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एन सी ई आर टी
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राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
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About the Journal

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The NCERT encourages original and critical thinking in education. The JIE provides a forum for teachers, teacher educators, educational administrators and researchers through presentation of novel ideas, critical appraisals of contemporary educational problems and views and experiences on improved educational practices. Its aims include thought-provoking articles, challenging discussions, analysis, challenges of educational issues, book reviews and other related features.

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CONTENTS

EDITOR'S NOTE

This issue of *Journal of Indian Education* covers seven research papers and three analytical papers. The research papers included in this issue focus on themes, such as use of laboratory in science teaching, teaching learning material, girls education, mid-day meal, academic plagiarism, education of the children of migrant labourers and legal education.

The goal of higher education is to prepare each and every graduate so that they can take responsibility for the administration, governance and enhancement of our society. Bibha Tripathi, in her paper, 'Legal Education: Vision of Visionaries' investigates the ways through which the 'Indian vision' could become a method to reassure the eminence and reach of legal education.

Another paper by Ruchi Shukla, 'Motivational Dynamics of Educational Stress' delves to recognise educational stress by probing how the different need aspects of basic motivation are interconnected. According to the author, Self-determination Theory (SDT) puts forward an outline to comprehend the understanding of the inter-relation between academic stress and internal motivation.

Education kit depicts a series of performances for constructing the instances that commonly show, represent, and display conceptions. P.K. Chaurasia's paper, 'Using Algebraic Tiles from Secondary Mathematics Kit' shows that the introduction of algebra tiles and other manipulatives into the classroom provides mathematics teachers with stirring opportunities to empower students of all learning ways.

Rashtriya Madhyamik Shiksha Abhiyan (RMSA) was started to improve the quality of secondary schools and importance was given to setting up of science laboratories in the schools. The last two articles focus on the impact of RMSA on different aspects of school education. K. V. Sridevi's paper, 'Status and Use of Science Laboratories in the Secondary Schools of Sikkim', reports the condition and utilisation of science labs in the secondary schools of Sikkim and shows that most of the schools of all the four districts of Sikkim are average in terms of utilisation of the lab facilities. The second paper titled, 'A Study of Rashtriya Madhyamik Shiksha Abhiyan (RMSA) on Girls Education with Special Reference to Achievement, Test Anxiety and School Adjustment' by Sunita Gehlot and Divya Choudhary, reveals that while, the urban girls reported a greater number of worries, more separation anxiety and higher level generalised anxiety, RMSA has more impact on rural girls on science achievement as compared to urban girls.

Another research by Poonam Chauhan and Geetanjali Satendra Satyarthi titled 'Effect of Self-instructional Modules on Social Science (Geography)

Achievement of Secondary School Students in Relation to their Intelligence and Gender' studies the result of Self-instructional Modules on social science (Geography) achievement of Class IX students in relation to their intelligence and gender. The study locates that there is no major difference in academic achievement of boys and girls students in terms of gender or intelligence.

In India, as in most of the countries, the division of home and the outside world is principally a gendered one and within this purview, the attitude towards education of women has been found to be ambivalent. Through interviewing two 'scholar wives', Preeti Vivek Mishra in her paper 'The Scholar Wife: Examining the Gender Paradox' shows the responsiveness of these women about common codes of behaviour and their remarks on the repressive discourse of gender and its crippling effects on the academically successful women.

Furthermore, the paper by Prashant Kr. Nahak and Meenakshi Singh titled 'Education of the Left-behind Children of Migrant Labourers of Balangir: An Overview' endeavors to identify the lacunae in the conveniences and the supervision associated troubles faced by the seasonal hostels. The study reveals—inadequate infrastructure, lack of hygienic living and learning environment and non-participation of children, especially, girls, are some of the major drawbacks of these learning centres.

There are many cases in the past where Indian teachers as well as students have faced charges of plagiarism. Gaurav Singh in his paper, 'Awareness and Understanding about Plagiarism among Higher Education Teachers in India' focusses on identifying the rational understanding of plagiarism among faculty members and the ways to evade it.

An empirical paper by Seepana Prakasam, titled 'Impact of Mid-day Meal Scheme on Body Mass Index of School Children in India', which investigates the impact of mid-day meal scheme on body mass index and found the results largely unsatisfactory. Therefore, the author proposes that food menu should be kept in accordance with the benefit of the children, without compromising on dietetic values.

Academic Editor

Legal Education
Vision of Visionaries

BIBHA TRIPATHI*

Abstract

The Indian society of twenty-first century is tremendously changing in many respects affecting the life and well being of every human being. But there is dearth of positive transformation in every change. The Indian education system in general and the legal education in particular are lacking that charm and glory, whose foundation stone had been laid by the great visionaries of Indian education. Law has been treated as an instrument of social engineering and lawyers as social engineers (Pound,1911), but now it seems that law and legal profession has lost its vision, mission and passion (Pillai, 2008). Therefore, the paper attempts to focus on vision of Indian visionaries on higher education in general and legal education in particular—nourished and cherished by some of India's most brilliant minds. Its culture, its spiritual and philosophical approach shall undoubtedly inoculate and inculcate those aspirations which are there for the welfare of whole world with an emphasis to reflect upon the ethical dimension so that the quality of education per se can be improved and legal education may play a vital role in social transformation.

INTRODUCTION

The background of the paper draws attention towards some critical areas of great concern like violence, terror, armed conflict, poverty, child abuse, sexual harassment, etc. In today's era we all are witnessing certain harsh realities. Now, technocrats are committing cyber offences, syndicates are committing organised crimes, bureaucrats are committing political crimes, capitalists are committing economic crimes and the so called highly qualified technocrats are committing almost all the crimes, which could be defined in specific term. It can be confidently said that all such white collar criminals are

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highly educated and might be having legal education too.

The present paper is an attempt to discern the dissatisfaction with legal education, which is being felt as a chronic grievance (Pillai, 2008).

Presumptions of Legal Education

There are certain irrevocable presumptions of legal education viz; law is presumed to be an instrument of social engineering and lawyers are social engineers, ignorance of law is no excuse, law is governed with the principle of utilitarianism, in a democratic society legal education can play a detrimental role to lead a meaningful life. The core thematic perception of law should be disseminated to public at large. (Pound, 1911)

Generally law is perceived as a last resort or option to the society suffering from number of problems or conflicts. Law graduates are expected to assume such perceptions, attitudes, skills and sense of responsibilities which are motivated or dedicated to the cause of humanity. Legal knowledge should be disseminated for promotion of democracy and constitutional government. There are some concurrent curricular goals and roles for legal education (Menon, 1998). Formally the legal education is under the control of two authorities. First, University Grant Commission (UGC) that is the funding authority and second, Bar Council of India, the controlling authority. The present paper has deliberately excluded to analyse the impact of such authorities on legal education because the institutes of law have no say regarding the control mechanisms. While getting themselves governed by the authorities what else could be thought for the betterment of legal education has been the major theme to discuss. Since laws and legal education play a significantly important role beyond the purview of legal profession and beneath the purview of social re-engineering. Significance of legal education is urgently realised and highly needed in almost every discipline and sphere of life.

Goals of Higher Education

There are mainly three goals of higher education i.e., the acquisition, conservation and transmission of knowledge and all the three goals are shared by law schools imparting legal education where it could mean knowledge about the law and its role in society. Indian legal education has to compete worldwide in an era of globalisation but it must contain values highlighted by the great education visionaries.

Mahatma Gandhi on Law and Legal Education and Legal Profession

As we all know that Mahatma Gandhi sailed for England on September 4, 1888, to study law and become a barrister. Gandhi practiced as a lawyer for over 20 years before he gave up the practice of the profession in order to devote all his time and energy

to public service. His experience as a lawyer and his message to others in the similar profession is worth mentioning for them to get inspired and do public service to some extent. He was of the opinion that society would be much cleaner and healthier if people resorted less to the law courts. He observed that justice in British courts is an expensive luxury. It is often 'the longest purse that wins'. Therefore, he advocated that a legal practice ought not to be a speculative business. The best legal talent must be available to the poorest at reasonable rates.

He on the basis of his experience asked the lawyers not to make the profession subservient to the interests of their purse, but to use their profession for the service of their country. He was of the opinion that the duty of a lawyer is always to place the case before the judges, and to help them to arrive at the truth, never to prove the guilty as innocent (Gandhi, 1923). For him a true lawyer is one who places truth and service in the first place and the emoluments of the profession in the next place only (Atri, 2007). He observed that facts mean truth, and once we adhere to truth; the law comes to our aid naturally (Maharajan, 2010). He recalled late Mr Pincutt's advice—facts are three-fourths of law (Gandhi, 1959).

Gandhi used to say that the institution of law is not only an external institution to settle the dispute but also an instrument to change the heart of litigants too. The modern legal system has done little to develop and mobilise man's moral sensibilities and capacities for reflection and introspection (Pandey, 2010).

Gandhi demanded equal pay for all the services. He said that if India is to live an exemplary life of independence, which will be the envy of the world, all the *bhangis* (sweepers), doctors, lawyers, teachers, merchants and others would get the same wages for an honest day's work. Indian society may never reach the goal, but it is the duty of every Indian to set his sail towards that goal and no other, if India is to be a happy land because there is no other royal road to true civilisation or happiness. He believed in division of labour but insisted on equality of wages (Pandey, 2010). If it is followed and observed then there will be no case of Durkheimian anomie (Emile Durkhiem, a French Sociologist, propounded the theory of Anomie, a condition of norm lessness in organic society) arising due to acute division of labour (Doshi and Jain, 1996). Gandhi said that there is a higher court than the courts of justice and that is the court of conscience. It supersedes all other courts (Gandhi, 1999).

Vision of Madan Mohan Malviya on Education

Pt. Madan Mohan Malviya envisioned education as a National Mission not profession. A duty oriented mission, rooted in all reforms. This is the true

spirit of legal education too. He was an exceptional figure of the history of mankind who received ever increasing sobriquets. At present, the education system in general and legal education in particular is suffering from Anomie i.e., a condition of normalness, a condition of transition. Since, he Ji was not only an educationist but also a lawyer too. Therefore, his observations on education are aptly suitable and applicable on legal education. Pt. Madan Mohan Malviya strived for those social problems, which are intended to be eliminated through various laws (Chawla, 2006). He has been an experimenting thinker in the field of education and founder of first national education policy.

Malviya's ideas and vision on education made him, realise not only its importance but also its necessity for removing backwardness from India. India became independent in the year 1947, but the independence was political independence only. It was neither intellectual nor cultural. Malviya envisioned cultural and intellectual independence through the establishment of Banaras Hindu University. He believed that the objectives of education are for complete liberation (*Sa Vidya ya Vimuktaye*). Only an independent man can get others liberated (*Muktsh Chyanyan Vimochyet.*) Malviya was an inspiration in his own. He envisioned producing more and more karmayogies dedicated to the cause of nation. For students, he used to mention that the University is like a training school where they learn discipline, regularity and punctuality and also learn praying and chanting the Lord's name. Their lives are shaped, as enshrined in *Srimad Bhagavad Gita*, as a person "who is regulated in diet and recreation, disciplined in the performance of work" (Swarupananda, 2018).

Malviya began a well consolidated and condensed movement of 'nation building' through 'educational reorientation'. He made education the prime means of national awakening. His vision was to blend the best of Indian education called from the ancient centres of learning with the best tradition of Modern Universities of the West, though he added emphasis on value studies, moral education, yoga and meditation too. There are five core essences, primarily assimilated in the installation of BHU—universality, holism, integration, spirituality and indignity must be seen in today's legal education. His mission behind establishment of this great university was to educate 'pupils' to become 'righteous people'. He strived throughout his life for the cluster of virtues like self involvement, sensitivity, sanity, subservience, servitude, sacrifice, sermonisation, societal commitment, synergy, sustainability and salvation, etc.

The preceding elaboration is merely a synoptic proposition for understanding his pathway model of an ideal educational management and administration. Time has come

to re-engage ourselves to be the true followers of Pt. Madan Mohan Malviya's speculations and realise the motto of BHU.

Dr Sarvapalli Radha Krishnan on Education

Dr Sarvapalli Radha Krishnan was a great thinker and visionary especially in the field of education. He was of the opinion that our colleges of law do not hold a place of high esteem either at home or abroad, nor has law become an area of profound scholarship and enlightened research. The legal education should be able to meet the ever growing demands of the society and should be thoroughly equipped to cater to the complexities of different situations (Wilkins, Khanna and Trubek, 2017). Therefore, the responsibility of improving the quality of the polity is greater in legal fraternity in particular and in higher education system in general. Banaras Hindu University was called as living embodiment of inspiration of new India by Dr Radhakrishnan, the successive Vice Chancellor of BHU after Pt. Madan Mohan Malviya. While celebrating his 100th birth anniversary, a life size statue was unveiled at the BHU gate and Dr S. Radhakrishnan expressed that all those who study in this university and all those who enter in this university will look at the statue and will remember his fascination for patriotism, his insistence on purity, his adherence to the supreme for the rational values of life-fearlessness, love and detachment. This great teacher had quoted that Pt. Madan Mohan Malviya realised that our country has suffered a lot on account of technical backwardness, lack of public spirit and inattention to our own great culture. To remove those defects he established this great university.

Jawaharlal Nehru on Education

Pt. Jawaharlal Nehru also represents the legacy of law, therefore, his views on education in general and legal education in particular becomes relevant from the point of view of introspection needed in the field of legal education. Jawaharlal Nehru was a passionate advocate of education for India's children and youth, believing it essential for India's future progress. His views on education are partly influenced by Karl Marx and partly by Gandi's ideas. Nehru accepted that education was the most powerful means to social change. He believed that freedom from ignorance is as essential as freedom from hunger. Nehru, in his address to Allahabad University students, said, "A university stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search for truth" (Chakrrabarty, 2015). He was of the opinion that the legal education should strengthen the socialist and democratic principles. It should bring gender neutrality and help in developing scientific temperament.

So we can say that it has been a shared belief of every great visionary that education must fight injustice, intolerance and superstition.

Law graduates should take oaths to lead a purposeful and successful life. Two dimensional reforms in legal education can be proposed. First, at the institutional level containing minimum standard mechanism and secondly at the individual level containing maximum exposure mechanism along with a proposal for dissemination of legal education from the very beginning of school education depending upon the Intelligence Quotient level of the students.

Here, it could be submitted that one should always remember that change is the law of nature and law is the regulator of social change. It is sine-qua-non for the development of rule of law and for a sustainable democratic order. Therefore, quality legal education is to be imparted to the people, taking into consideration the changing needs of the society and in the changing era of globalisation.

National Knowledge Commission, 2005

Realising the urgent need of reform in higher education, the Prime Minister of India established the National Knowledge Commission (N.K.C) in 2005 to recommend and undertake reforms in order to make India a knowledge based economy and society.

The N.K.C. once again recognised legal education, as an important constituent of professional education. The Commission opined that the vision of legal education is to provide justice oriented education. The Commission emphasised over the aims of legal education and expressed that legal education must not only aim at preparing legal professionals but also to equip them to meet the new challenges and dimension of internationalisation, where the nature and organisation of law and legal practice are undergoing a paradigm shift. The need for original and path breaking legal research to create new legal knowledge and ideas that will help to meet these challenges in a manner responsive to the needs of the country and ideals and goals of our Constitution was also realised. The Commission has proposed 10 key reforms in Legal Education which include

1. Regulatory reform by creating a new standing Committee for legal education.
2. Prioritise quality and develop a Rating System.
3. Curriculum development
4. Examination system
5. Measures to attract and retain talented faculty
6. Developing research tradition in law schools and universities
7. Centers for Advanced Legal Studies and Research
8. Financing of legal education

9. Dimensions of internationalisation and
10. Technology for dissemination of legal knowledge.

On the point of curriculum development C. Rajkumar (Kumar, 2013) said that in the era of globalisation. One should pay attention on four important factors to improve the standard of legal education. These are global curriculum, global faculty global degrees and global interactions, with a brief note that he has to think globally but act locally. Apart from these reformative steps it has also been suggested that legal education must be socially engaged. This means that legal education programmes must compulsorily expose students to the problems of poverty, social exclusion, social change and environmental degradation through clinical legal education, legal aid programmes and through seminars and debates that sensitise and expose students to the issue of social justice. Further, the commission suggests that, in some countries, law schools are tying up or partnering with foreign law schools. For this purpose, an alliance of law schools has to be brought into being so that the domestic as well as the foreign law schools may mutually benefit and in such alliance, the cost is to be shared. The syllabi can be changed to have a common core of transnational curricula.

Conclusion and Suggestions

In the concluding observation it is submitted that the Indian vision on education could become a catalyst to assure the quality and reach of legal education. Here it can also be submitted that legal education must be imparted as humanistic education so that it can be ensured that there is a degree of emotional identification with 'social pain' for the downtrodden, the poor and the ignorant. It requires first hand indigenous thinking, research and teaching on the Indian problems.

Therefore, it has been suggested in the paper that to ensure quality legal education two-fold attempts should be made as to set the objective of legal education and reconstruction of the structure of legal education.

So as far as the objectives are concerned, it could be classified in two parts i.e., Doctrinal objective and Empirical objective, and the Indian vision should be to achieve the empirical goals, and only then the desired purpose can be achieved. The structural change is concerned to assure the reach of legal education and it may be submitted that the syllabi of not only higher education but also elementary and secondary stage education should be changed in a manner which includes fundamentals of law. The entire process of socialisation should be changed in a way to sensitise the past, present and future generations, to bring equality in true sense, to abolish gender bias, to inculcate a sense of real joy

of one's own earnings to eliminate the problem of dowry, etc. What I mean to convey here is simply one thing that attempt should be made towards social legalisation vis-a-vis legal socialisation. On the basis of the suggestions given by N.K.C., it may be submitted that in addition to the prescriptions from regulatory bodies, universities and also the educational institutions should be given the required amount of freedom in the selection of teaching methodologies and syllabus suitable to the local needs and stuff of students.

At last it is submitted that the seven sins identified by Gandhi must be eschewed for the sake of enhancing the quality of legal education. The sins are wealth without work, pleasure, without conscience, knowledge without character, commerce without morality, science without humanity, religion without sacrifice and politics without principles and seven principles of standards in public life like selflessness, integrity, objectivity, accountability, openness honesty and leadership must be promoted to assure justice-oriented legal education. Such values should be preferred by every legal professional.

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Motivational Dynamics of Educational Stress

Ruchi Shukla*

Abstract

One can understand educational stress by examining how the different need aspects of intrinsic motivation are interrelated and how they function to mediate the level of experienced stress by individual students. Analysis of the relationship between schooling experiences, parental expectations and the experience of educational stress can be understood in the Self-determination Theory (Ryan and Deci, 1985) framework in which sense of autonomy, self-efficacy or competence and relatedness can be said to affect the degree of internalisation of the motivation for school-related performance, which in turn would be related to experiencing of educational stress.

Introduction

Mental health and stress among students, particularly those in the adolescent phase, facing major school-related burden and pressures of examination (Class IX to XII), can be understood from a motivational perspective. Among the various approaches to student motivation, the Self-determination Theory (SDT) by Ryan and Deci (1985) seems to be quite promising in offering a framework of motivational dynamics in terms of variables like self-esteem, competence, sense of autonomy and relatedness. Self-determination as a concept means internally controlling one's behaviour, acting on the basis of personal beliefs and values rather than on the basis of social norms or group pressures.

The SDT, when applied to education, is about fostering in students an interest in learning, a valuing of education and a confidence in personal capabilities (Deci et al., 1991). According to this theory, students become actively engaged in educational activities to

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the extent that classroom endeavours affirm their competencies and prove them to be interesting and relevant to students' lives. The basic needs of competence and self-determination explain the motivational source underlying students' experiences of becoming interested in school and internalising school-related values. As needs, both competence and self-determination represent energising states that, it nurtured, facilitates interest, enjoyment, engagement and well being (Ryan and Deci, 2000). Competence represents the need for seeking out optimal challenges and for perceiving oneself as efficacious in mastering those challenges. Self-determination represents the need to experience choice in the initiation and regulation of one's behaviour, such that the students' choice rather than environmental events determine their action (Deci and Ryan, 1985.). Thus, to promote an interest in learning, valuing of education and an affirmation of personal capabilities, educational climate need to find a way to support students' need for competence and self-determination.

What is Self-determination and How it Impacts Academic Stress?

According to SDT, students become engaged in school-related activity when instructional activities are interesting and relevant to their lives, and affirm their competencies, that is, perceptions of self-determination and competence constitute students' internal motivational resources that support their engagement and persistence in school. Such school activities result in a sense of achievement and knowing that mastery brings joy. Through play, a child gets the confidence to say "I can do it for myself", which illustrates the link between emotions and learning, between cognitive (thinking) and affective (feeling) experiences (Pringle, 1974). One important role teachers play in helping students develop these internal motivational resources is through the provision of autonomy supportive classroom, which support and nurture students' needs for self-determination and competence. There is also a third psychological need emphasised in addition to self-determination and competence, namely relatedness. Relatedness also explains some of the motivational underpinnings of students' engagement and commitment of school (Goodernow, 1993; Ryan and Powelson, 1991; Skinner and Belmont, 1993). Thus, the Self-determination Theory very explicitly shows what exactly is needed by the child and how the educational system can provide it to them.

The review of literature relating to SDT and also the studies seeking to relate specific variables with mental health, well-being and stress clearly show that one can understand educational stress by examining how the different need aspects of intrinsic motivation are interrelated and how they function to mediate the level of experienced stress by individual students. Analysis of the relationship

between schooling experiences, parental expectations and the experience of educational stress can be understood in the SDT framework in which sense of autonomy, self-efficacy or competence and relatedness can be said to affect the degree of internalisation of the motivation for school related performance, which in turn would be related to experiencing of educational stress. Ryan and Deci (2000) suggest that children's school experience is both a cause and consequence of the degree to which they assume agency of their academic endurance, or the degree to which their academic efforts continue to be regulated by external contingencies of reward and punishment. To the extent that the child is able to perceive the outcomes of academic effort as externally controlled, they will lead to a sense of uncertainty and stress. However, the closer the child moves into the direction of internal self-regulation and intrinsic motivation, a child would ascribe school-related effort to internal satisfaction and interest. Thus, persistence in academic task can be clearly related to the degree of intrinsic motivation amongst students.

The SDT recognises the inevitable condition of academic performance as externally regulated. That school performance could continue to be associated with external reward conditions, such as marks and grades and tangible future returns, is an inescapable aspect of modern schooling. Therefore, assumption of internally driven agency is not possible by simply negating or ignoring the external contingencies, rather as SDT suggests, it is necessary to internalise through cumulative processes of introspection and self-regulation to progressively internalise the causation of academic effort. In other words, while emphasis on competitive grades and other indicators of school success is a fact of modern school experience, the key to a sense of well-being and moderate stress experience of children lies in the extent to which conditions favourable for motivational internalisation are available to children.

How does Self-determination Work in Education?

According to the SDT, the degree of internal regulation of any motivated action springs from three need sources—autonomy, competence and relatedness, to the extent that the child has a sense of self-efficacy, belief in one's competence and perception of self-esteem. A child would be prone to deriving internal satisfaction and assuming greater autonomy, when perception of self-efficacy, competence is higher. As has been discussed earlier, a number of studies show a clear relationship between competence and intrinsic motivation. Apart from the theoretical formulations of Ryan and Deci (1985) and the empirical research in the SDT framework, there is also a substantial body of literature relating overlapping

concepts, such as self-efficacy as in Bandura's Social Learning Theory (1977) discussed earlier and self-esteem, relating them to intrinsic motivation and sense of well-being. It is also necessary to appreciate that agentic self perception is possible only when a person's actions are perceived to be under internal rather than external control. The more one is able to take initiatives and to feel that one is able to decide, engage in or refrain from specific action, the more would be the sense of self-control and agentic belief. Thus, when a classroom experience is such that a child is able to exercise independent choice, it would promote a greater degree of internalisation. Independent choice would be reflected in belief of self control. In the SDT, this as a source of internal self-regulation comes from the perception of autonomy. When a child feels that one has some autonomy in engaging in classroom and academic activities, greater internalisation of the motivational contingencies would be possible. Thus, the degree of intrinsic motivation in academic activities would depend on the extent to which a child's academic environment is autonomy supportive. Such autonomy support is primarily related to two sources for a school going child. Sense of autonomy in classroom activities is related to the degree to which the teacher is able to create a classroom, wherein the pupils feel that they have some independence and initiative in engaging in specific academic activities. Thus, an autonomy supportive classroom is likely to lead to higher levels of intrinsic motivation.

The other source for autonomy perception is the family itself. Parenting styles are known to be either authoritarian or liberal, and parents either exercise greater control over child's actions or allow the child a greater freedom of choice. When a child perceives autonomy, rather than parental control, agentic self-beliefs would lead to intrinsic motivation. Thus, autonomy support both in the family and classroom is a major contributing factor to the degree of internalisation in academic efforts. The third need i.e., the need for a sense of relatedness, state Ryan and Deci (2000) pertaining related to intrinsic motivation. A greater degree of interpersonal relationships and a sense of security in the availability of social support would facilitate greater degree of intrinsic motivation. Thus, SDT offers a framework to understand how the experience of academic stress and internal motivation are interrelated through the mutual interacting effect of the three contributing factors in the child's environment, namely autonomy, competence and relatedness.

