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LESSON PLANNING: THE CRUX OF TEACHER EDUCATION

Fr. (Dr.) K. M. Rajan *

Abstract

The teacher education programs aim at grooming teachers for the future. In any teacher education program, planning of lesson is an important activity. Planning of lesson serves many purposes and stems from different perspectives. These perspectives are grouped into four, viz., (1) General Approach, (2) Focussing on Objectives of Instruction, (3) Grounded in Psycho-social Theories and (4) Comprehensive Models of Lesson Planning. These perspectives are not mutually exclusive and are not claimed to be exhaustive. How to plan a lesson remains a problematic but crucial topic for teacher education. But there are dominant model of lesson planning at institutional and university levels. There are various reasons why a definite model in the lesson planning is popularised at institutional and university levels. The ideas presented in this paper are intended to encourage teacher educators to refrain from imposing a linear structure on the planning of lesson which is against the principle of flexibility. Also, teacher-trainees should be exposed to a wide range of possibilities to develop a lesson so to enable them to personalise their own lesson plan.

Key words: Lesson planning, General Approach, Tyler Model, Culturally Responsive Teaching, ARCS Model, Experiential Learning, Typological Approach, Cognitive Constructivism, Social Constructivism, Multiple Intelligence, etc.

The teacher education programs aim at grooming teachers for the future. The whole program deals with theory and practice of teaching-learning processes. The focus of these programs is to train teachers in lesson planning and classroom instruction. Planning is very important in instruction as in any enterprise. Adopting a top-down planning strategy, there are three levels in the planning of instruction. They are: (1) Year Plan, (2) Unit Plan and (3) Lesson Plan. The details on the year plan and unit plan are available

in any textbook on teaching (e.g., Sharma & Sharma, 1971; Thurber & Collette, 1964; Soman, 1987; Das, 1985; Gupta, 1985) and are not detailed in this paper. This paper focuses on different perspectives in lesson planning incorporating the recent theories and practices in school education.

Lesson Planning

About seven decades ago Good (1945) defined a lesson plan as a teaching outline of the important points of a lesson arranged in

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the order in which they are to be presented which may include objectives, points to be made, questions to ask, references and assignments. The importance of planning of lesson has been detailed by many authors (e.g., Joseph, 1982; Sharma, 1996). However, research findings suggest that teachers have three reasons for lesson planning (Clark & Peterson, 1990). They are: (1) planning to meet immediate personal needs (e.g., to reduce uncertainty and anxiety, to find a sense of direction, confidence and security); (2) planning as a means to the end of instruction (e.g., to learn the material, to collect and organize materials, to organize time and activity flow); and (3) planning to serve a direct function during instruction (e.g., to organise students, to get an activity started, to aid memory, to provide a framework for instruction and evaluation).

Apart from the above three reasons for planning a lesson, there are several variables that influence the lesson planning, viz., locality of the school (urban/rural), number of students in the class, students' previous knowledge assumed by the teacher, resources available at the school, etc (Gupta, 1985). Therefore, there can be as many lesson plans as there are teachers on a single topic (Joseph, 1982). One way to think of a lesson is by using the analogy of a story that is highly organized; it has a beginning, middle and an end (Stigler & Stevenson, 1991). A good story engages the reader's interest in a series of interconnected events that are best understood in the context of the events that precede and follow. Lesson Plan can also be conceived as a map which shows where you start, where you finish and the route to take to get there.

The content in the textbook is restructured /reorganized in the lesson

planning process (Clark & Peterson, 1990). Novice teachers seem to be reluctant in making changes in the sequence of content in the process of lesson planning. For example, a textbook may contain a concept (e.g. alkali metals are highly reactive) for which there is no fact given in the textbook. In such cases, the teacher will have to generate (add) two or more facts which can be inductively developed into a concept. However, both novice and experienced teachers are influenced to a greater extent by the content as given in the textbook in the planning of lessons. In other words, the process of planning is constrained by the prescribed content in the textbook. Teachereducators should encourage teacher-trainees to restructure the content and add items as demanded by the method of instruction and context of instruction.

Approaches to Lesson Planning

In the teacher education coursework, considerable time is spent on teaching how to write detailed lesson plans. It is true that the student population is diverse and the teacher educators need to rethink how to develop creative and active learning for students in inclusive classrooms (Causton-Theoharis, Theoharis & Trezek, 2008). There are several aphorisms which suggest the sequencing of content such as - concrete to abstract, known to unknown, simple to complex, empirical to rational, specific to general, part to whole, near to far, etc. There are different suggestions regarding sequencing and organising the classroom transactions. Several alternatives and parallel formats have been suggested by different authors for lesson planning such as Test-Teach-Test (TTT); Presentation, Practice, Production (PPP), Task-Based Learning (TBL – Willis, 1996), etc. Vaidya (1971) is very critical about the rigid steps in lesson planning. He states, "There is no Money Order form like proforma for writing the lesson plan" (p. 168). He lists fourteen parts to a lesson plan with freedom to pick and choose, as there is no agreed format. However, different strands of lesson planning can be identified in the research literature. These strands are not claimed to be mutually exclusive or collectively exhaustive. These threads are grouped into four - (I) General Approach, (II) Focussing on Objectives of Instruction, (III) Grounded in Psycho-social Theories and (IV) Comprehensive Models of Lesson Planning.

I. General Approach

General Approach focuses on some aspects of teaching-learning process such as objectives of teaching, culture of learner, experiential base of the learner, the nature of the content to be taught, etc. This category includes - (1) the Tyler Model, (2) Culturally Responsive Teaching, (3) ARCS Model in Lesson Planning, (4) Kolb's Experiential Learning Theory and (5) Typological Approach Based on the Nature of Content. Each model is described briefly in the following pages.

(1) Tyler Model

Tyler (1949) suggested a linear model with four steps in lesson planning. The four steps are: (1) Specify the objectives, (2) Select learning activities, (3) Organize learning activities and (4) Specify evaluation procedures. Thurber and Collette (1964) added three items, viz., materials, references and assignments to what Tyler had suggested. Different format for the body of the lesson plan such as matter & method (Das, 1985), teaching point & teacher-pupil activities (Maitra, 1991) and matter, method and black board summary (Kohli, 1986) have been proposed. However, a four-column format with content, specification, learning experience and evaluation was popular in the state of Kerala for more than four decades. In spite of the different format and stages in lesson planning, the fact remains that the lesson plan is the real plan to be executed in a class period. Also, teachers (teachers educators) Subject Matter Knowledge (SMK) and Knowledge of Student Misconceptions (KOSM) are very important in lesson planning (Sadler, Sonnert, Coyle, Cook-Smith, & Miller, 2013; Rajan, 2011; 2013c).

(2) Culturally Responsive Teaching

The process of lesson planning should consider the culture of the learner since it affects how people learn, remember, reason, solve problems, and communicate. Ladson-Billings (1994) suggested eight principles to make the teaching-learning culturally responsive. They are - - (1) Communication of High Expectations, (2) Active Teaching Methods, (3) Practitioner as Facilitator, (4) Inclusion of Culturally and Linguistically Diverse Students, (5) Cultural Sensitivity, (6) Reshaping the Curriculum or Delivery of Services, (7) Student-Controlled Discourse and (8) Small Group Instruction. This Culturally Responsive Teaching (CRT) was examined by several researchers (e.g., Shade, Kelly, & Oberg, 1997; Irvine & Armento, 2001).

(3) ARCS Model in Lesson Planning

In ARCS Model of Motivational Design, there are four steps for promoting and sustaining motivation in the learning process (Keller, 1983; 1984: 1987: 1999a; 1999b; Means, Jonassen, & Dwyer, 1997). They are - (1) Attention, (2) Relevance, (3) Confidence, and (4) Satisfaction (ARCS). 1. Attention can be gained by Perceptual and Inquiry arousal (stimulates curiosity by posing challenging questions or problems to be solved). This will include – (a) Active participation, (b) Variability in presenting, (c) Humor, (d) Conflict and (e) Inquiry.

2. Relevance of the content will have to be established in order to increase learners' motivation. This will include - (a) Experience,(b) Present Worth, (c) Future Usefulness and (d) Choice.

3. Confidence of students to learn and achieve is important no matter what the content is. Therefore, teachers should - -(a) Help students understand their likelihood of success, (b) Provide objectives and prerequisites, (c) Help students estimate the probability of success by presenting performance requirements and evaluation criteria, (d) Allow for small steps of growth during the learning process, (e) Provide feedback and (f) Insist Learner to take control of their learning. They should believe that their success is a direct result of the amount of effort they have put forth.

