textbook is used. Such studies are rare in India. The nature of the investigation are also of two types: (a) researchers collected views from a group of teachers, students and parents, and (b) researchers developed criteria and evaluated textbooks on their own. Descriptive and qualitative approaches were followed in most of these studies. While developing civics textbooks by Eklavya, children's perception of government was examined. The textbook which Eklavya used for research was used by the teachers in the class. This led Eklavya to revise civics part of Social Studies textbooks (George, 2010).

Each social science textbook comprises concepts, events, and issues. Textbooks are expected to provide appropriate account of all the aspects included as part of the syllabi for which the textbook is developed. Here follows the review into two categories: Subject-specific and Thematic reviews.

Subject Specific Review

History: School history is a subject which has been examined critically even prior to India's independence (Powell, 1999). Indian historians are apprehensive of curriculum development agencies whenever there was a change or revision of syllabus and textbooks. Changes in history textbooks are seen as a willful agenda to gain political mileage. Joshi (2010) alleged that the Indian Social Science textbooks promote their political agenda and polarising people with potentially disastrous consequences. They were not only limited to what the students learnt about the past, but also made students' to believe that they were inheritors of different pasts and belonged to different worlds. In 2003, when the NCERT began revising the school syllabus and textbooks based on the *National Curriculum Framework for School Education 2000,* a number of historians, educationists and textbook writers debated the rationale to rewrite social science and particularly history.

In a study of the use of NCERT textbooks in two Indian states (Haryana and Uttrakhand), students reported liking for the social science textbooks in general and history textbooks in particular (Yadav et al, 2016). Though the perception of parents of students' studying in Classes VI to VIII in Delhi and a section of social science teachers were relatively not enthusiastic, the students liked the social studies textbooks (Agnihotri, 2008). Batra (2010) reported that many teachers in Madhya Pradesh supported the Social studies textbooks of Classes VI to VIII and their intentions when Eklavya worked with them for a longer period as part of the textbook development and training. In a M.Phil. level research in Delhi, while students liked the history textbooks, teachers raised apprehensions that the new history textbooks might not help in promoting historical thinking among students (Kumari, 2008). These studies indicate that even if the details from different states are available, it may be difficult to arrive at a conclusion on 'likeness' of social science textbooks.

Geography: This is an important subject within the social science course at the school level, particularly for Classes VI to X. Scholars have raised concerns about negligence of geography as a social science curricular area in other classes and in the higher education system. Geography education in India started within the colonial framework. It underwent changes with the progress of education over different points in time before and after independence

(Banerjee, 2006). Though geography is a subject which gives scope to develop creativity (Singh, 2000), studies show that syllabus based textbooks geography syllabus and textbooks brought out by both national level organisations such as NCERT and by the state agencies have limitations (Sunny, 2006; Nirantar, 2010). Even today, due to various reasons geography is given less importance as compared to other subjects (Kapur, 2004). One possible reason is the absence of geographers researching and contributing to the knowledge in the field of geography education in India. The curricular materials not containing the links between geographical concepts with real life problems could be another reason. However, some efforts are being taken in recent times to write geography using alternative conceptual framework, particularly for young children. The book, *Sprout: A Social Geography of Rajasthan,* is an example. In this book, Sunny (2014) attempted to help young people to understand how social formations occurs due to the process of production and distribution, and opened up the scope to newer ways of approaching and understanding geography. This book has also been recommended internationally to promote education for sustainable development (UNESCO MGIEP, 2017).

Economics: Economics was introduced as school subject at the elementary and secondary levels only in the late 1980s in India.

Earlier it was taught as an optional subject at the higher secondary/pre-university level. Economist's in many countries question teaching economics in schools. This is because no economic theory is universally accepted and they inherently contain ideological bias (Srinivasan, 2011; Haydock, 2015). Since late 1990s, economics has become an important curricular area within social sciences and taught in Indian schools without receiving little attention from professional economists (Srinivasan 2008b). What is taught in Indian schools at the higher secondary stage as economics is regarded as a watered down syllabus of undergraduate courses in India (Bose & Sardana, 2008). Though the economics courses evolved for schools are supposed to propagate the idea of egalitarianism, neither the textbooks nor the classroom processes reflect these perspectives. Economics textbooks and teachers still propagate the idea of positivist development agenda (Bose, 2012, 2013).

Political Science: Traditionally, political science topics were taught in schools as 'civics' part of social science curriculum. This was

due to the colonial legacy. The school political science curriculum in India mainly introduces government, Indian Constitution and functioning of the governments. This curriculum promotes citizenship education and schools are expected to promote citizenship values. From middle school level onwards, students are exposed to Indian Constitution. The political science topics taught in schools during 1980–2000 encouraged learners to work for the nation building. They contained materials producing 'binary opposites' and considered being illiterate bad, and portrayed the nature of life in rural areas negatively (Jain, 2004). It was also seen as an, "attempt by the dominant culture to project all the qualities and characteristics it most fears and hates within itself onto the dominated" (Jain, 2004, p. 181).

During 2005, one major policy change took place at the national level. This was also due to research done in this area (Madan, 2003; Jain 2004, 2005; George, 2010). The *National Curriculum Framework* 2005 called for using the term 'political science' and doing away with the term 'civics' in body and spirit in the school curricular materials. As a consequence, modern curricular materials formulated by NCERT for Classes VI–VIII for promoting political science education changed to 'Social and Political Life', and in Classes IX and X, 'Democratic Politics' came into being. Sharan (2015), while working with students and teachers in a centrally funded school, reported difficulties teachers and students' faced in working with political science topics. Similar issues were raised in another study in Haryana and Uttarakhand schools (Yadav et al, 2016). As in the case of history, students' and teachers views were uniform but mixed and varied according to the context.

Reflection of Educational Theories in School Social Science Curriculum

Curriculum development process is influenced by learning theories and educational philosophies. For a long time, development of social science curriculum was mainly driven by behaviourist school of thought. Due to this, the social science textbooks were information loaded and hence were used by government job aspirants in India and lacked sufficient pedagogical approach (Bhattacharya, 2009). It can also be argued that these textbooks were brought out by the government organisations and hence all the information given in textbooks were authentic and were used as learning materials by students and teachers (Srinivasan, 2008).

The *NCF 2005* advocated constructivist perspective to organise school curriculum and in the development of syllabi and textbooks. According to the constructivist perspective, student is considered as an active learner and he or she learns better by actively constructing knowledge and reconciling prior knowledge. This was followed by NCERT and other state agencies bringing out revised social science textbooks. Ohja (2011), while examining the history syllabus and textbooks, records that constructivist approach, though needs to be used for organising history curriculum, requires to be supplemented with other schools of thought to make history teaching meaningful. In contrast to this, Krishnaiah (2015), based on a study in Telangana state, argued that teachers preferred to teach social science using constructivist approach as it helped them to develop congenial and democratic classroom environment as well as children-friendly learning activities. Mahesha (2014) prepared lesson plans in geography based on the social constructivist philosophy and used in a school in Karnataka. When compared with the students taught using traditional lesson plans and teaching methods, the social constructivist approach did not only enhance the learning achievement but also helped in developing group cohesiveness, group success, group leadership, communication skills among students.

Identity Concerns in School Social Science Curricular Materials

It was pointed out earlier that school social science learning materials contain social science theories and concepts, important events and processes that shaped the world. Social science texts also include ideal aspects such as the expectations of Indian Constitution. Curriculum developers choose illustrative examples from within the local context to teach theories and concepts and how people shaped India's Constitution through struggles. India's long history and diversity of culture and living provide potential to include many examples. The real life examples included in social science textbooks relate not only to individual kings, queens, freedom fighters, social reformers, political personalities but also about groups belonging to specific sex, caste, class, religion, region and etc.

The social science textbooks in India suffer from identity concerns (Gottlab, 2007). According to the Stanford Encyclopedia of Philosophy, the issue of identity starts from "analysis of oppression to recommend, variously, the reclaiming, re-description,

or transformation of previously stigmatised accounts of group membership. Rather than accepting the negative scripts offered by a dominant culture about one's own inferiority, one transforms one's own sense of self and community, often through consciousness-raising". The stakeholders of identity concerns demand 'respect for oneself as different' and not just 'inclusion' in the mainstream.

The textbooks developed after NCFSE 2000 met with diverse views (Thapar, 2002). Two divergent views that drew attention were (a) creation of an open, democratic, secular, and civil libertarian state whose role was to promote a modern scientific outlook in civil society, and (b) creation of a state to promote narrow and sectarian vision (Mukherjee & Mukherjee, 2001). However, as Lal et al. (2003, p. ix) pointed out, it was mainly to five 'fresh relook at India's heritage in the light of new discoveries and path breaking research'. One study compared the history textbooks used in faith-based schools in Chennai city and reported that though there is no explicit references suiting their faith, yet the language used in the textbooks imply subtle interpretation of historical events (Levknecht & Ramanathan, 2006).

The Indian Constitution guarantees equality for all regardless of sex, caste and class and other differences and equal treatment to all before the law. School social science textbooks are expected to promote gender equality. Until 1990s, mostly men were found in the textbooks reflecting the sexist bias (Bhog, 2002). Women were absent in visuals included in the social science textbook contents, in discussion of important events— be it India's freedom struggle, ruling a territory or in other contexts. Some social science textbooks published in 1990s addressed these issues— 'visuals showing or writing about men making tea while women read the paper' or fighting great battles like men'. Feminist scholars and activists reported that such portrayal was 'mere transference: penning highly masculinised, militaristic accounts of women's lives' or depicting 'woman-as-victim.' (Nirantar, 2010). Textbook developers are expected to develop texts containing not the artificial 'role reversals' but in real ways — the way gender is construed in daily lives. It is suggested to contextualise gender — women could be portrayed as part of the context, women belonging to different socio-economic group could form major discussion point; depicting the complexity with which women make their ends meet in daily lives and how women even as victims raise voices in

different aspects of their lives. Chaturvedi (2015) while studying social studies and social science textbooks published by NCERT, Tamil Nadu SCERT (TNSCERT) and textbooks published by state government authorised private publishers in Uttar Pradesh, found that different approaches were followed in the textbooks. The UP textbooks merely described gender discrimination and did not directly engage the issue and "do not provide sensitising perspective" as attempted well in NCERT textbooks.

Including the details of people and culture from different regions in the social science textbooks has also received attention. Some states voice their disappointment about the region not properly reflected in the school textbooks. Nawani (2014), while comparing the textbooks at the elementary level (Classes I to VIII), reported that those published by private agencies, "present the social and political lives of people in a rather simplistic, uncomplicated and uniform manner and do not substantially address the social diversities or challenges and conflicts confronting people". In contrast, the NCERT textbooks based on the *NCF 2005*, according to her, "besides being pedagogically superior and attempted to grapple with the real lives of people and sensitise and help children critically engage with the issues of diversity, inequality and discrimination". The school textbooks, in general and social science textbooks, in particular are expected to contain the sanitised version of what civil society organisations want to introduce.

The social science curriculum, as envisaged in the *National Curriculum Framework* 2005, expects students to develop empathy with the poor and marginalised sections of the Indian society. The *NCF 2005* also suggested to see the developmentalism critically and promoted egalitarian perspective. Bose's (2013) study attempted to understand children's perception about the poor. It recorded that the economics textbook contents on poverty allegedly showed "persistent preoccupation with the measurement questions at the cost of ethical and egalitarian aspects of poverty". The students in classrooms looked at poverty "only within utilitarian framework" and that it was acceptable for students to study poverty as a topic in economics course without "any reference to the key ideas of dignity, social justice and equality" (Bose, 2013, p.378.).

To sum up, the above discussion clearly suggests the need to conduct more researches on different aspects of social science education and that should form the basis of developing social

science curriculum and materials. In the absence of a scientific base, the discipline will continue to attract public criticism.

Methods, Materials and Social Science Teachers

The social science teachers teaching Classes VI to X in India are different from others. In school syllabus, topics from history, geography, political science and economics are found whereas most teachers come to teach this course with one or two subject background while doing under-graduation. The number of higher education institutions offering geography and political science are far less when compared with institutions offering history or economics (Srinivasan, 2015). In states such as Tamil Nadu, economics graduates are not eligible to become social science teachers. In a few other states, only those who have studied history are eligible to get recruited as social science teachers. There are hardly any institution offering all the three subjects at the under-graduation level. This has implications on the nature of teaching social science in the school.

The one and a half decades (2000–2015) are important in many dimensions in the area of social science education. The number of schools and children studying in Indian schools increased manifold. The variety of learning resources available to teach social sciences got expanded from textbooks, atlas, maps, globe, newspapers, and blackboard to many others. Two schemes were introduced by the Union Government, *Sarva Shiksha Abhiyan (SSA)* and *Rashtriya Madhyamik Shiksha Abhiyan (RMSA)* during 2001 and 2009, respectively to improve the quality of schooling in India. These schemes encouraged innovations in teaching-learning methods, development and supply of teaching–learning materials and also supported States to build school infrastructure and teacher recruitment. Teachers were also encouraged to develop teaching aids and were provided financial support through schools to procure teaching aids.

During 2000–2015, the ICT entered Indian schools in a big way. Due to this, expectations of schools system from students and teachers also changed dramatically. Social science students and teachers' are expected to explore digital resources–use computers, access internet, multimedia materials published by private and public curricular materials. The *NCF 2005* also recommended using ICT 'to enrich curriculum so that it goes beyond textbooks'. Social science students in some Indian schools today prepare projects

using materials collected from internet and submit digitally. The open educational resources, provided by government agencies, have the potential to work as a platform for teachers and students to participate in online courses and would in future possibly bridge the digital divide (Khan, 2014). The availability of newer teaching aids also supposedly encourages teachers to go beyond lectures as a teaching method in social science classrooms. In some schools, particularly in the private sector, social science teachers use worksheets, liquid crystal display (popularly known as LCD) projectors, smart boards, i-pads and multimedia materials.