The relationships between competence, autonomy and intrinsic motivation and its impact on the experienced academic stress and school performance.

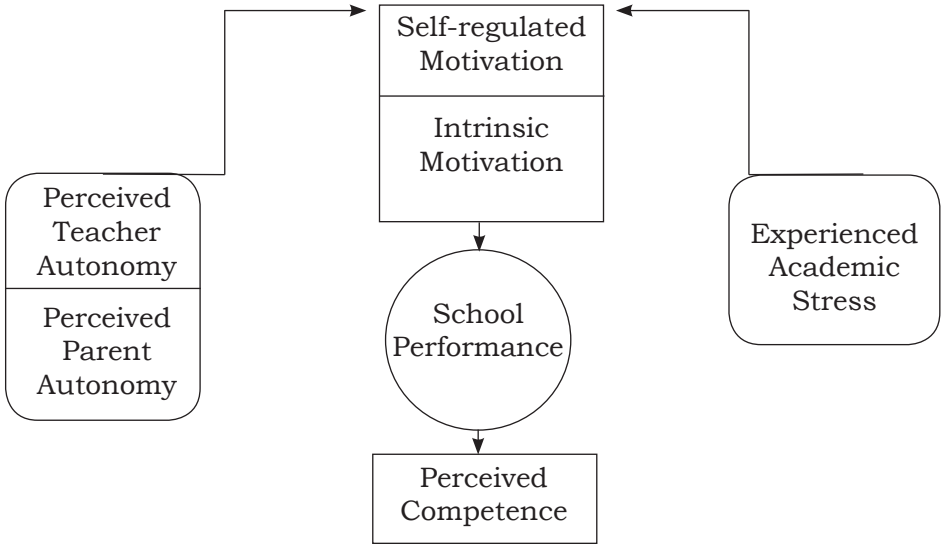

Figure 1. A Motivational Model of Experienced Academic Stress

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Using Algebraic Tiles from Secondary Mathematics Kit

P. K. Chaurasia*

Abstract

The Secondary Mathematics Kit developed by National Council of Educational Research and Training (NCERT) describes and elaborates an important and effective pedagogical strategy at the secondary stage, whose potential is rarely exploited yet, which promotes active engagement in subjects, respectively. It arises from a perspective that mathematics is a constructive activity and is most richly learned when learners are actively constructing objects, relations, questions, problems and meanings. In these kits, we show that not only can all learners perform conceptual activities, but the act of construction or activity can engage learners who might otherwise be passive and uninterested. Kit describes a range of practices for producing the examples that generally illustrate, model and demonstrate concepts. We claim that the experiments or activities that learners perform arise from a pool of ideas. Several concepts through these kits can be explored, enriched and extended—a pedagogical focus that is a powerful way of understanding the concepts. Teachers find ways to transfer initiative to learners to experiment with activity or construct mathematical objects, extending their sophistication and deepening their understanding. In this article, we perform the activities based on algebraic tiles along with secondary stage students of KV No. 1, Ajmer. We show that not only all learners can perform conceptual activities, but also the act of construction or activity can engage learners who might otherwise be passive and uninterested. We observe that activities provide ways to reveal learners' depth and breadth of understanding of concepts and general strategies for creating engaging and concept-deepening questions. It is surprising how learners can be energised and intrigued by simple adjustments to standard classroom algebraic tasks.

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Introduction

The process of learning includes understanding of how a child learns, the nature of the subject matter that we want to teach (or what we want children to learn) and an understanding of what learning is. These three aspects form what we call a model of learning.

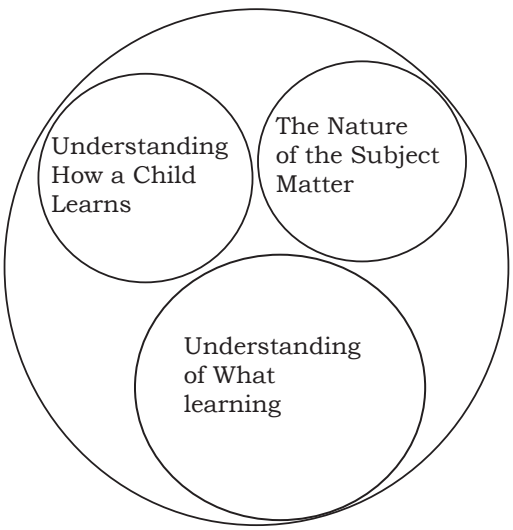


Figure 1. Model of Learning

One of the most important factors that determine the model of learning, that any of us follow is, what we understand by the word 'learning'. Let us consider a sample of ways in which some teachers we spoke to understand learning.

- Learning is production of an expected response to a given stimulus.
- Learning is a change in behaviour due to practice.
- Learning is a change in behaviour due to practice and experience.
- Learning is a permanent change in behaviour because of reinforced practice.

All the definitions above talk of learning having taken place only if it is visible to other people, that is, other people should be able to see the change in behaviour of the learner. For example, according to these definitions, if a child gives a correct answer then the child has learnt; but if the child does not give the correct answer, one will not have learnt it. In this case, it is not a matter of concern as to what understanding the wrong answer shows, or how far has this child developed the concept. So, even though one does not give the expected answer, one may have some feel for the concept. The understanding may not immediately show up in an ability to solve the problem. But as one applies it in more and more situations that one is faced with, one would develop it further.

Some psychologists have taken this view of a child developing an understanding in consideration. They believe that there are other ways of understanding how learning takes place. They do not expect children to immediately display the 'taught' way of solving problems. They respect the need for the child to think and analyse in one's own way, explore and develop one's own way of solving problems. For this, they suggest providing different kinds of tasks to the children, which provide an opportunity to learn. Therefore, instead of a learning environment

where learning plays a passive role in the learning process, there is a need to create an environment where the approach to learning should regard the learner as the active agent of one's learning—actively making sense of the physical and social environment around. According to this approach, the learner builds (constructs) one's own understanding based on one's interaction during performing the activities. So the question is how to provoke the students to think harder and about many aspects? How would we get one to explore the concept on one's own? How would we provide the child opportunities where one has to struggle to find one's own methods of solving problems by helping oneself and providing inputs to oneself as and when one needs them? How would we give the child problems that do not have the same kind of solutions, and would expect one to think how each problem can be dealt with? Such innovative practice would require the teacher to discuss with the child what one has done and give oneself an opportunity to solve a wide variety of problems related to the concepts one is trying to learn. A constructivist believes that a child learns by acting on objects. Specially while learning algebra at the secondary stage, we experimented these questions with students working with algebraic tiles. We will see the detail of the activities in later part of the article.

Facilitation of Self-learning Constructivist Environment

We believe that creating learning by doing environment foregrounds the ways in which teachers can match the above-mentioned opportunities for learning. The integration of hands-on activity-based concrete kits is believed to be very crucial for learning.

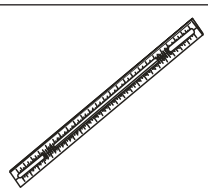
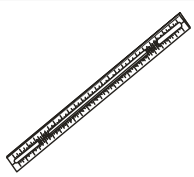
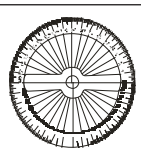
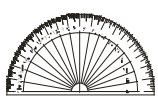
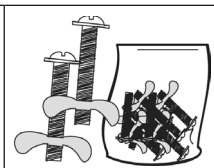
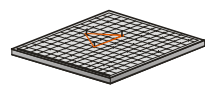
As a matter of practical significance, however, the technologies under consideration are concrete kit items and have some inherent properties that make applying them in straightforward ways generate learning by self-doing constructivist environment. Most traditional pedagogical technologies are characterised by specificity (a pencil is for writing, while a microscope is for viewing small objects); stability (pencils pendulums and chalkboards have not changed a great deal over time); and transparency of function (the inner workings of the pencil or the pendulum are simple and directly related to their function) (Simon, 1969). Over time, these technologies achieve a transparency of perception (Bruce and Hogan, 1998); they become commonplace and, in most cases, are not even considered to be technologies.

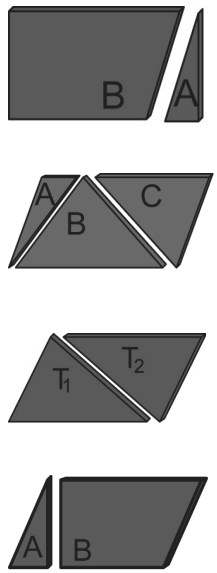
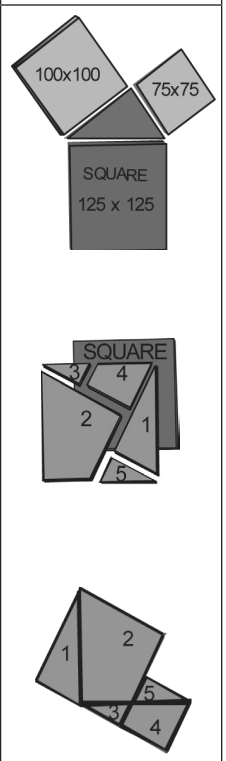
It is believed that when students learn by doing with technology (analog and digital), they may use it as a cognitive tool that helps them to construct meaning, based on their prior knowledge and conceptual framework. Publishers, curriculum specialists, mathematicians,teachers

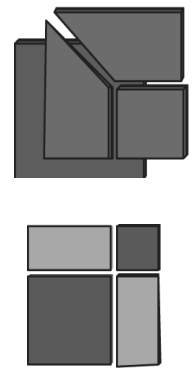
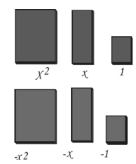
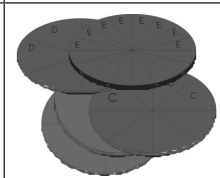
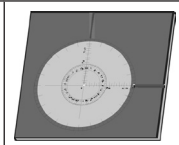
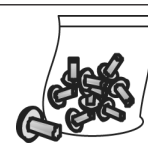
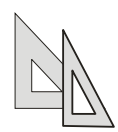
and students have placed a great deal of mathematics and mathematics-related information and activities on the Web. There is a need to consolidate these applications so that students can access a greater range of learning opportunities, and teachers can have a stronger sense of the concrete items or technology's utility and connection to learning outcomes. Technology enhances learning opportunities because it can efficiently support learning by doing, graphing, visualising and computing. Moreover, the technology is used as a medium to provide resources and learning situations that would otherwise be unrealistic or impossible to create.

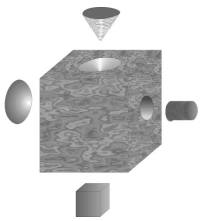
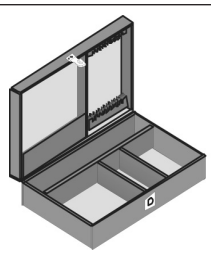
Keeping in view this visionary attitude, the author has developed 'Secondary Mathematics Kit' at NCERT, New Delhi, focusses on broad objectives of 'how to design and develop technology-based content using concrete kit along with different subject-specific open source softwares on various concepts of mathematics as technological interactive content.' Algebraic tiles are one of the tools of this kit and we are focussing on the activities based on those.

Secondary Mathematics Kit (Technical Specification)

S.No	Item Name	Figure/stapes
1.	Plastic Strip (A Type)	
2.	Plastic Strip (B Type)	
3.	Full Protractor (360^{o})	
4.	Half Protractor (180^{o})	
5.	Fly nut and Screw	
6.	Geo-board (rectangular)	
7.	Geo-board Dowels	
8.	Rubber bands	

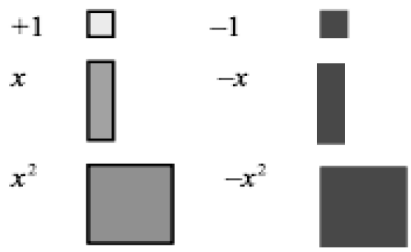
9.	Cutouts : Triangle trapezium b) Two congruent triangle c) A parallelogram and 3 cutouts of a triangle d) Pieces of a trapezium	
10.	Pythagoras Theorem Square With 5 Cut Outs	

11.	Algebraic Identities	
12.	Algebraic Tiles a) x^2 , x , 1 b) $-x^2$, -x , -1	
13.	Cut Outs For Area Of A Circle	
14.	Trigonometric Circle Board	
15.	Connectors For (Strip)	
16.	Connectors (T-type)	
17.	Set Square	

18.	Rotating Needle	
19.	Cutouts With Cuboid Cone Cuboids Cylinder Hemisphere	
20.	Kit Box along with carton	

Algebra Tiles: Tools for Understanding

To help teachers rise to teaching challenges and opportunities for learning algebra, we experimented with algebraic tiles. The introduction of algebra tiles and other manipulatives into the classroom provides mathematics teachers with exciting opportunities to empower students of all learning styles. Through hands-on activities, students become familiar with the uses and applications of algebra tiles. They become comfortable using algebra tiles in their classrooms. And with the experience, users will learn new applications. The activities can be customised to accommodate different needs and levels of understanding. Teacher can select the activities that best meet their specific time constraints and professional requirements. One can introduce the session using any of a variety of ideas. There is a variety of activities designed to address the curriculum goals and objectives. Teacher needs to create a reasonable schedule for her session, being sure to allow time for exploration and questions. Place algebra tiles on the table as follows:



Have students spread the algebra tiles on their worktables and examine them.

Discuss the colours and shapes of the different algebra tiles.

Ask questions such as:

What do you notice about all the negative tiles, –1, –x, and $–x^2$?

Answer: All the negative tiles are red.

Have students stored the tiles in a corner of their worktables so they will have room to make models in the center of their tables.

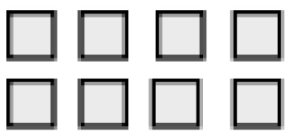
Inform students that they have to record their findings by drawing the models and writing the number sentences and equations they will create in the activities.

Activity 1: Adding Integers

Use your algebra tiles in the steps below to illustrate the addition of two positive numbers — 5 + 3

Have students show two groups of positive tiles. In one group, model +5. In the other group, model +3.

Ask: How can we model 5 + 3 with these tiles? Elicit the fact that to add the two groups, they should be moved together.



Ask: What number sentence describes the model?

Answer: 5 + 3 = 8

Since the sum of a number and its opposite is zero, together, a positive tile and a negative tile represent zero and are called a zero pair. Use your algebra tiles to model a zero pair.

Ask: What number sentence describes this zero pair?

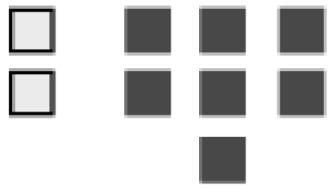
Answer: 1 + (–1) = 0

Have students model 3 + (–3) at their desks while you model. Model 3 with 3 yellow tiles and model –3 with 3 red tiles.

Ask: What number sentence describes the model?

Answer: 3 + (–3) = 0

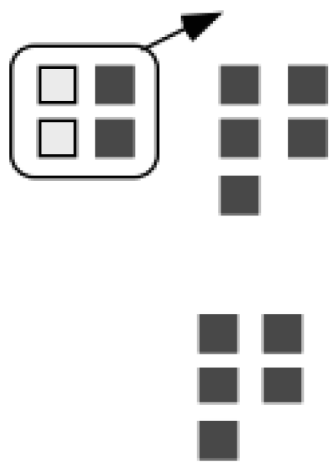
Have students model 2 + (– 7) at their desks while you model the expression on the overhead projector. Model 2 with 2 positive tiles and –7 with 7 negative.



Ask: What expression does this model represent?

Answer: 2 + (–7)

Have students join the two groups of tiles. Match pairs of positive and negative tiles and remove them. Elicit the fact that you can remove zero pairs because their value is zero. Elicit the fact that you cannot form any more zero pairs because all yellow tiles have been used.



Ask: After removing the zero pairs, what tiles are left?

Answer: 5 red tiles, representing –5

Ask: What number sentence describes the model?

Answer: 2 + (–7) = –5

. Challenge students to find another sum

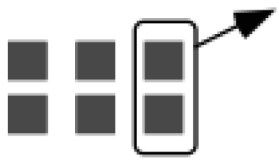
a. 4 + (– 9) b. – 3 + (– 8) c. 9 + (– 3)

Activity 2: Subtracting Integers

Use algebra tiles on the overhead projector as per the steps below to illustrate the subtraction of two integers.

Say: We can model – 6 – (–2).

Start with 6 negative tiles. To subtract –2, remove 2 negative tiles.

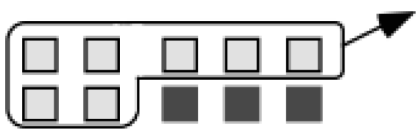


Ask: What number sentence describes the model? Answer: –6 – (–2) = –4

Say: We can model 4 – 7.

Have each group place four positive tiles in a group. Ask them to add zero pairs until they have seven positive tiles in the set.

Have the students remove seven positive tiles.



Say: This is one form of subtraction.

Ask: How many tiles are left?

Answer: Three red tiles, representing – 3.

Ask: What number sentence describes the model?

Answer: 4 – 7 = – 3

Ask students use algebra tiles for the following subtractions. After each group has to record its models and number sentences, uncover the 'Model/Answer' column.

a. 2 – 6 b. 2 + (–6) c. –3 – 8 d. –3 + (–8)

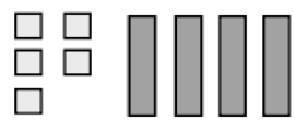
Elicit discussion about the differences and sums.

Activity 3: Simplifying Algebraic Expressions

Write this expression on the board: 5 + 4x

Ask: How can we model this expression?

Give students an opportunity to respond. Then model the expression with the group.



5 + 4x

Write this expression on the board: 3x + 2 – 4x – 5

Say: Before we model this expression, remember that subtracting is the same as adding the opposite, so we can write the expression as 3x + 2 + (–4x) + (–5).

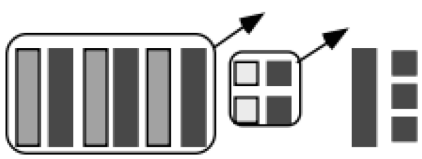
Ask: How can we model this expression?

Give students an opportunity to respond. Then model the expression with the group.

$3x + 2 - 4x - 5$

Ask: How can we simplify the expression?

Elicit the fact that simplifying means collecting like terms (like tiles) by using zero pairs.



Remove zero pairs of x tiles and zero pairs of integer tiles.

Say: After we move aside the zero pairs, the simplified expression is left.

Answer: $3x + 2 - 4x - 5 = -x - 3$

Have students use algebra tiles to model and simplify the following expressions. After each group has recorded its models and expressions, uncover the 'Model/Answer' column.

a. $4x + 8 - 3x$ b. $5x - 9 - 2 - 3x$ c. $-3x + 7 + x - 6$

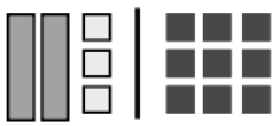
Activity 4: Solving Linear Equations

Write this expression on the chalkboard:

Write: $2x + 3 = -9$

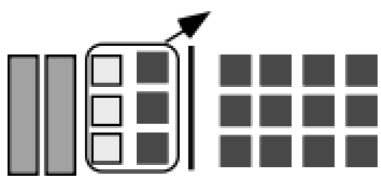
Ask: How can we model and solve this equation?

Give students an opportunity to respond. Then manipulate the tiles while you explain each step. $2x + 3 = -9$

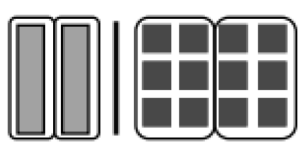


$2x + 3 = -9$

Add three negative tiles to each side to create zero pairs on the side with the x-tiles.



Remove zero pairs to show $2x = -12$.



$2x = -12$

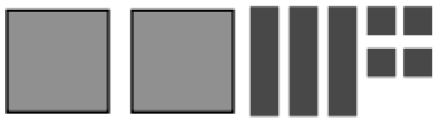
Say: We want to get x alone for a solution. First, we can make two groups of equal numbers of tiles on each side of the bar. Then we can remove one set of the tiles from each side of the bar. Remember that whatever we do to one side of an equation, we must do to the other side. $2x \div 2 = -12 \div 2$

Ask: What is the solution?
Answer: x = –6

Activity 5: Modelling Polynomials

Place the tiles on the table.

Ask: What expression does this model represent?



Answer: $2x^2 - 3x - 4$

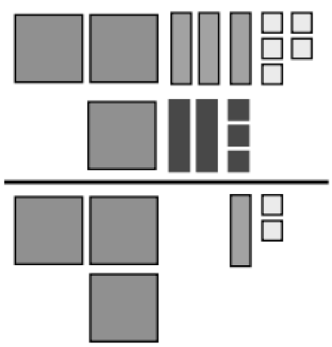
Activity 6: Adding Polynomials

Remind the students that they can model addition of polynomials by modelling the two polynomials, joining them, and removing zero pairs.

Ask: How can we model the addition $2x^2 + 3x + 5$ and $x^2 - 2x - 3$?

Accept all reasonable answers. Then model the addition with tiles on the overhead projector. Call attention to the zero pairs.

Ask: What is the sum?



Answer: $3x^2 - x + 2$

Activity 7: Subtracting Polynomials

Remind students that they can model subtraction of a polynomial by adding the model of the inverse of the polynomial to be subtracted to the model of the first polynomial.

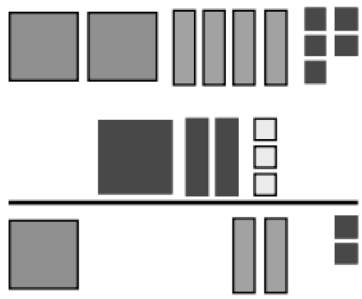
Ask: How can we model this subtraction?

$2x^2 + 4x - 5 - (x^2 + 2x - 3)$

Accept all reasonable answers. Then model the addition with tiles.

Build a model for $2x^2 + 4x - 5$.

Subtract $x^2 + 2x - 3$ by adding its opposite, that is $-x^2 - 2x + 3$. Model this expression.



Answer: $x^2 + 2x - 2$

Combine models and remove zero pairs to model the result.

Ask: What expression does the resulting model represent?

Activity 8: Multiplying Polynomials

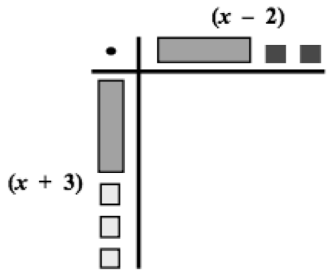
Ask students how to show basic multiplication facts.

Ask: How can we find the product 3 and 4?

Ask: What is the product of 3 and 4?

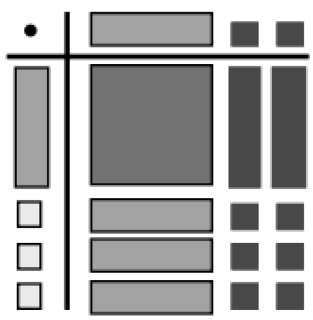
Help students to relate a basic multiplication table to a rectangular array to model the multiplication of polynomials.

Ask: How can we model the multiplication of (x + 3) (x – 2)?
Elicit the fact that algebra tiles that represent the first factor (x + 3) are placed on the vertical axis and algebra tiles that represent the second factor (x – 2) are placed on the horizontal axis.



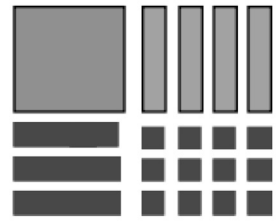
Ask: How can we model (x + 3) (x – 2)?

Give students a chance to respond and model the multiplication with algebra tiles.

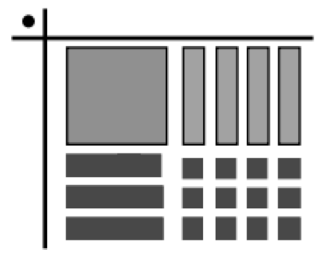


Ask: What is the product of (x + 3) (x – 2)?
Answer: $x^2 + 3x – 2x – 6 = x^2 + x – 6$

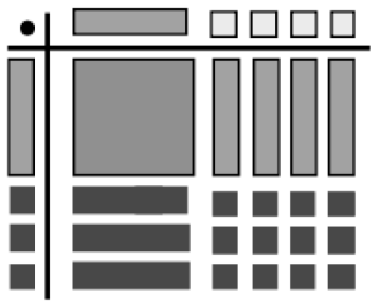
Activity 9: Factoring Polynomials
Show the model



Call attention to the fact that the model shows a rectangular array with the tiles arranged in descending order.
Ask: What expression does this model represent?
Answer: $x^2 + 4x – 3x – 12$
Challenge students to suggest how the expression can be factored by using algebra tiles. Give students a chance to respond and then demonstrate how to factor a polynomial.



Build an axis around the rectangle.
To factor the polynomial, find the dimensions of the rectangle. Determine which tiles should be placed on the horizontal axis and which tiles should be placed on the vertical axis. Call attention to the fact that all negative tiles should be placed on the same axis.



Ask: What expression does the resulting model represent?
Answer: (x – 3) (x + 4)

Summary

Thus, we have looked pedagogical approaches in using Algebraic tiles. Algebraic tile tools based interactive content materials will form a resource pool and motivate users from exploratory mode towards expressive mode. It has been observed that students generally enjoyed using the manipulative and this enjoyment was consistent among all groups. Normally groups did not differ in achievement using this manipulative based instructional strategy. Students have shown confidence that their level of understanding was enhanced by using concrete materials. This appeared to be true for all learning style groups. Students appeared to be able to apply the knowledge they had acquired from concrete experiences in abstract situations.