4. Satisfaction is one of the laws of learning. The conditions that enable satisfaction are - (a) Learning must be rewarding or satisfying in some way, (b) Make the learner feel as though the skill is useful or beneficial by providing opportunities to apply, (c) Provide feedback and reinforcement and (d) do not patronize the learner by over-rewarding easy tasks.

(4) Kolb's Experiential Learning Theory

David A. Kolb's experiential leaning theory is a holistic perspective that combines experience, perception, cognition and behavior. The theory is built upon the work of John Dewey and Kurt Levin. The essence of the theory is that "learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). Kolb's four-stage learning cycle includes - (1) Concrete Experience, (2) Reflective Observation, (3) Abstraction- conceptualization and (4) Active Experimentation. The focus of the model is on the learner variables and the social context of learning is neglected in this model.

(5) Typological Approach Based on the Nature of Content

All school subjects are not identical with respect to the content and therefore, how curriculum can be transacted and evaluated are different (Rajan, 2004). It is of crucial importance for teachers of each subject to sit and deliberate on what are the different types of content area that can be classified into lesson types. Lesson types can be construed from several perspectives. Dunkin (1987) analyzed lesson formats from the point of view of classroom communication and interaction. Wittrock (1986) summarized the complexity of classroom events and the demand on the teacher in group-lessons. A few teacher educators think of lesson types as lessons that can be taught using different instructional methods. A few others consider lesson types on the basis of the focus of teaching and learning activities, i.e., teachercentered, student-centered and contentcentered. The conceptions of science teaching such as the traditional, experimental, constructivist, pragmatic, and social will also influence lesson planning (Freire & Sanches, 1992). The lesson types that are discussed here stem from the nature of the content (subject or discipline).

Teacher-trainees often find the development of lesson plan very difficult for

they are not systematically exposed to the types of lessons that they will have to plan in each content area. A comprehensive and exhaustive description of the types of lesson plans in all school subjects is beyond the scope of what is attempted here. However, four types of content in physical science will be dealt here so that similar or other types can be developed in each subject of study. The different types identified in physical science are: (1) Descriptive type, (2) Inductive type, (3) Procedural type and (4) Logical relationship type (Rajan, 2004). Each type is described below.

1. In Descriptive Type, the content is mostly at the factual level. Analysis of content of this type reveals that there are so many facts in the content area with a minimum of concepts. The content demands verbal description and there is little scope for demonstration.

2. Inductive Type lessons are typical for they contain a set of facts, which lead to concept and generalization. Several content area fall under this category. The method of induction proposed by Francis Bacon and systematized by John Stuart Mill is used in this type of lesson planning (Mill, 1949).

3. In Procedural Type, a standard procedure is detailed in a particular sequence. The content usually contains a few facts to be arranged in a sequence which invariably involve a diagram and a procedure to be adopted in the process (e.g., laboratory preparation gases).

4. In Logical Relationship Type, the content is of higher level involving relationship among concepts. The content can be a principle or a law involving mathematical concepts such as proportionality, equality or variations. More often than not, these content

areas are dealt at an abstract level in textbooks and teacher trainees find it difficult to select appropriate learning experience. On several occasions, teacher-trainees resort to deductive approach which may cause too much of information processing load on the part of the learner. Much attention is to be paid in helping teacher-trainees both in selecting and sequencing learning experiences.

The four types mentioned above entail different levels of planning. That is, the prerequisites, learning experiences, method of instructions and home assignments have basic differences in the four types. The role of prerequisite in the Logical Relationship Type is much more crucial than the other types. The selection of learning experience is simple in all types except the Logical Relationship Type. The home assignments can have variety of items in Inductive and Logical Relationship type but Descriptive and Procedural types involve mostly items to be recalled.

Most of the content areas in high school physics and chemistry will fall in either of the above four categories or a simple combination of one or more categories. Teacher-educators will have to identify types of lesson plans in their areas of specialization and must positively incorporate the types in the discussion of lesson plans. A thorough content analysis and identification of types of lesson plans are essential for an effective pre-service training of the teachers. Although the instructional methods aim at the realizations of objectives, the content types set limitations on curriculum transaction. An awareness of the structure of the content in a way helps for a better preparation of the teacher-trainees in the task of lesson planning.

II Focusing on Objectives of Instruction

Objectives are the foundation upon which lesson plans and assessment techniques can be developed. Objectives define the behavioural changes expected of the learner as a result of instruction. The objectives are formulated as the first step in developing lesson plans. The learner variables such as aptitude, interest, culture and social context of learning are not of primary concern in this approach. However, the emphasis on the Outcome-Based Education (OBE) or Measurement Driven Instruction (MDI) has de-emphasized some elements of learning that are not endorsed by the assessment procedure (Barnes, Clarke & Stephens, 2000). This category includes - (1) Bloom' Taxonomy, (2) McCormack & Yager Taxonomy and (3) Objectives of Critical Pedagogy.

(1) Bloom's Taxonomy

The initiative in developing taxonomy gathered momentum in 1948 in the convention of the American Psychological Association in Boston. The participants were interested in developing a theoretical framework for the purpose of writing test items for evaluation. Several meetings were held during 1948-1953 to develop a taxonomy which resulted in the popularly known taxonomy of educational objectives (Blooms, 1956). According to Bloom's Taxonomy, behavioural changes of individuals resulting from instruction can be classified into three domains - (1) Cognitive, (2) Affective and (3) Psychomotor. Although, the taxonomy was primarily developed to write test items, it became the pivot of lesson plan development which dominated the teacher education field for almost half-a-century in India. Several educationists have developed taxonomies for the psychomotor domain (e.g., Dave, 1970; Harrow, 1972; Simpson, 1972). In the 1990s Lorin Anderson, a former student of Bloom along with David Krathwohl, one of Bloom's original partners, worked to revise the original taxonomy (Anderson & Krathwohl, 2001; Krathwohl, 2002). They changed the category names from nouns to verbs, and switched the Evaluation and Synthesis levels in the hierarchy of Cognitive Domain.

(2) McCormack & Yager Taxonomy

McCormack and Yager (1989) proposed a new taxonomy of science education which includes five domains -(1) Knowledge, (2) Process, (3) Creativity, (4) Attitudinal and (5) Application. The focus of this taxonomy is to help learners know how scientists develop new knowledge, methods of science and to instil an interest in conducting scientific enquiry. The process domain of this taxonomy draws heavily from the Science A Process Approach (SAPA, 1966) of the American Association for Advancement of Science (AAAS).

(3) Objectives of Critical Pedagogy

Paulo Freire, the Brazilian educator (1921-1997), in 1968 published the book titled Pedagogy of the oppressed in Portuguese. The book was translated at published in English in 1970. He lays out the dynamics of oppression and uncovers secretes of the oppressors in his book (Freire, 2000). The book is one of the foundation texts in the field of critical pedagogy which attempts to help students question and challenge domination, beliefs and practices that dominate. The theory envisages a transformed world through a kind of educational system, which enables people to get involved in social issues, analyse them critically, discuss them in a democratic atmosphere and achieve a deepened awareness of socio-cultural reality that shapes their life. This approach gave rise to Issue-Based Instruction (IBI).

The IBI or Problem-Based Approach (PBA) addresses certain areas of concern such as lack of vision as a universal citizen. lack of development of work competency. lack of awareness of cultural heritage and independence, lack of scientific perspective on health, lack of scientific land and water management, lack of eco-friendly industrialisation and urbanisation, negligence of marginalised sections, state of negligence towards agricultural heritage, etc. The classroom transactions should be centred on any one or more of the issues or problems. Learners can be lead to various sub-problems by using different strategies, which arouse critical thinking in them. The steps in critical pedagogy are - (1) Context, (2) Vocabulary, (3) Codification, (4) De-codification, (5) Dialogue and (6) Praxis. This approach promotes dialogue mode in teaching-learning process (Rajan, Sindhu, George, Netto, & Sajan, 2010).

III Grounded in Psycho-social Theories

Lesson Planning approach in this category deals with psycho-social theories. These theories includes (but not limited to) (1) Cognitive Constructivism, (2) Social Constructivism and (3) Theory of Multiple Intelligence.

(1) Cognitive Constructivism

Cognitive constructivism is based on the work of the developmental psychologist Jean Piaget. Piaget's theory has two parts -(1) dealing with what children can and cannot understand at different ages and (2) a theory of development that describes how children develop cognitive abilities. In connection with the process of learning Piaget suggests that humans cannot be 'given' information which they automatically understand and use, they must 'construct' their own knowledge (Piaget, 1964; 1973). They have to build knowledge through experience. Several psychological constructs such as assimilation, accommodation, disequilibrium, equilibration, organization, adaptation, maturation and activity are all components of this influential theory (Hurlock, 1997; Woolfolk, 2004). The focus of cognitive constructivism is on the learner and his/her psychological capabilities.