The above developments led researchers to examine— (a) teachers' perceptions about curricular materials, (b) compare different methods in improving teaching and (c) the use of teaching aids or teaching learning materials (popularly known as TLMs) in improving the social science learning levels.

Teachers believe that social science in schools widens the horizon of students and prepare them for life (Dinesh, 2010). A study of geography teachers in Manipur found the need to train teachers to develop understanding of the philosophical underpinnings of the subject, curricular objectives of geography, right attitude and necessary skills in geography (Singh, 2015).

While teaching democratic values to Class VIII students, the modular approach was found more effective than the conventional method (Singh & Rathore, 2013). To Menzes (2002), inductive method was more appropriate to teach history for Class IX students. The inquiry approach to teach history was 'equally' good in improving the learning achievement of students belonging to different levels of intelligence and socio-economic status (Hemalatha, 2002). Ranganathan (2011) found three methods, namely, interactive method, teacher interactive method, and self-learning, which made a significant effect on the learning levels of high school students in history in Chennai and Tamil Nadu. Newspapers help teaching economics to school students and some of the activities could be devised by the teachers for developing newspaper reading habit among the students, such as preparing a project file on various forms of graphical presentation of economic data, news reading on current economic affairs, conducting essay competition on economic issues etc (Meena, 2007).

Though a variety of teaching aids are available in markets, they need to be selected and used cautiously. Ojha (2008), while

recommending the use of spider diagram, time line, time graphs in history classes to develop time sense in history suggested teachers to recognise their limitations.

Social science students' found ICT enhanced learning 'interesting, motivating as compared to the traditional method of teaching' (Patel, 2015; Yadav, 2013). Singh (2013) and Quasmi (2013) reports the use of ICT in social science teaching as effective in developing creativity and concept attainment in Geography as compared to the conventional method of teaching. However, the number of studies showing ICT potential in improving the understanding of the social science concepts are limited.

Assessing Social Science Learning

Assessment helps to identify and certify learners about their mastery over knowledge, skills and perceptible changes in behaviour and belief as given in the curricular goals and Indian Constitution. In some ways, assessment in social science is different from other subjects. Students are assessed on the basis of marks scored in paper-pencil tests—unit tests, other regular periodic tests and annual examinations. Traditionally, students studying science were assessed on the basis of written tests and practical experiments conducted in school laboratories. In all other subjects including social sciences, students were certified, particularly in Class X and XII, on the basis of written tests conducted at the end of the academic year. During 2000–2015, a few reforms were mooted in Indian schools.

The Central Board of Secondary Education, one important Board in India, introduced project work for social science course in Class X and optional social science subjects in Class XII. The RTE Act 2009 mandated to introduce Continuous and Comprehensive Evaluation (CCE) for Classes I to VIII and not to detain students in the same Class. This led the CBSE and states introducing CCE in which students were assessed on the basis of a variety of tests and projects. The CBSE also made Class X Board Examination optional for some time and introduced modified version of CCE for Classes IX and X.

Though not directly relevant to social science education, since 2005, one voluntary organisation, Pratham through its Annual Status of Education Report (ASER), began reporting the learning levels among primary students as 'low' compared to the expectation particularly in the rural government schools (ASER, 2005). This

was based on a large scale assessment conducted among lakhs of primary level students in rural India. Due to this, students learning levels in curricular areas such as Mathematics and English have become a major source of contention in the policy debate.

Studies to understand the assessment dimensions of social science subjects at the national level are scarce in India. NCERT conducted a survey of Class VIII students studying in government and government aided schools in all the states and union territories. Students' learning levels in social science were estimated based on the national level tests among nearly two lakh students. The Class VIII students reported difficulty in studying social sciences taught in the schools. The average achievement of students in social science varied across states and Union Territories of India and there were no differences in the learning levels between male and female students or rural and urban students. This study also attempted to find the impact of variables associated with home and school (Singh et al, 2013). However, the contribution of intervening variables to the social science learning achievement was very low.

Board question papers form an important component of assessment system. These are used as a model for other classes in the school system. For example, the question papers of Class X set example for Classes VI to IX and Class XII question papers are used as a model for Class XI. Sreekanth (2007) reports wide variations in the social science question paper setting in Indian examination boards and most of them are traditional in nature (Kumari, 2008).

When students are introduced to interactive learning approaches, rather than traditional lectures, economics students of Class XII reported higher levels of achievement in Delhi schools (Singh, 2011). Raveendran (2013) found that the CCE model (NCERT, 2013) when tried out with Class VI students in a rural schools in Haryana helped students to perform better. The various teaching strategies integrating assessment models raised students' interest in classroom participation, involvement and sharpening of their social science skills. The CBSE model of CCE received criticism and created debate (Nawani, 2013; Roy, 2011). Students and teachers reported increase in the curricular burden (Srinivasan, 2015).

The quality of questions given in the textbooks and those asked in Board examinations has also received some attention. While examining Classes IX and X geography textbooks, it was found that the textbook questions covered only spatial concepts (Mishra, 2014).

The position paper of NFG on Examination Reforms reported that social science questions in Board examinations suffer from various deficiencies. There is a difference in the quality of questions asked by different Boards. The CBSE question papers are better than the state board question papers. Many questions asked in CBSE Board Examinations encourage students to use their curricular knowledge for problem solving and application (Agarwal et al, 2006). Similar observations were also made by Chandrashekar (2007), while examining the Punjab Board question papers.

A few researchers looked into the performance of students belonging to different social, economic and other categories in social science school based examinations—rural students or urban students, boys or girls, Indian students and students in other countries, and factors determining the level of learning achievement. Rajadhurai (2014) studied the status of social science teaching and learning in secondary schools in Chennai city in Tamil Nadu. The study indicated that the students from high income families performed better in academic achievement than the students from low income families. Students studying in the private unaided (locally known as matriculation) schools showed higher level of learning achievement than their government school counterparts, and the male students had registered better academic achievement than the female students. Also, the students of semi-urban areas scored better in learning, study organisation, study habit, attitude towards teaching than the students of urban areas. Within urban areas, students of semi-urban areas did better than other urban areas particularly in geography. There was, however, no discussion on why some children performed better than others.

Mete (2006) conducted a study to find out the relationship between the higher secondary students' attitude towards study of Geography and achievement level found that urban students' learning levels were better in Geography. In another study, Indian students were found doing better than Seychelles students in social science skills such as observation, classification, inferring, and map skills while the Seychelles students were better only in inference skills (Felix, 2013).

Many factors such as intelligence, study habit, self-concept, examination anxiety, family income, family education, socio-economic status contribute to students' achievement in social science (Mathew, 2014). Also, students performed well when teachers were directly involved in the classroom and school decision

making process (Basu, 2014).To be specific, the leadership qualities of teachers tends to influence the academic performance of students in social science. Specific methods and teaching learning materials have a bearing on the learning levels. Gowdhaman (2014) found that the use of photographs in the higher secondary history class improved the learning levels.

A few studies analysed students' marks in Board examinations and how they influence the students' selection of courses at the higher secondary level and in higher education. Srinivasan and Karpagam (2012) reported that in Tamil Nadu girls outnumbered boys in overall enrolment and were way ahead of boys in pass percentage in higher secondary Board examinations. Majority of the boys from 'General' and 'Backward Class' in urban areas studied in self-financing English medium schools and opted for Science and Commerce groups. In contrast to this, a substantial portion of government and private aided school girls from rural areas and belonging to distressed communities opted either Economics or Vocational groups. The pass percentage of these students was also low and the percentage of students with distinction in higher secondary examination for getting into professional courses and premier institutions was very low. The absence of Science and Commerce streams in the government schools in rural areas further depresses the future prospects of the students. Thus, rural girls suffer from double disadvantage of social and economic backwardness of their communities and the inadequacies of the schools.

To sum up, students' scores in tests conducted by government and non-government agencies on a large scale are matter of concern. Their data is still being researched. So also the marks scored by students in state and national level Board examinations. The implementation of continuous and comprehensive evaluation (CCE) through RTE Act 2009 and reforms introduced by the CBSE has become part of the public discourse. A number of studies have examined role of teaching methods and teaching aids in improving the learning achievement. Barring a few, Board question papers and questions asked in the question papers of state level boards are yet to receive the attention. The assessment framework suggested in many NCERT social science textbooks including the questions and activities neither received the required attention by the educational researchers nor by examination Boards.

Taking Social Sciences beyond Schools

Some new institutions and organisations emerged in India to take social science education outside the syllabus and textbooks and from the four walls of the school. Included among them are curriculum development agencies such as SCERTs and NCERT. This is a major change witnessed during this period. Some of them were established long ago and many others are emerging. This review essay will not get completed if a brief account of their details is not mentioned.

It was already pointed out that, since the early 1980s, Eklavya is one organisation in the non-governmental sector engaged in researching social science curriculum. Voluntary organisations such as The Institute of Geographical Studies (TIGS) (http://www.tigs.in/), Bangalore promotes geography education through informal ways. The Children's Movement for Civic Awareness (CMCA) (http://www.cmcaindia.org), Bangalore working with school going children and volunteers promotes citizenship education. They conducted national level survey (called Yuva Nagarik Meter – YNM) on children and adolescents' understanding of citizenship issues and work through schools with the help of volunteers. The study reports that the Indian youth are not able to understand democracy as a principle to be followed in our lives. Youth reproduce stereotypes pertaining to culture reflecting the nature of Indian society and failure of educational system in making any change in this area. They are indifferent towards the working class and possess stereotypical views on women's rights and attitude towards violence. The undemocratic, hierarchical and discriminatory tendencies prevalent in the public life and in educational institutions perpetuate this tendency in youth. Home and parents are also party to this attitudinal aspect of youth equally.

We The People (http://www.wethepeople.ooo/) is yet another organisation of volunteers attempting to create awareness about Indian Constitution and citizenship values and is located in Pune and Gurugram. The Reserve Bank of India (RBI) and Securities and Exchange Bureau of India (SEBI) spread awareness of being literate in financial world. The Indian Space Research Organisation (ISRO), Dehradun works with the NCERT to develop map reading skills. The Azim Premji Foundation, Bangaluru works with many states helping them in curriculum development using research. They bring out a newsletter, *Learning Curve,* and a magazine, *Teacher*

Plus. They are the major source of information and academic aids for social science teachers. The Centre for Budget and Governance Accountability (CBGA) in New Delhi promotes economic education and particularly on taxes, and brings out materials on India's state and central budget. The Centre for Science and Environment (CSE), New Delhi is another organisation promoting environmental education through various advocacy and publications.

Summary and Conclusions

Today the society, media and the state find teaching social sciences in schools as quite important and useful to impart nationalistic and citizenship values at least up to secondary level. Schooling is nothing but reflection of the society. What is taught and learnt in schools depends on what is expected by the society. A considerable section of society does not wish to study science curriculum, at the higher secondary stage and in higher studies. This may be due to changing aspirations despite the availability of high paid information technology jobs in Indian labour market. During the years 2000 to 2015, among all the curricular areas, school social science curriculum made a significant impact on people's lives—drawing the attention of media, political parties, and civil society organisation on the importance of social sciences.

Today, social science curriculum development process is well documented. We know how social science curricular materials, mainly textbooks, are developed in government organisations in India. This review records that researchers have started looking at syllabus, textbooks, question papers and questions from dimensions entirely different from the way they were researched in the past. Advanced social science research methods have begun to be applied today in Indian school social science classrooms.

Behaviourism has given way to constructivism, particularly in policy formulations and in curriculum development. Yet, social science is still dominated by core disciplines and their proponents. Social science textbooks became children-friendly and yet they pose pressure and challenges to social science teachers due to wide gap between the textbook expectations and the knowledge and competency levels of social science teachers. Today, the civil society organisations and media are vigilant with regard to curriculum revision and what goes into social science textbooks. Though this is a welcome development in the world's largest democracy, it causes

serious challenge in changing anything in social science curriculum even to bring in innovations and incorporate latest developments in the social science knowledge domains. All the changes that have happened in the present-day curricular materials occurred due to curricular research conducted in India and other parts of the world.

It is also true that not all the issues which were in the public discourse were taken for detailed investigation by curriculum researchers. For example, authentic research evidences on the impact of ICT on the social science learning is still required. On the whole, this was the period of reflections and reactions on what to teach as social science to school children and this debate is going to continue in the coming decades as well.

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Statistical Audit of Data Analysis of Educational Researches

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The present study is a part of the research project approved and supported by ICSSR, New Delhi, under its Senior Fellowship Programmme. 126 Ph.D. and 11 M.Phil. theses submitted to five universities of the five North-West Indian States were examined with a view to identify dominant statistical practices adopted by the researchers in education. The study revealed that 56.9 per cent of the research studies used t-test, while 33.6 per cent employed Analysis of Variance technique to test the hypotheses. Thus, over 90 per cent of the researches used either t-test or Analysis of Variance (ANOVA) in particular. However, it was found that in 51.3 per cent applications of the total t-tests and 21.7 per cent of the total ANOVA uses were inappropriate. Next most preferred (29.9 per cent) practice comprised of testing relationships using coefficient of correlations technique. Furthermore, the assumptions underlying these techniques were seldom tested. Consequently, only one researcher was found to have used non-parametric test of hypothesis. There was just one study wherein the researcher has reported effect size for each of the factors without interpreting it. The findings of the study could serve as a useful guide for chalking out need-based intervention programmes for researchers in education.