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Status and Use of Science Laboratories in the Secondary Schools of Sikkim

K.V. Sridevi*

Abstract

Science has always played an important role in understanding the natural phenomenon of the world. Thereby, scientific knowledge can become a characteristic of an individual by inculcating scientific temper at a young age, and for that, science practicum is an important aspect in the school curriculum. Science labs equipped with instruments, equipments and necessary glassware provides the conducive atmosphere for inculcation of science process skills. But the science labs at secondary stage lack all the elements which would have led to scientific temperament. This study reported the status and use of science labs in the secondary schools of Sikkim and highlighted the various policy implications which can go a long way in improving the condition of labs.

Introduction

Science learning is incomplete without performing experiments and activities in the laboratory. The laboratory experiments and hands-on activities enhance the learners' understanding and make them become active in the teaching-learning process. The experiments and project work suggested at the secondary stage develop basic skills of measurements, handling some common apparatus, chemicals, microscope, making observations, collecting data and presenting it in appropriate format, interpreting the data and drawing conclusions (NCERT, 2013). Thus, it basically provides students with a lending hand in the attainment of the necessary science process skills, and in inculcating scientific attitude and temper among them.

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NCF 2005 emphasises that well-equipped laboratories and libraries, and access to computers are essential, and all efforts must be made to ensure that schools are well equipped with such resources. Laboratory experiences add on to the students' understanding of the complexity of the natural phenomena and learn the practical skills, such as making observations, formulation of hypotheses, collection of data and its interpretation. It assists the students to collaborate effectively with others in carrying out complex processes.

Central Board of Secondary Education (CBSE, 2005) has given some norms, based on which science laboratories need to be designed in schools for the secondary level. For secondary students, schools must have a composite science lab of minimum of 9m × 6m in size. The science labs should be fully equipped. Schools can purchase equipments prescribed for science subjects from the Board. Following are the criteria given for designing of the lab in the schools.

- A laboratory could be located in the ground floor towards the end of the building.
- Laboratory should cover an area of 45×25 for an average class of 40 students.
- In laboratories, cement floor or concrete flooring should be used. Slippery floor should be avoided.
- Minimum two doors should be there in the lab.
- There must be provision for electric lightening apart from day light.
- Sinks must be installed near the walls.
- Every laboratory must have a proper drainage facility.
- Almirahs should be provided for storing the equipments and apparatus.

Furthermore, according to Dangbin (2008), practical activities using sufficient facilities help the learners to acquire cognitive skills, such as formulation of hypothesis, observing, predicting, recording data, etc., which are necessary for acquiring scientific skills and knowledge. Moreover, Adeyegbe (2005) in Yara (2010) has listed laboratory adequacy as one of the factors that affects the learning outcome of students.

Research evidence indicates that science learning is not happening the way it is expected to be. The transactional mode is still limited to lecture or demonstration method. Added to this, it was also found that laboratories are still not functional in some of the schools. As a result, students not only lack process skills but are also unable to meet the learning outcomes.

To overcome this situation, the Rashtriya Madhyamik Shiksha Abhiyan (RMSA) was launched to improve the quality of secondary schools and importance has been given to setting up of science laboratories in these schools. Funds have also been provided to improve the scenario of science labs in the

school. In this direction, a study of this kind is taken up to study the status of laboratory facilities in the schools at the secondary level.

Need for the Study

Laboratory activities have long been seen as an important resource, which has also been shown to stimulate and motivate students to learn more about science. These activities appeal as a way of allowing students to learn with understanding, and at the same time, engages in a process of constructing knowledge. Moreover student engagement in laboratory courses has been shown to positively impact achievement in science. While elementary schools can benefit from a science corner, secondary and higher secondary schools require well-equipped laboratories. Practical work makes an exceptional learning surrounding that help student to construct their knowledge, enhance logical inquiry and psychomotor skills (Mashita, Norita, and Zurida, 2009). Moreover, practical work offers an interactive experience to the students, where they can broaden the scope of constructivist learning (Umar, Ubramaniam and Ukherjee, 2005). It is believed that by carrying out practical work, students' knowledge can be expanded to understand the real world (Millar, 2004).

Also, it was found that the use of chemistry laboratory helped in the development of scientific attitude, such as honesty, patience, skepticism as well as scientific skills for problem solving in students towards the learning of chemistry, it trained the students in using scientific method (Akani, 2015). The findings of another study revealed that inadequate laboratory facilities have affected the teaching and learning in schools and in turn the academic performance of students (Oriade, 2008; Muhammad, 2017). From the review of the studies, it is evident that a large number of researches have been carried out at higher secondary level and undergraduate level compared to secondary level. Majority of the studies have focussed upon the status of chemistry laboratory rather than the integrated laboratory (Raju, Suryanarayana (2011), Oriade (2008) and Muhammad (2017).

NCERT (2015) conducted research studies in the schools of Madhya Pradesh, Karnataka and Rajasthan to find out the status of science lab and their use in learning science. The findings of these studies have revealed that in most of the schools of Karnataka and Rajasthan, separate science labs are not there and wherever the lab is found, it lacked the basic facilities. Only in majority of the schools of Madhya Pradesh, the laboratories are found to be effectively utilised by the teachers.

From the review of related literature, it was observed that rarely any studies have been conducted in north eastern states related to the status of utilisation of lab facilities. Hence, it is felt necessary to take up a study to find out the status of

laboratory facilities and the extent of utilisation in the schools at secondary level in Sikkim. Moreover, the findings of this research study will throw light on the concerns or issues related to the status and utility of science labs which can go into policy or schemes.

Objectives of the Study

1. To examine the availability of lab facilities for the teaching of science
2. To assess the utilisation of available lab facilities in science teaching
3. To study the extent of integration of theory and practicum in the teaching of science
4. To identify the factors for underutilisation and non-utilisation of available lab facilities

Research Questions

1. To what extent are the labs equipped and used by the secondary school teachers and students?
2. Are theory and practical activities integrated while teaching science by the teachers?
3. What are the reasons for under utilisation or non-utilisation of available facilities?

Research Design

The research was descriptive in nature, wherein the descriptive survey method was used to collect data from principals, teachers and students using various tools.

Sample of the Study

In Sikkim, the north, south, east and west districts of Sikkim were considered. Six schools each from north, south and west Sikkim and seven schools from east Sikkim were randomly selected. The sample included urban and rural schools; secondary and senior secondary schools; and girls', boys' and co-education schools. From the schools of Sikkim purposive sampling technique is employed to select secondary school principals, science teachers and students from Class IX and X.

Selection of Students

Twenty students were selected from each school, such that 10 students were from Class IX and 10 were from Class X. The total sample for the study is 500 students (20 students × 25 schools).

Selection of Teachers

The teachers teaching science to Class IX and X were selected as the sample for the study. The total number of science teachers in the sample are 94, from 25 selected schools of Sikkim.

Selection of Principals

The principals of all the selected 25 schools were considered as a sample for the study.

Classroom Observation Sampling

One science lab session or science classroom teaching for secondary classes in each school was observed, thus making it a total of 25 observations.

Development of Tools

The following tools were developed, finalised and used in the study:

Questionnaire about Lab Facilities for Principal

The purpose of the questionnaire is to examine the availability and adequacy of lab facilities for teaching of science. The questionnaire consists of 16 questions divided into five categories, namely infrastructure and lab facilities, human resources and training, teaching-learning process, financial resources and future plans. It includes both subjective and objective type of questions.

Questionnaire about Lab Facilities for Teachers

The focus of the questionnaire was to assess the utilisation of available lab facilities in teaching of science and to identify factors for underutilisation and non-utilisation of lab facilities. The questionnaire consists of 35 questions divided into seven categories, namely infrastructure and lab facilities, human resources and training, teaching-learning process, computer lab, assessment, financial resources and suggestions.

Questionnaire about Lab Facilities for Students

The questionnaire consists of 16 questions which are divided into three categories, namely infrastructure and lab facilities, teaching-learning process and financial resources. The purpose of the questionnaire is to examine the availability and utilisation of lab facilities in teaching of science by students.

Focus Group Discussion with Students

A set of 13 questions were listed, which would help in probing the reasons for non-availability and inadequacy of the lab materials. It would throw light on the problems faced by the students as well as teachers while conducting the practicals in the lab.

Observation Schedule

The schedule was developed by the research team which consists of 17 statements which can have two responses—either yes or no. The focus of the schedule is to examine the extent of integration of theory and practicum in teaching of science, facilities available in the science lab and utilisation of science lab in science teaching. The members of the research team observe one class or lab session and record their observations as yes or no.

Table 1
Tools developed and used in the study

Tool Administered	Respondents
Questionnaire about Laboratory facilities	Principal
Questionnaire about Laboratory facilities and utilisation	Teachers
Questionnaire about Lab facilities and utilisation	Students
Focus group discussion with students	Students
Observation schedule	Researcher

Statistical Technique Used

Frequencies and percentages were calculated from the data collected through questionnaires of principals, teachers and students. Qualitative data collected from observations of the classrooms or lab sessions and Focus Group Discussion were analysed.

Findings of the Study

The major findings of the study are as follows.

Availability of Lab Facilities

Majority of the schools (92 per cent) of Sikkim have science lab and only one school in each of south and west Sikkim does not have a science lab.

Table 2
Availability of Science Lab
District wise

	Available	Not available
North Sikkim	6 (100%)	0
South Sikkim	5 (83.3%)	1(16.6%)
East Sikkim	7 (100%)	0
West Sikkim	5 (83.3%)	1 (16.6%)
Total	**23 (92%)**	**2 (08%)**

The data collected from 94 teachers indicate that the labs lack proper water facility (50 per cent) and drainage system (36 per cent). The same was evident during the observations made. Most of the schools (92 per cent) have lab attendantes, whereas one school each of south and west Sikkim does not have lab attendant.

Science kits are available in all the schools of north Sikkim, whereas these are unavalable in one school each of south and west Sikkim and two schools of east Sikkim. Schools of east Sikkim have a better provision of ICT labs compared to the other three districts. The science labs have not been adapted for the Children with Special Needs (CWSN) in the schools.

Adequacy of Lab Facilities

The size of the science lab is not adequate to carry out the experiments in majority (78 per cent) of the schools of Sikkim.

In 64 per cent of the schools, lab equipments are inadequate to carry out the experiments with the students. It was found out that one school each in the south, east and west Sikkim have less than 25% of the required equipments, which were not adequate for the students' strength. Glasswares used in the laboratory are adequate (in quantity) in most of the schools (72 per cent) of Sikkim. In north Sikkim, all the schools have adequate number of glasswares to meet the students' need. When it comes to the adequacy of the chemicals, it was found that 28 per cent have adequate quantity of chemicals to conduct experiments, while 43 per cent do not. It was also found that 24 per cent of the schools do not have chemicals at all to perform the experiments.

Table 3
Adequacy of chemicals district wise

District	Adequate	Inadequate	Not present
North Sikkim	2 (8%)	3 (12%)	1 (4%)
South Sikkim	1 (4%)	4 (16%)	1 (4%)
East Sikkim	3 (12%)	2 (8%)	2 (8%)
West Sikkim	1 (4%)	3 (12%)	2 (8%)
Total	**7(28%)**	**12 (48%)**	**6(24%)**

The charts, models and specimens are found to be adequate in numbers in majority of the schools. The stock registers were available in all the schools listing out the consumable and non-consumable materials separately for physics, chemistry and biology lab.

Allocation of Lab Period

All the schools of south Sikkim have allocated science lab period in the time table, whereas two schools each of north, east and west Sikkim do not have allocation of science lab period in the time table. In most of the schools, the designated lab period is used for other works, such as revision, completing the syllabus and practising for the school programmes.

Utilisation of Lab Facilities

The science lab is being utilised by secondary students in the schools. Most of the schools of all the four districts are average in terms of utilisation of the lab facilities. Opportunities are provided to students to handle the lab apparatus and to carry out the experiments on their own in most of the schools. The students are allowed to use lab equipments in the classroom for experimentation and projects.

Experiments are being conducted in groups of four to six students and as demonstrations but rarely are conducted individually.

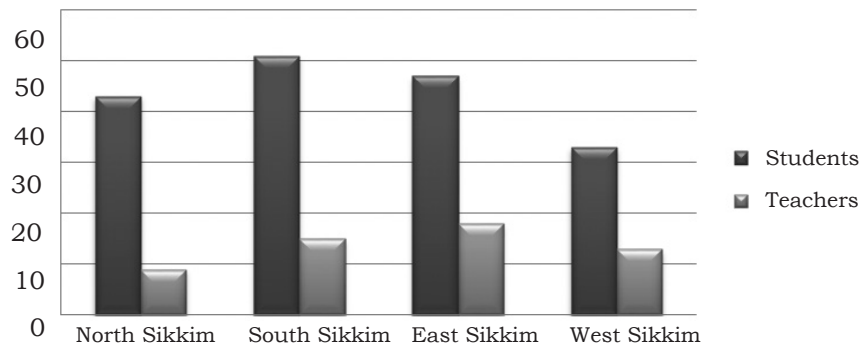

Figure 1. Use of lab equipments for project work

Working of Students in the Lab in Sikkim

In terms of students' involvement, 78 per cent of the teachers expressed that the students are moderately involved during an experiment in the lab in majority of the schools. teach the students. Students' responses also supported this. Seventy-six per cent of the students expressed that lab work helped them in learning science better. During interaction with students, they even mentioned that lab work helped them in remembering concepts for a

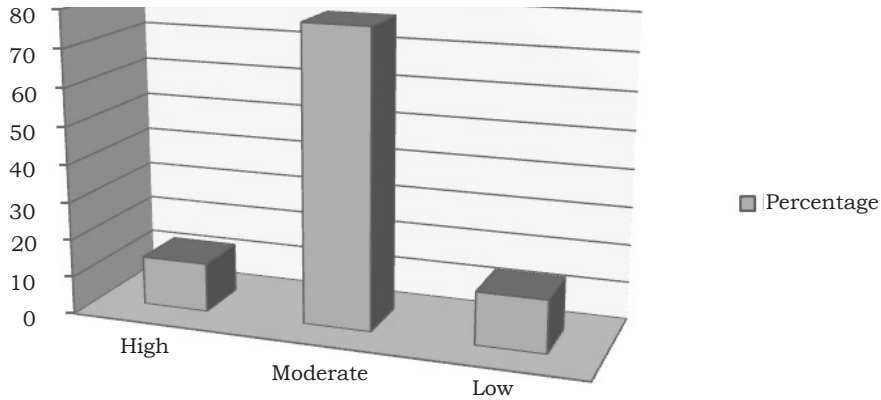

Figure 2. Student involvement in experiments

Teachers Training

Most of the science teachers (96 per cent) underwent training in lab skills, but a very few were trained in the use of science kits (20 per cent). Sixty-eight per cent of the teachers revealed that they use science kits to longer duration of time and abstract topics are understood in an easy and better way.

Most of the teachers (85 per cent) felt that there is no need of improvisation to the activities proposed in the science textbook. Teachers believe

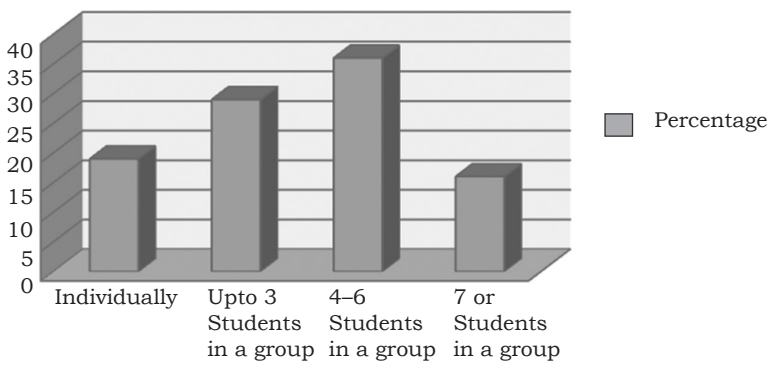

Figure 3. Students' work in lab

that lab work helps in enhancement of learning of the science concepts and promoting process skills like observing, measuring, experimenting and reasoning skills.

Assessment of Lab Work

Science question papers, report card and performance file of the students were collected from all the sampled schools. From all these documents, it can be concluded that only theoretical aspect of performance of the students in science is recorded in the school report card. There is no scope for indicating the performance of students in lab activities in the performance file. In majority of the schools, 10 marks are allotted for the lab work and students are awarded marks without conducting the practicals. It was also observed that in most of the schools, application-based questions were not asked in the tests. The questions were textbook oriented and only theoretical. The lab practical related or activity-based questions were hardly found in the test papers.

Integration of Theory and Practicum

From the lab class observation and focus group discussion, it was understood that in most of the schools where lab apparatus or equipment is used while teaching or lab session is conducted, they are done in vacuum. From the analysis, it is evident that teachers have tried to carry out practicals but still, the theory has not been integrated with the practical. The practical records are copied from the records of the senior students and submitted. Homework or also projects are not used for assessing students' learning. More, over they are very theoretical, monotonous and rest for name sake.

Reasons for Underutilisation of Laboratories

Lack of availability of lab equipments and chemicals, high student strength and time constraint acts as a major barrier in conducting of experiments. There is no accountability for mishandling or damaging the lab equipments in most of the schools. Fifty-two per cent of the schools reported that they did not receive any grants for the lab and its maintenance, whereas 48 per cent of the schools who received said that they were insufficient. Stock verification is not done annually in the schools.

The science lab is not a priority in the School Development Plan in most of the schools. There is no separate lab period allocated for Class IX students in the schools that have classes up to X. Whereas, in composite schools (with Class I–XII), a specified number of lab periods for Class IX and X finds place in the time table. Despite the allocation, most of the lab hours are being used for completing the syllabus and revision.

Educational Implications

The findings of the study have implications for interventions in

the system. Some of the major implications are given below.

- The schools have science lab as well as lab attendant but still the labs are not maintained properly. The lab attendants should be assigned their role and responsibilities by the management and be monitored on a regular basis. To update themselves, the lab attendants should be given training on maintenance of labs.
- Science teachers should be provided with the in-service training in lab skills and science kits so that their knowledge and practical expertise can be enhanced. This would in turn help them in integrating theory and practicum in their regular teaching.
- Funds should be allotted on the basis of enrolments and the needs of each school. It is better to grant a separate fund for science lab and its maintenance to the schools and for upgradation of the labs. These grants are to be enhanced keeping the needs of CWSN into consideration to make science education inclusive.
- School management needs to consider the lab as an important constituent and as a result, they need to audit the stock and replenish it from time to time, especially consumables and breakable items like glassware, chemicals to meet the needs of the students.
- East Sikkim being the capital of the state has better facilities overall when compared to other three districts. The funds can be allocated more in the north, south and west Sikkim for lab infrastructure and maintenance.
- Teachers should make efforts to use locally available materials, develop equipments for conducting experiments or show demonstrations to students irrespective of poorly equipped laboratory.
- Students should take active role by sharing responsibility with the faculty in maintaining cleanliness in the lab. Ownership and accountability needs to be fixed on the students on school property and its maintenance, as a sustainability measure. Teachers need to encourage the students to take an active part in developing improvised apparatus using locally available materials or resources.
- The science practical period should be used only for learning science and should be allocated twice a week for Class IX and X in all the schools, so that science theory can be integrated to practical knowledge.
- Teachers should provide students with the opportunity to engage in lab work. It will help in developing scientific attitude and enhance their achievement in science. Engagement of students in lab work helps them in sharpening their science process skills and scientific attitude.

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A Study of Rashtriya Madhyamik Shiksha Abhiyan (RMSA) on Girls Education with Special Reference to Achievement, Test Anxiety and School Adjustment

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Abstract

The present study attempted to find out the effectiveness of the RMSA programme in government schools on Class X students in relation to their achievement, test anxiety and school adjustment. The sample comprised 400 students studying in different division of Jodhpur, i.e., Pali, Jalore, Barmer, Jaisalmer and Jodhpur districts. Test Anxiety questionnaire was constructed by A. Kumar, the School Adjustment inventory was prepared by N.M. Bhagia and self-constructed science achievement test were used to collect data. It was found that the achievement of rural girls was higher as compare to urban girls but the test anxiety was lower in urban girls in contrast to rural girls, whereas the school adjustment was excellent in urban girls as compared to rural girls due to the facilities provided by the RMSA Programme. Low, negative and significant relationship was found between achievement and test anxiety of rural and urban girls. Low, positive and significant relationship was found between rural and urban girls in relation to their achievement and school adjustment. Moderate, negative and significant relationship was found between test anxiety and school adjustment. This was a benchmark study that provides concrete information from the perception of students that a quality improvement programme must be offered through the RMSA as it is a very effective programme for quantitative and qualitative improvement of the students.

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Introduction

The Rashtriya Madhyamik Shiksha Abhiyan (RMSA), a flagship programme of the Government of India is a centrally sponsored scheme launched in March, 2009 for achieving universal secondary education. It is a community owned initiative to universalise secondary education with an objective to provide quality secondary education to all children up to 16 years and 18 years, respectively, and higher/senior secondary education to all children up to the age group of 14–18 years.

The vision for secondary education is to make good quality education available, accessible and affordable to all children in the age group of 14–18 years. It aims to provide a secondary school within a reasonable distance of any habitation, which should be 5 kilometres for secondary schools and 7–10 kilometres for higher secondary schools. It also aims to include providing access to secondary education with special references to economically weaker sections of the society, the educationally backward, the girls, the disabled children residing in rural areas, other marginalised categories like SC, ST, OBC and Educationally Backward Minorities.

The purpose of this scheme is to improve the gender ratio by providing an environment of security and education to girls with better nutrition and to eliminate all discriminations against the girl child. It is significant that girl education is promoted in rural areas, so that every girl becomes independent and assertive.

Girls' education is also very essential for strengthening the society and lowering crime rates. Most of the parents in rural areas are now seem to be convinced in sending their girl child to school, but it is important that girls finish all necessary levels of education, learn extra skills and competencies for showcasing the same level of competitiveness in the labour market.

Bhutia (2013) studied RMSA in northeast India and concluded that secondary education provides an indispensable link to the whole education system. Sangeeta and Kumar (2013) reviewed the support of RMSA to achieve the education for all. Deb et al. (2015) studied the impact of RMSA and found that RMSA is a transforming recent programme for the universalisation of secondary education. Sachdeva (2016) studied the impact of RMSA in enrollment and parents' satisfaction in rural schools of Sunderbani. Chamyal (2017) conducted a comparative study of the knowledge of RMSA and found significant difference in the knowledge of RMSA among secondary and senior secondary school teachers of rural and urban areas.

The review of literature revealed that there is no study conducted on the RMSA programme to find out improvement of girls' education with special reference to their achievement, test anxiety and school adjustment.

The academic activities conducted under the RMSA programme are focussed on science, mathematics and

English education, in-service training of teacher, science laboratories, ICT-enabled education, curriculum reforms, teaching-learning reforms, etc., for bringing out best results. Therefore, the following research objectives have been framed for investigation.

Objectives

The following objectives have been framed for the present study.

1. To study and compare the achievement, test anxiety and school adjustment of rural and urban girls studying in schools under the RMSA.
2. To study the relationship between achievement and test anxiety of rural girls studying in schools under the RMSA.
3. To study the relationship between achievement and school adjustment of rural girls studying in schools under the RMSA.
4. To study the relationship between school adjustment and test anxiety of rural girls studying in schools under the RMSA.
5. To study the relationship between achievement and test anxiety of urban girls studying in schools under the RMSA.
6. To study the relationship between achievement and school adjustment of urban girls studying in schools under the RMSA.
7. To study the relationship between school adjustment and test anxiety of urban girls studying in schools under the RMSA.

Methodology

The normative survey method was used in this study. The sample for the present study consisted of five districts of Jodhpur division including Jodhpur, Barmer, Jaisalmer, Pali and Jalore district. The sample consisted of 400 girl students of rural and urban areas of these districts. The following tools were used for the collection of data under the present study.

Tools

In the present investigation the following tools were used.

1. Test Anxiety Scale for children: Constructed and standardised by A. Kumar (1971).
2. The School Adjustment Inventory: Constructed and standardised by N.M. Bhagia (1968).
3. Achievement Test: Self-made objective type test.

The researcher discussed the selected content with the senior teachers of science and also with the teacher educators and experts having long teaching experiences (care was taken that the physics portion was examined by the physics teacher while chemistry and biology was examined by the concerned subject teachers to ensure the reliability and validity). The test paper consisted 50 questions of 50 marks and was checked by an expert panel.

The test is prepared on the basis of blueprint, considering the knowledge,

understanding, application and skill type items. In the present test, all the selected items were objective type and each test item or question carried equal marks. The test paper was of a 60 minute duration. The instruction of administration was also prepared which are written on the test paper. The scoring key and the marking scheme for the test were prepared for evaluation of the test papers.

Statistical Analysis

The data obtained through the tools have been subjected to appropriate statistical analysis in line with the objectives of the study. Mean, Standard Deviation, t-Test, Product Moment Correlation were used for analysis.

Results and Discussion

Science Achievement

The achievement of rural and urban girls of Jalore, Jodhpur, Pali, Barmer and Jaisalmer district in science subject is given in Table 1.