(2) Social Constructivism

Social constructivism is a theory developed by the psychologist Lev Vygotsky. Vygotsky's theory is very similar to Piaget's assumptions about how children learn, but he places more emphasis on the social context of learning (Vygotsky, 1978; 1988; Shaffer, 1996; Woolfolk, 2004). Infants are born with a few elementary mental functions such as attention, sensation, perception and memory that are eventually transformed by the culture into new and more sophisticated mental processes. According to the social constructivists students can, with help from adults or children who are more advanced, grasp concepts and ideas that they cannot understand on their own. Social constructivism encourages the learner to arrive at his/her own version of truth, influenced by his/her background, culture or embedded world view. In this context, Zone of Proximal Development (ZPD) and scaffolding are important in the learning process (Rajan, 2010; 2013a; 2013b). Social constructivism acknowledges the role of context of learning in the process of learning.

(3) Theory of Multiple Intelligence

Planning of Lesson must take into consideration Multiple Intelligences of the learner (Gardner, 1993; Lind, 1997; Lazear, 2003; Armstrong, 2009). Multiple Intelligence (MI) theory suggests use of diverse teaching strategies and materials in teaching and learning processes. The guideline in this framework addresses the cognitive components of intelligence which are to be satisfied. That is, during an academic year, lessons should be planned in such a way that all students can have their strongest intelligences addressed at least some of the time.

Armstrong (2000) suggested seven steps in creating MI lesson plans. The steps are - (1) Decide on the topic/objective, (2) Relate the topic with nine intelligences, (3) Consider the possibilities of using different techniques and materials appropriate for developing different intelligences, (4) Brainstorm the various alternatives to generate a minimum of two ideas to address each intelligence, (5) Select appropriate activities taking into account the infrastructure facilities of the school/ classroom, number of students in the class and time available, (6) Set up a sequential plan of action to address each intelligence and (7) Implement the plan. While trying to relate the topic with nine intelligences (Step 2), several probing questions should be asked. For example, how can I use spoken or written words? (Linguistic Intelligence), how can I bring in logical thinking skills or classifications? (Logical-Mathematical Intelligence), How can I use visual aids? (Spatial Intelligence), How can I bring in a rhythmic or melodic framework? (Musical Intelligence), How can I use hands-on experience? (Bodily-Kinesthetic Intelligence), how can I engage students in peer sharing or co-operative learning? (Interpersonal Intelligence), How can I evoke personal feelings or give students choices? (Intrapersonal Intelligence), How can I relate the topic with natural phenomena or living things? (Naturalist Intelligence) and How can I address current controversies in science? (Existential Intelligence). Although the MI theory seems to be appealing, there is a strong argument that these intelligences are not mutually exclusive.

IV Comprehensive Models of Lesson Planning

Comprehensive Models of Lesson Planning have taken into consideration most of the aspects of teaching-learning process. These models have given a framework that is generic which can be attempted by novice and experienced teachers. This category includes - (1) Herbartian Steps of Lesson Planning, (2) Hunter Model of Lesson Planning and (3) Inclusive Lesson Planning Model.

(1) Herbartian Steps of Lesson Planning

The first name associated with Lesson planning is that of John F. Herbart (1776-1841). Herbart's theory of education is based on the assimilative function of mind. This assimilative power of mind to him is the apperception. Apperception implies the linking up of new experiences with the old (Purkait, 1995). The principle of apperception suggests two important processes in learning, viz., absorption and reflection. Absorption stands for clearness and association, and reflection involves system and method. Thus, Herbart suggested four steps in the educative process. They are: (1) Clearness, (2) Association, (3) System and (4) Method. Later, Herbart's disciple, Ziller, divided the step clearness into two - (1) preparation and (2) presentation. The other three steps were renamed (Purkait, 1995). Thus, the five steps of lesson planning are -(1) Preparation, (2)

Presentation, (3) Association /Comparison, (4) Generalisation/Systematisation and (5) Application (Ozmon & Craver, 1986). However, several authors have added recapitulation to make six Herbartian steps in developing a lesson plan (e.g., Maitra, 1991; Kohli, 1986; Joseph, 1982). The main problem in delineating the Herbartian steps is that none of the authors have indicated the source from which they have drawn this information. This is a problem in writing and will not be elaborated here. The details of these six steps are available in any textbook on teaching (e.g., Kohli, 1986; Maitra 1991; Das; 1985; Rajan, 1999; Rajan, 2004; Vaidya, 1971).

(2) Hunter Model of Lesson Planning

Hunter's Instructional Theory into Practice (ITIP) model suggest seven steps to lesson planning. They are - (1) Learning Objective (on the basis of task analysis), (2) Anticipatory Set (motivate focussing on task and or prior knowledge/experience), (3) State Lesson Objectives of learners, (4) Input (introduce main concepts/skills using examples/diagrams and inviting student participation), (5) Check for understanding (make modification based on immediate feedback), (6) Provide guided practice (asking questions and solving problems) and (7) Independent Practice (to solidify skills and knowledge). However, these seven steps are not mandatory to develop each lesson (Hunter, 1982, 1994; Mishra, 2008; Mollica, 1994; Boudah, Deshler, Schumaker, Lenz & Cook, 1997; Skowron, 2001; Chatel, 2002). Although Hunter's method gives insight about how to structure a lesson, it omits guidance around individual students, needs and strengths, behaviour management, student support, etc.

(3) InclusiveLesson Planning Model

The inclusive lesson planning Model addresses the diverse needs of the learner. The model includes six sections (Causton Theoharis, Theoharis & Trezek, 2008). Each of the six section is detailed here because this model appears to be more comprehensive compared to other models referred above.

(1) Lesson Context. This involves Description of Grade Level/School, Demographics, unique characteristics, Subject, Unit, Duration of the Lesson, Student Background Knowledge, Target Students (academic, behavioural and/or social range of learners) such as - (a) background, (b) like/dislikes, (c) intelligences, (d) strengths, (e) communication, (f) behaviour, (g) academic performance, (h) social information, (i) concerns, and (j) other pertinent information.

(2) Lesson Content. This deal with Lesson Goal, Content Differentiation (to make it appealing to students with different levels of knowledge about this content), Whole-class and Multi- level Lesson Objectives.

(3) Lesson Product. This discusses the outcome of learning such as Product Differentiation, Authentic Assessment (Work samples, song, play, photo, essay, mural, article, demonstration of a skill, individual and or group presentation.

(4) Lesson Process. This incorporates - (a) Process Differentiation, (b) Lesson Formats (Demonstrations, experiential learning, group investigation, games, simulations, multi-media, presentation, minilecture, peer dialogues, etc), (c) Room Arrangement (physical access, rules, expectations, noise level, etc), (d) Student Arrangement (Small groups, cooperative partnerships, cross-age pairings, active learning strategies, etc), (e) General Teaching Strategies, (f) Student Specific Teaching Strategies (Pre-teaching, adjust pacing, sequence, repetition of key points or directions, periodically check performance, reduce or increase complexity, functional applications, physical guidance, pair verbal instruction with other modes of input, adjust behaviour management), (g) Systems of Support and Supervision (Options for coteaching, alternative teaching, split class with same content, team-teaching, etc).

(5) Lesson outline. This section details - (a) Sequence of Lesson (such as Engage, Explore, Explain, Apply), (b) Behavioural Considerations (Setting expectations, praising desired behaviour, purposeful partnering, increasing student responsibility, individual behaviour plan, more or different type of support, choice, proximity, scheduled breaks, voice/tone, incentives, etc), (c) Introduction, Body, actual time each segment will occur, Sequence of steps, questions prepared, Closure, Materials and Assistive Technologies.

(6) Reflection on teaching. Reflection by the teacher is very important in any type of teaching. The teacher must reflect on -(a) time, (b) Sequence of steps, (c) Students who are different and alike, (d) Students' words and/or reaction to the content, (e) Student learning, (f) Student engagement and participation, (g) effectiveness of planning, preparation and teaching, (h) Educational theories that guided decision making process and (i) Use of technology

Conclusion

A variety of lesson planning formats and approaches are available as described in this paper. However, a ten-step lesson plan format is common in the state of Kerala. The ten steps are - (1) General Information, (2) Content Analysis, (3) Statements of Instructional (Curricular) Objectives, (4) Pre-requisites/Previous Knowledge/Entry Behaviour, (5) Teaching Aids/instructional materials, (6) Preparation/Introduction/ sensitization, (7) Presentation/Learning Activities, (8) Application, (9) Review/ Recapitulation and (10) Assignments. The details of these steps although named differently are available in any textbook on teaching (e.g., Rajan, 1999; 2004).