सार

वर्तमान अनुसंधान भारतीय सामाजिक विज्ञान अनुसंधान परिषद्, नई दिल्ली द्वारा अनुमोदित और समर्थित वरिष्ठ फेलोशिप कार्यक्रम के अंतर्गत परियोजना का एक भाग है। शिक्षा के क्षेत्र में शोधकर्ताओं द्वारा अपनाए गए प्रमुख सांख्यिकीय प्रथाओं की पहचान करने के लिए 126 पी.एच.डी. तथा 11 एम.फील. शोध प्रबंधों की जांच की गई जो कि उत्तर पश्चिम

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भारतीय राज्यों के पाँच विश्वविद्यालयों में प्रस्तुत किए गए थे। अध्ययन से ज्ञात हुआ है कि 56.9 प्रतिशत शोध अध्ययनों में t.परीक्षण का उपयोग किया गया, जबकि 33.6 प्रतिशत ने ANOVA तकनीक को परिकल्पना का परिक्षण करने के लिए उपयोग किया। इस प्रकार 90 प्रतिशत से अधिक शोधों में विशेष रूप से t.परीक्षण या ANOVA का उपयोग किया गया है। हालांकि यह पाया गया कि कुल t.परीक्षण के 51.3 प्रतिशत और ANOVA के 21.7 प्रतिशत उपयोग अनुचित थे। इन परीक्षणों के अतिरिक्त सहसंबंध गुणांक की गणना अत्यधिक (29.9 प्रतिशत) प्रयुक्त तकनीक है। परंतु इन तकनीकों में अंतर्निहित मान्यताओं का शायद ही कभी परीक्षण किया गया। जिसके फलस्वरूप केवल एक शोधकर्ता ने परिकल्पना की जांच हेतु गैर-पैरामीट्रिक परीक्षण का उपयोग किया था। केवल एक शोधकर्ता ने प्रभाव विस्तार का उपयोग अपने अध्ययन में किया है, हालाँकि इसकी व्याख्या नहीं दी है। अध्ययन के निष्कर्ष, शिक्षा में शोधकर्ताओं के लिए आवश्यकता आधारित हस्तक्षेप कार्यक्रमों को चलाने के लिए उपयोगी मार्गदर्शिका के रूप में उपयोगी साबित हो सकते हैं।

Introduction

Quality of higher education provided in the colleges and universities depends to a great extent on the quality of research being conducted by the faculty and students. Quality of research in turn is largely influenced by the knowledge and skill base possessed by the research practitioners. The University Grants Commission (UGC), an institution mandated by the Government of India for maintaining standards in higher education, contemplated various steps to enhance standards in research practices at the university level. For these purposes, UGC through its regulation on Minimum Standards and Procedure for the award of M. Phil. or Ph.D. degree (2009) has stipulated a mandatory six-monthly pre-Ph.D. Coursework in research methodology. Simultaneously, faculty guiding research scholars are required to upgrade their knowledge of research methods through various empowerment programmes, refresher courses and other online courses and Massive Open Online Courses (MOOCs) under Ministry of Human Resource Development portal, SWAYAM.

However, for ensuring the effectiveness of the designed academic interventions, the above provisions need to be tailor-made to the emergent needs of the research practitioners. Need assessment exercise can either be based on the analysis of the curricula offered at the universities for preparing would-be researchers or by an analysis of the doctoral studies produced by

the universities. Hence, an analysis of the statistical data analysis practices followed by the researchers was planned, which could serve the blue print of any targeted intervention programme for research practitioners in education.

Not many researches focusing at analysis of research methodology, particularly their statistical procedures, are available in literature. Among the three studies at which the hands could be laid, Keselman et al. (1998) examined several articles published in the prominent US educational journals and found that researchers rarely verify validity assumptions, use analysis that are typically non-robust to assumption violations, rarely report effect size statistics and hardly perform any power analysis. Elmore and Woehlke (1996) analysed all published articles appearing in the three top US journals from 1978 to 1995 and concluded that most common methods used by researchers were ANOVA and ANCOVA, multiple regression, bivariate correlation, descriptive statistics, multivariate analysis, non-parametric tests and t-tests. Govil, et al. (2015) studied 20 Ph.D. theses submitted to Aligarh Muslim University (AMU), out of which 10 were from the Department of Education and remaining 10 from the Department of Psychology. The study concluded that errors committed by research scholars while using statistical methods were serious in nature. Only 79 per cent employed appropriate methods, 47 per cent tested the underlying assumptions, 36 per cent used insufficient statistical methods and none of the research reported effect size.

Clearly, the couple of studies undertaken abroad were taken up some twenty years ago. The only Indian study was on a miniscule level, based on just 20 studies from a single institution and included only ten from the field of education. There is definitely a need for such review studies as the present one.

Objectives of the Study

The objectives of the study were:

- to identify the dominant statistical data analysis practices of educational researches in Indian universities at Ph.D. or M. Phil. level.
- to assess the appropriateness of the practices in view of the research designs adopted, underlying assumptions and other desirable indicators.

Method

Sample

The four states from Hindi speaking belt of Northern India, namely Uttarakhand, Uttar Pradesh, Haryana and Himachal Pradesh, were randomly selected. After that, one university from each of the selected States was selected on the basis of following criteria:

- Having Department of Education in the University
- Availability of substantial amount of Ph.D./ M. Phil. work during the last five years

Additionally, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha, being Hindi-medium Central University in the Western Indian State of Maharashtra was also included in the list. Thus, the following five universities in each of the five North-West Indian states comprised the sample for the present study.

1. Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (MGAHV), Wardha
2. Hemvati Nandan Bahuguna University (HNBU), Sri Nagar, Garhwal
3. Maharishi Dayanand University (MDU), Rohtak
4. Chaudhary Charan Singh University (CCSU), Meerut
5. Himachal Pradesh University (HPU), Shimla

Table 1 gives the number of Ph.D. or M. Phil. theses by university and year of submission.

Table 1
University and Year-wise Breakup of the Sampled Theses (N=137)

Year	MGAHV	HNBU	HPU	CCSU	MDU	Total
2011	-	-	-	6	4	10
2012	-	20	9	11	14	54
2013	-	5	11	3	8	27
2014	-	6	5	2	10	23
2015	-	3	2	2	3	10
2016	4	1	5	-	-	10
2017	3	-	-	-	-	3
Total	7*	35	32	24	39**	137

*M. Phil. theses   ** Includes 4 M. Phil. theses

As is clear from Table 1, two universities namely, MGAHV and MDU accounted for 11 M. Phil. theses while 126 Ph. D. theses were submitted to the four universities. The entire lot of 137 researches was spread over a span of seven years i.e. from 2011 to 2017. However, about 76 per cent of the theses examined, referred to the three years period ranging from 2012 to 2014.

Procedure

All the selected theses were studied with a view to identify the practices related to quantitative data analysis. Parameters for classification of the studies and the associated considerations are presented below:

1. Selection of statistical test or tests used by researchers to test the formulated hypotheses: While classifying a research study on the basis of statistical tests used by the researchers, certain points were kept in mind. For instance, research studies using t-test as a follow up procedure to ANOVA were not included in the t-test category but were rather placed under the ANOVA category. Similarly, research studies using regression necessarily use the technique of coefficient of correlation, t-test and ANOVA. Nonetheless, such theses were put under regression only, and so on.

2. Appropriateness of the selected statistical test in view of the design of the study and objectives/hypotheses: Researches using series of t-tests for comparing more than two group-means as also those breaking up a factorial design into a several pair-wise comparisons were considered inappropriate practices as they inflate Type I error. In the same manner, research studies using t-tests separately at pre- and post-experiment stage or using paired samples t-tests separately for the two groups were placed under inappropriate category.

3. Statistics used for studying the assumptions underlying the selected tests: It was also examined whether the researchers have performed distributional checks to test the assumptions underlying the selected tests and the statistics employed by them for this purpose.

4. Post Hoc tests used in view of a significant F value: Frequencies of researchers following up a significant F-value with post analysis and the strategies of post-hoc comparisons used by them were observed.

5. Interpretation of significant interactional effect strategies: Practices used by the researchers in view of a significant interactional effect were identified and their frequencies noted.

6. Non-parametric statistics used by the researchers: The incidences of use of various non-parametric tests by the researchers along with the conditions of their use were recorded under the point.

Results

The collected information was tabulated in the form of a master sheet and later analysed on the basis of the parameters fixed for the analysis. The results of the analysis are being presented below under various captions.

Statistical Tests/ Measures Adopted by the Researchers: An Overview

All the research studies examined were categorised into one or more of the categories given in Table 2, according to the statistical tests and measures used for analysing the data.

Table 2
Statistical Tests Employed by Researchers or Data Analysis (N = 137)

Statistical Test	Frequency	Per cent
Descriptive	14	10.2
t-test	78	56.9
Paired	05	3.6
Independent	73	53.3
ANOVA	46	33.6
One way	15	11.0
Many way	30	21.9
ANCOVA	01	0.7
Non-Parametric Tests	11	8.0
Chi-square Test	09	6.6
Mann Whitney Test	01	0.7
Kruskal Wallis Test	01	0.7
Correlation	41	29.9
Multiple Regression	06	4.4
Factor Analysis	01	0.7

Note: *Total is greater than 137 (and more than 100%) as some of the studies having used different statistical tests were placed under more than one category.*

It is evident from Table 2 that 10.2 per cent of the researchers used only descriptive statistics like measures of central tendency, measures of variability and graphical representations to analyse/ represent data. A total of 78 theses comprising of 56.9 per cent of the sample employed t-test for the data analysis, 5 of these (3.6%) have been paired samples t-tests. Analysis of Variance was used by 46 researchers (33.6%). The number of researches using Many-way ANOVA, One-way ANOVA and One-way ANCOVA was 21.9 per cent, 11 per cent and 0.7 per cent respectively. Next most preferred statistical technique was coefficient of correlation, used in 29.9 per cent of the theses. Only 6 researchers used multiple regression technique, while factor analysis was employed by a solitary researcher.

Among non-parametric statistics, Chi-square test was used by 11 (8%) of the researchers, while Mann Whitney and Kruskal Wallis test were applied by one researcher each.

Appropriateness of the Statistical Test

The appropriateness of the selected statistical tests used by the researchers can be gauzed by the study of Table 3.

Table 3: Test Appropriateness

Statistical Test Used	Frequency	Per cent
t-test (N=78)		
Appropriate	38	48.7
Inappropriate	40	51.3
Test deemed Appropriate		
Two-way ANOVA	30	38.5
One-way ANOVA	04	5.1
Two-way ANCOVA	04	5.1
One-way ANCOVA	02	2.6
ANOVA (N=46)		
Appropriate	36	78.3
Inappropriate	10	21.7
Test deemed Appropriate		
Two-way ANOVA	05	10.9
One-way ANOVA	02	4.3
Two-way ANCOVA	03	6.5

Total = 124, Appropriate = 74 (59.7%), Inappropriate = 50 (40.3%)

Out of 78 researches using t-test, 40 (51.3%) were found inappropriate (Table 3). In about 38.5 per cent of the researches using t-test, the technique called for was two-way ANOVA as the researchers have used twin factors. Similarly, in about 5.1 per cent of the theses, the appropriate tests should have been two-way ANCOVA and one-way ANOVA, respectively. Finally, one-way ANCOVA was an appropriate test in case of two studies. In case of use of Analysis of Variance, 10 out of 46 (21.7%) ANOVA uses were inappropriate. In place of the ANOVA model used by the researcher, two-way ANOVA was called for in 5 instances, one-way ANCOVA in one instance and two-way ANCOVA in two cases. In all, out of total 124 researchers using t-test/ANOVA, 50 (40.3%) used them inappropriately. In 28.2 per cent of the cases, two-way ANOVA was called for. One-way ANOVA, two-way ANCOVA and one-way ANCOVA should have been used in 3.2, 5.6 and 3.2 per cent of the cases, respectively.

Testing Assumptions Underlying the Statistical Tests Employed for Data Analysis: The frequency of researchers following the practice of testing the assumptions underlying statistical tests applied is given in Table 4.

Table 4: Testing of Underlying Assumptions

t-test (N=78)		
Assumption	Frequency	Per cent
Normality	06	7.7
Homogeneity	04	5.1 (Using Descriptive Statistics)
Hartley's Test	03	3.8
Leven's Test	01	1.3
ANOVA (N=46)		
Normality	05	10.9 (Using Descriptive Statistics)
Homogeneity	08	17.4
Hartley's Test	05	10.9
Barlett's Test	02	4.3
Leven's Test	01	2.2
Correlation (N=41)		
Normality	04	9.8

Homogeneity	Nil	Nil
Linearity	Nil	Nil
Multiple Regression (N=6)		
Normality	03	50
Multicollinearity	Nil	Nil
Linearity	Nil	Nil

It can be observed (Table 4) that among those who used t-test, only 7.7 per cent took care to discuss normality of distribution using descriptive statistics like mean, median, skewness, kurtosis and graphs. However, none of the researchers did so for checking the normality of distributions at each level of the independent variable. With regard to variance homogeneity, only 5.1 per cent of the researchers applied statistical tests to check whether the data meets this requirement. Only 3 of the 78 studies employed Hartley's test and one used Leven's Test. In case of total ANOVA usage, 10.9 per cent of the researchers discussed normality of the underlying distribution using descriptive statistics. None of them have applied test of normality such as Kolmogorov-Smirnov test or Shapiro-Wilk test. As for the variance homogeneity, the incidence of testing the assumptions is 17.5 per cent. The tests used by the researchers are Hartley's Test, Bartlett's Test and Leven's Test in that order of preference. Next most popular statistical test used was bi-variate coefficient of correlation 'r'. While normality test was given due attention by 9.8 per cent of the researchers, none chose to test the variance homogeneity and linearity of relationship. Finally, with the exception of normality which was considered by half of those applying multiple regression, none cared to verify the nature of the data for violation of linearity, multi-collinearity and homogeneity. Likewise, the assumptions of ANCOVA and factor analysis were not paid due attention by the only researcher using these techniques each.