Interpretation

The mean values showed that the rural girls (35.17) have more impact of RMSA on their science achievement than urban girls (31.05). There is a significant difference between the two groups. So, it can be assumed that the RMSA programme methodology and strategy have a powerful impact in the rural areas. This study is in the line with the findings of the previous study (Gupta et al., 1993) who observed that in rural and urban areas, different factors contribute to the prediction of academic achievement. Thus, the RMSA programme increased the science achievement of secondary students, especially in rural areas.

Test Anxiety

Acompalisson of the anxiety level of the rural and urban girls of Jalore, Jodhpur, Pali, Barmer and Jaisalmer district is given in Table 2.

Table 1

Comparison between Rural and Urban Girls for the Variable Science Achievement Studying in Schools under RMSA

S. No.	Area	N	Mean	S.D.	SEm	t value	Level of significance
1.	Rural	200	35.17	9.1	0.64	4.478	Significant at 0.05 level
2.	Urban	200	31.05	9.4	0.66		

Table 2
Comparison between Rural and Urban Girls for the Variable Test Anxiety Studying in schools under RMSA

S.No.	Area	N	Mean	S.D.	SEm	t value	Level of significance
1.	Rural	200	13.415	6.78	0.47	2.134	Significant at 0.05 level
2.	Urban	200	11.84	7.95	0.56		

Interpretation

The numerical values showed that the rural girls have more test anxiety than urban girls; 't' value is significant at 0.05 level of confidence. So, it can be interpreted that the RMSA programme is helpful in decreasing the test anxiety among secondary students, especially in urban areas. These are in line with the findings of the previous study (Alam, 2013) observed that urban students have least test anxiety and excellent academic performance in comparison to their rural counterparts.

School Adjustment

The school adjustment of rural and urban girls of Jalore, Jodhpur, Pali, Barmer and Jaisalmer is described in Table 3.

Interpretation

The significant 't' values for various levels of adjustment in the school by urban and rural girls demonstrate the impact of the RMSA programme and suggest that the programme is capable to increase the school adjustment of secondary students, specially in urban areas. This study is in line with the findings of previous study (Punia and Sangwan, 2011) who reported that the urban adolescents have comparatively better adjustment against its rural counterparts.

Table 3
Comparison between Rural and Urban Girls for the Variable School Adjustment Studying in Schools under RMSA

S. No.	Area	N	Mean	S.D.	SEm	t value	Level of significance
1.	Rural	200	118.4	22.48	1.58	5.774	Significant at 0.05 level
2.	Urban	200	132	24.65	1.74		

Table 4
The Relationship between Science Achievement and Test Anxiety Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Probable Error	Remarks
Science achievement and test anxiety	-0.1505	Negative	Significant	0.0466	Low

Interpretation

The results revealed that for every unit increase in test anxiety, there is a proportional unit decrease in the science achievement. The negative, low and significant relationship shows that RMSA programme deals with easy teaching and activity-based learning. The RMSA teaching and learning programme influences the understanding of science achievement and decreases the level of anxiety. Certain amount of anxiety is required as an impetus towards positive action. Earlier researches showed moderate negative level of test anxiety (Syokwaa et al., 2014) but the present study revealed low negative test anxiety among secondary students. It means that the RMSA programme is helpful in decreasing test anxiety and increasing science achievement of rural girls of secondary standard.

Interpretation

The well-adjusted students usually value their learning, positively involved in classroom activities and receive high grades (Kuiru et al., 2009). The positive and significant relationship between science achievement and school adjustment of girls under present study indicates that the students are well adjusted in the class and achieving higher scores in science. The physical as well as educational facilities created by RMSA programme in the schools of rural and urban areas enhance the school adjustment of student and simultaneously their science achievements. Our findings are in corroboration with the findings of Kuiru et al., (2009) who observed that adjustment in the classroom influences the learning and attitude of the student.

Table 5
The Relationship between Science Achievement and School Adjustment of Rural Girls Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Remarks	Probable Error
Science achievement and school adjustment	0.2395	Positive	Significant	Low	0.047

Table 6
The Relationship between Test Anxiety and School Adjustment of Rural Girls Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Remarks	Probable Error
Test anxiety and school adjustment	– 0.3323	Negative	Significant	Moderate	0.042

Interpretation

Results revealed that for every unit increase in test anxiety, there is a proportional unit decrease in the science achievement. The RMSA programme is child-centered programme in which students are helped to establish their school adjustment, besides this, the liabilities of students are considered, co–curricular activities and excursions are planned to improve the school adjustment of students under the RMSA programme. As the school adjustment of the students increases, the test anxiety will decrease. These findings are in line with the previous study (Hussain et al., 2008) who observed an inverse but significant relationship between academic stress and adjustment.

Interpretation

All the students experience test anxiety, whose level may change from time to time according to the prevailing circumstances. The high expectations of parents, teachers, school and society make a child more anxious. Hence, an increase in the test anxiety may lead to a decrease in achievement (Sarason, et al., 1960; Pandit 1969; Sridevi, 2013). This study revealed that the RMSA programme is extremely helpful in decreasing test anxiety and increasing the science achievement by providing skillful learning, activity-based strategies, etc.

Table 7
The Relationship between the Variable Science Achievement and Test Anxiety of Urban Girls Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Remarks	Probable Error
Science achievement and test anxiety	- 0.2362	Negative	Significant	Low	0.045

Table 8
The Relationship between Science Achievement and School Adjustment of Urban Girls Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Remarks	Probable Error
Science achievement and school adjustment	0.2114	Positive	Significant	Low	0.045

Interpretation

This study revealed that there is a low positive and significant relationship found between science achievement and school adjustment of urban girls. The RMSA programme enhances the achievement of students by providing them various innovative pedagogy and methods or techniques which help in the adjustment of students. Surekha (2008) reported significant, positive correlation between academic achievement and adjustment. Yellaiah (2012) found that there was a low positive relationship between adjustment and academic achievement. The findings under the present study are in agreement with the findings of other workers and suggests that the RMSA is an objective-based programme, fulfilling the needs of students.

Table 9
The Relationship between Test Anxiety and School Adjustment of Urban Girls Studying in Schools under RMSA

Correlated variables	Coefficient of correlation	Type	Level of Confidence	Remarks	Probable Error
Test anxiety and school adjustment	– 0.3842	Negative	Significant	Moderate	0.041

Interpretation

Anxiety is the way of telling us that something in the environment requires attention, which should be addressed properly. Urban girls reported a greater number of worries, more separation anxiety and higher level of generalised anxiety (Vig and Chawla, 2013). But the RMSA programme deals to sensitise these adolescent girls on the issues of test anxiety and planned educational programme for effective management of test anxiety. The results proved that the RMSA programme is getting success in decreasing test anxiety and increasing school adjustment.

Conclusion

The present study is an attempt to study the impact of the RMSA in the education of girls, with special reference to their achievement, test anxiety and school adjustment. It has also tried to compare and correlate the variables that is i.e., science achievement, test anxiety and school adjustment. The present study revealed that the RMSA programme has more impact on rural girls on science achievement as compared to urban girls. It means that the RMSA programme has more effect on rural girls as compared to urban. The rural girls have more test anxiety, than urban girls due to lack of facilities in that area. The school adjustment of urban girls were more than rural girls. It shows that the RMSA programme is working efficiently to remove adjustment problems. In rural and urban areas, the relationship between science achievement and test anxiety was

negative, low and significant, which proves that the RMSA programme decreases test anxiety and gives a positive effect on science achievement. The correlation between science achievement and school adjustment of rural and urban girls was positive, low and significant, revealing that the RMSA programme helps in learning and healthy adjustment of students. The correlation between test anxiety and school adjustment of rural and urban girls was moderate, negative and significant, showing that the RMSA programme is a student-centered programme.

Suggestions

On the basis of the findings of this study, some suggestions can be made.

1. The RMSA programme is enhancing the science achievement of secondary school students, so it should be monitored properly.
2. The teachers need to be familiar with the uses of ICT and open educational resources for teaching school subjects. Some training programmes could be organised on e-pathsala.
3. Some personality development programme for teachers may be organised with the help of NCERT, CBSE, and also the best teacher award should be given to the teacher who takes initiatives.
4. Pre-service education programmes need to be revised and updated as per the NCF 2005, the RTE Act 2009, and NCTE regulation 2014.
5. The students need to be encouraged for study by organising discussion on different topics, skills, reading habits, note taking and communication. Established alumni may be invited to the school for delivering lectures or giving motivational speeches.
6. The training programme should be convenient for all teachers so that they can be self-motivated for the programme. Teacher should be trained according to their interest, capabilities and academic achievements.
7. Every school must appoint a school counsellor who can help students and teachers, especially girls for their adjustment during period of adolescence. The counsellor can also aid students in choosing subjects and carriers after school education.
8. Impact of quality of RMSA should be analysed over a period of time but not as a single point. The performance of students should be recorded, monitored and compared from one project to other so that relative advantage may be assessed.
9. A toll free 24-hour helpline for the RMSA programme can be set up to provide effective, quality, on-the-spot solutions by experts. This will not only help the people person in remote areas but also solve the problem by subject experts, resource person, etc.
10. Attractive incentives should be provided to expert and teachers to work in remote tribal areas so that a result-oriented scheme could be launched.

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Effect of Self-instructional Modules on Social Science (Geography) Achievement of Secondary School Students in Relation to their Intelligence and Gender

Poonam Chauhan* and Geetanjali Satendra Satyarthi**

Abstract

In this study, the researcher studies the effect of Self-instructional Modules on social science (Geography) achievement of Class IX students in relation to their intelligence and gender. The sample is selected from three secondary schools of Agra district, UP, India. The sample comprises 320 students. Pretest and post-test equivalent group design of true experimental research is used to find the answers to the problem. For testing achievement, self-made achievement test is used by the researcher. J C Raven's Standard Progressive Matrices test is used for the assessment of intelligence in this study. For data analysis, t-test and Pearson correlation and ANCOVA techniques are used through SPSS. The researcher finds out that there is no significant difference in academic achievement in terms of gender. Boys and girls have performed equally in terms of achievement. Secondly, there is no significant difference in intelligence in terms of gender. Boys and girls have equal intelligence. Also, there is no significant relationship between academic achievement and intelligence. Self-instructional Modules are found to be more effective than the traditional teaching method.

Keywords: *Self-instructional Module, Achievement, Intelligence, Secondary Students, Geography, Gender*

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Introduction

Last year, a report was published on new global education monitoring (GEM) announced by United Nations Educational, Scientific and Cultural Organization (UNESCO). The report says that India is expected to achieve universal lower secondary education by 2060 and universal higher secondary education by 2085. It is a long time to reach the goal. The dissatisfactory condition of secondary school education is due to a number of reasons.

If we see the *Educational Statistics at a Glance 2018* (Table no. 16 and 32) uploaded on the website of (MHRD), dropout rates at secondary levels for all categories of students in India are 50%. Dropout rates in case of secondary level has gone down from 82.5% in 1980–81 to 50.3% in 2011–12. In 2011–12, the dropout rates at secondary levels for all categories of students were 50.3%. Although it is lower if compared to the number in 1980, still many students drop their school education due to lack of money, inadequate/ non-performance in class, not getting attention by the subject teacher, non-involvement of parents, not knowing how to improve their study habits for high achievement, how to improve their intelligence for high achievement, non-clarification of concepts and use of traditional teaching method as well as only one textbook for one subject. We can find writings on the problems of secondary education in India in various reports, surveys and researches done by educationists and researchers. Some problems occur due to family instability, single parents; obligation of taking up a job, teacher's routine work, poor study habits and stereotype teaching. In India, we have a large population of secondary school students in terms of interest, personality, learning style, attention, reasoning style habits, socio-economic status type of school, location, etc. They are not able to learn with the same teaching method. It is high time to be provided some alternative teaching method to the secondary students so as to help them obtain their desired achievement. The researcher believes that one of the main reasons for dropouts of secondary school students is the use of only one type of teaching method. Self-instructional Modules can play big role to clear concepts to students; it is a self-learning material and learner-centred approach. If we consider secondary school students, different researches show that, there is a positive relationship between intelligence and academic achievement. This study finds that, there is no relationship between academic achievement and intelligence (Dhull, 2012). This study also locates no effect of intelligence on the experimental group (Self-instructional Modules). We can find a person's intelligence on the basis of one's behaviour in the context of one's environment. Intelligence plays a big role in achievement. If students have no proper environment to use their intellectual abilities,

then intellectual development is not possible. Also, they would not be able to use their intelligence to the optimum. If students are intelligent then they can do better in achievement. Although nothing can be done about the heredity, we can only provide them a healthy atmosphere to improve their mental abilities so that they can behave, react, and solve any problem intelligently. 'We need to develop suitable methods of teaching and instruction among the secondary level students a contributing factor for developing intelligence which is essential for high academic achievement' (Danistha, 2014).

Self-instructional Modules

Self-instructional Modules comprise self-instructional material, which is based on individualised instruction. At the time of developing this module, some principles were followed, such as active responding, self-pace controlled by learner, semi-formal way of writing, continuous evaluation, and self-evaluation.

"Self-instructional Module is a package of well organised learning practices in an interactive way that helps to understand well defined content independently, based on specific objectives" (Satyarthi, 2015).

Programmed learning material and computer-assisted instruction have also been part of such principles. This printed module can also be used as a software through computer. In this study, Self-instructional Modules are developed in social science (Geography) on the topic of lithosphere (environment's concept, importance and elements, types of rocks, layers of earth, and endogenetic and exogenetic forces on lithosphere), which is included in the half-yearly examination syllabus for social science (Geography) of Class IX under the UP Board. The development of Self-instructional Modules is done in the following manner.

Selection of the Content

It was decided on the basis of the suggestions of experienced subject teachers in the first session of the year. It was presented before the students easily with the help of coloured pictures. The module was written on the topic of lithosphere, which is included in the syllabus of half-yearly examination for social science (Geography) of Class IX.

Content Analysis

Selected topics were divided in the sub-topics on the basis of content analysis and were arranged in a sequence. All the topics were divided and written in three parts on the basis of content analysis — Part 1: environment's concept, importance and elements, types of rocks, layers of earth; Part 2: endogenetic forces on lithosphere and Part 3: exogenetic forces on lithosphere.

Writing Module

They were written in the module. Every part of the module starts with the terminal behaviour related to a particular topic. Then,

the presentation is written and arranged according to the content related learning activities in semi-formal ways, such as live classroom interaction with the help of coloured pictures, followed by problematic questions, and lastly, summary. Once the summary was provided and problematic questions were answered, at the end, each part was completed with practice questions in the form of fill in the blanks, true-false and one-word substitution.

Expert Advice

After writing the module, experienced subject teachers were consulted for corrections and reforms in the module. The researcher went to the secondary schools and asked geography teachers to correct the module. Based on the suggesions of the experts, various pictures, questions and statements were changed and added in the module by the researcher.

Tryout

The researcher gave the module to a Class student to read; to check the language, style, difficult words and to know if there is any difficulty in reading.

Researches also tried out self-instructional modules and achievement tests on a small group of students to know the reliability; value, difficulties and effects of self-instructional modules.

Academic Achievement

It means the amount of knowledge gained by the students in different subjects of study.

In this study, academic achievement is determined by the marks obtained by the students in post-test scores. The post-test scores are taken as achievement of students. A self-made criterion reference test is used by the researcher as achievement test. Before taking the pretest, the researcher assigned the classes into the control group (Traditional teaching method) as C section and experimental group (Self-instructional Modules) as E-section. For data collection and to know the achievement, a self-made achievement test was administered as pretest on both the groups. After that, treatment was given to the groups and at the end of experiment, the post-test was administered on both the groups to know the achievement in social science (geography). This achievement test was used to take scores on the basis of pretest and post-test. Selected response format was used by the researcher for writing the items. The questions were objective in nature, due to which scoring was fast and easy. Multiple choice items with four alternatives were made in this rough draft. Then the test was tried out on a small group of students. After this, the researcher personally approached the experienced subject teachers to get suggestions with respect to language, spelling, irrelevant and

repeated items, and covering of related topics as well as estimation of administration time of the test. After getting valuable suggestions from experts, the researcher decided to make changes in items. After the tryout of achievement test, all the scores were drawn and arranged in an ascending order. For quantitative item analysis, all the scores were divided into three parts after taking 27% from the upper and lower group apart from this average groups'. 'Twenty-seven per cent provides the best compromise between two desirable but inconsistent aims: (i) to make the extreme groups as large as possible and (ii) to make the extreme groups as different from the other as possible.' (Eble and Frisbe, 199:227). Discrimination value of each item was calculated by the help of this formula (H – L)/N/2, where H= the number of correct scores from high scoring group on the item; L= the number of correct scores from low scoring group on the item; N= the total number of students in the two groups. Then, the difficulty value was calculated with the help of this formula A/N×100, where A= a number of subjects, answered the item correctly; N= the total numbers of subjects responding to the item. All the items of the final achievement test had the range of difficulty value from 0.20 to 0.68 as well as discrimination value from 0.17 to 0.68. Both calculated values of every item were checked by the critical values. In final, achievement test consisted 36 items after the pilot study. It was a criterion referenced test related to the specific objectives. Therefore, some items were discarded to maintain the reliability value of the achievement test, which was calculated with the help of SPSS. Since the reliability value of this achievement test was by the Cronbach's Alpha method is 0.79. This test also had content and construct validity. 'Content evidence is based on careful examination of course textbooks, syllabi, objectives and the judgements of subject matter specialist' (Best and Kahn, 2012:295). So for surety of this, different topics and sub topics were tested carefully as well as all the items were included according to the specific objectives. Content validity was determined on the basis of the judgement, by the same subject experts in geography of Class IX. Construct validity was established by the correlation of coefficient of Cronbach Alfa method. All the items of final achievement test had the correlation of coefficient with the value of 0.78 to 0.80.

Intelligence

"Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with his environment" (Wechsler, 1944).

For assessing intelligence, the Standard Progressive Matrices test developed by J.C. Ravens (1983) was used in this study. It is for the age of 6 to 65 years. The test has 60 items which are classified into five

parts. It has no time limit and can be administered in both group and individuals. Co-efficient of reliability of this test is 0.83 and 0.93 with different age group by test-retest method. This is a culture-free test since, social and cultural factors cannot affect the result.

Delimitations

- This study was limited to the secondary students of Class IX only.
- The syllabus was related to the UP Board.
- Self-instructional Module was developed in social science (geography).
- All the schools were Hindi medium.
- Only specific topics (Environment's concept, importance andelements, types of rocks, layers of earth, endogenetics and exogenetic forces on lithosphere) were taken to develop the Self-instructional modules.

Achievement may be influenced by many other different variables. In this study, only intelligence, SES and gender were included.

Researches related with Achievement and Intelligence

The research studies related to the present finding claims that there is positive relationship between academic achievement and intelligence of secondary school students like the works of Morosanova (2015), Danishta (2014), Chandra and Ajimuddin (2013), Heaven and Chairochi (2012), Laidra (2006), Garg and Chaturvedi (1992), Rani (1992), Shah (1990) and Singh (1981). Dhull (2012) and Naderi et al., (2008) found no relationship between academic achievement and intelligence of secondary school students. Clemens (2017) found that Class IX school grades correlate only moderately with intelligence. Nyicor (2016) found that students are bright but average in academic achievement.

Researches Related with Effect of Self-instructional Modules on Achievement

This study found that Self-instructional Modules are more effective in comparison to the traditional teaching method on achievement of secondary school students. Similarly, some researchers also compared Self-instructional Modules and traditional teaching method, namely Justus (1981), Madjiman (1982), Hooper (1982), Mohammd (1988), Al-Quattan (1989), Madhuman (1990), Kumar (1990), Santosh (1990), Arunachalam (1991), Watson (1991), Trehan (1994), Hajeena (1995), Nayer and Shubha (1999), Kohal (1999), Binuman (2000), Mathew (2000), Sharma (2000), Kumar and Anita (2004), Pazhenival (2004), Vig (2005), Ahuja and Singla (2005), John (2006), Khan, et al., (2010), Ali, et al., (2010), Dubey (2011), Das (2012), Marwin and Madhia (2012), Sufiyana (2012), Aliyas and Siraj (2012), Syafin

and Yasin (2013), Kiong, et al., (2013), Avnish (2014), Padmpria (2015), Satyarthi (2017), Kour, et al., (2017), Augus (2017), Kumar and Anita (2004).

Researches Related with Achievement and Gender

Hassan (2012), Vakharia (2017), Susai (2009), Satyarthi (2018) and Herbert and Stipek (2005) found that there is no significant difference in academic achievement in terms of gender. Sutherman (2011) found boys to be better in achievement. Satyarthi (2017) found that gender has no effect on Geography achievement of Class IX students in control and experimental group. Raju (2016) found differences in academic achievement in terms of gender.

Objectives

1. To compare the academic achievement (AA) of male and female students of Class IX.
2. To compare the intelligence of male and female students of Class IX.
3. To study the relationship between academic achievement (AA) and intelligence of Class IX students.
4. To compare the effect of intelligence on post-test scores in social science (Geography) of control (traditional teaching method) and experimental (Self-instructional Modules) group.
5. To compare the effect of the experimental group (Self-instructional Modules) and control group (traditional teaching method) on post-test scores in social science (Geography) by controlling the effect of pretest and intelligence scores as covariates.

Hypotheses

1. There is no significant difference in academic achievement (AA) of male and female students of Class IX.
2. There is no significant difference in intelligence of male and female students of Class IX.
3. There is no significant relationship between academic achievement (AA) and intelligence of Class IX students.
4. There is no significant effect of intelligence on post-test scores in social science (Geography) of experimental (Self-instructional Modules) and control group (Traditional teaching method).
5. There is no significant effect of the experimental group (Self-instructional Modules) and control group (Traditional teaching method) on post-test scores in social science (Geography) by controlling the effect of pretest and intelligence as covariates.

Methodology

Pretest and post-test equivalent group design was used in this study given by Campbell and Stanley. (Campbell and Stanley, 1963:13).

R E	O1	XO2
R C	O3	O4

A sample of 320 students of Class IX was taken from three secondary schools of the Agra district of Uttar Pradesh, India. This sample size seemed enough to collect the data since a big sample would take more time to experiment, would increase the time duration, and it would also affect the maturity of the students. These Hindi medium schools are affiliated with the Uttar Pradesh Board of Secondary Education. Among 320 students, there were 200 boys and 120 girls. Convenience cum randomisation technique was used for sampling. Students were divided into control and experimental groups on the basis of randomisation (even-odd numbers of their roll numbers).

There were two types of tools used in this study. One was measuring tools as — Achievement Test, Intelligence Test and Socio-economic Status Scale. Second was treatment tools as traditional teaching method and Self-instructional Modules.

In this study, for testing achievement, the post-test marks were taken into consideration. The data collection procedure was followed in three stages— pretest stage, treatment stage and post-test stage. Stage I—Pretest: at this stage, self-made achievement test as pretest, intelligence Test by J.C. Ravens and the Socio-economic Status Scale by Upadhyaya and Saxena were administered on the whole sample one by one. At the time of administering, all the norms and instructions were followed by the researcher, as given in the manuals. The pretest stage continued for two days. Stage II— Treatment: Treatments were given for a duration of sixteen days to both groups. Both groups were given equal time periods for the treatment, taught the same topics. Both groups had the same objectives and equal chance to learn, revise and test to achieve the learning objectives. The control group was taught through the traditional teaching method (chalk and talk) by the researcher with the help of explanation and interaction based on Class IX social science (Geography) textbook material of the syllabus of Uttar Pradesh Madhyamik Shiksha Parishad. This group was also taught all the content in three parts and after finishing every part, there was a small revision test. The remaining two parts were also followed by the same pattern. The experimental group was given the treatment by using the Self-instructional Modules for self-learning. The experimental group was under the observation of two instructors; students learned with the help of this Self-instructional Module. At first, the instructors explained to this group how to read and learn this module and about the revision test, which was to be taken at the end of every part. Self-instructional Modules were distributed to this group every day at the beginning of the period and collected from them at the end of the period. They were permitted to write some points if they wanted to do so.

It was continuously checked by two instructors if the experimental group read the module timings or not. Stage III—Post-test: After finishing the experiment, the same achievement test was administered to both groups as post-test.

In this study, a self-made achievement test is used in social science (Geography) with the reliability value of 0.79. For testing intelligence, the Standard Progressive Matrices Test developed by J.C. Ravens is used for this study. The coefficient of reliability of this test is 0.83. After collecting all the data on the basis of the tools, namely Intelligence test, pretest, post-test, socio-economic status scale, scoring is done by the researcher with the help of a scoring key following the manuals. The scoring provided us the raw scores. These raw scores are organised with the help of a score sheet. These scores are fed in the software of SPSS version 20 by the researcher. All the variables are entered in variable view and all the raw scores are entered in data view. After feeding all scores, data are ready for the analysis. Cronbach Alfa method, Standard Deviation, t-test and ANCOVA are used to analyse the whole data.

Result and Discussion

Objective 1: To compare the academic achievement (AA) of Class IX male and female students

Hypothesis 1: There is no significant difference in the academic achievement (AA) of Class IX male and female students.