The dominant model of lesson plan in any teacher education program leads to a limited view of teaching-learning process and a restricted approach to 'learning to teach.' All the steps in the dominant model lead to or emerge from the aims and objectives in a linear pattern (John, 2006). There are various reasons for such a definite (dominant) model in the lesson planning. The important reason can be summarised as - (1) teacher educators feel more comfortable with a unified agreed-upon format, (2) the model creates grater equity in terms of teachertrainees experience, (3) teacher educators gain a control to manage, assess and direct the process of lesson planning since all students are required to follow the same procedure and (4) so called professional organisations' hegemony demand a uniformity in lesson planning.

How to plan a lesson remains a problematic but crucial topic for teacher education programs. The ideas presented in this paper are intended to encourage teacher educators to refrain from imposing a linear structure on the planning of lesson which is against the principle of flexibility. Also, teachertrainees should be exposed to a wide range of possibilities to develop a lesson so to enable them to personalise their own lesson plan.

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DEVELOPMENT OF HIGHER EDUCATION IN INDIA: MANAGERIAL ISSUES

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Abstract

Indian Higher Education system has undergone changes with unprecedented growth transforming from an elite system to a mass system. The demand for higher education is rapidly growing. University becomes a centre of Economic and cultural development in the knowledge based society. The National Knowledge Commission has already suggested that the U.G. colleges may be restructured in order to create small Universities with an aim of bringing out changes in the policies and practices. It is observed that the enrolment pattern is skewed in favor of conventional arts and humanity courses with less enrolment in P.G. and Doctoral studies. The foreign universities emerging in the recent times become a challenge to the local condition.

Key words: Higher education, National Knowledge Commission, Foreign universities, Private universities, etc.

INTRODUCTION

We move toward a global economy become more and more when we interdependent in terms of trade, culture and communication. The University has always been global continuing to be a powerful force in the world. The modern University emerges to be an international knowledge encompassing system technology. communication and culture. It is also the primary centre of learning and repository of accumulated wisdom. Again, the University becomes a centre of Economic and cultural development in the knowledge based society. It educates the people, performs research, provides opportunities for social mobility and certifies expertise and professional competence. In this context, it is important to study the growth and development of higher education in India in terms of student enrolment, access and equity and quality education.

The size, structure and growth of the Indian Higher Education System are really unreliable to see when compared to those at the international level. There are more than 20,000 educational institutions in India with a little higher than 5 lakh teachers and 1.2 crores

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of students in addition to 450 Universities. It is unquestionable to approve that India emerges to be the third largest country in the world in terms of spread of Higher Education. It is the fact that the number of Educational Institutions in India out numbers that of the rest of the World taken together. But at the same time, it is to note that the Gross Enrolment Ratio in Higher Education is about 11% in India. This is very less when compared to that of the world average (23.2%). The Indian academic structure has adopted the British Universities as its model. However, the recently established universities in India have adopted the organizational models of the U.S. Universalities. Though, they look like that of the U.S. Universities in terms of organizational structure, they basically differ from U.S. Universities in terms of vision and mission. Despite of our social diversity and complex economic development, the educational system in India moves towards ensuring uniformity leaving little choice for the students.

Many colleges act like tutorial colleges with fixed curriculum with the purpose of cracking examinations. It is the need of the hour for consolidation of resources available in various colleges and Universities by merging and clustering them. This exercise may ultimately result in effective intellectual exchange, benefit from synergy and share the infrastructural facilities. The National Knowledge Commission has already suggested that the U.G. colleges may be restructured in order to create small Universities with an aim of bringing out changes in the policies and practices.

It is observed that the enrolment pattern is skewed in favor of conventional arts and humanity courses with less enrolment in P.G. and Doctoral studies. We have to ensure proper mix of streams in the expansion side by integrating vocational courses with arts and humanities by suitable curricular reforms. It is proposed that the GER be enhanced to 15% by 2012 with an additional capacity for 7.5 million students. The Central Government has been setting up several IITs, IIMs and other premier institutions for enhancing the turn out of the higher professional education. 16 new central Universities and 14 world class Universities have been established in the recent times.

The issue of expanding access in Higher Education is associated to the rising aspirations of the learners in the recent time. The unplanned proliferation of Universities and colleges expanded the access to Higher Education over the period of time from independence. But at the same time, the recent focus on inclusive growth shows a clear direction for the expansion of access to Higher Education. The financial limitations also put constraints in the enhancement of access. Perhaps, better access to higher education in India in the recent times must be attributed to private enterprise in this direction. The change in the socio-economic realities and gradual shift towards pro-market economic policies, help privatization of higher education and thus 60% of the school pass out go for higher education in India.

The enrolment rate being 6.73% and 19.8% for the rural and urban areas respectively, it is understood that the GER in the urban areas trebles when compared to rural areas. The GER among the SCs (6.3%), the STs (6.33%) and the OBCs (8.5%) was much lower when compared to the others (16.6%). The SCs, the STs and the OBCs from all religions suffer from lower access to higher education. The SCs within the Hindu and the Sikhs suffer more than SCs belonging the other religions. Again, OBCs within the Muslims suffer more than the Hindu OBCs. Similarly, the STs within the Hindu suffer more than their Christian counterparts. Gender disparities in terms of access to Higher Education is really very wide. The enrolment ratio is generally low for females (9.11%) when compared to males (12.42%). The females belonging to lower castes and some religions suffer more acutely in accessing higher education than other females. The GER for Muslim females was 5.8% as compared to 9.32% for Hindu females, 12.7% for Sikh females and 16% for Christian females. The GER for the poor is 2.21% as against 12.36% for the non-poor. Differences in the GER are also seen across occupational groups in the rural and the urban areas. The 11th Five Year Plan recognized the problem of multiple natures of disparities in enrolment rate and proposed policy measures to enhance men access to higher education. Hence, it is obvious that inclusive education requires an increased access to higher education to these multiple groups who suffer from lower access to higher education (Pawan Agarwal, 2009).

The demand for higher education is rapidly growing. So, Government Institutions can accommodate all those who are aspiring for Higher Education. Hence, the future of Indian higher education largely depends upon the growing private sector. Private higher education has flourished in low-risk higher profit segments of higher education. We have to establish self-financing colleges even in Arts and Science subjects. So far as Tamil Nadu is concerned, the number of such colleges has increased from 6 in 1984-85 to 297 in 2006-2007, a fifty told increase. It is to note that the number of Government and Government aided colleges increased only by six (from 187 to 193) during the same period. Again, the number of private engineering colleges increased from 0 in 1984-85 to 254 in 2006-2007. Despite the emergence of quality private institutions,

there are poor colleges which plague private provision. Anyhow, private institutions continue to be the main venue for increasing access to higher education. The growth of private higher education leaves large gaps which need the public institutions to fill up the gaps. The public institutions should take care of the P.G. and research programmes in addition to such programs as arts, humanities and languages. The foreign universities emerging in the recent times become a challenge to the local condition. While private Universities enhance access, foreign universities energies local institutions through competition.

CONCULSION

Indian Higher Education system has undergone changes with unprecedented growth transforming from an elite system to a mass system. Higher Education is now easily available to the public including the underprivileged and weaker sections of the societies. However, the system has to change its organizational structure and form and maintain uniform standards of education. In this context, it is imperative that we have to take corrective measures to bring out reforms in our system of Higher Education.

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EFFECTIVENESS OF THE PICTURE - WORD INDUCTIVE MODEL OF TEACHING ON VOCABULARY ACQUISITION IN ENGLISH AMONG ELEMENTARY SCHOOL PUPILS WITH DIFFERENT LEARNING STYLES

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Abstract

Mastery of vocabulary is a must for language competence. Teaching of vocabulary to English as Second language students is a challenge for teachers. The learning style of the learner is a deciding factor in vocabulary acquisition. The present study is to test the effectiveness of the Picture-Word Inductive Model of Teaching on Vocabulary Acquisition in English among Elementary School Pupils with different Learning Styles when compared with the existing method of teaching vocabulary. This experimental study followed the Pretest- Posttest Nonequivalent- Groups Design. The sample comprised 62 pupils of standard five studying in Malayalam medium following the Kerala State School Syllabus. The statistical procedures employed in this study were Mean, Standard deviation, ANOVA and MANCOVA. The analyses of the data indicated that the Picture- Word Inductive Model has a significant effect on Vocabulary Acquisition in English on the components of Meaning and Spelling. The effect on the component, Pronunciation was not significant. It was also found that the pupils vary in their learning styles. Also it was found that there is no significant difference in the effect of the Picture- Word Inductive Model on Vocabulary Acquisition among pupils of different Learning Styles

Key Words: The Picture-Word-Inductive Model, Vocabulary Acquisition in English, Learning Styles, etc.