Use of Different Multiple Comparison Procedures (MCP)

In case of significant F-value for a factor with three or more levels, researchers have to further subject the analysis to pair-wise comparisons for identifying pairs with significant differences. Post-Hoc tests employed to compare groups pair-wise have been classified in Table 5.

Table 5

ANOVA: Post Hoc (Multiple Comparisons) Tests Employed

Post Hoc Test	Frequency	Per cent
t-tests	23	82.1
No test used	03	10.7
Bonferroni	01	3.6
Tukey's HSD	01	3.6
Total	28	100.00

As apparent from the Table 5, 82.1 per cent (23 out of 28 eligible cases) of the researches used t-tests, whereas none used Fishers' LSD (an approach using common error term). Another 10.7% left the analysis at that point, concluding that significant differences exist. Only one researcher each used Tukey's HSD and Bonferroni test which allowed making adjustments for increased alpha error in case of a family of hypotheses.

Strategies Used for Interpreting Significant Interactions

The strategies adopted by researchers to interpret a significant interactional effect denoted by FA×B are presented in the Table 6.

Table 6

Interpretation of Significant Interaction (A×B)

Strategy adopted	Frequency	Per cent
Multiple 't's	10	47.6
Bar graphs	02	9.5
Line graph	05	23.8
No follow up	04	19.1
Total	21	100.00

It can be seen that less than one-fourth (23.8% to be precise) used line graph to discuss interaction between two variables (Table 6). Interestingly, a large number of researchers (47.6%) used multiple t-tests in a bid to 'explain' interaction. About 9.5% researchers prepared bar graphs, while 19.1 per cent did not follow up a significant F-value for interaction at all.

Non-Parametric Tests Used by the Researchers

Frequencies of different non-parametric tests used for hypotheses testing have been listed in the Table 7 below.

Table 7
Non-parametric Statistics (N=11)

Test	Frequency
Chi-square	09
One Sample Case	05
Two Samples Case	04
2 ×2 Classification	02
2 ×3 Classification	01
2 ×4 Classification	01
Mann Whitney	01
Kruskal Wallis	01

It is clear from Table 7 that only 9 research studies applied Chi-square test. Out of these, only 5 have been one sample cases while the remaining ones have been two sample cases. None of the studies has followed residual analysis in view of a significant Chi-square value with more than two categories of factors.

Discussion

An overwhelming majority of 90.5 per cent of the researchers have been found using either t-test or ANOVA techniques for hypotheses testing. This concurs with the findings by Keselman et al. (1998), Elmore & Woehlke (1996) and Govil et al. (2015). Thus, sound practices related to these tests will go a long way in avoiding large number of invalid and misleading research findings, consequently improving the quality of research. However, ignoring the fact that comparison of several group means calls for the use of One-way ANOVA is not a healthy practice. Further, if one chooses to use multiple t-tests, he/she might run the risk of escalating Type I error, termed as family-wise error (FWE). In such cases, certain null hypotheses liable to be accepted will be erroneously rejected by the researchers.

The same applies to the multiple classifications of variables and use of ANOVA for testing the difference between means. If there are two factors with two or more levels each, it is a perfect situation for the use of 'Two-way ANOVA'. There is a tendency among researchers to break it into several pair wise comparisons using multiple t-tests rather than examining two main and interactional effects through omnibus ANOVA test. Interestingly, in one case, a researcher has applied two one-way ANOVA tests separately for boys and girls

to avoid using two-way ANOVA. In every one out of five ANOVA usages, researchers have first used multiple t-tests and afterwards claim to have 'verified' the results by applying Omnibus ANOVA Test. A particular case is instructive in which the researcher finds significant difference among one of the several pairs of t-values. Later, upon applying ANOVA she gets a non-significant F-value. She admits the fact as unfortunate not to get results of the t-test verified by the F-test!

In case of ANOVA, a significant F-value indicates that there are significant differences among several means. If the factor has just two levels, it is sufficient to observe the two mean scores and no further analysis is required. Using a t-test in such case is eventually a redundant practice if not an erroneous one. Post-Hoc tests or Pair-wise comparisons are made in case of three or more groups. Out of 28 cases, barring one researcher each who has used Tukey's HSD and Bonferroni test, all others have used t-tests for pair-wise comparisons. Thus, they have failed to take advantage of tests which can control inflation of alpha error and ensure that family-wise error does not exceed 0.05 or 0.01 levels of confidence. More exposure to softwares like SPSS and 'R' can perhaps facilitate researchers to adopt these strategies.

Exploration of the nature of data for checking the underlying assumptions is yet to develop as a healthy research practice among the educational researchers. Keselman et al. (1998) also reported that researchers rarely tested the validity assumptions. The occurrence of testing underlying assumptions ranges from a minimum of 5.1 per cent to a maximum of 17.4 per cent (for N>10). Not surprisingly, therefore, there are numerous cases of illegitimate application of statistical tests for analysis of the research data resulting in many misleading and invalid research findings. Unwillingness to check whether the data meet the requirements of statistical tests happens to the prime cause of almost total disregard of the educational researchers for non-parametric tests such as Mann-Whitney test, Wilcoxon matched pairs test and Kruskal Wallis Test by ranks.

Barring one instance, none of the researchers in education happened to use strategies to manage violation of assumption of homogeneity of variance like Welch Test, Brown-Forsythe Test or any other adjustment mechanism. Likewise, applying data transformation to deal with cases of non-normality seems to be a phenomenon not yet belonging to the realm of educational research.

Obviously, unless checking basic assumptions like normality of distribution is followed as a mandatory practice, researchers may afford to remain blissfully unaware of the data transformation practices in educational research.

The statistical significance of an observed value of a test need not imply its practical significance. If sample size is quite large, a very low value of the test statistic may turn out to be statistically significant which may not have any practical importance. For example, studies have reported coefficient of correlation as low as 0.1 to be significant, which means only 1 per cent common variance (r2 value) are being shared by the two variables. The indicator of practical significance of a test value is termed as 'effect size'. Only one of the sampled theses has reported effect size— that too without any interpretation. Govil et al. (2015) too found none of the researchers reporting the effect size, while Keselman et al. (1998) also observed it to be rarely reported in studies. It may be noted that Cohen's 'd', partial eta squared and coefficient of determination (r2) are some of the effect size measures that can be used in case of t-test, ANOVA and coefficient of correlation techniques, respectively. Lack of awareness about these measures coupled with shyness to use statistical software like SPSS might constitute the prime reasons for the trend.

With the exception of a solitary researcher, all others using parallel group pretest design have followed bizarre practices like comparing pre-test scores of experimental group with post tests scores of control group and vice-versa. Similarly, one also finds researchers applying correlated t-test separately for the experimental and the control groups and even concluding that both the treatment and conventional methods have been found effective. Also, comparison of both groups at pre and post-stage separately is quite common among researchers. The ill practices can perhaps be attributed to the lack of knowledge regarding ANCOVA and tendency to reduce any situation to familiar two-group comparisons.

The most popular non-parametric statistical test used by the educational researchers was Chi square test. Tests like Kruskal Wallis test and Mann Whitney 'U' test have been employed by only one researcher each, out of a total 11 researchers. However, none has taken recourse to residual analysis to locate significant differences within cells of the contingency table. A significant Chi square value needs to be subjected to further analysis akin to post-hoc tests in ANOVA.

The study has significant implications for planning a need-based curriculum of a Pre-Ph.D. Coursework or intervention programs to improve the data analysis skills of research practitioners in education, eventually rising in the quality of research in education.

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Awareness of Elementary School Teachers about Assessment of Personal-social Qualities of Learners

Sudarshan Mishra* and Tapaswini Moharana**

Abstract

The investigators undertook a study related to awareness of teachers about assessment of personal-social qualities (PSQs) of learners in the context of implementationof continuous and comprehensive evaluation (CCE) scheme in Odisha. Descriptive survey method was followed for the present study. A sample of thirty six elementary schools was selected randomly from three districts of Odisha namely, Cuttack, Khordha and Nayagarh. One hundred fifty-five elementary school teachers were selected from these districts. An awareness schedule was developed by the investigators to collect relevant data from the teachers. Results showed that overall awareness of teachers towards assessment of PSQs of the learners in elementary schools was high. No significant difference was found in awareness of teachers about assessment of PSQs of students with reference to gender, locality, qualification and teaching experiences. Based on the findings, possible implications of the study have been discussed.

सार

अन्वेषकों द्वारा सतत और व्यापक मूल्यांकन योजना के कार्यान्वयन के संदर्भ में शिक्षार्थियों के व्यक्तिगत सामाजिक गुणों के मूल्यांकन के प्रति शिक्षकों की जागरूकता पर ओडिशा में अध्ययन किया गया है। अध्ययन में वर्णनात्मक सर्वेक्षण विधि का प्रयोग किया गया है। ओडिशा के तीन जिलों (कटक, खुर्दा व नयागढ़) से छत्तीस प्राथमिक स्तर के स्कूलों (विद्यालयों) का

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एक न्यादर्श यादृच्छिक रूप से चुना गया। इन जिलों से एक सौ पचास प्राथमिक विद्यालय शिक्षकों का चयन किया गया। शिक्षकों की जागरूकता हेतु जाँचकर्ताओं द्वारा एक जागरूकता अनुसूची विकसित की गई जिसमें यह पाया गया कि प्राथमिक विद्यालयों में शिक्षार्थियों के व्यक्तिगत सामाजिक गुणों के मूल्यांकन के प्रति शिक्षकों की जागरूकता अधिक है। शिक्षकों की जागरूकता में लिंग, स्थानीयता, योग्यता और शिक्षण अनुभवों के संदर्भ में छात्रों के मूल्यांकन के विषय में कोई महत्वपूर्ण अंतर नहीं पाया गया। निष्कर्षों के आधार पर अध्ययन के संभावित प्रभावों के विषय में चर्चा की गई।

Introduction

The ultimate goal of education is the harmonious development of personality of the children. The learning experiences provided in the school should contribute towards achievement of this goal. Along with intellectual development, development of personal-social qualities (PSQs) of children is also equally important as it supports and enhances child's holistic development. According to the NCF-2005, "Learning takes place both within school and outside school". Hence, varieties of experiences should be provided to the children both inside and outside the classroom so that holistic development can be possible. Teaching and learning process of the school should consider the cognitive, affective and psycho-motor development of the child. Evaluation process as an integral part of teaching and learning process, must take into account all three domains of child's learning.

As per Directorate of Teacher Education (TE) and SCERT, Odisha (2012), Continuous and Comprehensive Evaluation (CCE) shall be carried out in three areas of students' progress such as, Curricular areas, Other curricular areas and PSQs. PSQs include assessment of regularity, punctuality, discipline, cleanliness, emotional stability, initiative, cooperation, sense of responsibility, civic consciousness, environmental awareness, honesty, spirit of social service, attitudes (towards teachers, studies, schoolmates, school programmes, school property, physical health, etc.).

While reviewing the then examination system, Satrusallya (1991), Bhattacharjee and Sarma (2010) found that the existing examination system was primarily cognitive in nature and no importance was given to the assessment of affective and psycho-

motor domain which results in the lop-sided development of the learners. The traditional evaluation system encourages rote learning among the children (Nagaraj & Nagaraj, 2015). Once the examination is over, they forget all that they have learnt. Moreover, one's overall performance cannot be assessed in one shot three hour examination held at the end of the year. There is no permanency in learning and no reflection in attitudes, behaviour and values in students' real life. The teacher should give attention to the individual difference and develop a deep insight into the emotional and psychological needs of the learners and integrate the teaching-learning process into a holistic and realistic life experience. Children should be given ample freedom and opportunities to construct their own knowledge, and develop essential attitudes, values and qualities. Realising this, RTE Act, which has been implemented since April 2010, makes CCE mandatory. CCE facilitates overall growth of child's personality. CCE is systematic in nature and it brings holistic development of the students learning through the assessment of curricular and co-curricular areas and socio-personal qualities (Pani, 2004; NCERT, 2004; Panda, 2005; Jadal, 2011; Panda, 2012; Idowu & Esere, 2009; Kothari & Thomas, 2012; & Raveendran, 2013).

The *National Policy of Education* (1986) and *Programme of Action* (1992) followed by the *National Curriculum Framework for Elementary and Secondary Education* (1988) reiterated the need for developing the personal and social qualities in learners. It suggested that the scope of assessment should be broad enough to cover socio-emotional attributes and psycho-motor skills and emphasised the evaluation of the key PSQs of the learners. Assessment of PSQs of learners as a part of CCE has been done along with the assessment of curricular and co-curricular areas after implementation of CCE (Panda 2005; Pradhan, 2007; Panda, 2012; Mishra and Mallik, 2014; Lakshminarayan, 2014). It is further stated that the personal-social qualities and behaviour of learners has improved through continuous assessment. Active involvement of learners in curricular and co-curricular activities develops important PSQs such as leadership, responsibility, social skill, etc. (Haber & Komives, 2009; Asare, et.al 2015; Madhavan, 2016). The assessments of personal-social qualities have created consciousness and awareness among the students and parents (NCERT, 2004). Assessment of PSQs as an important part of CCE scheme has already been implemented in elementary schools of

Odisha. PSQs are those qualities that students develop through interaction with peers, parents and teachers at school, home as well as in their social surroundings. All such traits contribute to a students' sound personality. However, if one is not aware of the process of assessment of PSQs, he/she cannot assess the PSQs of learners. Hence, whether the teachers who are the prime implementers of the CCE are aware about assessment of PSQs need to be studied. There is hardly any study relating to the awareness of teachers regarding the assessment of PSQs.

Objective of the Study

To study the awareness of elementary school teachers about assessment practice of personal-social qualities of learners with respect to their gender, locality, qualification and teaching experience.

Hypotheses

$H_{0.1}$: There is no significant difference in awareness of elementary school teachers towards assessment of personal-social qualities of learners with respect to their gender.

$H_{0.2}$: There is no significant difference in awareness of elementary school teachers towards assessment of personal-social qualities of learners with respect to their locality.