Table 1

Comparison in Academic Achievement of Male and Female

	Gender	N	M	SD	df	t	Sig (p)
AA	Male	200	1.51	.50	318	.31**	.39
	Female	120	1.53	.50			

***P>.05*

With this objective, the achievement of gender (male and female) is compared. So Independent samples t-test is used to analyse the data. Table 1 shows that, the calculated 't' value for gender of achievement is .317 with the degree of freedom 318 as well as P value is .39, which is greater than the .05. Large 'P' value indicates that the sample provides weak evidence to reject the hypothesis for entire populations. So, the null hypothesis 1 is accepted. We can say that, there is no significant difference in academic achievement of males and females of Class IX students. The male and females have performed equally on achievement.

Objective 2: To compare the intelligence of Class IX male and female of students.

Hypothesis 2: There is no significant difference in the intelligence of Class IX male and female of students.

Table 2
Comparison in Intelligence of Male and Female of Class IX Students

	Gender	N	M	SD	Df	T	Sig (P)
Intelligence	Male	200	32.43	12.49	318	.60**	.16
	Female	120	30.50	42.33			

***P>.05*

With this objective, the intelligence of gender (male and female) is compared. Since independent samples 't' test is used to analyse the data related to this objective. Table 2 shows that, the calculated 't' value is .602 with the degree of freedom 318 as well as P value is.16, which is greater than A .05. Large P value indicates that the sample provides weak evidence to reject the hypothesis for entire populations. So, the null hypothesis 2 is accepted. We can say that, there is no significant difference in the intelligence of Class IX students in terms of gender. Male and female have equal level of intelligence.

Objective 3: To study the relationship between the academic achievement (AA) and intelligence of Class IX students.

Hypothesis 3: There is no significant relationship between the academic achievement (AA) and intelligence of Class IX students.

Table 3 shows the 'r' value is .084. This result points towards the negligible correlation between the academic achievement and intelligence. In this study, intelligence is not related to the academic achievement of ninth Class IX students. There is no significant relationship between academic achievement and intelligence.

Objective 4: To compare the effect of intelligence on post-test scores in social science (Geography) of control (Traditional teaching method) and experimental groups (Self-instructional Modules).

Hypothesis 4: There is no significant effect of intelligence on the post-test scores in social science (Geography) of experimental (Self-instructional Module) and control group (Traditional teaching method).

Table 3
Relation of Academic Achievement and Intelligence

	N	M	SD	R
AA	320	20.11	6.97	.08
Intelligence	320	31.71	27.68	

Table 4
Comparison of Effect of Intelligence on Post-test Scores of Experimental and Control Group

Groups	Mean	N	SD	Df	T	Sig(P)
Experimental	30.67	153	12.85	318	.69**	.41
Control	32.84	167	37.76			

***P>.05*

With this objective, there is a comparison of the mean of two groups, i.e., control and experimental group on intelligence. In this study, independent variable intelligence is not categorised, since independent samples t-test is used to analyse the data related to this objective. As Table 4 shows, the calculated 't' value is .69 with degree of freedom 318 as well as P value is .41 which is greater than the .05. A large P value indicates that the sample provides weak evidence to reject the hypothesis for the entire population. Therefore, null hypothesis 4 is accepted at .05 level of significance. So, we can say that there is no significant effect of intelligence on the post-test scores in social science (Geography) of control and experimental group.

Objective 5: To compare the effect of the experimental group (Self-instructional Modules) and control group (Traditional teaching method) on post-test scores in social science (Geography) by controlling the effect of pretest and intelligence scores as covariates.

Hypothesis 5: There is no significant effect of the experimental group (Self-instructional Modules) and control group (Traditional teaching method) on post-test scores in social science (Geography) by controlling the effect of pretest and intelligence scores as covariates.

Table 5
Descriptive Statistics for Group on Post-test Scores

Group	Mean	SD	N
Control	16.19	5.74	153
Experimental	23.70	6.01	167
Total	**20.11**	**6.97**	**320**

Table 6
ANCOVA Summary for Group on Post-test Scores

Source	Sum of square	Df	Mean Square	F	Sig (p)
Group	3462.40	1	3462.40	121.65*	.00
Pre	1856.48	1	1856.48	65.22	.00
Intelligence	101.00	1	101.00	3.54	.06
Error	8963.82	315	29.83		.
Total	**144964.00**	**320**	**28.45**		

**P<.05*

With this objective, independent variable group has two levels—control and experimental group; dependent variable achievement is post-test scores. The effects of pretest and intelligence scores are controlled as covariates, since one way analysis of covariance is used to analyse the data related to this objective.

As Table 6 shows, the F value is 121.65 for the group with degree of freedom 1/315 and P value is .00 which is lesser than .05. Low P value indicates that the sample provides enough evidence to reject the hypothesis for entire populations. Therefore, null hypothesis 5 is rejected at .05 level of significance. So, we can say that, there is a significant effect of control and experimental group to post-test scores in social science (Geography) by controlling the effect of pretest and intelligence scores as covariates. As we can see, the covariate pretest shows significant differences between control and experimental group because of low P value (.00 than .05). Intelligence shows no effect of intelligence on control and experimental group because of large P value (.06 than .05).

Experimental group post-test means scores are 23.70, which is higher than control group post-test scores i.e., 16.19 as Table 5. Experimental group performed better than the control group. Experimental group (Self-instructional Modules) is found to be more effective than a control group (Traditional teaching method) in social science (Geography) in controlling the effect of pretest and intelligence scores as covariates.

Findings of the Study

1. There is no significant difference in academic achievement in terms of gender. Boys and girls performed equally on academic achievement.
2. There is no significant difference in intelligence in terms of gender. Boys and girls have equal intelligence.
3. There is no significant relationship between academic achievement and intelligence (Dhull 2011) and Naderi, et al., (2008).
4. There is no significant effect of intelligence on post-test scores in social science (Geography) of control (Traditional teaching method) and experimental groups (Self-instructional Modules Intelligence is not found to be effective for the experimental group (Self-instructional Modules).
5. Experimental group (Self-instructional Modules) is found to be more effective than a control group (Traditional teaching method) in social science (Geography), in controlling the effect of pretest and intelligence scores as covariates.

Conclusion

In this study, gender neither influences the academic achievement nor the intelligence of secondary school students. We can facilitate our

students with this Self-instructional Module to help in their concepts clearing, which will help them to increase high achievement. At the present time, equal opportunity is being provided to learn at home; coaching and equal chance is being provided to improve their mental abilities. That is why females perform equally well and have equal intelligence. Intelligence is not working as correlates of academic achievement in this study. Similarly, Self-instructional Modules is found to be more effective than traditional teaching method even if it has low intelligence of experimental group than the control group.

It means increasing achievement does not increase in intelligence as well as decreasing achievement does not show a decrease in intelligence. Like that; 'High academic performance is not possible in the absence of intelligence, but then there is no guarantee if high intelligence, then performance will also be higher' (Patel, 2011).

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The 'Scholar Wife'
Examining the 'Gender Paradox'

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Abstract

This paper explores perceptions, expressions and negotiations of gender in the complicated context of the 'scholar wife'. The assertion about 'complicated context' positions draws upon scholar wives constituting a 'unique duality', wherein their existential positions simultaneously situate them in the realm of traditional masculinities and femininities. The theoretical-epistemological lexicon for this undertaking is borrowed from the postcolonial feminist perspectives because of their denial of metanarratives and the critical scrutiny of the colonisation of gender discourse. The analysis draws upon theoretical postulations as well as primary data obtained through in-depth case studies of two 'Scholar wife'(ves). The paper seeks to understand whether scholarship has been emancipatory for the 'scholar wife'(ves), whether they are able to scrutinise the knowledge or power relations and whether they do critically analyse engendering.

Introduction

This paper explores expressions of gender in the complicated context of the 'scholar wife.' The theoretical-epistemological lexicon for this undertaking is borrowed from the postcolonial feminist perspectives; noticeably that of Chandra Mohanty.

The assertion about 'complicated context' has precedence in a similar engagement by Pillay (2007) with 'Academic Mothers'. She positions them as constituting a 'unique duality' because:

"Thinking... has been described by Western Philosophers as rational, unemotional and logical... mothering is traditionally associated with nurturing, loving, emotion and sensitivity." (p.1).

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The duality is accentuated by Ruddick's (1989) pointing out of the historical co-optation of mind, objectivity, reason and logic by masculinity.

Extending the above argument to the case of 'Scholar Wife', in this essay I seek to investigate how women perceive and negotiate existential positions, which simultaneously situate them in the realm of traditional masculinities and femininities. The write-up focusses on women from third-world contexts held emblematic of traditional gender-roles in Eurocentric analyses. (Amos and Parmar, 2005).

To do so, I draw upon the postcolonial feminist frameworks because of their denial of metanarratives and the critical scrutiny of the colonisation of gender discourse. The second question I ask is whether the 'Scholar wife' plays along the discourse of Third World femininities or does she negotiate or redefine the boundaries of gender protocols presumed monolithic by it (Mohanty, 1997, pp.91–92). The answers to these questions will in turn allow an evaluation of the suitability of a postcolonial framework for similar analyses in the future.

For operationalisation, I define a 'Scholar Wife' as a married woman of established academic credentials engaged in a willed pursuit of higher education post-marriage. The cultural-geographical context of the Indian Hindu woman delimits the expanse of inquiry. The analysis draws upon theoretical postulations as well as primary data. The rationale for the selection of methodology and research subjects will be addressed in subsequent sections.

The next section attempts to problematise the colonial discourse on the Third World women with respect to the nature of theorisations and research it produces. It also makes a case for adopting a postcolonial framework and an epistemic position of researching the 'non-other'.

The Colonised 'Other': Theoretical and Methodological Casualties

Feminists routinely foreground the 'other'; social feminists foregrounded the 'reproducing other' missing from the masculinist Marxist analysis, feminists of colour foregrounded the racialised, others put the heteronormative under scrutiny and foregrounded alternative sexualities (Mohanty, 2003). These shifts embodied what Hooks (1984) refers to as the transformatory potential of feminism.

The resultant theorisations, often labelled as feminist postcolonial perspectives, are characterised by an acceptance of the politics of everyday life and the resultant enmeshing of feminist agenda with politics of subversion and anticipated transformation. Accordingly, the Postcolonial feminists seek to unearth, articulate and redress the effects of colonisation on theorisation and researching of gender.

The colonisation agenda establishes the white-western Eurocentric feminism as the only legitimate version. In symbolic retaliation, the postcolonial feminists have objected to the hegemonisation of their experiences by 'imperial feminism' characterised by race blindness. It is contended that 'imperial feminism' is fuelled by theories of racial superiority and in case of Third World women, by the Empire thus rendering the experiences and existences of the postcolonial 'other' as a 'feudal residue'(Amos and Parmar, 2005). To counter this, postcolonial feminist theorising has adopted a decolonising agenda that foregrounds the 'other' woman who is of colour and /or hails from the Third World (Hooks, 1984; Mohanty, 1991).

The decolonising agenda focuses on both the 'invisibility' and 'distorted visibility' of the 'other'. In doing so, theorists have sufficiently stressed the inherent diversity of perspectives within white feminist theorisation recognising those western women's gender-related struggles and concerns are by no means monolithic and replicable.

They argue that nonetheless, there has been a tendency to create and reinforce a binary of the western and the non-Western women in attempts to theorise black and Third World women. (Amos and Parmar, 2005, Hooks, 1982). The white feminist movement prioritises goals and experiences appealing to a minority of women, thereby rendering its referents of empowerment and vision for political transformation, exclusionary (Hooks, 1982). Simultaneously, it synonymises pre-capitalist societies with a cultural and ideological backwardness (Amos et al., 2005 pp.48–49).

Mohanty observes that the sharp divide in priorities of the Western and non-Western woman has further accentuated owing to the macro-phenomena of recolonisation of the globe by capitalism. This has resulted in 'Protocapitalist Feminism'; a neo-liberal, capitalist engendering agenda, wherein the model of empowerment is based on the American corporate women (2005). Ironically, this forecloses the possibility of recognising the gender-related struggles and subjugation experienced by successful corporate women themselves. It also renders collectivist cultural identities as subaltern by co-opting an essentially individualistic cultural dynamic.

The decolonisation project has also been cognizant of the implications of the above for researching gender. Pillay (2007) recalls 'the practice of white people doing research on black people was becoming tiresome' (p.10). Amos and Parmar (2005) present another seething observation:

"Often we have appeared in cross-cultural studies which under the guise of feminist and progressive anthropology, renders us as 'subjects' for 'interesting' and 'exotic' comparison." (p. 47)

The tone of such research enterprises is condescending and the knowledge so created is 'naïve and perverse' because those steeped in Western feminist traditions operate from an ontological and epistemological position, which renders any alternative ways of organising experiences, relations and existential struggles—irrelevant and invalid (Mohanty, 2003).

The recognition of the above theoretical and methodological lacunae have increasingly paved way for postcolonial theorisations, made robust by adoption of a culture commensurate ontological position. This has necessitated the audibility of 'shared voices' between researchers and researched.

Aligning with the ontological and epistemological critique developed above, the subsequent section explicates the choice of methodology and subjects.

Methodological Delineation

An exploration into the lived realities of subjects is a qualitative enterprise; so is an inquiry into naturalised and contested gender discourses and the power or knowledge symmetries. The present qualitative inquiry aim to 'reflect women's voices rather than be occupied with statistics that mask the reality of how processes and structures influence the daily lives'. (Purkayastha, Subramaniam, Desai and Bose, 2003, p.510).

In line with qualitative tradition, researching the 'non-other' requires a threadbare explication of researcher's own positionalities and subjectivity (Narayan 1997 cited in Pillay, 2007, p.21).Given that a key step in negotiating the alleged messiness of qualitative researches is to reflexively articulate the positionalities of the researcher and researched, the same is undertaken hereafter.

I am an Indian upper-middle class Hindu woman academic married for over 11 years and had shifted to the UK without my family on a year-long international scholarship award. Whereas, during this stint my academic and professional engagements situated me as a 'scholar', I simultaneously subscribed to the primacy of marriage as a key defining attribute of who I was and am. The subscription, however, is not utterly unproblematic, nor perennially effortless. The scholar and the wife do not seamlessly merge into one another; the ironies are palpable within and from without.

I problematised this predicament with regard to its typicality vis-à-vis other scholar wives from similar socio-economic, religious-cultural context and failed to find relevant literature and by extension; answers to my question. The absence of research evidence necessitated engagement with primary data, which I reckoned would emanate in all richness from case studies of other scholar wives.

In choosing subjects who shared my socio-cultural, educational-linguistic context, I hoped that the power dynamics characterising the

researcher-researched interactions will be less acute (Purkayastha, et. al).

I further hoped that researching 'non-others' will reasonably limit 'external' appropriation and the normative analytic which characterises most colonial scholarship (Mohanty, 1997).

Thus, the two subjects chosen for case studies were both Indian Hindu married women with established academic credentials studying in the UK on a reputed scholarship award[1].A description of each follows:

Subject 1: RB

A 31 year old from an upper-middle class background, married to an academic of her choice for over seven years. Her husband and a child accompanied her to the UK. She was an M.Phil. at the time of her marriage; her husband was pursuing a Ph.D. Since then, her husband had completed his doctorate and she had enrolled for it at the Cambridge University.

Subject 2: NS

A 27 year old from an upper-middle class background, married to a non-academic of her choice for four years. She did not have children, and had travelled to the UK alone. She was pursuing M.Sc. at the time of her marriage. Since then she has enrolled for doctorate at the University of Reading. Her husband was an MBA at the time of marriage and is presently an entrepreneur in India.

The collection of data was preceded by—(i) an ethics review and (ii) steps to obtain informed consent. Subsequently, subjects were asked to fill up a bio-sheet comprising an array of factual-objective type questions on academic, professional and personal demographics. These questions facilitated subsequent customising of interview schedule to any differential life circumstances[2], and provided a reference point for analysing subsequent responses.

The primary tool of investigation was a semi-structured interview schedule and a follow-up questionnaire. The responses were framed against the backdrop of colonial as well as contemporary discourses of femininity in India.

The subsequent section presents these discourses. The penultimate section would use these as an evaluative undergirding for the narratives of the two scholar wives.

The Indian Women: Colonial and Contemporary Discourses

Western portrayal of Indian woman is determinedly essentialist in that it establishes her as a mere relational entity and victim of patriarchy (Mohanty, 1991; Sunder Rajan, 1993). It is homogenising as it posits a representational discourse which denies the heterogeneity of real subjects, and is discursive in that epistemologically it repeatedly calls upon certain analytic categories and modes of appropriation (Mohanty, 2003).

Eurocentric referencing leads to a projection of Indian women as being socialised towards interdependence rather than independence and personal autonomy (Seymour cited in George, 2001), wherein interdependence is modelled on the weak western woman and autonomy or independence signifies empowerment. The following findings[3] typify the western researcher's reading of Indian women:

'Women are still expected to place their interests second to that of the other household members. In this sense, the higher education of women was seen as enhancing their marriageability… when career women met with resistance from family members for their new-found independence, marital and family strife resulted' (Emphasis added).

The quote reiterates Mohanty's earlier assertions (2003) about the methodological casualties of a colonised analysis of the 'other'. It is therefore imperative to concentrate on the native theorisations and assessments on engendering in India. I do this next:

The concern with gender in India is not a recent phenomenon[4]. For centuries and up until the early twentieth century the socio-cultural protocol on femininity in India emanated primarily from intersections of religion and caste. Sarvar (1994) argues that the strictest injunctionary codes of femininity and sexuality were placed on the highest caste Brahmin woman and so forth. At the same time, all women including *Brahmin* woman were positioned at par with the lowest caste *Shudra* male; the hierarchy was thus doubly oppressive for women.

Subsequently, a forced interaction with western modernity under British Imperialist regime led to a (pseudo) reformist agenda, wherein the household and family was rationalised as the emancipatory space for the educated middle-class 'new woman'. The private was sanctified by the woman of the house against corrupting influences of the western modernity by agentic and selective co-optation of modernity while actively responding to the call for being a good wife [Kalpagam, 2000, Chatterjee 1993, cited in Trivedi, 2010]. The domination of the reformist agenda gave way to nationalist agenda, which invoked the image of motherhood and pushed gender scripts of sacrifice and endurance on one hand and power and protection on the other. (Kumar, 1993).

The pre-independence allusions to gender were essentially relational. However, a parallel engagement with a critique of patriarchy and an articulation of the need for emancipation of women could be heard in voices of Jyotirba Phule, Tarabai Shinde, Pandita Ramabai and Mukta Sathe. Phule, for instance, critiqued the enslavement of women in domesticity and highlighted the societal origins of cultural derogation of women (Omvedt, 2015).

In this sense then the construct of womanhood as comprising an identity independent of relationality is a product of nineteenth and twentieth century characterised by colonialism and nationalist struggles (Trivedi, 2010).

A major change in perspective characterised decolonised India. Discussions and debates on gender gained ground on the Indian turf and gender became a matter of sustained academic articulation and scrutiny (Omvedt, 2015; Kumar, 1993). Since 1980s, the analytics of gender-based oppression witnessed an upsurge in deconstruction of knowledge or power relations, on intersectionality of gender and class, as well as on the colonial appropriation of the Indian femininities as backward and willingly accepting patrilineal subjugation. It is interesting to note that whereas the discussion on Indian women has gained immense momentum and newer forms since then, the Eurocentric portrayal of Indian femininities continues to identify with the pre-independence tying down of woman to private spaces and a relational existence (Kalpagam).

An explanation of this preoccupation can be traced back to Said's explication of the timeless orient and stabilities of status quo perpetuated by Orientalism (1978). The 'direct experiences' of the Imperialists and colonisers with the Indian woman were through the socio-cultural-religious images of a woman defined relationally and subordinated through patriarchy. Given the archival imagery that the West has access to, it is not startling that these imageries of wife and mother typify much western exposition till date. The metanarrative of 'Indian Woman' so generated has displayed the astonishing persistence typical of Orientalist representations.

The foregoing section has traced the imagery of Indian women in some native and Eurocentric discourses. The following section focusses on relatively recent theorisations. At the outset, it is noteworthy that the Indian constitution 'explicitly provides for a progressive and pro-women structure' (Trivedi 2010, p.183). Yet, participation of women in public life and political activity has been low. A conspicuous effort to promote women's rights notwithstanding, the context of such struggles has been bourgeois democracy and not civil society. As a result the gains in political equality have been severely undermined and rendered superficial (Omvedt, 2015).

Going beyond legislature demands a caveat! In abject denial of the colonial homogenisation of Indian womanhood, I reiterate that the intersectionality of religions, regions, castes and class forecloses the possibility of a generalisable notion of Indian Womanhood (Trivedi 2010). However, one can attempt to profile Indian womanhood as an intersectional product of these multiple axis of identifications.

Womanhood in present day India evokes a mixed picture. Seen in relation to men, it is disadvantaged and continues its struggle against patriarchal institutions like patrilineal inheritance, patrilocal residence, restrictive remarriage norms, disenfranchising widowhood (Dreze and Sen, 2002, pp. 262–266). However the oppression cannot be systematised to imply universality of abject patriarchy (Mohanty, 1997). Significant intersectional variations are evidenced by research literature, too.

To illustrate, India has one of the poorest female to male ratio (FMR) globally. The FMR is consistent with the 'character of gender relations in different parts of the country' (Dreze and Sen, p.231). A noticeable trend is the thriving gender inequality indicators in the Northern and Western states and encouraging gains in gender equality in the Southern and Eastern states. Similarly, whereas woman fare badly in relative terms to men in the same family on grounds, such as education, nutrition, healthcare, etc. (Bose, 2012), yet the absolute gain in women's education and well-being have been encouraging (Trivedi, 2010).

India presents an interesting antithesis to colonial-capitalist theorisation which equates upward mobility with empowerment. Dreze and Sen argue that economic growth across various castes seems to be accompanied by an intensification of gender bias with upward economic mobility often leading to an emulation of patriarchal norms of higher caste by the lower castes. Given that traditionally the higher castes have enforced the most constraining gender scripts on women (Sarvar); sanskritisation is perilous to the women involved.

On the positive side, studies have revealed that variables directly related to women's agency and voice, such as female literacy and labour force participation, earning independent income, etc., do redress inequalities to some extent. Further, an increase in educational opportunities for women has been accompanied by an exercise of agency resulting in significant reduction in fertility rates thereby allowing them to escape or minimise the 'drudgery of domesticity and child rearing.' (Dreze and Sen, 2002).

This change, however limited in coverage, is significant as it allows redefining women beyond their reproductive role and relational status.

Alongside the macro-picture, the discussion on 'Scholar Wife' also necessitates an explication of the specificities of experiences related to education and households. The same is attempted hereafter:

In India, as in much of the world, the division of home and the world is largely a gendered one. Yet, whereas the domestic realm is maintained as the normative space for women's self-definition, the public realm opened to her on account of education allows, in some measures, explorations

and enactments of non-domestic non-normative gender scripts (Rajagopal, 1999).

The fluidity of demarcation between the private and public domains for Indian women is highlighted by Mogford (2011) in a study on domestic abuse in Uttar Pradesh; one of the most gender inequitable Indian states (Dreze and Sen, 2002). The findings suggest an ambivalence of agency. To illustrate — for the women who simultaneously operate in public and private settings, dimensions of status that overlap with the traditional male domain (i.e., the public-paid labour, financial decisions, etc.) are associated with higher levels of abuse, while dimensions of status that operate in women's traditional spaces (i.e., the household) appear to be protective against abuse.

Recognising these shifts, Basu (1999) calls the Indian woman a 'fractured colonial subject' who is the 'last bulwark of Indian history and tradition'; she lives the contradictions of modernity and tradition. To illustrate some contradictions — firstly, irrespective of the educational and financial standing of a woman, the absolute importance of marriage in determining the social status of women does prepare ground for patriarchal oppression. Also, whereas the nuclear household is increasingly becoming a reality for married working women on grounds of geographies of work commitments, they are expected; to calibrate to demands of socio-economic and cultural subordination demanded by joint family setups (Basu, p.256). Then again, whereas there has been a sustained case made for enhancing agency of women in the name of modernity and development, the rationale for it invariably derives from the relational definition of women (Dreze and Sen, 2002: pp.17–20). The contestations between tradition and modernity are also visible in the requirement of a wife who looks younger than the husband, the relative legitimacy and rights of a woman who has borne sons rather than daughters, the continuing importance of the family of the husband, the norm of patrilineal dislocation, and the contentions of a sacrificing wife along with the voice of an educated, employed woman (Mitra, 2013, p.1285).

The attitude towards education of women have been found to be ambivalent by researchers. As pointed out earlier, the attitudes vary with the cultural variances with northern India being particularly inequitable in all respects when compared to south (Bose, 2012). Specifically, researches relate education with an increased control over material and financial resources, greater say in decision-making and higher probability of 'erosion of traditional sex-based attitudes and development of more egalitarian views' (Amin 1996, cited in Bose, p. 71).

On the other hand, researches also suggest that 'education is

socially valued because it makes girls better wives and mothers' (Bose). Also higher education is often seen as irrelevant for women and premium is placed instead on acquiring household skills for impending and inevitable domesticity.

Whereas, the above analysis is largely representative of the ambivalent realities of Indian women, a non-stereotypical shift in urban women's self-definitions has also been observed. In a study of 90 urban, young and middle-aged working women, Singh and Agrawal (2007) found a reduced tendency to identify with traditionally feminine characteristics and an increased identification with traditionally masculine and/or androgynous characteristics.