Introduction

Language is a powerful tool for the empowerment of the individual. This tool becomes still more powerful and effective in the hands of a person who has mastery of an international language like English other than his mother tongue. English is today a symbol of people's aspirations for quality in education. The impacts of technological advancements, globalization and economic liberalization have changed the role of English in India. English has become a

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necessity for mobility, career opportunities, advancements, and social and economic purposes. It is the language of the information age. From the level of library language to link language and window to the world, it has now become the language of opportunity.

The National Advisory Committee set up by the Central Government in March 1992 under the chairmanship of Prof. Yash Pal, the then Chairman of the UGC (1986-1991) put forth the concept of 'burden on school children'. The committee's finding was that the existing curriculum is a burden on children due to several reasons. "The burden of languages (as of all education) is the burden of incomprehension". (National Focus Group on Teaching of English, 2005)

In the vernacular medium schools, it is not the heavy bags that cause the burden on children but the problem of incomprehension that makes things extremely difficult for majority of children. At the elementary level language education aims at development of the basic skills in language learning i.e., listening, speaking, reading and writing. Language is a complex system that works through symbols, the symbols being words. Therefore, knowledge of words is primary to the development of language skills. They are the stepping stones for effective communication. A sound knowledge of words is necessary to listen with comprehension, speak with confidence, read with understanding and to write effectively.

Vocabulary and Language learning

True mastery of a language lies as much in knowing and appropriately using its vocabulary as in being able to use its system of sounds and its grammatical and discourse pattern. Vocabulary is the life blood of any language. Good language use relies greatly on an adequate stock of words. Therefore a language teacher's primary aim is to enable one's pupils to build their stock of words. As far as learning of English in India is concerned, English is in the air. A second language learner knows several words in English that he or she picked up incidentally or intentionally from the classroom, home, media, parents, siblings, advertisements, etc. But he may not be aware of the spelling, pronunciation, phonetic features, structural features, letter sound connection, etc. The question is how to develop the sight vocabulary of these learners or in other words how to help them recognise words in print which is essential for reading. Vocabulary and reading have a reciprocal relation. The best way to acquire extensive vocabulary required for reading widely in a second language is reading itself and a pre-requisite for such reading is an extensive vocabulary. Therefore, the first challenge before the teacher and the learner is to build this stock of words. Words are learnt both deliberately and incidentally. Incidental learning requires good exposure to the target language, which is not always possible in second language learning .Therefore, teachers are on a look out for techniques based on proven principles and practices of word teaching that are interesting, challenging and purposeful; otherwise students may not show interest in the learning of words. In the search of research works and articles on developing vocabulary acquisition among students, the investigator came across a technique backed by years of research for increasing the sight vocabulary of pupils, The Picture - Word Inductive Model of Teaching (PWIM) developed by Bruce Joyce and Emily Calhoun (1999).

Models of Teaching and Language learning

Models of Teaching are researchbased instructional strategies that have their basis in acceptable psychological theory or philosophic background. They have a history of over forty years. The Models of Teaching developed by Bruce Joyce and Marsha Weil are grouped into four families. These are: The Information- Processing family, The Social family, The Personal family, and The Behavioural Systems family. An important development in the field of teaching over the last forty years is the development of combinations of models into curriculums that make the Models of Teaching even more powerful. The Picture Word Inductive Model of Teaching is a combination of Concept Attainment Model of Teaching based on the theory of Jerome S. Bruner and Inductive Model of Teaching based on the theory of Hilda Taba. It belongs to the Information -Processing family of Models of Teaching, which emphasises ways of enhancing the human being's innate drive to make sense of the world by acquiring and organising data, sensing problems and generating solutions to them, and developing concepts and language for conveying them.

The Picture Word Inductive Model of Teaching (PWIM)

The Picture Word Inductive Model is an inquiry --oriented language arts strategy that employs photographs containing familiar objects, actions, and scenes to elicit words in children's listening and speaking vocabulary. This model helps students add words to their sight reading vocabulary, as well as their writing vocabulary. It also helps students discover phonetic and structural principles present in those words. This model includes both explicit instruction and concept formation lessons and is a multidimensional approach literary development. (Emily to Calhoun1999)

The conceptual frame work of the Picture-Word Inductive Model (PWIM)

The conceptual frame work of the Picture-Word Inductive Model (PWIM) is grounded on the body of research about how students become literate, children's development of language, the process of learning to read and write and reading and writing connection. The model capitalises on the natural ways a child learns a language. Instructional Sequence of the Picture-Word Inductive Model

The Picture-Word Inductive Model cycle comprises the following ten steps. The duration of each cycle may last from two to three days to two weeks or even a month.

- 1. Select a picture.
- 2. Ask students to identify what they see in the picture.
- 3. Label the picture parts identified. (Draw a line from the identified object or area, say the word, write the word; ask students to spell the word aloud and then to pronounce it.)
- 4. Read and review the picture word chart aloud.
- 5. Ask students to read the words (using the lines on the chart, if necessary) and to classify the words into a variety of groups. Identify common concepts like beginning consonants, rhyming words, etc.
- 6. Read and review the picture word chart (say the word, spell it, and say it again).
- 7. Add words, if desired, to the picture word chart and to the word banks.
- 8. Lead students into creating a title for the picture word chart. Ask students to think about the information on the chart and what they want to say about it.

- 9. Ask students to generate a sentence, sentences, or a paragraph about the picture word chart. Ask students to classify sentences; and put the sentences into a good paragraph.
- 10. Read and review the sentences and paragraphs.

The basic moves of the PWIM stress components of phonics, grammar, mechanics, language conventions, and usage:

- Students hear the words pronounced correctly many times and the picture word chart is an immediate reference as they add these words to their sight vocabulary. The teacher can choose to emphasize almost any sound and symbol relationship (introduced or taken to mastery).
- Students hear and see letters identified and written correctly many times.
- Students hear the words spelled correctly many times and participate in spelling them correctly.
- In writing the sentences, the teacher uses standard English (transforming student sentences if necessary) and corrects punctuation and mechanics (e.g., commas, capital letters). As different mechanical and grammatical devices are used, the teacher describes why the device is used. After several lessons and experience with the teacher modelling the devices, the students learn how to use them, too.

Studies in the Picture- Word Inductive Model of Teaching

Feng, Ching Chao (2011), reported that the students' English vocabulary increased and they were able to compose meaningful English paragraphs as a result of the PWIM, a non-traditional strategy. The students also revealed that their motivation toward learning English had improved. Li, Xiaobin (2011), found that pupils taught by the PWIM gained relatively higher test scores and performed more actively and found the lesson more enjoyable in the classroom. Teaching by the PWIM was found to be effective in learning the new English vocabulary of SLA (Second Language Acquisition). Wong, Anni Chingman (2009), reported that the PWIM enhanced the students' understanding of language structures and developed their oral language skills creating a strong foundation for literacy development. Lori Decker (2007), found that the PWIM's effect on the students' confidence was tremendous. According to Lori the model is beneficial for both academic achievement and student wellbeing. It is both teacher friendly and student friendly and above all as Calhoun (1999) states, "... it respects their ability to think." Swartzendruber, Kara Louise (2007), stated that statistically significant differences in the scores on vocabulary acquisition were achieved between the control and experimental group (taught using the PWIM) participants on the final assessment.

The above studies prove that the PWIM is an effective strategy as far vocabulary acquisition is concerned. The investigator has found no study related to the model in the Indian context. Therefore the investigator decided to experiment this model and compare its effectiveness in Vocabulary Acquisition in English as Second language, among Malayalam medium Elementary pupils, with the Existing Method of Teaching vocabulary.

Language learning and Learning Styles

There are arguably at least two selfevident truths, about effective teaching and learning in the classroom. The first is that an individual pupil's approach to learning is central to educational achievement .The second, is that a teacher's awareness and response to this approach is equally crucial for success in the classroom. (Gloria Banner and Steve Rayner 2000). Experts assert that individuals enjoy various learning styles. In many cases what is being taught has a less impact on learners' achievement than the way materials are presented. In other words, learning styles make an important component in the learning environment. (Mohamad Jafre Zainol Abidin, Abbas Ali Rezaee, Helan Nor Abdullah, Kiranjit Kaur Balbir Singh 2011). Language learning and learning style are inseparable. Language learning just like any other kind of learning is affected by the individual's approach to learning or the learning style of a learner. This is the reason why we find varying performances among students with similar exposure to the target language. (Gloria Banner and Steve Rayner 2000). Discovering the learning preferences of students and accommodating the teacher's teaching style according to the learning style of the learner will prevent any kind of mismatch between the two. This will reduce the frustration caused by such mismatches among learners and improve the learners' learning outcome. It will help develop a more versatile approach to learning (Sun Ming-Lei 2011).