$H_{0.3}$: There is no significant difference in awareness of elementary school teachers towards assessment of personal-social qualities of learners with respect to their qualification.

$H_{0.4}$: There is no significant difference in awareness of elementary school teachers towards assessment of personal-social qualities of learners with respect to their teaching experience.

Method

Since the study attempted to know the awareness level of teachers about currently implemented CCE scheme, descriptive survey method was appropriate for the present study. A sample of thirty-six elementary schools was selected randomly from three districts of Odisha namely, Cuttack, Khordha and Nayagarh. All the available teachers from these schools were selected (155 teachers).

For collecting the relevant data related to the awareness of teachers about assessment of PSQs, structured awareness

schedule was developed by the investigators in English language which was reviewed by the experts. The tool was modified and finalised based on the suggestions of the experts. Then the tool was translated into Odia. The tool was intended to elicit responses of the teachers about their awareness and understanding of the concept, dimensions, assessment procedures and benefits of PSQs in holistic development of students. The tool had two sections. In Section-1 basic information regarding gender, locality, qualification and teaching experiences were identified. Forty multiple-choice items were there in Section-2 of the preliminary list, which were related to comprehensiveness of the scheme, frequency of assessment, motivation of learners regarding assessment of PSQs, etc. Each item had four alternatives, out of which one was the correct response.

After pilot study, many items were corrected and modified. A total of eight items were rejected. Finally, there were 32 multiple-choice items in the awareness schedule related to ten dimensions: meaning of PSQs (five items), purpose of PSQs (one item), modes of assessment (four items), benefits of PSQs (three items), relationship of PSQs with CCE (two items), dimensions of PSQs (one item), multiple tools of PSQs (one item), assessment of PSQ (seven items), techniques of assessment of PSQs (seven items) and purpose of PTM meeting (one item).

In this study, the investigators used multiple choice question items. For correct response, one mark and for wrong response, zero mark was assigned. Permissible maximum and minimum scores were 32 and 0. After the collection of relevant data by the investigators, data were analysed by using both descriptive and inferential statistics. Descriptive statistics included mean and standard deviation and inferential statistics included t-test and ANOVA.

Results

Overall Awareness of Teachers on Assessment of PSQs of the learners was analysed and presented in the Table-1.

Table 1
Overall Awareness of Teachers about Assessment of PSQs

Item	N	Mean	Median	Mode	Std. Deviation	Variance	Skewness	Kurtosis
Awareness of Teachers	155	23.39	23.00	22.00	3.50231	12.266	0.108	0.736

From Table 1, it is observed that there were 155 teacher respondents whose mean awareness score is 23.39. Median and Mode are 23.00 and 22.00 which are slightly less than the Mean. The maximum score was 32 and the mean is 23.39 (73.09%). Hence, it can be concluded that the overall awareness of teachers about assessment of PSQs is high. The elementary school teachers are aware about the assessment of PSQs.

Gender-wise awareness of Teachers about the assessment of PSQs

Gender wise awareness of teachers on assessment of PSQs of the learners was analysed and presented in the Table 2.

Table 2
Means, SDs and t-values of Male and
Female Teachers on Assessment of PSQs

Dimensions	Gender	N	Mean	SD	df	t-value
Meaning of PSQs	Male	46	4.52	0.658	153	1.170
	Female	109	4.38	0.814		
Purpose of PSQs	Male	46	0.83	0.383	153	0.539
	Female	109	0.79	0.410		
Modes of Assessment	Male	46	2.37	1.062	153	**0.279**
	Female	109	2.42	1.091		
Benefits of PSQs	Male	46	2.65	0.566	153	3.258**
	Female	109	2.27	0.878		
Relationship of PSQs with CCE	Male	46	1.37	0.572	153	1.552
	Female	109	1.52	0.537		
Dimensions of PSQs	Male	46	0.98	0.147	153	0.815
	Female	109	0.95	0.210		
Multiple Tools of PSQs	Male	46	0.96	0.206	153	0.192
	Female	109	0.96	0.189		

Assessment of PSQs	Male	46	5.39	1.308	153	0.671
	Female	109	5.54	1.183		
Techniques of Assessment of PSQs	Male	46	3.26	1.692	153	1.387
	Female	109	3.66	1.504		
Purpose of PTM meeting	Male	46	0.93	0.250	153	1.120*
	Female	109	0.88	0.326		
Overall	Male	46	23.48	3.595	153	0.192
		109	23.36	3.479		

*P<.05,   **P<.01

Table 2 shows that the overall Mean and SD of male teachers were 23.48 and 3.595 and female teachers were 23.36 and 3.479, respectively. The obtained p-value of 0.948 is greater than 0.05. Hence, the null hypothesis, "There is no significant difference in awareness of elementary school teachers towards assessment of Personal-Social Qualities of learners with respect to their gender" is retained. No significant difference was also found between male and female teachers in eight different dimensions such as: meaning of PSQs; purpose of PSQs; modes of assessment; relationship of PSQs with CCE; dimensions of PSQs; multiple Tools of PSQs; assessment of PSQs; and techniques of assessment of PSQs. However, significant difference was found between male and female teachers in two dimensions such as benefits of PSQs and the purpose of PTM meeting (p-values are 0.001 and 0.038). Male teachers are significantly more aware than their female counterparts in these two dimensions.

Locality-wise Awareness of Elementary School Teachers about Assessment of PSQs

Locality-wise awareness of teachers on assessment of PSQs of the learners is analysed and presented in Table 3.

Table 3

**Means, SDs and t-values of Rural and
Urban Teachers on Assessment of PSQs**

Dimensions	Area	N	Mean	SD	df	t-value
Meaning of PSQs	Rural	72	4.53	0.691	153	1.659
	Urban	83	4.33	0.828		

Purpose of PSQs	Rural	72	0.88	0.333	153	2.238**
	Urban	83	0.73	0.444		
Modes of Assessment	Rural	72	2.32	1.085	153	0.934
	Urban	83	2.48	1.075		
Benefits of PSQs	Rural	72	2.51	0.712	153	1.939*
	Urban	83	2.27	0.885		
Relationship of PSQs with CCE	Rural	72	1.42	0.575	153	1.274
	Urban	83	1.53	0.526		
Dimensions of PSQs	Rural	72	0.94	0.261	153	0.982*
	Urban	83	0.98	0.154		
Multiple Tools of PSQs	Rural	72	0.93	0.256	153	1.767**
	Urban	83	0.99	0.110		
Assessment of PSQs	Rural	72	5.53	1.210	153	0.294
	Urban	83	5.47	1.233		
Techniques of Assessment	Rural	72	3.11	1.632	153	3.254
	Urban	83	3.99	1.416		
Purpose of PTM meeting	Rural	72	0.90	0.298	153	0.228
	Urban	83	0.89	0.313		
Overall	Rural	72	23.18	3.542	153	0.703
	Urban	83	23.58	3.479		

** $P< 0.01$, *$P<0.05$ level of significance

Results show that the overall Mean and SD of rural teachers was 23.18 and 3.542 and that of urban teachers was 23.58 and 3.479, respectively. The obtained p-value (0.927) is greater than 0.05. Hence, the null hypothesis, "There is no significant difference in awareness of elementary school teachers towards assessment of Personal-Social Qualities of learners with respect to their locality", is retained.

While analysing dimension-wise, no significant difference was found between rural and urban teachers in six different dimensions such as: meaning of PSQs, modes of assessment of PSQs, relationship of PSQs with CCE, assessment of PSQs, techniques of assessment of PSQs and purpose of PTM meeting. Significant difference was found between rural and urban teachers in four dimensions such as: purpose of PSQs, benefits of PSQs, dimensions of PSQs and multiple tools of PSQs. Rural teachers were significantly more aware than their urban counterparts on

two dimensions such as purpose of PSQs and benefits of PSQs. Urban teachers were significantly more aware than their rural counterparts on two dimensions such as dimensions of PSQs and multiple tools of PSQs.

Similar results were found from the study of Panda (2012) and Kauts and Kaur (2013), which revealed that rural school teachers perceived CCE in a better way than urban school teachers. Contradictory result was found from the study of Sharma (2013) which says that the urban school teachers had more positive attitude towards CCE than rural school teachers.

Qualification-wise Awareness of Elementary School Teachers about assessment of PSQs

Qualification wise, there are three sub-groups i.e. up to Matric CT (N=30), +2 CT (N=83) and BA, B.Ed (N=42). The awareness of teachers about assessment practice of PSQs of learners with respect to their qualification was analysed using inferential statistics (t-test and ANOVA). The result has been presented in Table 4.

Table 4
Qualification-wise F Values on
Awareness of Teachers about Assessment

Dimensions	Qualification	Sum of Squares	df	Mean Square	F
Meaning of PSQs	Between Group	0.949	2	0.474	0.794
	Within Group	90.793	152	0.597	
	Total	91.742	154		
Purpose of PSQs	Between Group	1.036	2	0.518	3.314*
	Within Group	23.764	152	0.156	
	Total	24.800	154		
Modes of Assessment	Between Group	5.383	2	2.692	2.351
	Within Group	174.010	152	1.145	
	Total	179.394	154		
Benefits of PSQs	Between Group	7.369	2	3.685	5.885**
	Within Group	95.172	152	0.626	
	Total	102.542	154		

Relationship of PSQs with CCE	Between Group	3.029	2	1.515	5.275**
	Within Group	43.642	152	0.287	
	Total	46.671	154		
Dimensions of PSQs	Between Group	0.056	2	0.028	0.742
	Within Group	5.712	152	0.038	
	Total	5.768	154		
Multiple Tools of PSQs	Between Group	0.090	2	0.045	1.211
	Within Group	5.677	152	0.037	
	Total	5.768	154		
Assessment of PSQs	Between Group	6.094	2	3.047	1.403
	Within Group	330.190	152	2.172	
	Total	336.284	154		
Techniques of Assessment	Between Group	9.419	2	4.710	1.971
	Within Group	363.136	152	2.389	
	Total	372.555	154		
Purpose of PTM meeting	Between Group	0.182	2	0.091	0.975
	Within Group	14.167	152	0.093	
	Total	14.348	154		
Overall	Between Group	3.610	2	1.805	0.140
	Within Groups	1958.674	152	12.886	
	Total	1962.284	154		

** $P < 0.01$, *$P < 0.05$

Table 4 shows, the obtained p-value is 0.869. Hence, the null hypothesis, "There is no significant difference in awareness of elementary school teachers towards assessment of Personal-Social Qualities of learners with respect to their qualification", is retained. However, it is revealed that there is significant difference among elementary school teachers on three dimensions such as: purpose of PSQs, benefits of PSQs and relationship of PSQs with CCE. However, no significant difference was found on seven dimensions such as: meaning of PSQs, modes of assessment of

PSQs, Dimensions of PSQs, multiple tools of PSQs, assessment of PSQs, techniques of assessment of PSQs and purpose of PTM meeting.

Multiple comparisons using Tukey test of Post hoc with three groups is presented in Table 5.

Table 5

Multiple Comparison of Qualification-wise Significant Difference of Teachers on Awareness

Dimension	Qualification (I)	Qualification (J)	Mean Difference	Std. Error
Purpose of PSQs	Matric, CT	+2, CT	–0.21004*	0.08423
		BA, B.Ed.	–0.20000	0.09452
	+2, CT	Matric, CT	0.21004*	0.08423
		BA, B.Ed.	0.01004	0.07487
	BA, B.Ed.	Matric, CT	0.20000	0.09452
		+2, CT	–0.01004	0.07487
Benefits of PSQs	Matric, CT	+2, CT	–0.01968	0.16857
		BA, B.Ed.	–0.50476*	0.18915
	+2, CT	Matric, CT	0.01968	0.16857
		BA, B.Ed.	–0.48508**	0.14984
	BA, B.Ed.	Matric, CT	0.50476*	0.18915
		+2, CT	0.48508*	0.14984
Relationship PSQs with CCE	Matric, CT	+2, CT	–0.31807*	0.11415
		BA, B.Ed.	–0.39524*	0.12809
	+2, CT	Matric, CT	0.31807*	0.11415
		BA, B.Ed.	–0.07717	0.10147
	BA, B.Ed.	Matric, CT	0.39524*	0.12809
		+2, CT	0.07717	0.10147

** P< .01, * P<.05

Results from the Table 5 indicate a significant difference in awareness about purpose of PSQs between Matric, CT and +2, CT qualified teachers (p-Value is 0.036). The mean difference was -0.21004. Hence, +2, CT qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the purpose of PSQs.

Significant difference was found in awareness about benefits of PSQs between Matric, CT and BA, B.Ed qualified teachers (The

obtained p-Value is 0.023). The mean difference is –0.50476. Hence, BA, B.Ed qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the benefits of PSQs. Significant difference was also found in awareness about benefits of PSQs between +2, CT and BA, B.Ed qualified teachers (The obtained p-value was 0.004 which is less than 0.01 level). The mean difference is –0.48508. Hence, BA, B.Ed qualified teachers are significantly more aware than +2, CT qualified teachers regarding the benefits of PSQs.

Significant difference was found in awareness about relationship of PSQs with CCE between matric, CT and +2, CT qualified teachers (The obtained p-Value is 0.016). The mean difference is -0.31807. Hence, +2, CT qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the relationship of PSQs with CCE. Significant difference was also found in awareness about relationship of PSQs with CCE between matric, CT and BA, B.Ed qualified teachers (The obtained p-Value is 0.007). The mean difference is –0.39524. Hence, BA, B.Ed qualified teachers are significantly more aware than Matric, CT qualified teachers regarding the relationship of PSQs with CCE.