Given the conflicting nature of evidences thrown up by researches with regard to the status of women in contemporary India, a conclusive signalling of the subversion of gender-based subjugation is a distant reality, yet the colonial imagery of women as uneducated, tradition–bound, victimised too does not hold universal ground.

If education and its essentialities prepare a bed for agency to take roots, then it is worth investigating the case of 'Scholar Wife' to ascertain whether for them scholarship has been emancipatory, if knowledge or power relations have been scrutinised and engendering critically analysed. The subsequent section attempts a deconstruction of the Scholar wives' narratives to answer the questions raised at the outset.

The Scholar Wife: An Analytic Account

The subsequent discussion draws upon the respondent's narratives and theoretical undergirding made conspicuous in the preceding discussions.

To begin with, Mohanty repeatedly cautions against considering women as 'a category of analysis' and constituting a homogenous group prior to the analysis (1991, p.56). Interestingly, the respondents' narratives too reinforce the need for mindfulness against homogenisation of 'Scholar wives' and resultant epistemic hegemonisation and a denial of their material histories.

To illustrate, RB and NS' identification with the label 'Scholar wife' differs considerably. This further resulted in them evaluating and explaining the dichotomies of being a 'Scholar wife' differently.

For RB the dichotomies are extraneous to herself; she never experienced these because she always prioritised her individuality over the societal expectations, '*For me it was clear, it (the priority) is me. I don't think there is something called a scholar wife. There is only a scholar, but it is for the others that you are a wife. When I think about myself, I am only a scholar. For me being a scholar wife is secondary*'.

RB is convinced that being a wife could be a secondary priority

provided the women so chooses; "*If I start becoming a wife, (*laughs*) my scholar will automatically disappear... when you compete as a scholar, does it say you will get extra weightage because you are married...you can be wife only for your marital status, but scholar... you ARE a scholar*'. She traces the dichotomies experienced by other women to the fact that they have meekly internalised social expectations and have rendered themselves un-agentic. '*You succumb to... many a times not being you... because if you are not able to muster that courage to break free from it, then it is not a matter of your choice, then it is somebody else's choice.*"

Interestingly, whereas for NS too the dichotomies are not profound, her reason is in stark contrast to RB's emphasis on individuality. NS is driven by love and acknowledges marriage as her primary axis of identification, *'The wife is more profound...because of my husband I could continue to do what I wanted to do.*'

Their responses also highlight the distinction between the material and discursive. Whereas both women accepted themselves as 'Scholar wives', they subscribe to different ideas about what it means to be a scholar, a wife, and both. In line with the post-colonial framework, the differences result from them being material subjects of their lived history. RB echoes this at the very outset as, '*to answer that, I will start with my past first....*' The respondents' different life events, spaces and lived trajectories and their self-iterative referencing of these further necessitate what Mohanty refers to as the need for 'uncovering the material, ideological specificities that constitute a particular group of women as powerless (or powerful) in particular context' (1991, p. 57, parenthesis added).

While on powerlessness, the narratives also bring under scrutiny the colonial assumptions about Indian women being powerless victims of oppressive socio-economic systems. Both respondents accepted the presence of societal discourses of femininity and wifehood, yet they approach them with a criticality and knowledge or power uncharacteristic of the archetypical colonial image.

RB critically reflects, '*When you become a mother or wife, individual success goes down, you are always scaled as family.'* She questions the discourse as, '*being at home from nine to five to receive my child from school, these are some romanticism of society, these really do not matter.*'

NS too cognizes gender discourses and exercises power as she reflectively weighs the losses and gains in playing according to these scripts. She accepts the social protocols on grounds of reciprocation of love and not as ordained duties, '*I am not repaying him, this is purely emotional.*' Her awareness of societal protocols is also evident as she comments on the oppressive discourse of gender and its crippling effects on some other women, '*socialisation forces a women to act passively in the*

society, which makes her less confident and dependent.'

RB too displays criticality as she argues against the homogenisation of all women as relational entities and the resultant loss of self, '*Is it right to be an individual or should I take a break and be an individual later?*'

Again, contrary to the colonial discourse of Indian familial systems as oppressive, both women deny conscious patriarchal and oppressive structures. For NS, '*When you are working, your family does not put you under pressure.*' RS re-appropriates the oppression discourse as unintended and non-malicious, "*It is not an individual clash, it is a clash of value systems… it is not easy for them at 75, it was not easy for me at 25.*"

The respondents' narratives also contradict assumptions about marriage being oppressive and women as victimised. RB asserts, "*I never thought about what I would be like in marriage but I was always sure about how I want my partner to be in marriage.*" For her marriage has not resulted in a change of priorities, "*I still value myself as a person more dearly. I cherish my individual attainments."*

Both women also demand equality in marriage as a 'Scholar Wife'. To quote NS, '*If I am playing two roles, then even he too has to play two roles, otherwise directly or indirectly he is asking me to leave one of the options.*'

In contrast to the victimisation premise, both women accept relationality as a matter of choice and not coercion. They value their families and yet are neither constricted nor haplessly dependent on them. RB is the archetypical independent person when she says, "*No matter he is my husband… whoever my partner is, whoever my husband is, I want that person to be free.*"

As Scholar Wives habituating presumably dichotomous gender arenas, these women are aware of the balancing that is required of them. Yet, they are not women succumbing to external scripts but a person actively choosing to be a 'Scholar Wife' through creative negotiations. NS typifies this as *"The scholar and wife in me always fight and when you fight within, you always come out with a solution."* RB assesses the constraints practically as, "*Earlier it was only your convenience, but now you have to share your time, everything is a negotiation for you, but it is manageable if you work like a horse (with blinkers).* She typifies the balancing of emotions and ambitions as, "*having individualistic goals are not denial of family goals… it is never that! If individual goals become family denials, then it is a check factor.*"

As an ode to creative re-appropriation of gender scripts, the limits of individualism too are carefully curated. Neither disengages wifehood with either mothering or homemaking. They willingly extended the ambit of their responsibilities and yet are agents who actively re-negotiate the societal protocols.

RB narrates the arduous journey such re-negotiation demands:

"*There is a phase where everything is violent, everything is falling one upon the other, clashing, but I think that is a very healthy thing... You just have to keep pushing yourself. The last seven years have been traumatic... but you start giving each other space.*"

NS illustrates this by recalling her carefully planned interventions with her in-laws, "*We gradually changed their mind-sets, we started at the roots, things changes as they realised I loved them.*'

Further, unlike the western portrayal of 'other' women as politically immature (Amos and Parmar, 2005), both women are acutely aware of the politics of gender. Recalling an academic panel asking her to defend her choice of leaving her family and enrolling in a Ph.D. in a different city. RB recognises the hegemonising discourse of gender in the academy and the costs it entailed "*In an interview, it takes me an extra answer to explain why I am an individual!'* She also specifically comments on the effects of oppressive gender discourse on educated women as, '*after a certain level of education, after a certain notion of how to lead your life if you are asked to compromise, it is killing that person… it is not going to do good to anybody*!'

As reflexive-agentic women both RB and NS are aware of the ways to work around or through gender constraints. For NS, her husband is a valued ally in this struggle, '*In the initial days of my marriage he always used to speak up for me* (to the in-laws). *I have some targets, aims and ambitions, and I am very clear about that. He dreams about my dreams.*' RB demonstrates a different approach by stressing the need to be oneself, '*I cherish my individual success and I never mix it with anything else.*' She cautions against being pushed by external discourses, '*If 'that' is not the person you are please don't try to pursue that…* (switches to Hindi) *Woh hoga nahin*! ('That' will never happen). Unlike NS, RB who labels herself an *outlier* observes that being a Scholar wife has led her to realise that marriage is not sacrosanct. She reminiscences , "*as a student at IIT,I wondered how and why a professor was divorced thrice and is still single… now I can fairly understand why that happens*!"

For NS being a scholar wife has positioned her as an empowered woman with potential of harbingering global change. Her husband's faith has been a catalyst in this realisation. As an agricultural engineer NS is fighting against global hunger through her research. For her, the pursuit of excellence is two-fold; she believes in marriage as an institution and cherishes it fully, "*I was a part of a very big job as a wife in India. I know I have responsibilities that I want to discharge.*"

Interestingly, shifting cultural-geographical positionalities have not altered their experiential realities. Unlike Mohanty who

autobiographically reminiscences, 'my life in the United States has exposed some new fault-lines—those of race and sexuality in particular' (2003, pp.2). For both RB and NS the shift to UK has strengthened their existing views about balancing marriage and scholarship; in their characteristically distinct styles, resulting from their own material histories in India.

Conclusion: Evaluating the Applicability of Postcolonial Analytics.

The above findings decidedly put the colonial image of Indian women under scrutiny.

The narratives of RB and NS about their re-appropriation of 'Scholar Wife', the creative redefinition of their relational yet independent existences, the variances in their experiences and beliefs, the bursting of the myth of Indian familial structures as purposively oppressive and the counter-evidence for political naiveté of women recurrently resonate with the postcolonial-feminist themes and question colonial representations.

In line with post-colonial assertions, the respondents acknowledge that the discussion has had a transformatory potential; it helped unearth hitherto unarticulated complexities and left them reflecting on the negotiation of the 'Scholar wife' as attempted by both of them.

Both of them also consider education to be emancipatory and criticality-inducing. For RB, "*The education system has helped me think independently and rationalise better... (it has) helped me from drowning in the emotional tantrums*"

The decolonising and politicising of knowledge by rethinking self is acknowledged as resulting from their material-experiential histories with people, events and spaces embodying emancipatory discourses on gender; for RB it was her working mother, for NS it is her husband's gender-defying support. This further reaffirms the postcolonial emphasis on individuals as material subjects.

As different material subjects both women, chart different paths to negotiate the dichotomies of 'Scholar wife'; RB takes the outlier position of being an individual and a scholar first, NS by prioritising love and common shared dreams of success with her husband, appears to be the inlier to those around her.

Finally, in contradiction to the colonial discourse on Universalist patriarchy, both women acknowledge that they could not be 'scholar wives' without their husband's support. The shared narratives on the husband's role have implications for further investigation into the calibration of Indian masculinities vis-a-vis their 'Scholar wives'.

The research evidence has affirmed the inadequacy of colonial discourses in explaining the present day lived realities of the 'Indian Hindu Scholar Wife'. At the same time, the multitude of differences between RB and NS' narratives caution against

treating women as a category of analysis (Mohanty, 1991, p.56). This caution is accentuated when read in conjunction with the multiplicity of axis of identification emanating from the socio-cultural–religious diversity of contexts and subjects.

RB's and NS's narratives reaffirm the need to question epistemic aprioris and explanatory metanarratives, alike.

Endnotes

1. The Scholarship details have not been shared on grounds of data protection. However, it goes to prove the assertion about the academic credentials of the scholar wives that the scholarships are merit-based. The awardees have to qualify a rigorous and competitive process of selection.
2. Some examples of differential life circumstances relevant to the study are having or not having children, or being accompanied or unaccompanied by family to the UK, etc.
3. Findings of a longitudinal study (1960–1990) conducted by Susan C. Seymour investigating the effects of urbanisation and modernisation on women from Bhubaneshwar— one of the major capital cities in India
4. Gail Omvedt (2015) traces the struggle for equal rights for women to as early as the Buddhist period.

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Education of the Left-behind Children of Migrant Labourers of Balangir

An Overview

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Abstract

Seasonal migration of labourers in search of livelihood is a common phenomenon in western Odisha. Kalahandi, Balangir, Bargarh and Nuapada are the major migration prone districts of western Odisha. Each year these districts witness millions of labourers who migrate. They migrate every year from October to May for working in brick kilns across different states. The district of Balangir alone sends more than one lakh migrant labourers each year, which includes approximately 35% children. They usually take their children of school-going age with them as they have no one to look after if left behind. This seriously affects the education of the children, resulting in low achievements and dropouts. To sort this out, seasonal hostels are in operation in all the migration prone blocks of Balangir district. They provide the basic facilities like food and lodging to children of migrant labourers for the time they are working as migrant labourers. This study is an attempt to identify the lacunae in these facilities and the administration related problems faced by the seasonal hostels.

Introduction

Seasonal and circular migration of rural labourers for employment is a major aspect of their livelihood strategies in India and other developing nations of Asia (Deshingkar and Start, 2003). The Census of India 2011 report reveals that 139 million people migrate internally for employment each year in India. The major migrant sending states are Odisha, Bihar, Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh and Jharkhand, whereas the major destination states are

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Delhi, Tamil Nadu, Gujarat, Kerala, Andhra Pradesh and Telengana (Abbas and Verma, 2014). The problem of migration is more prevalent in backward states like Odisha with a rural male unemployment rate of 8.8% (National Sample Survey, 2014). However, in Odisha, all the districts are not prone to migration; only the southwest regions including the K-B-K (Kalahandi-Balangir-Koraput) districts have higher migrating population (Samantaray, 2016).

The district of Balangir is situated in the western part of Odisha bearing a population of 16, 48,997 (Census of India, 2011). The areas with high hills are situated in the north western, western and south eastern parts of the district (CGWB, 2013). Inhabitants of this region are chiefly dependent on agriculture and forest products for their livelihood. Due to unavailability of proper irrigation system, the crop production solely depends on rain water. Severe droughts often occur in this district. The year by year meager production in agriculture due to drought compels people to migrate to different states like Andhra Pradesh, Telengana, Karnataka, Kerala, Tamil Nadu, Gujarat, Maharashtra and Goa in search of a source of income to support their families (Staff Reporter, 2014). These migrant labourers are locally termed as the '*Dadan* labourers'. Most of them migrate to Hyderabad to work in brick kilns (Panda, 2015). *Dadan* labourers generally starts migrating during October and return back in May.

Despite a number of initiatives, distress migration from Balangir and western Odisha districts continues on a large scale. More than one lakh people migrate from Balangir to work in brick kilns across the country and 35 % among these are children (*The New Indian Express*, 2018). Most of these labourers prefer to take their children of school-going age with them as they have no one to look after the children if they are left behind. The children aged beyond 11 or 12 years are employed as child labourers at the brick kiln along with their parents. Parents prefer this to schooling as it gives additional income. The education of these children is adversely affected because of such cyclic migration.

Realising the vulnerability of the migrant children, a few activists and social workers of Balangir demanded to open some community managed Residential Care Centres (RCC) in the migration prone villages of Balangir in 2001–02. The then district collector approved the demand for RCC centres with an aim to enable migrating parents leave their children at such centres thereby preventing child migration and child labour (Ghosh, 2018). Although, the migrating parents were reluctant to leave their children at RCC at first; they were convinced gradually by organising awareness camps in the migration prone villages. The migrant children got an opportunity to continue their studies as free lodging and food facilities were provided to them at RCC. The RCC model was a success which paved the way for launching

seasonal hostels by the School and Mass Education Department of Odisha in four migration prone districts, namely Balangir, Nuapada, Kalahandi and Bargarh.

Objectives of the Study

The objectives of the study are to

- explore the available facilities for the children at the seasonal hostels.
- find the problems related to lodging, food and education of the children at seasonal hostels.
- explore the administration related problems in the operation of seasonal hostels.

Delimitations of the Study

Due to limited resources and time this study has been delimited on the following grounds.

1. The study is confined to the six migration prone blocks of Balangir district. These blocks are Belpada, Patnagarh, Khaprakhol, Muribahal, Tureikela and Bangomunda.
2. The study is conducted only on the left-behind children staying in the seasonal hostels.

Method of the Study

Mixed method (Creswell and Clark, 2007) has been used for this study. Embedded design has been followed where the quantitative data is providing a supportive role for the primary qualitative data. The quantitative part consists of collecting information about different facilities available at the seasonal hostels through checklist. The qualitative part consists of interviews from the hostellers, caretakers, headmasters and Additional Block Education Officers (ABEO) cum Block Resource Centre Coordinators (BRCC) on issues related to facilities and administration of seasonal hostels.

Sample and Sampling

Multilevel sampling technique (Johnson and Christensen, 2008) has been used to select the sample. The detail information about the number of children migrated was collected from the office of District Project Coordinator (DPC), Balangir. Six migration prone blocks were identified and two among these blocks were selected randomly for data collection. The schools in which seasonal hostels were running were identified and three such schools were randomly selected from each block. The facilities available for the children in the seasonal hostels of these schools were observed and recorded by the researcher. Three hostellers from each hostel were interviewed along with the headmaster and the caretaker to know about the problems related to the food, lodging and education. BRCCS of the concerned blocks were also approached and interviewed in order to know the administration related problems in running the seasonal hostels.

Tools

Semi-structured interview schedules were developed by the researcher for students, headmasters, caretakers and BRCCs. A checklist was also developed to record the facilities available at the seasonal hostels.

Findings of the Study

Strength of Hostellers in Different Seasonal Hostels

Six different seasonal hostels have been observed by the researcher. Three of these hostels belong to schools in Belpada block and other three belong to schools in Muribahal block. The name of these schools and the strength of hostellers in the register of their seasonal hostels are shown in Table 1. However, the actual numbers of hostellers present in during observation were less than the registered numbers in all the six hostels. The researcher tried to inquire in this regard from the caretakers and teachers but received an ambiguous response.

Table 1
Class-wise Number of Students in Seasonal Hostels (Session 2017–18)

Name of School	Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII	Total
Government Upper Primary School, Chalki, Muribahal	3	5	6	5	8	3	3	2	35
Government Primary School, Babejuri, Muribahal	4	7	11	9	9	-	-	-	40
Govternment Upper Primary School, Gudighat, Muribahal	2	7	3	5	4	6	4	3	34
Government Project Upper Primary School, Debripali, Belpada	3	5	8	6	7	5	3	3	40

Government Nodal Upper Primary School, Sulekela, Belpada	4	6	11	8	12	5	4	4	54
Govt Primary School, Kanut, Belpada	5	4	12	11	8	-	-	-	40

Facilities Available at the Seasonal Hostels in Different Schools

There are provisions for the seasonal hostels to provide different facilities keeping the day- to- day requirements of the hostellers in mind. Table 2 shows a list of the different amenities provided by these seasonal hostels.

Table 2
Facilities provided at different seasonal hostels

Name of Schools / **Amenities**	***U.P.S., Chalki**	****P.S., Babejuri**	**U.P.S., Gudighat**	**#P.U.P.S., Debripali**	**##N.U.P.S., Sulekela**	**P.S., Kanut**
Mattress	Yes	Yes	Yes	Yes	Yes	Yes
Bed	No	No	No	No	Yes	No
Drinking Water	Yes	Yes	Yes	Yes	Yes	Yes
Water Purifier	No	No	No	No	No	No
Cupboard/ Locker	No	Yes	No	No	Yes	No
Working Toilet	No	No	No	No	No	Yes
Bathroom	No	No	No	No	No	No
First-aid Kit	Yes	Yes	Yes	Yes	Yes	Yes
Fan/Cooler	Yes	Yes	Yes	Yes	Yes	Yes
Entertainment (Television, indoor games, etc.)	No	No	No	Yes	Yes	Yes
Playground	Yes	No	No	No	Yes	No
Library	No	No	No	No	No	No

**U.P.S.* — Upper Primary School
***P.S.* — Primary School
#*P.U.P.S.* — Project Upper Primary School
N.U.P.S. — Nodal Upper Primary School

Food

A common food chart for all the seasonal hostels across the district has been decided by the district education authority consisting of the District Collector, District Education Officer (DEO), District Project Coordinator (DPC) and the Block Resource Centre Coordinators (BRCCs). The chart includes four meals per day, namely breakfast, lunch, evening snacks and dinner. Apart from these meals the students also enjoy the Mid-day Meal (MDM), which is provided to every elementary student during the lunch break of the school. On Sunday, the hostellers consume one additional meal in substitute for the MDM. Meals consist of locally produced grains and vegetables. Chicken, mutton or cottage cheese curry is generally served on Sundays.

Table 3
Food Chart for the Seasonal Hostels (Session 2017-18)

Days	Breakfast time 6.30 A.M. to 7.30 A.M.	Lunch time 9.00 A.M. to 9.30 A.M.	Evening snacks time 5.00 P.M. to 5.30 P.M.	Dinner time 9.00 P.M. onwards
Monday	Boiled green peas, onions, tomatoes, etc.	Rice, *dalma*, leafy vegetables	Flattened rice with banana and sugar	Rice, red lentil stew, mixed curry
Tuesday	Biscuits and tea	Rice, *dalma*, Tomato curry	Semolina upma	Rice, lentil stew, Vegetable curry (for vegetarian Boarders)
Wednesday	Puffed rice and mixture	Rice, *dalma*, leafy vegetables	Flattened rice upma	Rice, red lentil stew, vegetable curry mixed with chickpeas
Thursday	Boiled green peas, onions,tomatoes, etc.	Rice, *dalma*, leafy vegetables	Flattened rice with banana and sugar	Rice, red lentil stew, mixed curry
Friday	Biscuits and tea	Rice, *dalma*, Tomato curry	Semolina upma	Rice, lentil stew, Vegetable curry (for vegetarian boarders)

Saturday	Puffed rice and mixture		Rice, *dalma*, leafy vegetables	Flattened rice upma	Rice, red lentil stew, vegetable curry mixed with chickpeas
Sunday	6.30 A.M. to 7.00 A.M.	9.00 A.M. to 9.30 A.M.	1.00 P.M. to 1.30 P.M.	Puffed rice and mixture	Rice, lentil stew, mixed fries
	Seasonal fruits/ biscuits and tea	*Puri*, Potato with green peas curry	Rice, mixed lentil stew, chicken/ mutton/ cottage cheese curry		

Living Space

Seasonal hostels lack special infrastructure. Being a temporary arrangement, hostels run in the same classrooms of the schools meant for the teaching learning activities. Beds are arranged in these classrooms to transform them into seasonal hostels. Regular classrooms serve these dual purposes from November to May every year.

Electricity is available and fans are arranged in all hostels. A few hostels also provide coolers during the months from March to May to beat the scorching heat of western Odisha during summer.

Cupboards are not provided in 65% of the hostels and students are compelled to hang their bags on nails beaten on walls and keep their book and other study materials on the floor near their beddings. Books are often used as pillow at night. Some students use trunks on their own expenses to keep their belongings secure.

Figure 1. A Typical Hostel Room During School Hours

Drinking Water Facilities

Water from hand pumps in the school premises is used for cooking and drinking purposes. No water filtration equipment are provided to ensure the purity of the water the students are drinking. Hostellers are compelled to arrange water from outside whenever these hand pumps go out of order. During summer, earthen pots are arranged by the caretakers to keep the drinking water cool.

Medical Facilities

Health check-up programmes for hostellers are organised once or twice in a session. For minor health issues they consult the nearby primary health centre wih the help of the caretakers. These caretakers are responsible for firstaid assistance and the first aid box of the school is generally used if needed. In case of major health problems they are taken to the district headquarter hospital at Balangir with the help of the incharge teacher.

General Sanitation

It is the duty of the caretakers to ensure the general cleanliness of these hostels. Kitchen area is kept clean and dry to avoid flies and other insects. However, in most hostels, the storerooms where the rations have been stored are mice affected, which is a threat towards the health of the hostellers. Proper drainage system is essentially required in these hostels to control mosquitoes which are quite a number due to water logging.

Toilet Facilities

Toilets are available in all the hostels but are not in working condition. In 84% of hostels the toilets are in collapsed condition and without any water supply. Hostellers prefer to go to the nearby ponds for open defecation. Bathrooms are non-functional, although present in some hostels. Hand pumps are used for bathing purpose, where both boys and girls take bath in the open space.

Figure 2. Toilets in Dilapidated Condition

Recreation

Carrom boards are provided in 50% of these hostels and in 16% of the hostels television is also provided for recreation. However, the televisions are damaged and not in working condition. Hostellers engage themselves in group chat after school time. They also play cricket, football, kabbadi and *kho-kho* in the school premise. As the school gate is locked after four o'clock, they cannot go to the playground for physical activities.

Figure 3. Children Playing Carrom as a Part of their Recreational Activity

Tuition/Self Study

The two caretakers (one male, one female) are responsible for engaging the hostellers in studies during the spare time before and after school hours. As these caretakers are only educated up to the secondary level, they have their own limitations in guiding these students.

Availability of Caretakers and Addressing the Grievances of Hostellers

During school hours, the headmaster and other teachers listen to the problems of the hostellers. But after school hours, caretakers are the only person responsible for dealing with any problem related to the food and lodging of these students. In case of critical health conditions or any emergency, the headmaster and the teacher incharge of hostel are immediately intimated by caretakers to do the needful.

Miscellaneous Problems related to Facilities in Hostels

Although the headmasters and BRCCs claim that the facilities provided at the seasonal hostels are adequate and satisfactory, the interviews with the hostellers narrated revealing contrasts.

The accommodation facilities in seasonal hostels are far below the level of satisfaction for many hostellers as well as for their parents. Although such hostels are in operation for the last 15 years, no effort has been made by the authority to develop permanent infrastructure.

The small-sized classrooms have insufficient space for arranging beds for all the hostellers. In 85% of the hostels located in remote villages the beds are still not supplied, compelling children to sleep on floors.

Figure 4. Living Room of Seasonal Hostel without Beds and Cupboards

Separate rooms are allotted for boys and girls, but in the interior villages where seasonal hostels operate, only a single room is allotted for both the gender providing *Dadan* labourers another reason for not putting their girl child into such hostels.