Vocabulary acquisition and Learning Styles

Learners differ in their ways of adding to their stock of vocabulary, on how they enrich and extend their hold on the words they have already learnt for use. Some learn best in seeing the word repeated in print, others find listening to it or seeing it used in, say radio, T.V., some learn by putting words to work in meaningful contexts, others by watching other users producing new meanings by using words in creative ways. Recognition of each one's style of learning is a step towards the teacher's use of the best means available. The teacher must help the learner recognise/ discover his or her learning style and should adopt the best means available to make that strategy or style work for each individual learner. Knowledge of the learning style of the learner enables the teacher to accommodate one's teaching style accordingly and thereby make learning effective. A mismatch between the learners' learning style and the teacher's teaching style leads to frustration and poor learning outcomes.

Learning styles

Learning styles are simply different approaches or ways of learning. There are several classifications of learning styles. David Kolb Learning Styles model describes four types of Learning Styles, namely, Accommodating, Converging, Diverging and Assimilating .According to Peter Honey and Alan Mumford 's theory learning preferences are adaptable, either at will or through changed circumstances, rather than being fixed personality characteristics. They named four types of learners; Activist, Reflector, Theorist and Pragmatist. The learning styles model of Dunn and Dunn comprises three styles, namely, Visual, Auditory and Kinaesthetic. One of the most common and widely-used categorisations of the various types of learning styles is Neil Fleming's VARK model which expanded upon the earlier Neuro-linguistic programming (VAK) models. VARK is the acronym for visual, auditory, reading/writing and kinaesthetic learners. A learning style is a description of the process, or of preferences, of learning (Neil Fleming and Baume D 2006). Neil Fleming categorises learners into four on the basis of their learning styles. They are: Visual (V), Auditory (A), Reading/ writing(R), Kinaesthetic or tactile (K).

VARK is structured specifically to improve learning and teaching .VARK is about our preferences for 'taking information into' the brain and communicating them 'outwards'. But the inventory had to be adapted to suit the pupils' background and age (9-10 years). Therefore, the investigator constructed and validated a learning style inventory based on the theory of Neil Fleming for elementary pupils (standard five) with Indian background.

Studies in Learning styles and Achievement in language

Gabriela Olivares (2011), found that there existed a strong preference for kinaesthetic and sensing-perceiving learning styles among the pupils and also reported that divergent tendencies in learning preferences and learning strategy use were found across different ethnic groups. Lihui Wang (2007), identified that the students varied in their preference for particular learning styles, with a great variety of learning style preferences distributed unevenly among the sample population. A large number of the students showed mild preference to Global, Visual and Sensing learning styles. Jie, Li; Xiaoqing, Qin (2006), stated that learning styles have a significant influence on learners' learning strategy choices. They propose that learning styles may influence learners' language learning outcomes through their relationship with learning strategies. Castro, Obdulia; Peck, Veronica (2005), found that regardless of any specific language learning deficit or difficulty, a student's preferred learning style can hinder or help success in the foreign language classroom. Findings from this study also indicate that having access to information about the preferred learning styles of the majority of students enrolled in beginning foreign language classes at the college level will be of great importance for researchers, instructors, and students alike.

The implications of the above stated studies for English language teachers are that it is important to be aware of varied learning preferences of learners and respond flexibly by employing a broad range of teaching techniques to improve the performances of students. The PWIM 's theoretical base and instructional sequence gives equal importance to learning through all senses, namely visual, auditory, reading/writing, and kinaesthetic. Therefore the investigator decided to experiment its effectiveness among pupils of different learning preferences based on Neil Fleming's model of learning styles.

Objectives of the study

1. To study the effectiveness of the instruction based on Picture - Word Inductive Model over the existing method on Vocabulary Acquisition among pupils of standard five with respect to the following components:

a. Pronunciation,

- b. Meaning, and
- c. Spelling
- 2. To identify the learning styles of the pupils of the experimental group based on the theory of Neil Fleming's VARK Model of Learning Styles
- 3. To study the effectiveness of the instruction based on Picture - Word Inductive Model on Vocabulary Acquisition among pupils of the experimental group of standard five with respect to their learning style preferences based on the theory of Neil Fleming's VARK Model of Learning Styles

Hypotheses

1. There is a significant difference in the post-test mean scores on Vocabulary Acquisition of the Experimental and Control groups among pupils of standard five with respect to the following components:

- a. Pronunciation,
- b. Meaning, and
- c. Spelling
- 2. The pupils vary in their learning styles.
- 3. There is a significant difference in the post-test mean scores on Vocabulary Acquisition of the experimental group pupils of standard five taught with Picture Word Inductive Model with respect to their learning style preferences based on the theory of Neil Fleming's VARK Model of Learning Styles

Variables of the study

Independent variables

The two treatment variables of the study are the instruction based on the Picture - Word Inductive Model and the instruction based on the existing method of teaching vocabulary.

The attribute variable of the study is the Learning Styles of the pupils.

Dependent variable

The dependent variable of the study is Vocabulary Acquisition. The components of the variable are: Pronunciation, Meaning, and Spelling.

Methodology of the study

The study followed the Pre-test Posttest Non-Equivalent Groups Experimental Design.

Tools used

- 1. Vocabulary Test(A) and Vocabulary Test (B) in English constructed and validated by the investigator
- 2. Learning Styles Inventory for Pupils of Standard Five constructed and

validated by the investigator based on the theory of Neil Fleming's VARK Model of Learning Styles

- 3. Raven's Standard Progressive Matrices(SPM) Intelligence Test
- 4. Achievement Test in English (prepared by the Kerala State Government Examination Board)

Sample for the study

The population of the study covers all the Malayalam medium pupils of standard five studying in schools following the state syllabus in the state of Kerala. The investigator followed the purposive sampling technique in selecting the sample. The investigator selected 62 pupils of Holy Higher Secondary School Cross Cherpunkal in Kottayam District as the sample. The investigator randomly assigned the two Malayalam divisions of the school as the Experimental and Control groups, each group comprising 31 pupils each.

Statistical techniques used

Descriptive statistics such as Mean and Standard Deviation and Inferential statistics ANOVA and MANCOVA were used.

Analyses and Findings

1. Analysis of Objective one: Effectiveness of the Picture- Word Inductive Model of Teaching on Vocabulary Acquisition in English

The first objective of the study is to find the effect of the Picture Word Inductive Model of Teaching on Vocabulary Acquisition in English when compared with the existing method among pupils of standard five with respect to the following components: a. pronunciation, b. meaning, c. spelling. In order to analyse this objective the investigator formulated the following null hypothesis.

HO1: There is no significant difference in the post-test mean scores on Vocabulary Acquisition of the Experimental and Control groups among pupils of standard five with respect to the following components: a. pronunciation, b. meaning, c. spelling. The hypothesis was tested using the statistical technique MANCOVA by taking the scores on the Pre-test, Intelligence test and Achievement test in English of the pupils as covariates. The level of significance was fixed at 0.05 level for degree of freedom 1/55. The data and analyses are presented in the following table.

Table 1

Type III Sum of squares, Degrees of freedom 1, Degrees of freedom 2, Between subject mean square, Within subject mean square, F values, and P values for the components of Vocabulary Acquisition in English

Sub variables	Type III sum of squares	Df1	Between subject Mean square	Error variance	Df2	Witin subject Mean square	F value	P value
Pronunciation	.086	1	.086	142.912	55	2.598	.033	.856
Meaning	26.868	1	26.868	290.575	55	5.283	5.086	.028
Spelling	20.900	1	20.900	187.991	55	3.418	6.115	.017

The type III sums of squares for different components of Vocabulary Acquisition namely Pronunciation, Meaning and Spelling are 0.086, 26.868, and 20.900 respectively. The level of significance P values for F values of different components of Vocabulary Acquisition namely Pronunciation, Meaning and Spelling are 0.856, 0.28, and 0.17 respectively. The F value of Pronunciation is not significant at 0.05 level of confidence and hence the null hypothesis Ho1 that, 'There is no significant difference in the post-test mean scores on Vocabulary Acquisition of the Experimental and Control groups among pupils of standard five with respect to the components: a. Pronunciation, b. Meaning, c. Spelling', is accepted for the component Pronunciation. The F values of the components Meaning

and Spelling are significant at 0.05 level of confidence and hence the null hypothesis Ho1 that, 'There is no significant difference in the post-test mean scores on Vocabulary Acquisition of the Experimental and Control groups among pupils of standard five with respect to the components: a. Pronunciation, b. Meaning, c. Spelling', is rejected for the components Meaning and Spelling respectively.