Experience-wise Awareness of Elementary School Teachers about Assessment of PSQs

There were three subgroups of teachers based on experience, i.e., up to 9 years (N=49), 10–14 years (N=46) and 15 and above years (N=60). The awareness of teachers about assessment of PSQs of learners with respect to their teaching experiences was analysed using inferential statistics (t-test and ANOVA) which is given in Table 6.

Table 6
Experience-wise F-value of Teachers on
Awareness of Assessment of PSQs

Dimensions	Qualification	Sum of Squares	df	Mean Square	F
	Between Group	1.941	2	0.971	
Meaning of PSQs	Within Group	89.800	152	0.591	1.643
	Total	91.742	154		

Purpose of PSQs	Between Group	1.814	2	0.907	5.999**
	Within Group	22.986	152	0.151	
	Total	24.800	154		
Modes of Assessment	Between Group	5.689	2	2.845	2.489
	Within Group	173.704	152	1.143	
	Total	179.394	154		
Benefits of PSQs	Between Group	1.796	2	0.898	1.355
	Within Group	100.746	152	0.663	
	Total	102.542	154		
Relationship of PSQs with CCE	Between Group	0.204	2	0.102	0.333
	Within Group	46.467	152	0.306	
	Total	46.671	154		
Dimensions of PSQs	Between Group	0.197	2	0.099	2.690
	Within Group	5.571	152	0.037	
	Total	5.768	154		
Multiple Tools of PSQs	Between Group	0.062	2	0.031	0.822
	Within Group	5.706	152	.038	
	Total	5.768	154		
Assessment of PSQs	Between Group	9.411	2	4.706	2.188
	Within Group	326.873	152	2.150	
	Total	336.284	154		
Techniques of Assessment	Between Group	4.035	2	2.018	0.832
	Within Group	368.520	152	2.424	
	Total	372.555	154		
Purpose of PTM meeting	Between Group	0.090	3	0.030	0.230
	Within Group	14.259	151	0.094	
	Total	14.348	154		
Overall	Between Group	0.043	2	0.022	0.313
	Within Group	14.305	152	0.094	
	Total	14.348	154		

**$P < .01$

Table 6 indicates that the overall mean square of between groups is 0.043 and within groups was 14.305. The obtained p-value is 0.732. Hence, the null hypothesis, "There is no significant difference in awareness of elementary school teachers towards assessment of Personal-Social Qualities of learners with respect to their teaching experience", is retained. Only, experience-wise there was significant difference about Purpose of PSQs among the teachers. Further, the investigators conducted multiple comparisons of significant difference of experiences of teachers using Tukey Test of Post hoc which has been presented below in the Table 7.

Table 7

**Experience-wise Multiple Comparisons of
Significant Difference of Teachers about Purpose of PSQs**

Dimension	Experience (I)	Experience (J)	Mean Difference	Std. Error
Purpose of PSQs	Up to 9yrs	10–14 yrs	–0.05590	0.07983
		15 and above years	0.19048*	0.07488
	10–14 yrs	Up to 9 yrs	0.05590	0.07983
		15 and above years	0.24638*	0.07621
	15 and above years	Up to 9 yrs	–0.19048*	0.07488
		10–14 yrs	–0.24638*	0.07621

**sig. at P<.05

From Table 7, it is revealed that there was significant difference between teachers who had served up to 9 years and 15 and above years (The obtained p-Value is 0.032). The mean difference was 0.19048. Hence, teachers who had up to 9 years of teaching experience were significantly more aware than teachers who had 15 and above years of teaching experience regarding the purpose of PSQs. Significant difference was also found between teachers who had served for 10–14 years and 15 and above years (The obtained p-Value is 0.004). The mean difference is 0.24638. Thus, it is confirmed that teachers who had 10–14 years of teaching experience were significantly more aware than teachers who had 15 and above years of teaching experience regarding the purpose of PSQs.

Major Findings

1. Overall awareness of elementary school teachers about the assessment of PSQs was high.

2. There was no significant difference in awareness of teachers towards the assessment of PSQs with respect to their gender, locality, qualification and teaching experience.

3. Significant difference was found between male and female teachers on two dimensions such as benefits of PSQs and purpose of PTM meeting. Male teachers were significantly more aware than their female counterparts on these two dimensions.

4. Significant difference was found between rural and urban teachers in four dimensions such as, purpose of PSQs, benefits of PSQs, dimensions of PSQs and multiple tools of PSQs. Rural teachers were significantly more aware than their urban counterparts on two dimensions such as, purpose of PSQs and benefits of PSQs. Urban teachers were significantly more aware than their rural counterparts on two dimensions such as, dimensions of PSQs and multiple tools of PSQs.

5. Significant difference was found among elementary school teachers with respect to their qualification on three dimensions such as: purpose of PSQs, benefits of PSQs and relationship of PSQs with CCE. +2, CT qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the purpose of PSQs. BA, B.Ed qualified teachers were significantly more aware than Matric, CT and +2, CT qualified teachers regarding the benefits of PSQs. +2, CT qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the relationship of PSQs with CCE. BA, B.Ed qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the relationship of PSQs with CCE.

6. There was significant difference between teachers who have served up to 9–15 years and above years. Teachers who had teaching experience up to 9 years were significantly more aware than teachers who had teaching experience of 15 and above years regarding the purpose of PSQs. Teachers who have 10–14 years of teaching experience were significantly more aware than teachers who have 15 and above years of teaching experience regarding the purpose of PSQs.

Discussion

Overall awareness of elementary school teachers about assessment of PSQs was high. No significant difference was found in overall awareness about assessment of PSQs in relation to their gender, locality, qualification and teaching experience. This may be because that all the teachers irrespective of their gender, locality, qualification and teaching experience had been given in-service training on CCE at Block and District level. CCE Manual and study materials have been provided to teachers. The Government of Odisha had also organised seminars and workshops on CCE regularly so that all the teachers should become aware about the programme.

However, male teachers were found to be more aware than their female counterparts regarding the dimensions such as, benefits of PSQs and purpose of PTM meeting. Rural teachers were significantly more aware than their urban counterpart on two dimensions such as, purpose of PSQs and benefits of PSQs. Urban teachers were significantly more aware than their rural counterpart on two dimensions such as, dimensions of PSQs and multiple tools of PSQs.

Intermediate passed and CT qualified teachers were significantly more aware than Matric and CT qualified teachers regarding the purpose of PSQs and relationship of PSQs with CCE. BA, B.Ed qualified teachers were significantly more aware than Matric, CT and +2, CT qualified teachers regarding the benefits of PSQs. BA, B.Ed qualified teachers were significantly more aware than Matric, CT qualified teachers regarding the relationship of PSQs with CCE. This shows that higher the qualification, higher is the awareness about assessment of PSQs in the dimensions such as benefits of PSQs, purpose of PSQs and relationship of PSQs with CCE. Hence, special training and orientation workshops should be organised regularly for the less qualified teachers on assessment of aforesaid dimensions.

Teachers who had up to 9 years of teaching experience were significantly more aware than teachers who had 15 and above years of teaching experience regarding the purpose of PSQs. Teachers who had 10–14 years of teaching experience were significantly more aware than teachers who had 15 and above years of teaching experience regarding the purpose of PSQs. This shows that young teachers are more aware about assessment of PSQs in the dimension purpose of PSQs than the senior teachers.

Lack of conceptual clarity and interest, heavy workload, and lack of cooperation may be the reasons for such differences among teachers. Hence, special training and orientation workshop should be organised for the senior teachers on assessment of aforesaid dimensions. Senior teachers need to be given training for more conceptual clarity. Morespecific learning materials should be developed which will help in the assessment of PSQs.

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Students' Learning Style of an Elite Professional College

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ABSTRACT

The study was conducted on a sample of students (n=277) enrolled in an elite professional institute to identify dynamics of variation in learning styles. Classroom ecology and teaching styles were regressed on the learning styles. The results indicated that students opted for deep learning style when teachers adopted student-centric approach to teaching in a challenging classroom situation. They had more choice for strategic learning style in case of teacher-centric mode of teaching followed by challenging classroom. The demand of surface learning style came to the notice when teachers adopted teacher-centric approach to teaching. A significant difference between general and SC students was noted on deep learning style. The remaining learning styles did not make any difference across category. The study discussed variation in learning styles in the light of functioning and capabilities.

सार

अध्ययन शैली में भिन्नता की गतिशीलता की पहचान करने के लिए एक कुलीन पेशेवर संस्थान में नामांकित छात्रों (n=277) के एक न्यादर्श पर अध्ययन किया गया। कक्षा परिस्थिति की और शिक्षण शैलियों की सीखने का शैलियों पर पड़ने वाले प्रभाव का अध्ययन किया है। परिणामों से यह संकेत मिलता है कि जब शिक्षकों ने एक चुनौतीपूर्ण कक्षा में शिक्षण के लिए छात्र-केंद्रित दृष्टिकोण अपनाया तो छात्रों ने गहनता से सीखने की शैली को अपनाया। इसके अतिरिक्त उनके पास रणनीतिक रूप से सीखाने की शैली के लिए और भी अधिक विकल्प थे। सतही रूप से सीखने की शैली तब सामने आई जब शिक्षकों ने शिक्षण के लिए शिक्षक केंद्रित दृष्टिकोण अपनाया। सामान्य और दलित (SC) छात्रों के बीच एक महत्वपूर्ण अंतर गहनता से सीखने

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की शैलियों में पाया गया। अन्य सीखने की शैलियों की श्रेणी में कोई अंतर नहीं पड़ा। अध्ययन में कामकाज और क्षमताओं के प्रकाश में सीखने की शैलियों में भिन्नता पर चर्चा की गई है।

Keywords: *learning style, teaching-learning, classroom ecology, teacher*

Introduction

For the last few years educationists have paid more attention to learning styles for improving performance of students in higher education. Teachers try to understand complexity of differences in learning of the students for ensuring better classroom delivery (Manikutty, Anuradha & Hansen, 2007). It has been observed that the students learn better when the contents are delivered in their preferred learning style (Entwistle, Hanley & Hounsell, 1979). Best teaching practices accommodate multiple dimensions of learning styles. An earlier study (Singh, 2017) on an elite professional college revealed that about 23 per cent students had backlog in more than three papers during 2012–16. Of them, schedule caste (SC) and schedule tribe (ST) students had more backlogs between I-IV semester. Altogether 397 students were found repeaters in regular undergraduate programmes during the same session. This was a reflection of learning process which did not match the teaching styles. It can be argued that increasing access, without increasing chances of success, is becoming a new form of social exclusion within higher education (Wilson-Strydom, 2011). Taking a lead from previous findings the study was designed to identify category-wise learning styles of students enrolled in various courses of an elite professional college. Another purpose of the study was to assess impact of classroom ecology and teaching styles on learning styles of students enrolled in the professional elite college.

Researches conducted in past on learning styles are broadly based on two popular models proposed by Kolb and Entwistle. The first model proposed by Kolb (1984) is based on the way the students construct their ideas (whether through concrete experience or abstract conceptualisation) and the manner in which they process these ideas further (through active experimentation or reflective observation). These two dimensions, though independent of each other, generate four learning styles: (a) convergence, (b) divergence, (c) assimilation, and (d) accommodation. The major problem is that experiential learning is not the only way students learn; other ways such as information assimilation and

memorisation exist and are very important, especially in classroom situations (Jarvis, 1987). The second stream of research on learning style (Entwistle, Hanley & Hounsell, 1979; Entwistle & Tait, 1995; Entwistle, Tait, & McCunne,2000) revolves around the idea that learning environment and teaching-learning processes (TLP) determine the modes of learning. Researchers in this stream concentrate on the cultural factors of learning (Hofstede, 2002). Entwistle and Wilson(1970) identified two kinds of motivation for learning: achievement orientation and fear of failure. Entwistle, Hanley and Hounsell (1979) explain three categories of learning: deep, surface apathetic and strategic. Deep learning entails an interest in new ideas and a willingness to explore them in-depth. It involves a combination of reflective as well as active learning. The surface apathetic approach is characterised by learners tending to focus on memorisation, being extrinsically motivated by the fear of failure and focus strictly on the task at hand. The learners tend to be bound to the syllabus and typically gain only a shallow understanding of the subject. Strategic learners aim to obtain the highest possible grades or other rewards, serving their own set of objectives. They identify assessment criteria for courses and then adopt the appropriate study methods.

The educational reforms in higher education have, to a great extent, ignored the cultural forces affecting learning styles and teaching practices. A plethora of studies have been conducted to identify intercultural differences in learning styles (Hofstede & Hofstede, 2005). The Chinese and Japanese teachers have relatively lower teaching load than the Western teachers enabling them to have more time with students outside the class. The Chinese students are generally quiet in class and are taught not to question or challenge their teachers. Asian learners use the rote-learning strategy because of their practice of memorisation which did not enhance understanding (Wong, 2004). Taiwanese learners give priority to reproduction of written work and factual knowledge with little or no emphasis on critical thinking. The Australian education system encourages students to be critical thinkers, often giving them opportunities to generate questions in their mind. Wong (2004) in a comparative study reported that Indian as well as Chinese students were more reflective learners. In a collectivist culture, teachers transfer knowledge to their students, whereas in an individualist culture students are expected to be active participants in knowledge acquisition through discussions

and inquiry (Staub & Stern, 2002). However, there has been a debate on the issue that collectivist students are passive learners and teachers primarily transmit knowledge to their students. A teacher in an individualistic culture encourages students to become independent, focuses on individual needs, promotes them to express their opinion freely and asks them to be assertive. Teachers showed high degree of uncertainty avoidance by making learning more pragmatic and applicable to the global context (Hofstede, 2001).