Hostellers go for open defecation regularly because toilets are not well maintained making them vulnerable to many diseases. No authority is concerned about the regular health check-ups of these children.

Library facilities are not available for hostellers, where they can study peacefully after the school hours.

No co-curricular or extracurricular activities like debate, song competition, essay writing competition, drawing competition, excursion and picnic are ever organised specially for the hostellers. These students, however, participate in such activities organised by the school.

Administration related Problems in the Maintenance of Seasonal Hostels

Lack of enthusiasm among the headmasters to run seasonal hostels is the prime reason why targeted

number of hostels are not in operation in the district. Headmasters perceive them as an additional responsibility without any complementary remuneration. Apart from it, any mishap with any hosteller may lead to serious punishment or suspension from duty for the headmasters. According to them, there is no point in taking additional responsibility as they are already burdened with many non-academic duties.

Moreover, every year headmasters as well as other teachers find it tough to convince the *Dadan* labourers for admitting their children in seasonal hostels. Lack of parental awareness plays a crucial role in low enrolment of children in seasonal hostels across the district. They generally do not prefer to leave behind the children aged below six or seven years and the girl child due to security concerns. On the other hand, children above eleven or twelve years old are always taken along with the parents during migration. They provide a helping hand in earning by getting employment alongside their parents in the brick kilns. In many instances, the children from the hostels are forcefully withdrawn by their parents at midnight for migration. *Dadan* labourers solely blame the state administration for their unemployment and miserable condition. Poor parents find an earning child in the present more reliable than an educated child in the future.

Several other administration related problems were also revealed by the headmasters, such as scanty and irregular payment of remuneration for the caretakers, delay in fund transfer from district education authority towards various expenditures in seasonal hostel, delay in the supply of necessary materials for the hostellers like beddings, cupboards, lockers, etc. Such lacuna and irregularities in the system are some of the reasons why headmasters are reluctant to run seasonal hostel in their schools.

Discussion and Conclusion

A peep into the condition of the children staying in seasonal hostels may give us some insight about the various difficulties of their lives there. All those factors which directly or indirectly influence their education, such as the environment of the hostel, availability of study materials, quality of food, health care facilities and socialisation among the hostellers, safety and security can be assessed and corrective measures can be adopted if needed. The seasonal hostel should not be perceived only as a temporary shelter for these children. It is the centre which can nourish their future by developing their potential to the fullest by taking care of their intellectual, physical, mental, emotional and social needs. Any lacuna in the operation of seasonal hostels may seriously affect their education. However, in this study it was observed that providing four meals a day was only the major focus of the hostel authority keeping all other needs aside.

The reason behind the unwillingness among the parents need be explored and proper endeavours can be made towards enhancing their awareness so that an alteration in their mindset can be induced resulting in maximum enrolment of children in seasonal hostels. Separate dedicated buildings are essentially needed with better facilities and proper security arrangements for girls, such as a compulsory separate room, separate toilets and bathrooms, proper boundary wall around the hostel may attract parents to leave behind their children before migration.

Rewarding schemes like stipend for the hostellers can also be initiated to encourage *Dadan* labourers towards education of their children. Such financial assistance may motivate them for educating their children instead of using them as child labourers, leading to a promising future for these children.

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Awareness and Understanding about Plagiarism among Higher Education Teachers in India

Gaurav Singh*

Abstract

Plagiarism is one of the most debatable topics among academicians these days. People are debating about its ethical viz-a-viz legal consequences. Many incidents of plagiarism have been reported in the recent past among teachers in higher education institutions. Media reports on these cases of plagiarism have developed anxiety and tension among Indian academicians. In this backdrop, the researcher has tried to study the awareness and understanding of plagiarism among higher education teachers in India. A mixed item self-reporting tool was administered on 232 teachers teaching in various affiliated colleges or university departments. Data was collected through both offline and online mode. Analysis of the data reflects that teachers have a basic understanding of only a few common types of plagiarism but not all. Teachers are in support to avoid plagiarism, but many of them are still not aware of a proper plagiarism detection mechanism. The study suggests that along with training and awareness programmes, plagiarism and its consequences should be a part of the research curriculum. The comprehensive guidelines are also required to promote academic honesty among teachers in colleges as well as in universities.

Introduction

Plagiarism is one of the most discussed academic issue. Many incidents of plagiarism in journals and research papers have been reported around the globe, and India is not an exception. Though it is not a new concept, in India people have started talking more about plagiarism after a historic letter written by a

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few Stanford University professors to Hon'ble President of India in the year 2002.

Seven professors of Physics from Stanford University including three Nobel Laureates wrote a letter to Hon'ble President of India Late Dr A. P.J. Abdul Kalam on October 11, 2002, about an issue of plagiarism. This letter came as a shocking allegation against a member of the Indian academic community, and the country at large started thinking about plagiarism seriously. It had till then been an alien term to many of the teacher. There are many instances in the past where Indian teachers have faced allegations of plagiarism. Similarly, Clegg and Flint (2006) have also reported that plagiarism is spreading a moral panic in the United Kingdom. Singh et al., (2014) reported through the analysis of various news articles that most common types of plagiarism are ideas or thoughts, plagiarism of old published research work as new and plagiarism of data or process from a research paper. In India the debate is still going on whether plagiarism is an ethical issue or a legal issue. University Grants Commission (UGC) has proposed some measures to curb plagiarism in Indian Universities through some draft guidelines in 2017, but no final notification has been released till date.

Conceptual Understanding and Need for the Study

There appears to be no universal definition of plagiarism, but different authors or researchers have used the term depending on the context. American Association of University Professors (1989) defined plagiarism as, 'taking over the ideas, methods, or written words of another without acknowledgement and with the intention that they may be taken as the work of the deceiver' University of Essex (2007) also defines plagiarism as, 'using or copying the work of others (whether written, printed or in any other form) without proper acknowledgement in any coursework'.

Carroll (2007) defined it as' 'passing off someone else's work, whether intentionally or unintentionally as your own for your benefit.' Many researchers used different explanations for plagiarism like Young (2013) considered it as 'academic cheating'. It is commonly accepted as a deliberate act of taking someone's thoughts, work, data, and ideas or quote without acknowledging the original contributor and presenting as one's original work. the increasing access to the Internet has made this issue more common as students or researchers have a greater access to other's work. Faulty policies like the introduction of Academic Performance Indicator (API) system in India has also contributed a lot. The focus of teachers had shifted from teaching only to publish and perish. It is a common evil in

teachers as well as students work. There are researches who have identified reasons behind plagiarism like Carroll (2007) suggested that students who are not confident about their writing abilities in English, sometimes 'borrow' a few words from original authors. Burke (1986) also identified that challenges faced by international students in language contribute to plagiarism. Razera (2010) found that students expressed the need for extra information to feel more comfortable for dealing with plagiarism. Some researchers have pointed out the reasons, such as lack of motivation, lack of training, badly worded examinations and lack of time for plagiarism. Baty (2007) and Erlenawati (2005) reported that despite being aware of plagiarism, due to lack of English language skills required to read information, extract the relevant points and then put it into their words, students end up doing acts which come under plagiarism. Sivell (2013) found that plagiarism by English as Foreign Language (EFL) students may be unintended, and the cause may go beyond deliberate dishonesty.

Williams (2002) also revealed that purchasing papers from Internet sources are a very modern form of plagiarism. Songsriwittaya et al. (2009) discovered that students plagiarised because they wanted to achieve the goal of getting good grades. Charubusp (2015) highlighted that if students found some piece of work most suitable and sufficient, they do not try to work more and use it as it serves their purpose. Razera (2011) is of the view that when Internet was pervasive, plagiarism was not so easy as copying was done by hand from various sources like books, encyclopedia or newspapers, but Internet has made their work easy because they used elementary commands on computer famous as 'copy and paste'.

Few studies like Henriksson (2008) have pointed out the uncertainty among teachers and students about what plagiarism is, and where the line between acceptable and unacceptable conduct is traced. Razera (2010) suggested that students should have a better knowledge about academic writing and they should learn what is allowed and not allowed. Lack of knowledge about copyright issues among students is also an essential reason according to Kokkinaki et al. (2015). William (2002) cautions about the limited role of plagiarism detection tools, which can be used only for detection but not suggesting how to avoid plagiarism. Razara (2010) has also hinted about the disagreement between teachers and students about the detection tools. He pointed out that the students found these tools more helpful as compared to teachers. Wilkinson (2009) reported that in his study, 49% of the teaching staff and 39% learners thought that cheating on assessment tasks was common with 'copying a few paragraphs and not citing the source' the most common

form. He also reported that the staff feels that due to lack of understanding of rules, cheating occurs among students, whereas students are of the opinion that wanting a better grade and having too many assessment items are the strong motivators for cheating. Students also want the 'lighter sentences' (disciplinary actions) against plagiarism.

There are some studies like Ireland and English (2011) supporting plagiarism. They proposed a 'safe environment' where students are allowed to 'plagiarize'. Some cultural issues are also associated with this narrative. Angelil-Carter (2000); and Brennan and Durovic (2005) reported that, 'copying may be called plagiarism in western countries, but it is not considered as a problem in many other cultures.' There are many cultures which believe it is a free expansion, sharing and distribution of knowledge without any restriction as knowledge is for the benefit all. 'In some cases, it is considered humble than boldly advocating your own opinions about something (Bell, 1999)'. Yang and Lin (2009) reported that the student did not think it was correct to rewrite an author's words since the author was well known and respected. Hence, they included it in his their her text. Ballard and Clanchy (1988; 1991) reported that in Eastern culture, the respect of written knowledge and authority is the norm, and critical analysis is not required or encouraged.

The above discussion highlights the conceptual understanding of plagiarism, its causes identified and reported by various researchers, cultural issues associated with plagiarism and the level of understanding among teachers and students worldwide, which have given an exceptional understanding about the issue worldwide. It has also been found that as compared to rest of the world, there are negligible studies about plagiarism in Indian academic community. Thus, these reasons triggered the researcher to undertake a comprehensive study.

Statement of the Problem

The research study aims to study the awareness and understanding of plagiarism among higher education teachers teaching in affiliated colleges and university departments of Indian universities.

Operational Definitions

- **Awareness:** Awareness about plagiarism includes creating awareness among teachers about the incidents, reports, related acts, plagiarism viz-a-viz copyright and citation, detection tools, various ways to avoid it, etc.
- **Understanding:** Understanding about plagiarism includes statements related to different types of plagiarism as well as related issues.
- **Plagiarism:** In the present study, plagiarism is not taken as any one definition.

A widely accepted explanation of plagiarism is given by American University's Academic Integrity Code (Section II A): to plagiarise is to use the work, ideas, or words of someone else without attribution. Plagiarism may involve using someone else's wording without using quotation marks — a distinctive name, a phrase, a sentence, or an entire passage or essay. It may also involve misrepresenting the sources that were used.

The Graduate School of Michigan State University, (2014, p.2) found plagiarism as handing in a paper written by a friend, buying a paper on the Internet, paying someone to write a paper and handing it in as [one's] own, copying and pasting information from the Internet or another source without correctly citing the author, and inadequate paraphrasing of a source so that [the] wording is too close to the original.

Various researchers have given its various dimensions, operationally, all activities and dimensions of plagiarism have been considered under the umbrella term plagiarism for the present study.

- **Higher Education Teachers:** Higher education teachers refer to the faculty members teaching in affiliated colleges or university departments at the undergraduate, postgraduate or doctoral level and designated as assistant professors, associate professors and professors.
- **Affiliated Colleges:** Affiliated colleges refer to the undergraduate and postgraduate colleges affiliated to a university and recognised by University Grants Commission.
- **Indian Universities:** Indian universities refer to the central, state, deemed-to-be and private universities recognised by University Grants Commission.

Objectives of the Study

Primary objectives of the study are

- to study the awareness about plagiarism among higher education teachers teaching in Indian universities or affiliated colleges.
- to study the understanding of various issues related to plagiarism among higher education teachers teaching in Indian universities or affiliated colleges.
- to compare the awareness and understanding of teachers through their place of work (colleges or universities).

Hypotheses

In order to achieve the third objective; following two (02) null hypotheses are framed.

$H_0$1: There is no significant difference between awareness scores of higher education teachers teaching in university departments and affiliated colleges.

$H_0$2: There is no significant difference in understanding of higher education teachers teaching in university departments and affiliated colleges.

Sampling and Sample for the Study

This study is about awareness and understanding of plagiarism among higher education teachers. Nature of the population is almost homogeneous based on their level of teaching. The researcher used a convenient sampling method to reach out to subjects for the sample. The researcher collected data from 109 teachers in a face-to-face situation. The researcher also developed the online tool using online application Qualtrics and collected data from 123 teachers through Gmail, WhatsApp and Facebook. The total sample size is 232 including 109 offline and 123 online tools. Details are given in the following table:

Table 1
Sample Distribution

Nature of Data Collection	University Teachers	College Teachers	Total
Offline	35	74	109
Online	68	55	123
Total	103	129	232

Research Tool

The objective of the study is to achieve and develop a survey tool *Awareness and Understanding about Plagiarism among Higher Education Teachers*. The tool has three sections.

- **Section A** had eleven (11) Yes/No type items to test the awareness about the issue of plagiarism among teachers. These items focus on topics like if plagiarism is an ethical issue, its relation to copyright, falsification and fabrication, the role of citation and paraphrasing, etc.
- **Section B** had twelve (12) statements related to different types of plagiarism. The objective of this section is to test the understanding of participants about various dimensions of plagiarism.
- **Section C** had ten (10) statements, which need to be rated on a 5 points scale, ranging from strongly agree to strongly disagree. These statements are meant to test the understanding of participants about the detection and avoidance of plagiarism.

Reliability and Validity of the Tool

Expert validity was established for the tool by sharing the tool with 16 experts in education research teaching research methodology course in different universities. Initial tool had 15, 14, 15 items, respectively, in section A, B and C. Based on inputs from experts, the second draft was prepared with 11,

12 and 10 items. In section A, 4 items were dropped, in section B, 2 items dropped, and 3 items reformulated, in Section C, 5 items dropped, two were reformulated, and one added. The revised tool was administered on a sample of 35 teachers in online mode with a gap of 45 days. The test-retest reliability coefficient is found to be 0.68.

Method of Data Collection

The researcher collected data from 109 teachers participating in various refreshers and orientation programmes organised in academic staff colleges in a face-to-face situation. The researcher also developed the online tool using online application Qualtrics and shares with hundreds of teachers through Gmail, WhatsApp and Facebook. Despite repeated reminders and requests, the researcher got a date on online forms from 142 teachers in online mode and considered only 123 in the final sample as rest have not responded to all the sections or submitted incomplete information. So, for final scoring and analysis, responses of 232 teachers including 109 through offline and 123 through online was considered.

Data Analysis and Interpretation

The collected data was organised and tabulated to test the objectives of the study. To study the first objective, i.e., 'Awareness about Plagiarism' among teachers, the data was collected and tabulated as follows**:**

Table 2
Awareness about Plagiarism

S. No.	Statement	Yes		No		Undecided	
		Number	%	Number	%	Number	%
1.	Do you agreew that plagiarism is an area of concern in academic world?	173	74.57	54	23.28	5	2.16
2.	Have you ever heard about any incident of plagiarism in your university or discipline?	72	31.03	148	63.79	12	5.17
3.	Do you think that infringement of copyright and plagiarism are the same?	39	16.81	104	44.83	89	38.36

4.	Are you aware of the techniques to detect plagiarism in the academic world?	120	51.72	73	31.47	39	16.81
5.	Do you know that there are techniques to avoid Plagiarism?	107	46.12	81	34.91	44	18.97
6.	Are Falsification and Fabrication part of plagiarism?	65	28.02	109	46.98	58	25.00
7.	Is plagiarism only an ethical issue?	66	28.45	134	57.76	32	13.79
8.	Do you think that citation is a solution for plagiarism?	126	54.31	72	31.03	34	14.66
9.	Do you think that paraphrasing skills are a solution for plagiarism?	91	39.22	64	27.59	77	33.19
10.	Do you agree that plagiarism has become an area of concern only after the Internet era?	159	68.53	42	18.10	31	13.36
11.	Do you think that plagiarism can be avoided completely by using plagiarism detection tools?	80	34.48	89	38.36	63	27.16

Table 2 shows the awareness about various aspects related to plagiarism among higher education teachers. On item-wise analysis of Table 2, it was observed that there is a high variation in the awareness of teachers about various dimensions of plagiarism.

Around 74.57% teachers in this study are considering plagiarism as an area of concern among academicians. About 63.79 % teachers teaching at higher education level still do not have any knowledge of incidents of plagiarism in their discipline or institute. This reflects that a significant number of teachers are still not aware of the incidents of plagiarism. Only 16.81% of teachers are of the opinion that the infringement of copyright and plagiarism are the same whereas a significant number i.e., 44.83% do not agree with it. An interesting observation is that 38.36% are not able to decide that the infringement of copyright and plagiarism are the same or different. This finding indicates that a large number of teachers are still confused between issues like copyright and plagiarism and their interrelationship. This opinion suggests that more clarity is required on the issue related to copyright and plagiarism.

In this study, only 51.72% of teachers teaching in higher education institutions are aware of the techniques available to detect plagiarism, and only 46.12% are aware of the ways to avoid plagiarism in academic writings.

Fabrication means generating false data without doing any experiment or filling questionnaires or by false participants, whereas falsification refers to manipulate research materials, equipment, or processes, or change or omit/ suppress data or results without scientific or statistical justification, such that the research is not accurately represented in the research record. These terms are often misunderstood as plagiarism. When teachers were asked about terms like falsification and fabrication, which also come under academic misconduct, only 28.02% agreed with the statement. Interestingly about 46.98% are undecided about it.

In the light of debates around plagiarism as an ethical issue or a legal issue, participants were asked to respond on the item. According to 28.45% teachers, plagiarism is only an ethical issue, whereas a significant number i.e., 57.76% are undecided on it. Around 54.31% teachers thought that citation may be a solution to avoid plagiarism, whereas only 39.32% considered paraphrasing skills as a solution to it. These findings indicate that a large section of teachers who are still not aware of the ways to avoid it. It reflects that thorough training is essential for teachers in higher education on this issue. The study also reveals that teachers at large feel that the issue of plagiarism is due to the Internet. Around 68.53% agree with the statement in this study, but only 34.48% have faith in tools like Turnitin.

The analysis in Table 2 hints towards the need for continuous efforts for developing awareness and understanding about plagiarism among higher education teachers.

After studying about the awareness on plagiarism, some

specific statements related to various types of plagiarism were given to participants to know the level of understanding of teachers towards various acts, which often come under plagiarism. Twelve (12) statements related to various acts under plagiarism were given to respondents, and they were asked to tick, the act which they consider as plagiarism. Table 3 depicts their responses.

Table 3
Understanding about Various Aspects of Plagiarism

S. No.	Aspect of Plagiarism	Agree with Statement	Percentage
1.	If one copies someone else's work and puts their own name on it.	212	91.38
2.	When one borrows the 'phrases and clauses' from the source and weaves them into his writing.	89	38.36
3.	When one paraphrases or summarises another's work by changing the words a little or using synonyms without citing the source.	176	75.86
4.	If one incorrectly quotes and incorrectly cites a source they are using, like Facebook, etc.	75	32.33
5.	The use of another's exact words without citing the author	154	66.38
6.	Paraphrasing another's words by changing sentence construction or word choice without citation	149	64.22
7.	Submitting a paper without citing or by iwncorrectly citing another's ideas	167	71.98
8.	Submitting a paper that you got off the internet or from a friend for discussion as your own	132	56.90
9.	The use of your previous work for a separate assignment	138	59.48
10.	Using photographs, video/audio from online resources without permission or acknowledgement	152	65.52
11.	Quoting some text from an ancient book (for example, 500 years old)	69	29.74
12.	Using some knowledge, which you heard in any lecture or an academic meeting	61	26.29

On analysing Table 2, it can be said that there is not a single act which comes under plagiarism, which is known to all respondents. There are few statements or acts with which more than 50% of teachers have agreed with statements like copying someone else's work and putting their name on it (91.38%), paraphrasing or summarising other's work by changing the words a little or using synonyms without citing the source (75.86%), using another's exact words without citing the author (66.38%), paraphrasing by changing sentence construction or word choice without citation (64.22%), submitting a paper without citing or with wrong citation of other's ideas (71.98%), submitting a paper that one got from the Internet or from a friend for discussion as their own (56.90%), using one's own previous work for a separate assignment (59.48%), and using photographs, video/ audio from online resources without permission or acknowledgement (65.52%).

Whereas the acts like borrowing the 'phrases and clauses' from the original source and weaving them into his own writing (38.36%), incorrectly quoting and/or incorrectly citing a source they are is using, like Facebook, etc., (32.33%), quoting some text from an ancient book (29.74%), and using some knowledge, which someone heard in any lecture or an academic meeting (26.29%), are the lesser known forms of plagiarism to participants.

This finding shows that more common acts under plagiarism are known to a considerable number of the respondents, but less common acts are still not known to many of them. This reveals that participants do not have a sound understanding of various issues and acts, which are covered under plagiarism. This also establishes the need for thorough training and awareness programmes to be conducted at the university as well as at college level.

It has also been observed there are some issues which are under debate among teachers. To know the opinion of teachers on such issues, a rating scale has been created (based on Likert's attitude scale method). Their responses were taken as strongly agree, agree, can't say, disagree and strongly disagree on the statements, which were focussing on the philosophical understanding of plagiarism, some lesser common types of plagiarism like avoiding plagiarism in oral presentations, ways to avoid it and how more awareness can be developed about plagiarism. Issues like keeping plagiarism in research methodology syllabus of colleges and universities; and providing plagiarism detection tools to all colleges and universities were also placed to know the opinion of the participants. Their responses are tabulated in Table 4 and have been analysed statement-wise afterwards.

Table 4
Opinion about Plagiarism Related Issues

S. No.	Plagiarism related Issues	Strongly Disagree		Disagree		Can't Say		Agree		Strongly Agree	
1.	It is against the philosophy of spreading knowledge without boundaries.	35.78%	83	21.98%	51	17.24%	40	14.22%	33	10.78%	25
2.	It can also occur in your use of illustrations, maps and tables.	33.62%	78	25.00%	58	7.76%	18	23.28%	54	10.34%	24
3.	It needs to be avoided in an oral presentation.	5.17%	12	17.67%	41	11.21%	26	26.72%	62	39.22%	91
4.	It is about having subjective interpretations.	3.45%	8	13.79%	32	20.69%	48	39.22%	91	22.84%	53
5.	It has brought anxiety and tension among teachers in higher education.	5.17%	12	13.36%	31	17.67%	41	37.07%	86	26.72%	62
6.	It should be controlled under a universal law or international pact or agreement.	1.72%	4	1.29%	3	5.17%	12	48.28%	112	43.53%	101
7.	It can be avoided by organising continuous awareness programmes.	2.59%	6	3.45%	8	4.31%	10	46.98%	109	42.67%	99
8.	It should be a part of the curriculum of research methods courses in universities.	0.00%	0	0.43%	1	0.00%	0	29.74%w	69	69.83%	162

9.	The polgirism detection tools should be available for free or in-open access to individuals.	7.33%	17	5.17%	12	0.00%	0	40.09%	93	47.41%	110
10.	Is it an Internet generated threat among academicians?	9.91%	23	18.53%	43	15.52%	36	33.19%	77	22.84%	53

There is a strong belief in certain sections of academia that there should be no restriction in the dissemination of knowledge and it should be available for all without any restrictions, such as citation, etc. When higher education teachers were asked to give their opinion on this issue, their responses were quite different. As shown in Table 4, only 25% agree or strongly agree with the opinion that plagiarism is against the philosophy of spreading knowledge without boundaries and restrictions. About 35.78% strongly disagreed and 21.98% are disagreed with the statement, whereas a significant portion i.e., 57.76 % of respondents were against this opinion. It reflects that among higher education teachers, opinion is not the same and more awareness and collective understanding needs to be developed.

When respondents' opinion on plagiarism in the use of illustrations, maps, tables were taken, most of them agreed with the statement, as shown above in Table 4, around 33.72% of respondents either agreed or strongly agreed with the opinion that plagiarism is also an issue in the case of illustrations, graphs, maps, tables, etc., but a large section did not agree, with it. It has been observed that teachers typically use quotes, statements, text, and data in classroom teaching or oral presentations without quoting the original contributors. When they were asked to give their opinion on this issue, responses were reflected that 26.72% agreed and 39.22% strongly agreed i.e., around 66% of teachers were of the opinion that plagiarism also needs to be avoided in oral presentations. Though it cannot be challenged easily, it is a matter of academic honesty and ethics. Teachers should develop a habit of quoting the original contributor during oral presentations also, and the same should be promoted among students too.

It is clear from Table 4 that 62.06% teachers support that plagiarism has a subjective interpretation. It has been observed that in some universities 25% similarity is allowed whereas in some cases the threshold limits up to 40%. UGC recommendations allowed 10%, but there is no universal interpretation. Sometimes, the use of different plagiarism detection tools give different results.