Therefore, it may be inferred that the treatment based on The Picture-Word Inductive Model was more effective than the Existing Method of teaching vocabulary for the components Meaning and Spelling. The treatment based on The Picture-Word Inductive Model has no significant effect on the component Pronunciation. 2. Analysis of Objective two: To identify the learning styles of the pupils of the experimental group based on the theory of Neil Fleming's VARK Model of Learning Styles

Distribution of the Learning styles of the pupils of the experimental group	Number	Mean of the scores on Vocabulary acquisition	Standard Deviation
Visual	7	15.57	7.547
Auditory	7	19.86	5.669
Reading/Writing	10	17.70	5.908
Kinaesthetic	7	16.00	7.118
Total	31	17.32	6.410

Table 2

Distribution of the Learning Style preferences of the pupils of the experimental group and the mean scores on Vocabulary acquisition of the respective categories

From the table 2 it is observed that the distribution of pupils with Visual, Auditory, Reading, and Kinaesthetic learning styles are 7, 7, 10, and 7 respectively. The mean scores on vocabulary acquisition of pupils' with Visual, Auditory, Reading, and Kinaesthetic learning styles are 15.57, 19.86, 17.70, 16.00, and 17.32 respectively. The standard deviation of the mean scores on vocabulary acquisition of pupils' with Visual, Auditory, Reading, and Kinaesthetic learning styles are 7.547, 5.669, 5.908, 7.118, and 6.410.

From the distribution of the learning styles of the pupils given in the table 2 it may be inferred, that the Reading learning style dominates among the four learning styles in the group. The other three styles are equally distributed in the group.

3. Analysis of Objective Three: Effectiveness of the instruction based on Picture - Word Inductive Model on Vocabulary Acquisition among pupils of the experimental group of standard five with respect to their learning style preferences The third objective is to study the effectiveness of the instruction based on Picture - Word Inductive Model on Vocabulary Acquisition among pupils of the experimental group of standard five with respect to their learning style preferences based on the theory of Neil Fleming's Model of Learning Styles.

In order to analyse this objective the investigator formulated the following null hypothesis.

Ho2: There is no significant difference in the post-test mean scores on Vocabulary Acquisition among the experimental group pupils of standard five taught with Picture Word Inductive Model with respect to their learning style preferences based on the theory of Neil Fleming's Model of Learning Styles The hypothesis was tested using the statistical technique ANOVA. The level of significance was fixed at 0.05 level for degree of freedom 3/27. The data and analysis are presented in the following table.

Table 3

Type III Sum of squares, Degrees of freedom 1, Degrees of freedom 2, Between subject mean square, Within subject mean square, F value, and P value for Vocabulary acquisition in English of the Experimental group pupils taught with Picture -Word Inductive Model with respect to their Learning Styles

Vocabulary	Type III	Df1	Between	Error	Df2	Within	F	Р
acquisition of	sum of		subject	variance		subject	value	value
the pupils with	squares		Mean			mean		
different			square			square		
learning styles	80.103	3	26.701	1152.671	27	42.692	.625	.605

From the table it is observed that the type III sum of squares for vocabulary acquisition of the pupils with different learning styles 80.103. The level of significance P value for F value of Vocabulary Acquisition of the pupils with different learning styles 0.605. The F value is not significant at 0.05 level of confidence and hence the null hypothesis Ho2 that, 'There is no significant difference in the post-test mean scores on Vocabulary Acquisition among the experimental group pupils of standard five taught with Picture Word Inductive Model with respect to their learning style preferences based on the theory of Neil Fleming's Model of Learning Styles', is accepted. It may be inferred that the Picture-Word Inductive Model is equally effective among pupils of different learning styles.

Major Findings of the study

- 1. The Picture- Word Inductive Model has a significant effect on Vocabulary Acquisition in English on the components of Meaning and Spelling.
- 2. The Picture- Word Inductive Model has no significant effect on Vocabulary Acquisition in English on the component Pronunciation.
- 3. Pupils vary in their learning styles. Reading learning style dominates

among the four learning styles among the pupils. The other three styles are equally distributed among the pupils.

4. There is no significant difference in the effect of the Picture- Word Inductive Model on Vocabulary acquisition in English among pupils of different Learning Styles.

Summary and Conclusions

The Picture- Word Inductive Model is more effective than the Existing Method of Teaching vocabulary in English in the elementary classes; especially in the case of learning the meaning and spelling of words. Its chief merit lies in the fact that it capitalises on the current knowledge level of the pupils. It builds on what the pupils already know. It is a constructivist method of teaching vocabulary to the core. The pupils reflect on their knowledge of vocabulary and explore into the newer and deeper levels of the same vocabulary. They also learn new words through inductive thinking and making generalisations. This way they dwell on their own thinking. The model is suitable for pupils of visual, auditory, reading/writing, and kinaesthetic learning styles. The pupils also learn a lot through their collective effort. The model provides opportunities for group sharing and discussions. The pupils are also found to develop a higher level of confidence in dealing with English when taught in this method. The model was found to be highly motivating. Implementation of the model for greater length of time can bring significant improvement in the different levels of language learning.

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DON BOSCO'S PHILOSOPHY OF EDUCATION IN EDUCATING THE UNACCOMPANIED LEARNERS OF THE SOCIETY

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Abstract

This article presents the Educational Philosophy of Don Bosco, the great Educationist of the 19th century in educating the Unaccompanied Learners of the Society. Don Bosco was born on 16th August 1815 in a place called Becchi in Turin, Italy. His Educational Philosophy is called "The Preventive System." This method has 3 underlying fundamental principles. They are: Reason, Fear of God and Loving-kindness. The group of Unaccompanied Learners is one category among the Disadvantaged Learners of the Society. Children and young people taken from the street by Government homes, NGOs and other service organisations for rehabilitation to bring them out of the street are called Unaccompanied Learners.

Key words: Unaccompanied Learners, Street Dwellers, Juvenile Delinquents, Orphans, Abandoned, Preventive System, etc.

Introduction

Don Bosco was a great Educationist of the 19th century. Don Bosco was born on August 16, 1815 in a little hamlet calledBecchi in Turin, Italy. His parents were Francis Bosco and Mamma Margaret. His full name was John Melchior Bosco. They were peasants. He was a person who was born poor, lived poor and died poor. Don Bosco died on January 31, 1888. His method of Education for the Unaccompanied Learners is a unique one. Don Bosco made use of a special method of education in educating them and he called it "The Preventive System."

The Background

Don Bosco was a person who set aside his life for the abandoned youngsters of the Society. He had a soft heart for the unloved and the uncared of the Society. He dedicated his life for the upliftment of the neglected.Don Bosco's educational intervention is as a direct response to the dehumanizing and oppressive life situation of the youth of his day especially around Turin in Italy. The rapid growth of industrialization and its consequent need for cheap labor had lured many an adolescent to the city in search of work and shelter. But what they received were long hours of grueling work, poor and oppressive working

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conditions. Don Bosco responded to this situation with his Educational Philosophy-The Preventive System, intended to mold the young minds into good and honest citizens. Thus the educational philosophy of Don Bosco strives for the total development of the person. This educational intervention started in Italy has spread to the other parts of the Universe. It has spread over to 126 Countries in the world. This method continues to inspire many Unaccompanied Learners even to this day, making them true, good and honest citizens to serve the Society at large.

The Disadvantaged Group of Learners

All have equal rights to learn in a Democratic Country like India. Though our Country is democratic in nature we have many groups of Disadvantaged Learners who have no chance of learning. They never see the portals of a school. There are numerous groups of Disadvantaged learners. They are mentioned below.

Street Dwellers

Street dwellers are those people living on the by lanes of busy roads in the cities and who make market places their own home.

Unaccompanied Learners

Children and young people taken from the street by Government homes, NGOs and other service organisations for rehabilitation to bring them out of the street, enable them to live a decent life and make them good and responsible citizens of the country are called Unaccompanied Learners. They are Unaccompanied because they do not have the support of their parents or relatives. But this feeling of not being accompanied by their Parents is substituted by the genuine concern shown to them by the different organisations. Thus they are accompanied by these organisations to become responsible and educated citizens of the Country.

Juvenile Delinquents

Juvenile Delinquents are those children who commit crimes. These crimes are often not intentional. When some life threatening situations arise they have recourse to such activities to protect their life. At other times they don't think about the consequences of their misdeeds and venture into such dangerous activities. The statistics of such children in some places of our country is very revealing and alarming.

Today more and more children are committing crimes in India. The statistics of juvenile crime boosted up from 21,088 in 2006 to 22,865 in 2007. India has seen 8.4% increase in the number of juvenile crimes in 2007. Out of this, 7,498 — were theft followed by 4,832 for hurts, 3,744 for burglary and 2,231 for riots. Madhya Pradesh reported the highest 5,089 number of juvenile crimes in the country followed by 4,499 in Maharashtra and 1,864 in Gujarat. (Stop Juvenile crimes in India 19 idealogues by Ruchi Malviya-Feb.23, 2011)

These juveniles are protected and kept in rehabilitation homes after sorting out legal issues. They may be termed Disadvantaged as they are not put for normal schooling. Though they became devoid of the atmosphere of malpractices, yet they are curbed to mingle with the normal peer groups. Their learning methodology may suffer due to this.