In student-centered pedagogy collaborative learning is generally practiced to encourage students from different backgrounds (Hofstede & Hofstede, 2005). The degree, to which students showed their engagement with issues and applied their understanding to the surroundings, gets influenced by the level of classroom debate and discussion. Some teachers avoided discussing contents during teaching and, thereby, limiting students' opportunities to engage academically with the issues. Teachers defined parameters for participation in their classroom proceedings (Clark, 2003). Teachers kept asking questions as if they were authority and had command over all valid knowledge. Thus, a limited inclusion of students in classroom transaction was noted; though appropriate students' knowledge as an integral part of instruction was missing (Singh,2017a).Getting a cue from previous studies on cross-cultural variation in learning styles and teaching styles the study focused on Enwistle' approach to learning style.

Objectives

The main objective of the study was to examine dynamics of variation in learning styles due to classroom ecology and teaching styles in an elite professional institute.

Hypotheses

A set of hypotheses were framed.

Hypothesis1: In a challenging learning environment teacher-centric instructional teaching will lead to both the strategic as well as surface learning.

In India students try to secure the highest possible grades or ranks that help get a lucrative job. This is possible when they organise their studies in temporal frame and select appropriate methods of preparation.

Hypothesis 2: Student-centric instructional teaching will promote deep learning, if learning environment is more challenging.

Teaching-learning processes in prestigious colleges make learning more pragmatic and applicable to the global context. In societies with a high degree of uncertainty avoidance, students were comfortable only with precise objectives, structured learning, detailed assignments, strict time tables and an unambiguous assessment (Hofstede, 2002). It promotes strategic as well as deep learning styles.

Hypothesis 3: There will be category wise variation in learning styles.

The SC/ST students may increase access to the prestigious colleges. It does not mean that they ensure success to the academic programme leading to a disguised form of social exclusion (Sen, 1999). A functioning is an achievement [outcome], whereas a capability is the ability to achieve potential. Capabilities are related to functioning (achievement). Deep learners improve their capabilities whereas, surface learners opt for functioning. They differ in their approach to learning. The distinction between capabilities and functioning is critical, because outcomes/achievements do not necessarily provide sufficient information to understand how well someone is really doing in terms of their personal wellbeing (Nussbaum, 2011; Sen, 1995).

Method

Sample

Out of 1173 students enrolled, a total of 277 students belonging to different categories (General=121, OBC=78, SC=42, ST=36) from a prestigious professional institute from 19 academic departments/ centres across semesters were proportionately selected for the study in the year 2017. The sample, selected randomly, comprised of about 23 per cent of the enrolled students either in B. Tech (Hons.) or both B. Tech and M. Tech dual degree programmes. Students of 1st semester were not included in the study because they were least exposed to the campus activities.

Tools Used

The study followed Entwistle's model of learning styles. The investigator developed all three scales based on contextual requirements. Since the scales were presumed multidimensional,

factor analysis of each scale was separately computed by the principal axes method followed by non-oblique method to get orthogonal factor. Factors were extracted till Eigen value was more than one. It was noted that some items had significant loading on more than one factor. They were closely scrutinised and were retained on those factors where either they had highest loading or to which they seemed to belong in terms of the meaning. All measures were 4-point scale.

Learning Style Scale (LSS)

A set of 22 items of the scale (Singh, 2017a) generated three factors-deep learning, strategic learning and surface learning accounting for 73.66 per cent of the total variances. The Eigenvalues of these factors were 3.94, 3.47 and 3.16. The alpha coefficient computed for each factor was 0.79, 0.68 and 0.65 respectively. Some items were: factor I(deep learning): I am able to explain things which I learn (0.75), factor II(strategic learning): I distribute my study hours to all papers (0.73) and factor III(surface learning): I study because I have to pass the exam(.66).

Teaching Style Scale (TLS)

This scale having 22 items resulted in two interpretable factors-teacher-centric and student-centric accounting for 66.42 per cent of the total variances (Singh, 2017a). The Eigen values of the both factors were 4.88 and 4.07 respectively. The alpha coefficients of the factors were 0.77 and 0.66. A few items with loading were: Factor I(teacher-centric process)-teachers never go beyond the prescribed syllabus (0.76) and Factor II(student-centric process)-they work out our problems even in the leisure period (0.65).

Classroom Ecology Scale (CES)

The scale having 24items gave rise to two orthogonal factors-challenging and encouraging explaining 71.86 per cent of the total variances (Singh, 2017a). The Eigen values of the both factors were 4.27 and 3.77 respectively. The alpha coefficients computed for both factors were 0.76 and 0.69. A few items were: Factor I (challenging)-teachers incorporate activities for students to apply new knowledge (0.72)and Factor II(encouraging)-teachers encourage all students to express their thought (0.69). The loadings and other details of all factors of each scale are reported in the Table 2.

Data Collection

The investigator conveniently approached students and gathered data with the help of a set of scale. Teachers also provided sufficient information about the teaching-learning practices and classroom environment. This helped substantiate the results.

Results

Students across category were found to have more choice of strategic learning style followed by deep learning style (Table 1). On the other side, SC students opted for surface learning (mean= 3.12) as compared to general category (mean=2.87). ST students (mean=3.03) had an edge over SC students (mean=2.96) while opting for strategic learning style. Both groups had less choice for deep learning. OBC students consistently followed all three styles with least variation. An overall significant difference on deep learning style among groups was noted ($p < 0.05$). More specifically, the general and SC category students differed on deep learning style ($p < 0.01$). On the other side, no differences were recorded on strategic and surface learning styles among students across category ($p > 0.05$). Hence, hypothesis 3 got partially supported.

Table 1
Difference between Learning Styles among Category

Category	Learning style		
	Deep Learning	**Strategic Learning**	**Surface Learning**
Gen (131)	3.19**(0.76)	3.28 (0.95)	2.87 (0.77)
OBC (68)	3.07 (0.93)	3.12 (0.97)	3.07 (0.76)
SC (42)	2.73**(0.86)	2.96 (0.79)	3.12 (1.02)
ST (36)	2.81(1.02)	3.03 (0.84)	2.98 (1.03)
F-value (3,274)	4.19* p <0.01	2.01 p > 0.05	1.98 p > 0.05

Note: Mean values of learning style are reported. Figure in parenthesis against category and learning style indicates number of respondents and SD respectively; response measured on 4 point scale. Newman-keuls test was computed to assess difference between groups.

Manikutty, Anuradha and Hansen (2007) identified a pattern of deep, surface and strategic learning behaviour in the light of cultural context. Deep learners exploited learning opportunities in

many ways. Strategic learners had very specific goals. They had a well-planned time distribution for their study and accordingly, had an advance preparation for regular assessment. Probably, it was one of the reasons for a choice of strategic learning. Surface learners adopted shortcut way of success and hence could not cope with academic stress. All three learning styles in various combinations were functional among students, depending upon their liking or disliking the subjects for which they had shown their interest.

An analysis of teaching style suggested that teacher-centric style (proportional mean=3.38) was more prominent in the institute. It did not mean that teachers were not employing student-centric process (proportional mean=3.18). They tried to get SC/ST students involved in learning processes. The study revealed that teachers worked out their problems even out of the class, if required. They monitored the lab work during the off-period and encouraged them to explore some alternative solutions (student-centric). Remarkably, students who had frequent interaction with their teachers, took advantages of this situation. Such students did not hesitate to go to their teachers' residence for asking questions.

Table 2
Mean, SD and Proportional Mean with Rank of All Factors

Dimension	Range of mean scores	Range of loading on items	Range of SD	Proportional mean	Rank
Teacher-centric (10)	3.34–3.42	0.51–0.78	0.68–1.04	3.38	1
Learner-centric (12)	3.15–3.35	0.53–0.74	0.66–1.07	3.18	2
Challenging (14)	3.18–3.58	0.52–0.77	0.55–1.07	3.19	1
Encouraging (10)	3.08–3.33	0.58–0.71	0.57–0.96	3.16	2
Deep learning (7)	3.29–3.47	0.65–0.77	0.72–1.14	3.28	1
Strategic learning (8)	2.72–3.17	0.59–0.75	0.64–0.98	2.86	2
Surface learning (7)	2.66–3.05	0.56–0.68	0.58–1.06	2.82	3

Note: Figures in parenthesis against dimension show number of items.

An attempt was made to capture classroom ecology as perceived by students. Two main trends were noted in the study-challenging and encouraging. The challenging classroom ecology (proportional mean=3.19) was more prominent in the institute which included

many teaching practices such as setting high expectations for students' performance, incorporating activities for students to apply new knowledge, providing opportunities for independent or group learning in the classroom, allowing all students to discover key ideas individually, employing brainstorming techniques in some cases, asking questions for drawing inferences from data, providing opportunities for all to conceptualise learning experiences, etc. Another prominent feature of the classroom ecology was known as encouragement (proportional mean=3.16). Teachers continued encouraging all to judge variation in learning situations, promoting all in the exploration of diverse points of view to reframe ideas, motivating all students for multiple interpretations of some problems, encouraging all to reflect on the concept thrown by the teachers, motivating all to gather multiple sources of data for solving some problem, throwing a challenge to all students in solution-finding activities, etc.

Regression Analysis of Learning Style: Altogether three predictors namely, student-centric process followed by challenging classroom ecology and relationship with roommate significantly contributed to deep learning style. An overall F (7,270) was found significant 3.64, p < 0.01. The coefficient of multiple Rwas 0.67 suggesting 44 per cent of the total variance on deep learning style was accounted for by the predictors in question. The pattern of results revealed that student-centric process emerged as prominent predictor explaining deep learning style, F(1,270) 4.67, p <0.01. Challenging classroom ecology was another predictor that significantly determined deep learning, F (1,270) 4.59, p <0.01. Relationship with roommate had a significant effect on deep learning, meaning that they discussed many issues with their roommate F (1,270) 5.78, p <0.01. The result confirmed Hypothesis 2. Strategic learning style had two predictors-challenging classroom ecology and teacher-centric process. Challenging classroom ecology generated disequilibrium in students, leading to strategic learning, F (1,270) 3.96, p <0.05. Teachers always set high expectation for students' performance. At the same time, they gave priority to high performers and were found selective while setting a challenge to the entire class, F (1,270), 4.11, p <0.01. It substantiated Hypothesis 1. Surface learning was a result of teacher-centric process and relationship with roommate. An overall F (7,270) 3.28, p <0.01 was significant. Surface learners experienced academic stress during teacher-centric learning. Even

relationship with the roommate was not very congenial (beta –0.22) which deprived them of getting academic support from their room partner F (1,260) 3.98, p <0.01.

Discussion

The study identified learning styles and its predictors of a prestigious professional institute. Students enrolled in various programmes were by and large, strategic learners. They had expectation of getting lucrative jobs after good performance. An overall difference on learning styles among category was insignificant. The study noted significant difference between general and SC category on deep learning, showing more practices of deep learning by general category students. The study observed more teacher-centric instructional methods in the institute. Other than engagement of remedial or tutorial classes for poor performers, teachers hardly paid attention to them. There existed challenging classroom ecology promoting healthy competition among students. This accounted for strategic learning as well deep learning. But not all students had a desire for deep learning. In case of challenging classroom ecology they had to face many difficulties and hence, opted for surface learning. It was also true that all students had no equal learning capacities. These students under teacher-centric approach to learning adopted shortcut way of success. Whether learning style is a state-of-art or trait? This issue has generated a debate on learning behaviour. Cassidy (2004) argues that learning style is a stable characteristic of learners that exists in a form over time. It is a state-of-art changing with learning experience or learning situation. Curry (1991) suggests an 'Onion model' to explain learning behaviour. A learner has three layers of learning preferences-instructional, social and informational. Instructional layer deals with preferences of learning environment while social interaction allows a learner to learn from social interaction. Informational processing is an academic exercise a learner adopts. Witkin and Good enough (1981) explains learning styles in terms of field independence and field dependence approach to learning behaviour. Field independent learners are characterised as operating with an internal frame of references, intrinsically motivated with self-directed goals, structuring their own learning and defining their own study strategies. Field dependent learners, on the other hand, are characterised as relying more on external frame of reference, are extrinsically motivated and have a need for

structuring and guidance from the instructor. Asian learners are more field-dependent (Hofstede, 2002).

On deep learning styles there existed a significant difference between general and SC category students because of competence level. At the time of entry SC students got admitted to the institute because of reservation policy. But the learning environment was equally challenging to all. As a result they could not cope with the learning environment. Nor they were comfortable to the classroom teaching. They stayed away from the classroom for many reasons. The choice of strategic learning was common to all. They had a plan how to perform well in the exam. Least choice of deep learning and not coping with the challenging academic environment by the SC students could be attributed to functioning and capabilities approach to exclusion in educational programme (Nussbaum, 2011; Sen, 1999). Functioning refers to outcomes that a person values or has reason to value. Capabilities are the freedom a person has to enjoy valuable functioning. A functioning is an achievement (outcome), whereas a capability is the ability to achieve (Sen, 1985; Walker & Unterhalter, 2007). Functioning without capabilities restricts entitlement (freedom of choice) and hence, does not provide sufficient information to understand how well someone is really performing (Wilson-Strydom, 2011).

Conclusion

Access to higher education does not necessarily guarantee equity and thereby social justice, to those who have been denied it for centuries since the history of prejudice has reproduced newer forms of inequalities (Deshpande & Zacharias, 2013; Sen, 1999). It is true that the meritorious students had exercised a monopoly on all means of upward mobility, thereby restricting the same for the less meritorious. Merit has always been conjoined with the elite and the privileged and has been exercised as a filtering device to produce and reproduce discrimination. Hence, the meritorious leave room for the persistence of discrimination without assuming social responsibility for its elimination. The introduction of entrance examination has reproduced disparities in the elite institutions, not only by justifying, also socially legitimising merit. However, it is well-known fact that social conditions and the nature of schooling determine the scores in entrance examinations, and subsequently, the entry of candidates in higher education. Since the underprivileged come from under performing state-funded schools,

it is not surprising that they can hardly compete for admission. The reserved category students were neither familiar with the educational institutions nor were prepared for participating in these new settings. This resulted in high dropout in the form of social exclusion (Desh Pande & Zacharias, 2013). The elite institutions uphold excellence through entrance exam. This position could serve to eliminate those who had entered the institutions through either coaching or reservation policy. Dalit students felt alienated by an unfamiliar pedagogy, ragging and other discriminatory practices in the everyday life of a university campus.