Nearly 1/3rd i.e., 63.79% teachers either agree or strongly agree with the statement that due to issues related to plagiarism, anxiety and tension among teachrers may develop. When they were asked about the need of an international/universal pact/ agreement or act to curb the issue of plagiarism, most of them i.e., 91.81% supported it as it affects academic community all over the world.

Teachers were also asked to give their opinion about some remedial issues. When they were asked to give their opinion about the need for continuous awareness programmes about plagiarism, 89.96% supported the role of such programmes in avoiding plagiarism. Around 99.57% i.e., almost all suggested that plagiarism should be an essential part of the curriculum of research methods in all disciplines. Researcher feels that this will deal with the issue of plagiarism in research work or research writing only. Much plagiarism is being detected in assignments, term papers, seminar presentations, etc. It should also be avoided, and the mechanism of awareness is required to resolve this issue as well. About 87.50% teachers have suggested that the availability of plagiarism detection tools as free or open access tools should be ensured. It is a common observation that commercial tools like iThenticate or Turnitin are charging a lot and due to the high cost, these tools are not accessible to many students, teachers and institutions. In India, UGC has provided facility to use Urkund thorough INFLIBNET freely in libraries of Indian universities, but many universities and their faculty members are still not using it. It reflects the lack of awareness as well as the need to develop a habit among academicians. Almost 56.03% of teachers still considered plagiarism as an Internet generated threat.

To test the null hypotheses H01 and H02, the researcher compared the scores by using t-test. Table 5 is shows the dimension wise t-test scores.

Table 5
Comparison of Scores of College Teachers and University Teachers

S. No.	Dimension	University Teachers (103)		College Teachers (129)		t-test	
		Mean	Variance	Mean	Variance	t-scores	Level of Significance
1.	Awareness about Plagiarism	12.54	47.68	10.82	46.40	1.90	N.S.
2.	Understanding of Plagiarism	8.02	15.92	5.79	18.42	4.05*	Significant at 0.05 level

The above analysis highlights that working in a university department or college or mode of data collection are not the factors associated with awareness of teachers regarding plagiarism. Efforts to make teachers aware about plagiarism are required at both the places. The significant difference between understanding of teachers about plagiarism between university and college teachers reflects that the understanding of teachers teaching in university departments is significantly better in various acts which come under plagiarism. To analyse it more, wise statement scores were also compared regarding understanding. Table 6 shows the outcomes:

Table 6
Comparison of Understanding about Various Aspects of Plagiarism

S. No.	Aspect of Plagiarism	University Teachers (103)		College Teachers (129)		t-test	
		Mean	Variance	Mean	Variance	t-scores	Level of Significance
1.	If one copies someone else's work and put their own name on it.	0.88	0.10	0.94	0.06	1.53	N.S.
2.	When one borrows the 'phrases and clauses' from the source and weaves them into own writing.	0.33	0.22	0.45	0.25	1.77	N.S.
3.	When one paraphrases or summarises another's work by changing the words a little or using synonyms without citing the source.	0.71	0.21	0.83	0.15	2.13	Significant at 0.05 level
4.	If one incorrectly quotes and incorrectly cites a source they have used, like Facebook, etc.	0.26	0.20	0.40	0.24	2.19	Significant at 0.05 level

5.	The use of another's exact words without citing the author	0.59	0.24	0.76	0.19	2.72	Significant at 0.05 level
6.	Paraphrasing another's words by changing sentence construction or word choice without citation	0.58	0.25	0.72	0.20	2.18	Significant at 0.05 level
7.	Submitting a paper without citing or by incorrectly citing another's ideas	0.63	0.24	0.83	0.14	3.57	Significant at 0.05 level
8.	Submitting a paper that you got from the internet or from a friend for discussion as your own	0.46	0.25	0.71	0.21	3.95	Significant at 0.05 level
9.	The use of your previous work for a separate assignment	0.42	0.25	0.82	0.15	6.65	Significant at 0.05 level
10.	Using photographs, video /audio from online resources without permission or acknowledgement	0.55	0.25	0.79	0.17	3.86	Significant at 0.05 level
11.	Quoting some wwt from an ancient book (for example, 500 years old)	0.22	0.17	0.40	0.24	3.04	Significant at 0.05 level
12.	Using some knowledge, which you have heard in any lecture or an academic meeting	0.16	0.14	0.39	0.24	3.99	Significant at 0.05 level

t-scores against various aspects of plagiarism in Table 6 indicate that on initial two aspects i.e., copying someone else's work and putting their own name on it and borrowing the 'phrases and clauses' from the source and weaves them into one's own writing, there is no significant difference between understanding of teachers from colleges and university department. These are the most common types of act which come under plagiarism. But on all other aspects like paraphrasing or summarising other's work by changing the words a little or using synonyms without citing the source, using another's exact words without citing the author, paraphrasing by changing sentence construction or word choice without citation, submitting a paper without citing or by incorrectly citing another's ideas, submitting a paper that one got from the Internet or from a friend for discussion as own, using their own previous work for a separate assignment, using photographs, video /audio from online resources without permission or acknowledgement,incorrectly quoting and/or incorrectly citing a source they are using, like Facebook, etc., quoting some text from an ancient book, and using some knowledge, which someone heard in any lecture or an academic meeting, the difference between understanding of teachers teaching in colleges and university department is significant. The tables also show a pattern in mean scores, i.e., mean scores of the teachers from university departments are higher as compared to teachers teaching in colleges. This reflects that understanding of teachers about various aspects of plagiarism in the university department is significantly better than their counterparts in affiliated colleges. In India, more students are learning in colleges and more teachers are teaching there, hence there is a need of an effective mechanism to train teachers on various aspects of plagiarism so that such mall practices can be curbed and good academic discipline can be developed.

Discussion on the Findings

Findings of the study suggest that most teachers teaching at higher education level are still not aware about incidents of plagiarism in their discipline or institute, a large number of teachers are still confused between issues like copyright, plagiarism and other related issues and their interrelationship. This study suggests that more clarity is required on the issue related to copyright and plagiarism. For example, when teachers were asked about terms like falsification and fabrication, which also come under academic misconduct, only 28.02% agrees with the statement. Interestingly about 46.98% are undecided about it.

The biggest issue is that a large section of teachers are still not aware of the ways to avoid it. It reflects that thorough training is essential for teachers in higher education on

this issue. The study also reveals that teachers at large feel that issue of plagiarism is due to the Internet. The findings show that more common acts under plagiarism are known to a considerable number of the respondents, but less common acts are still not known to many of them. Study reveals that participants do not have a sound understanding of various issues and acts, which are covered under plagiarism. These findings are basically demanding for a conscious and dedicated efforts to make teachers aware about plagiarism, to train them with the skills required to check it as well as to avoid it. These training and awareness programmes can be conducted at the university as well as at college level. Use of available ICT platform like SYAWAM can be quite handy. A short-term online course can be developed and offered to all teachers across the country through online platforms like SWAYAM.

The study has revealed that teachers typically use quotes, statements, text and data in classroom teaching or oral presentations without quoting the original contributors. Though it cannot be challenged easily, but it is a matter of academic honesty and ethics. Teachers should develop a habit of quoting the original contributor during oral presentations also, and the same should be promoted among students too.

For a long time, there was no uniformity in rules to accept the degree of similarity of content among various universities or institutions, but after notification of UGC regulations, 2018, this issue has been resolved. As suggested by almost all, there is a need to include plagiarism as an essential part of the curriculum of research methods in all disciplines. The researcher feels that this will deal with the issue of plagiarism in research work or research writing only.

Conclusion

The study has shown that though there is general awareness of plagiarism among teachers in higher education, specific inputs are required to make them aware of this burning issue of academic activity. Though teachers understand the common types of plagiarism, they need to be sensitised about the many forms of plagiarism, which they do not consider as plagiarism. Many studies are indicate that no teacher supports plagiarism, but in the absence of proper tools and training they face many challenges. They are also of the opinion that apart from awareness programmes, plagiarism should be made part of the curriculum and academic honesty should be promoted by providing proper training to teachers in colleges and universities. Though University Grants Commission (UGC) has notified its regulations, but there is still a long way to go. There is no proper mechanism to check and control the plagiarism in Hindi and other Indian languages, in which most of the research work takes

place in state universities and regional institutions. It is also very difficult to ensure that the identified plagiarism by any software is actually plagiarism. We have seen a number of instances where plagiarism is being used as a tool for academic rivalry against persons sitting at higher positions either to demotivate them or to stop them for taking any higher position. In many such cases, complaints are found false at latter stage. This raises an alarm for all of us. It is our duty as academician to promote academic integrity as well as to curb mall-practices under the umbrella of plagiarism.

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Impact of Mid-day Meal Scheme on Body Mass Index of School Children in India

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Abstract

This paper is based on the field study conducted on 500 school children studying in Class VI to VIII in Union Territory Chandigarh, to analyse the impact of Mid-day Meal scheme on body mass index. Mid-day Meal scheme has been introduced in India to enhance enrolment, attendance, retention and educational attainment of school going children. A large number of school children belonging to the lower income groups depend on cooked Mid-day Meal. With regards the pattern of consumption of Mid-day Meal, among those who never took and discontinued taking the meal, the proportion of girls is more than that of boys, while in case of continuous consumption, the proportion of boys is more than that of girls. The higher the classes that the children are studying, the lesser the proportion of them availing Mid-day meal. The predominant majority of the children are suffering from under weight (low body mass index); among the underweight children, the proportion of boys is more than that of girls. The larger proportion of children belonging to Below Poverty Line (BPL) category is suffering from low body mass index, when compared to the children belonging to Above Poverty Line (BPL) category. Repetition of more or less same type of food menu should be avoided by enhancing quality to achieve the set objectives of Mid-day Meal scheme.

Introduction

Healthy children are more able than sick or malnourished ones to go to school and learn (World Bank, 2014). The decision to send a child to school, like other household investment decisions, can be made by cost-benefit framework (Dreze and Kingdon, 2001).

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Most of the children from low socio-economic background suffer from under nutrition, they more often drop out from schools at an early age, which shows direct impact on their personality development and it indirectly affects human capital formation of the nation. Poor enrolment and higher school dropout rate are attributed to the poor nutritional status of the children compounded by poor socio-economic conditions, child labour and lack of motivation (Ayeni and Adelabu, 2012).

Mid-day Meal scheme aimed at having duel effects—such as (i) reducing cost of education by providing free meals, through which enrolment, attendance, retention and educational attainment of children could be increased, (ii) enhancing learning abilities of children by supplementing nutritional support, as the problem of malnutrition, anemia, deficiency in Vitamin A and Iodine is very common among children in India. In addition to that, Mid-day Meal scheme also aimed at achieving social equity by creating a common platform for different socio-religious and economic groups to have meals together.

Right to life under article 21 of the Indian constitution supports children's right to food also. Considering the importance of providing food at free of cost, the Government of India initiated the National Programme of Nutritional Support to Primary Education (NP-NSPE) as a centrally sponsored scheme on August, 15 1995. Due to extension of this scheme to upper primary school children in 2007, it is called National Programme of Mid-day Meals in Schools. The scheme aimed to make hot cooked Mid-day Meal (lunch) available to school children studying in Class I to VIII in government, government-aided schools, special training centers (STC), Madrasas and Maktabs supported under the Sarva Shiksha Abhiyan (SSA).

Next to public distribution system, cooked Mid-day Meal scheme is the second largest food security programme in India. This scheme is aimed to support one-third of the daily nutrient requirements of school going children. Central and state governments having shared financial liability for the implementation of the scheme. The coverage of the scheme among number of schools and number of beneficiaries has increased considerably. During 2013–14, about 10.45 crore children were covered under this scheme among 11.58 lakh schools across the nation (Government of India, 2014).

In addition to food grains, Mid-day Meal involves two other major inputs viz. cost of cooking and provision of essential infrastructure. Cooking cost per child is not static; it keeps on being revised by the government in accordance with price index. Cooking cost is borne by central and state governments/north eastern states/ UTs in different proportions (Centre and the North Eastern states on 90:10 bases and with other States/UTs on 75:25 bases). Cooking cost for upper primary classes is kept more than

primary classes due to requirement of larger quantities for the former.

The nutritional content in Mid-day Meal is to supplement 480 calories worth of food for primary class studying children and 720 calories worth of food for upper primary class studying children, while in case of dailyprotein supplementation it is 12 grams and 20 grams for primary and upper primary, respectively. The daily requirement of food items is, rice/wheat 100 grams, pulses 20 grams, vegetables 50 grams, oil and fat 5 grams, salt and condiments, as per requirement for primary classes, while for upper primary classes, rice/ wheat 150 grams, pulses 30 grams, vegetables 75 grams, oil and fat 7.5 grams, salt and condiments, as per requirement (Government of India, 2015).

The Problem, Objectives and Methodology of Research

The Problem

The larger number of school children belonging to lower income groups depend on cooked Mid-day meal. In addition to solving the problem of classroom hunger, Mid-day Meal scheme is aimed to supplement nutrition, which is deficient at home. That the larger number of school going children do not seem healthy is a matter of discourse.

Objectives

1. To study the consumption pattern of Mid-day Meal of the school going children.
2. To analyse the body mass index of the Mid-day Meal beneficiary children in Chandigarh.
3. To suggest policy measures for better implementation of Mid-day Meal scheme.

Data Sources Both: primary and secondary source of data were taken into consideration for this study. Primary data was collected by using structured questionnaire through conducting household survey.

Sampling Method: Clustered, systematic random sampling method was used

Sample Size: 500 school going children (both boys and girls) studying in Class VI to VIII were taken into consideration, from each family one child was taken into consideration.

Selection of the Study Area

Chandigarh city was selected for the study, because it occupies third rank in per capita income among Indian cities. Besides it attracts a large number of migrant poor people from different parts of India. As children of poor people generally study in government schools, hence it is felt important to know the impact of Mid-day Meal on school going children in the city.

Rationale of Selection of the Sample Respondents

Though Mid-day Meal is entitled to all the school going children studying in Class I–VIII, the children studying in

higher end classes (VI, VII and VIII) were taken into consideration, since they have a large number of years experience with consumption of Mid-day Meal.

Reference Period: The field survey was carried out during 2015.

Tools: Weighing Machine, Height Measuring Scale and Questionnaire.

Results and Discussion

Geographical Distribution of the Sample Respondents

Based on the concentration of residents and school going children, three larger slum clusters from the three administrative regions of the city were chosen for selecting 500 sample respondent school going children. About 40% respondent children were selected from economically weaker sections colony *Dhanas*, 40% respondents from 4 number colony industrial area and the remaining 20% respondents were selected from Janata colony sector 25.

Gender, Class Studying and Consumption Status of Mid-day Meal

Table 1 reveals that the predominant majority 87.2% of the children continued Mid-day Meal from the date of joining the respective school, while 5.2% discontinued and the remaining 7.6% had never taken the meal. Among never taken and discontinued, the proportion of girls were found to be more than boys, while among the continuing children, the proportion of boys were more than girls. Boys were more interested and habituated in availing Mid-day Meal when compared to girls; hence it is better to give more focus on girls.

The higher the class the children, the lesser the proportion of them availing Mid-day Meal. In the case of continuation of Mid-day Meal, the larger proportion 90.8% of the children studied in Class VI, about 87.6% and 80.8% studied in Class VII-VIII, respectively.

The study reveals that, the lower the class of the children studying, the lesser the freedom to avoid Mid-day Meal due to fear from the teachers and parents. The children studying in higher classes are more experienced with consumption of low quality Mid-day Meal; so those children studying in higher classes, by convincing their parents, can bring food or pocket money from their home. This is the reason that Class VI children are undernourished as compared to Class VII and VIII students. It can be concluded that, more the dependency on MDM more will be the vulnerability. In the study area, the cultural factors (the larger proportions of the children prefer vegetarian food in the school, because school is a sacred institution) are responsible for not introducing non-vegetarian food in the school, to reduce malnourishment.

Table 1
Gender, Class Studying and Consumption Pattern of Mid-day Meal

Consumption Status	Classes			Gender		Total (col 5+6)
	VI	*VII*	*VIII*	*Boys*	*Girls*	
Never taken	10 (5.0)	10 (5.6)	18 (14.4)	17 (6.8)	21 (8.4)	38 (7.6)
Continuing	179 (90.8)	156 (87.6)	101 (80.8)	221 (88.4)	215 (86.0)	436 (87.2)
Discontinued	8 (4.0)	12 (6.7)	6 (4.8)	12 (4.8)	14 (5.6)	26 (5.2)
Grand Total	197 (100)	178 (100)	125 (100)	250 (100)	250 (100)	500 (100)

Source: Field Survey Data.
Note: Figures in parenthesis are percentage to vertical totals

Income Category and Consumption pattern of Mid-day Meal

The higher the income level, the lesser the probability of availing Mid-day Meal. Among the never taken, the majority 10.75% of the children belonged to above poverty line (APL) category households, when compared to only 5.50% from below poverty line (BPL) category households. While 6.41% children did not belong to any economic category since their parents' economic category is not determined/ ration cards were not issued. In case of continuation of Mid-day Meal, the larger majority 90.25% of the children belonged to below poverty line, while 84.40% belonged to above poverty line, the remaining 84.61% children did not belong to any economic category. It can be interpreted that the children from poor families are more interested in consumption of Mid-day Meal.

Gender and Weekly Number of Days of consumption of Mid-day Meal

About 60% of the boys and 54% of girls availed Mid-day Meal on all six days of the week. In case of non-consumers of Mid-day Meal, the proportions of girls were found to be more than boys. Girls had a fear, that consumption of Mid-day Meal may spoil their health. The study reveals that certain proportion of the respondent children were disinterested in consuming Mid-day Meal on all the working days; due to repetition of more or less same type of low quality food menu.

Body Mass Index (BMI)

Body mass index is an approximate measure to know whether someone is overweight/underweight/normal weight. It can be calculated by dividing their weight in kilograms by the square of their height in meters.

Body Mass Index (BMI)=Weight in Kgs/Height in meters square. Body mass index is measured in accordance with World Health Organisation norms. Underweight (BMI below 18.5), Normal weight (BMI 18.5 to 24.9), Overweight (BMI 25.0 to 29.9), Obese (BMI 30 and above).

Body Mass Index Status of the Respondent Children

Table 2 reflects that a large proportion 42.2% of the children's body mass index is in the range of 16 to 19 (low BMI), while lesser proportion 1.8% of the children's body mass index is in the range of 22 to 25 (normal BMI), while only one student 0.2% is overweight (obese).

Gender, Class Studying, Economic Status of the Parents, Consumption Pattern of Mid-day Meal and Body Mass Index Status

Table 3 shows that the predominant majority i.e., 82.8% of the children are suffering from under weight, only 17% of the children were of normal weight, while 0.2% were overweight. As far as the body mass index of the gender is concerned; the large majority of boys 88.8% are suffering with underweight, when compared to 76.8% girls. In case of having normal weight, the proportion of 22.8% of girls is larger than the proportion of 11.2% of boys, whereas only one girl was overweight. Boys are more dependent on Mid-day Meal when compared to girls, but surprisingly

Table 2

Body Mass Index (BMI) of the Respondent Children (BMI=Weight in kgs/ Height in Metres Square)

Body Mass Index Range	Number of Children	Percentage
10–13	15	3.0
13–16	202	40.4
16–19	211	42.2
19–22	62	12.4
22–25	9	1.8
25 and above	1	0.2
Total	**500**	**100.0**

Source: Field survey data

boys are suffering from the problem of low body mass index. It indicates that the impact of Mid-day meal scheme is positive in reducing classroom hunger, but fails to reduce anemia.

Among the non-consumers of Mid-day Meal, 84.21% are facing the problem of underweight, 13.15% were of normal weight, while 0.2% were overweight. Among the Mid-day Meal continuing children, the greater majority 83.71% are suffering from underweight, while only 16.29% were of normal weight. Among those children who discontinued Mid-day Meal rephrase the larger majority of 65.38% children were underweight, while only 34.61% were of normal weight. There is no much difference in health status between consumers and non-consumers of Mid-day Meal. The consumption of Mid-day Meal shows no positive impact on maintaining health standards.

That the larger proportions of 88.32% of children studying in Class VI were underweight when compared to the other classes. About 81.35% children studying in Class VII were underweight, while 76.19% children studying in Class VIII were underweight. The larger proportion of 23.01% of children studying in Class VIII were of normal weight when compared to the other two classes. Only one student, who is studying in Class VIII, is suffering from overweight. The larger proportion the children studying in Class VI is the consumer of Mid-day meal, but interestingly the higher proportion of them are suffering from low body mass index when compared to their peers (Children studying in Class VII and VIII). The study reveals that more the dependency on Mid-day Meal, the lesser will be the impact on recovery from anemia.

Among the children suffering from underweight, the larger proportion of 48.30% belongs to Below Poverty Line (BPL) category. Among the children having normal weight, the larger proportion of 42.35% belong to Above Poverty Line (APL) category.

Table 3
Gender, Class studying, Consumption pattern of Mid-day Meal and Body Mass Index Status

Body Mass Index Status (1)	Consumption Status			Total (col 2,3,4)	Gender		Total (col 5,6)	Classes			Total (col 7,8,9)	Economic status of the parents			Total (col 10,11,12)
	Never Taken (2)	Continuing (3)	Discontinue (4)		Boys (5)	Girls (6)		6th (7)	7th (8)	8th (9)		APL (10)	BPL (11)	Economic Status undecided (No Ration Card (12)	
Below 18.5 (Under Weight)	32 (84.21)	365 (83.71)	17 (65.38)	414 (82.8)	222 (88.8)	192 (76.8)	414 (82.8)	174 (88.32)	144 (81.35)	96 (76.19)	414 (82.8)	159 (38.40)	200 (48.30)	55 (13.28)	414 (82.8)
18.5 to 24.9 (Normal Weight)	5 (13.15)	71 (16.28)	9 (34.61)	85 (17.0)	28 (11.2)	57 (22.8)	85 (17.0)	23 (11.67)	33 (18.64)	29 (23.01)	85 (17.0)	26 (30.58)	36 (42.35)	23 (27.05)	85 (17.0)
25.0 to 29.9 (Over Weight)	1 (2.63)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	1 (0.4)	1 (0.2)	0 (0)	0 (0)	1 (0.79)	1 (0.2)	1 (100)	0 (0.0)	0 (0.0)	1 (0.2)
Total	**38 (100)**	**436 (100)**	**26 (100)**	**500 (100)**	**250 (100)**	**250 (100)**	**500 (100)**	**197 (100)**	**177 (100)**	**126 (100)**	**500 (100)**	**186 (100)**	**236 (100)**	**78 (100)**	**500 (100)**

Source: Field Survey Data.
Note: Figures in parenthesis are percentage to vertical totals

Weekly Number of Days Mid-day Meal consumption and Body Mass Index

Table 4 shows that the majority of children around 58.21% are the consumers of Mid-day meal during all the six days per week, among them 84.56% were suffering with low body mass index, the remaining 15.43% had normal body mass index. Among weekly five days MDM consumers, 89.28% were suffering with low body mass index, the remaining (10.71%) children had normal weight. Among 4,3,2,1,0 days consumers 77.4%, 78.37%, 78.94%, 94.11%, 76.56% children, respectively, are suffering with low body mass index. It can be concluded that, interestingly both lesser number of day's consumers of Mid-day Meal and larger number of days consumers of Mid-day Meal are suffering from low body mass index. Hence Mid-day Meal has shown no major impact in enhancing nutritional standards among the consumers.

Table 4
Number of Days Consumed Mid-day Meal and Body Mass Index

Status of Body Mass Index	Number of days consumed Mid-day Meal per week							Total Number of children
	6	***5***	***4***	***3***	***2***	***1***	***0***	
	Number of Children							
Below 18.5 (Under Weight)	241 (84.56)	25 (89.28)	24 (77.41)	29 (78.37)	30 (78.94)	16 (94.11)	49 (76.56)	414 (82.8)
18.5 to 24.9 (Normal Weight)	44 (15.43)	3 (10.71)	7 (22.58)	8 (21.62)	8 (21.62)	1 (5.88)	14 (21.87)	85 (17.0)
25.0 to 29.9 (Over weight)	0 (0.0)	0 (0.0)	0 (0,0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.56)	1 (0.2)
Total	**285 (100.0)**	**28 (100.0)**	**31 (100.0)**	**37 (100.0)**	**38 (100.0)**	**17 (100.0)**	**64 (100.0)**	**500 (100.0)**

Source: Field survey data
Note: Figures in parenthesis are percentage to vertical totals

Conclusion

Mere implementation of Mid-day Meal Scheme will not give fruitful results unless necessary timely measures are initiated to bridge the existing drawbacks. Mid-day Meal scheme has played a greater role in reducing classroom hunger but failed to control the problem of anemia and under weight. Food menu should be

maintained in accordance with the interests of the children, without compromising on nutritional values. Girls are more health sensitive; hence, confidence among them can be enhanced by providing hygienic food. There should not be more time lags between preparation of food and food served, to save nutritional values. Food should be prepared in the school itself for better supervision and be made available in fresh, which will attract large number of children. Government should increase per head allocation of money, keeping inflation under consideration, so that quality food can be made available. Parents' and children's views should be taken into account while fixing menu, timings of serving food, etc. Create confidence among the parents by maintaining taste, hygiene and quality, only then will the proportion of children's intake of MDM can be increased. Education department should take timely feedback from the stakeholders of the Mid-day Meal scheme for better implementation and to achieve the very objectives of the scheme.

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