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Pedagogical Content Knowledge of Science in the Teacher Education Sector: A Developmental and Research Project

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This study attempted to involve teacher educators and student teachers in participatory planning and development of modular curriculum and resources in science and examined its effect on participants' pedagogical content knowledge. The study had two components: development of a curriculum module and associated resources, and the development of pedagogical content knowledge among the participants (student teachers).

The objectives of the study included the following:
- To develop a source package using a variety of media for the teaching and learning of science at the middle school level (Classes VI to VIII),
- To document the processes of engagement with prospective teachers of science, and
- To study participating student teachers' development of pedagogic content knowledge (PCK).

For studying student teachers' development of PCK, focus was primarily on the following questions:
- Do student teachers' initial ideas on the nature of science change as a result of readings and discussions?
- How do student teachers' ideas on science concepts coalesce

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during their engagement in inquiry-based tasks and discussions?

• What is the nature of change in pedagogic knowledge that student teachers undergo in the course of their classroom engagement?

To track pedagogical content knowledge among the participating student teachers, a case study methodology was used.

The following data were collected in the study:

• Log of planning meetings

• Questionnaire to elicit participants' understanding of science, science concepts and pedagogy

• Notes of sessions

• Student teachers performance in tasks

• Student teachers' participation in group work and classroom discussions

• Inquiry reports prepared by the student teachers

• Notes of student teachers

• Observation of the student teachers classes

• Feedback from teacher educators, practicing teachers and student teachers

• Self reporting on learning from the sessions.

A cycle of plan, implement, assess and reflect was used throughout the project period to engage with the student teachers. The mode of engagement was through a topic from school science curriculum, spanning Classes VI to VIII, in the case of D.Ed students and 6 to 10 in the case of B.Ed students. Each course of engagement was facilitated by— (a) relating to the history of the evolution of the concepts and theories relating to the topic of engagement (b) nature of science and understanding of science processes (c) use of general pedagogical principles useful for science classrooms and the tasks that can be planned to engage children (e) thinking through models and other representations in terms of conceptual understandings they promote and (f) assessment strategies for ascertaining children's initial ideas and map their progress in learning.

To document the processes of engagement, three aspects of pedagogical content knowledge (knowledge of science concepts and nature of science, knowledge of children's thinking, and knowledge of science pedagogy) were used.

A total of 43 student teachers from two teacher education institutes (One D.Ed. college and the other B.Ed. college) were engaged over an extended period of time. The D.Ed students were engaged for 15 hours. The B.Ed students were engaged in two groups: Group 1 for 48 hours and Group 2 for 20 hours.

Regarding knowledge of nature of science and science concepts, the study showed marked shifts in student teachers' understandings. Specific aspects of learning included noting that the following aspects of the nature of science has implications for teaching:

- careful observation is important in science

- inference from observations is based on our previous knowledge

- verification is important for science to accept a statement as truth

- there are systematic processes, which scientists follow to arrive at conclusions and the process is replicable, and

- science also relies on inference and interpretation because all the phenomenon are not directly observable.

The student teachers' emerging understanding of science curricula and pedagogy included— (1) guided inquiry an important pedagogical strategy, (2) need for teachers to use vocabulary accurately (3) familiarizing with pedagogical principles useful for science classrooms, (4) appreciating teacher's role as a facilitator, and (5) use of different assessment strategies (6) importance of engaging with children's prior knowledge.

Student teachers benefited from the collaborative effort of planning and resource creation among a subject content expert, teacher educators and a researcher.

उच्च प्राथमिक स्तर पर
संस्कृत भाषा शिक्षा पाठ्यक्रम के
क्रियान्वयन का गहन अध्ययन

(An In-depth Study of Implementation of
Sanskrit Language Curriculum at the Upper Primary Stage)

कृष्ण चन्द्र त्रिपाठी,* जतीन्द्र मोहन मिश्र,* रणजीत बेहरा***

संस्कृत भाषा के सबन्ध में एक सर्वस्वीकृत मान्यता है कि यह केवल एक भाषा मात्र न होकर भारत की आत्मा है। संस्कृत भाषा एवं साहित्य, जीवन के सभी पक्षों पर आधारित ज्ञान का विशाल आगार है। भूत एवं वर्तमान के समन्वयन, पुरातन साहित्य की ज्ञान सपंदा को समझने, नवाचार के नवीनतम उपायों की खोज तथा भारत को ज्ञान आधारित विश्व के आर्थिक परिदृश्य और ज्ञान-समाज के संदर्भ में संस्कृत की सर्वाधिक अपरिहार्यता है। प्राचीन काल से ही संस्कृत भारतीय भाषाओं के साथ सह-अस्तित्व में विकसित हुई है तथा भारत की एकता और अखंडता में इसकी महत्वपूर्ण भूमिका है। भारत के समावेशी प्रतिदर्श में संस्कृत साहित्य का विशेष योगदान है जिसे लोकप्रिय बनाकर प्रबलीकृत करने की आवश्यकता है। संस्कृत भाषा का भारतीय शिक्षा प्रणाली में अद्वितीय स्थान है। यह भाषा आधुनिक और शास्त्रीय/ परपंरागत भाषा के रूप में पढ़ाई जाती है। विद्यालयों में विद्यार्थियों का बड़ा समूह प्रथम/द्वितीय/तृतीय भाषा के रूप में संस्कृत का अध्ययन कर रहा है। राष्ट्रीय स्तर पर एनसीईआरटी के द्वारा पाठ्यचर्या/पाठ्यवस्तु का निर्माण किया जाता है। यह जानना ज़रूरी है कि पाठ्यक्रम (1992) यह स्पष्ट करता है कि किस प्रकार वास्तविक तथा वांछित परिवर्तन लाने के लिए राष्ट्रीय पाठ्यचर्या आवश्यक है। *राष्ट्रीय पाठ्यचर्या की रूपरेखा 2005 (National Curriculum Framework)* के आलोक में विकसित किए गए पाठ्यक्रम, पाठ्यपुस्तकों तथा संस्कृत के पठन-पाठन को समझने के लिए शोध कार्य अपेक्षित है।

शोध का उद्देश्य
राष्ट्रीय एंव राजकीय स्तर पर विभिन्न प्रकार के स्कूलों में संस्कृत भाषा पाठ्यचर्या के प्रभाव का अध्ययन

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उप-उद्देश्य

- उच्च-प्राथमिक स्तर पर संस्कृत भाषा शिक्षा की पाठ्यचर्या, पाठ्यवस्तु और पाठ्यपुस्तक सामग्री का विश्लेषण।

- *राष्ट्रीय पाठ्यचर्या अभिकल्प/रूपरेखा 2005* द्वारा प्रस्तावित नवीन शिक्षण पद्धतियों/ शिक्षा प्रणाली का अध्योपकों द्वारा किस प्रकार परिपालन हो रहा है, शिक्षा अधिगम प्रक्रिया की खोज का अध्ययन। शिक्षकों, शिक्षिकाओं तथा अभिभावकों के संस्कृत भाषा शिक्षा के कार्यप्रणाली पर्यवेक्षण का एकत्रीकरण एवं विश्लेषण।

शोध प्रश्न

- क्या विद्यालयों में रूचिपूर्ण शिक्षण हो रहा है?
- क्या विद्यालयों में बालकेंद्रित शिक्षण हो रहा है?
- क्या विद्यालयों में संरचनावादी दृष्टिकोण परिलक्षित हो रहा है?
- क्या विद्यालयों में भाषा शिक्षण के लिए संप्रेषणात्मक दृष्टिकोण परिलक्षित हो रहा है?
- क्या विद्यालयों में अन्तःसांस्कृतिक दृष्टिकोण परिलक्षित हो रहा है?
- क्या विद्यालयों में सह-शिक्षण क्रियाकलाप हो रहे हैं?
- क्या विद्यालयों में योगात्मक मूल्यांकन हो रहा है?
- क्या विद्यालयों में रचनात्मक मूल्यांकन हो रहा है?
- क्या विद्यालयों में बहुभाषिकता का क्रियान्वयन हो रहा है?

न्यायदर्श

प्रस्तुत शोधाध्ययन के लिए निम्नलिखित चार राज्यों को संस्कृत भाषा शिक्षा के विभिन्न प्रणालियों के लिए न्यायदर्श के रूप में चयनित किया गया है।

- हरियाणा, जहाँ प्रत्यक्ष रूप से *राष्ट्रीय पाठ्यचर्या की रूपरेखा 2005* पाठ्यवस्तु, पाठ्यपुस्तक को अंगीकृत किया गया है तथा वहाँ उच्च प्राथमिक स्तर पर संस्कृत भाषा तृतीय भाषा के रूप में पढ़ाई जाती है।

- ओडिशा, जहाँ परिवर्तित *राष्ट्रीय पाठ्यचर्या की रूपरेखा 2005* को अंगीकृत किया है तथा उच्च प्राथमिक स्तर पर संस्कृत तृतीय भाषा के रूप में पढ़ाई जाती है।

- उत्तराखंड, जहाँ ने परिवर्तित *राष्ट्रीय पाठ्यचर्या की रूपरेखा 2005* को अंगीकृत किया है एवं उच्च प्राथमिक स्तर पर संस्कृत भाषा को द्वितीय भाषा के रूप में अध्ययन किया जाता है।

- केरल, जहाँ राज्य स्वयं पाठ्यचर्या की रूपरेखा, पाठ्यवस्तु और शिक्षण सामग्री का निर्माण करता है, यहाँ पर संस्कृत भाषा उच्च प्राथमिक स्तर पर प्रथम भाषा के रूप में पढ़ाई जाती है।

न्यायदर्श चयन की विधि

शोध की आवश्यकता के अनुरूप *राष्ट्रीय पाठ्यचर्या की रूपरेखा-2005* के सिद्धांतों पर आधारित संस्कृत पाठ्यपुस्तकों का राष्ट्रीय/राजकीय स्तर पर किस प्रकार से क्रियान्वयन हो रहा है। यह जानने के

लिए विभिन्न राज्यों-हरियाणा, ओड़िशा, उत्तराखंड, केरल के विद्यालयों का चयन स्तरीकृत, यादृच्छिक प्रतिदर्श (Stratified Random Sampling) विधि द्वारा किया गया।

उपकरण (Tools)

एनआईई परिसर, एनसीईआरटी, नई दिल्ली में आयोजित चतुर्दिवसीय कार्यशाला में सम्मिलित सात सदस्यों—विश्व विद्यालयों प्राध्यापक, विद्यालयों के अध्यापक तथा एनसीईआरटी संकाय सदस्यों ने सुनिश्चित किया। विद्वत समूह ने निम्नलिखित तथ्यों पर उपकरण तैयार किए गए।

1. पाठ्यचर्या पाठ्य पुस्तिका का विश्लेषण
2. संस्कृत में शिक्षण अधिगम सामग्री
3. संस्कृत भाषा पाठ्यपुस्तक के प्रति अध्यापकों की अवधारणा
4. संस्कृत भाषा शिक्षा के प्रति अध्यापकों की प्रवृत्ति एवं अवधारणा
5. छात्र प्रश्नावली
6. कक्षा अवलोकन सूची
7. विद्यालयी रूपरेखा

उपकरण का प्रयोग (Piloting Tools)

वर्ष 2014, अप्रैल के प्रथम सप्ताह के दौरान हरियाणा के तीन विद्यालयों एवं दिल्ली के सर्वोदय कन्या विद्यालय, ग्रीन पार्क में उपकरणों का प्रयोगिक परीक्षण किया गया। परीक्षण के उपरांत उपकरण मे किसी प्रकार के संशोधन की आवश्यकता अनुभव नहीं की गई। इस प्रयोग को परियोजना कार्य में सम्मिलित कर लिया गया। प्रदत्त संकलन एवं विश्लेषण के समय दिल्ली के विद्यालय को भी सम्मिलित कर लिया गया।

विद्यालयों का चयन (Selection of Schools)

राज्यावा— हरियाणा, उड़ीसा, उत्तराखंड तथा केरल के 12 स्कूलों (5 ग्रामीण, 5 शहरी, 1 केंद्रीय विद्यालय और 1 संस्कृत पाठशाला) को न्यादर्श के रूप में चयनित किय गया है। राज्य स्तरीय संस्थाएँ, एससीईआरटी विद्यालय निरीक्षण के लिए संपर्क मे रही।

निष्कर्ष

इस परियोजना का प्रतिफल यह निकला कि उच्च प्राथमिक स्तर पर संस्कृत पाठ्यचर्या का क्रियान्वयन भली-भाँति हो रहा है। ओड़िशा और केरल राज्यों में एससीईआरटी द्वारा निर्मित पाठ्यपुस्तकों का अध्ययन-अध्यापन हो रहा है। शोधाध्ययन से ज्ञात होता है कि नवीन शिक्षण पद्धतियों तथा नवीन प्रणालियों का संस्कृत भाषा शिक्षण में सम्यक् ढंग से प्रयोग किया जा रहा है। सभी चयनित विद्यालयों में मातृभाषा को स्थान दिया जा रहा है। साथ ही यह ज्ञात हुआ कि संस्कृत शिक्षण के लिए संस्कृत सम्भाषण पर अधिक बल देने की आवश्यकता है। संस्कृत शिक्षकों को पुनर्बलन, अभिमुखीकरण की महती आवश्यकता है। साथ ही संस्कृत अध्यापकों के लिए प्रशिक्षण कार्यक्रम तथा पुनश्चर्या कार्यक्रम वर्ष में एक बार अथवा अधिक बार कराने की आवश्यकता महसूस की गई।

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