Orphans

Another group of such Disadvantaged learners are the orphans. Orphans are those who have no parents and other relations to support and take care of them. Orphans are often taken care of by the government homes, service organisations and also NGOs.

Abandoned

This category consists of children and young people who have been sent away by

their parents or relatives. There are several causes for sending them away. They may not be wanted at home. For parents they are a burden. Poverty could be another reason. Too many children at home could be yet another cause.

Children of Criminal Parents

Another category that belongs to the Disadvantaged group of learners is children of criminal Parents. Children of the Parents who have committed crimes tend to become offenders themselves. They observe the parents and they in turn commit crimes.

Children from broken families

Due to lack of family relationships, marriages break up and the children of such parents have no place to go. They form another Disadvantaged group in the society.

Teaching the Unaccompanied Learners

The Educational Method propagated by Don Bosco for this group of Unaccompanied Learners is called 'The Preventive System.' We have often heard the maxim in English "Prevention is better than cure." It is better to prevent a disease by taking some precautionary measures than to treat the disease itself. This saying is often referred to in the context of medicine. But it is proved to be very practically applicable in the educational method suggested by this great educationist of the 19th century. As the name of his educational philosophy suggests, prevention in education, was better than cure because the latter often involved repression or the infliction of a penalty for a fault already committed. We are able to grasp better the 'Preventive System' suggested by Don Bosco, when we explain the 3 underlying Fundamental Principles to it. The 3 fundamental principles of his philosophy of education are:Reason, Fear of God and Loving-kindness. We will now explain these fundamental principles.

Reason

Don Bosco believed that if the student comprehended the reasonableness of what he or she was doing, or what was being done, he or she did not need external and repressive measures or persons for the maintenance of discipline. Moreover, this prevailing sense of reasonableness on the part of the educator, brought out in the child a desire to be cooperative, self-disciplined from within and not one controlled by external or repressive forces. To be reasonable one has to avoid complications, artificialities, exaggerations, formalisms, when dealing with the young. To be reasonable was to be natural. Enable the youngsters to choose from the many options that are available to them. To reason out the pros and cons of a problem vexing an individual requires time. We need to put our precious time at the disposal of these people so that they have ample time to arrive at an amicable solution.

Another factor that we need to understand in the context of explaining the principle of reason is to explain the term'assistance'. The term means the help rendered to another person in a needy situation. When we speak about the principle of reason, we need to mention the concrete way in which we become reasonable in our approach to the students. It is by way of, what is called 'assistance' in the context of the Preventive System. This is a friendly and brotherly presence among the students always. By this presence we avoid the occasions for the young to go astray from the right path. We are with the students to show them the right path before they trample the wrong path. Our presence is not like a police man who is waiting to trap the wrong doer. The presence is like a genuine guide who wants to lead the Unaccompanied Learners to the real goal, just like a good teacher who would explain systematically to his or her students the steps involved in solving or approaching a problem. In this method there is no room for trial and error because there is constantassistance to the Unaccompanied Learners. This is how they are being accompanied all through their stages of learning.

Fear of God

All of us believe that God is the creator of us all. Every religion has basic belief and trust in God. Fear of God is the second principle on which Don Bosco's philosophy of education is based. Don Bosco always instilled in his students fear of God and deep faith in Him. Our allegiance to Him and childlike confidence in Him will carry us along this journey of life. All what we have and all what we are, is not because of our merit.It is God's benevolence. He insisted upon his students always to remain in the grace of God.

Don Bosco was conscious of the fact that successful Education required Religion as its base. In his Treatise on Education Don Bosco wrote "Religion alone is capable of bringing ahead the work of true Education."Don Boscoalso had the unshakable conviction that in education, religion ought to have top priority because religion alone can touch the heart of the student so as to transform him or her effectively into a true human being, bring out the finest qualities latent in him or her. Don Bosco's educational activity was directed more to the heart of the individual than to the intellect and hence the next principle.

Loving-kindness

Basically every human being craves for love. We need to genuinely love people. The teacher needs to express his or her sincere love for his or her students by the real concern shown to them. The students should feel that they are truly cared for. When students feel that his or her teacher is genuinely interested in them, they will automatically follow our directions without any compulsion. They understand that the teacher is wishing their good. Love is the distinctive characteristic of Don Bosco's system of education. He expressed this love as loving-kindness which is in essence supernatural love blended with reasonableness and human paternal and fraternal understanding. It is the teacher-pupil relationship which makes the educator live the life of his students; and love what they love. This interaction between the educator and the students produces a true rapport where mutual trust and respect exist and engender a truly friendly, sympathetic, and helpful situation. Thus this principle transforms the educative rapport into a filial and fraternal rapport and the environment of education into a family.

In the context of this principle it is significant for us to consider the old English proverb which all of us are familiar with and have used it often in the context of teaching-"Spare the rod and spoil the child." This is not an acceptable proverb any more. In an era when corporal punishments are considered to be an offence against pupils we say that this proverb does not have any meaning at all in the modern educational scenario. Probably we can reformulate this proverb and use it in the modern context of the 21st century- "Spare the rod and save the child." This reformulation of the proverb will definitely make sense to the modern educators and educationists. The inner meaning of the reformulated proverb truly reveals to us educators, what it means to be loving and kind in our educative approach to students of the present educational scenario of the 21st century.

Conclusion

Don Bosco is an educationist par excellence. His educative method "The Preventive System" is the result of the long experiment of his educative principles of the method, for over a period of time during the 19th century. It is interesting to note that a pertinent pedagogical response to the educational need of that period of history is relevant even to this day. His greatest contribution to the present educational scenario through his "Preventive System" is the far sightedness and vision he had about the corporal punishments. His principles of the system especially, reason and lovingkindness refers to nothing but the avoidance of physical punishments. It is enough that we reason out with our students to make them do the right thing. Our sincere, genuine, love and concern will never stray them away from the path of truth. This effective pedagogical method is probably unknown to many educators and educationists of the contemporary world. This method is followed and practiced even to this day in all the institutions under the banner of this great educationist of the 19th century. Let us imbibe the spirit behind this method of Don Bosco in our pedagogical settings and we will notice marked changes, wonders and marvels taking place in our pupils.

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DEVELOPMENT OF A THREE -TIER TEST TO ASSESS STUDENTS' MISCONCEPTIONS ABOUT BASIC CONCEPTS IN GEOMETRY

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Abstract

The main purpose of the study was to develop a three-tier test for assessing eight standard students' misconceptions about basic concepts in Geometry. The first tier of an item presents a multiple choice question, the second tier presents a set of reasons for the response given to the first tier and the third tier check whether the examinees are confident of their responses to the first two tiers. In the light of the related literature interviews were conducted by the investigator so as to collect information about students' understanding of basic geometric concepts and thereby a list of misconceptions were prepared, which was used to prepare opened test. The responses of open ended test were used to determine the distractors of the three-tire test. Then the three-tier test "Geometry Misconception identification test" was developed and administered to 130 students. The validity of the test was established by means of qualitative as well as quantitative methods. A positive correlation coefficient was estimated between students' scores and confidence levels, that is, successful students on the test were more confident for their responses than unsuccessful students. This results means that the test work properly. The test-retest method was used to establish reliability of the test and result shows that the correlations were significant at 0.05 levels. Hence the investigator hopes that the three-tier test helps to identify the misconceptions about basic concepts about Geometry.

Key words: Mathematics education, Geometry, Misconception, Three-tier test, etc.

Introduction

Students enter high school at a time when their physical and cognitive development is at a transition point, and mathematics produces particularly strong feelings for many of these students. Students often bring preconceived notions about what it means to learn mathematics; they often have low sense of efficacy, a great deal of anxiety, and a deep sense that much of what they learn in mathematics is irrelevant to their lives (Schumacker, Young, &Bembry, 1995).But it is a fact that a strong command of mathematics in high school influences the

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success of students in their future studies and career.

Generally mathematics is considered as a difficult subject and people look at it with fear. Teachers have the experience that despite their best effort, students do not grasp fundamental ideas covered in class. Even some of the best students give the right answers that are only correctly memorized words. When questioned more closely these students reveal their failure to understand fully the underlying concepts. Students are able to use algorithms to solve numerical problems without completely understanding the underlying mathematical concepts. In many cases students have developed partially correct ideas that can be used as the foundation for further learning. (Clement et, al, 1989) .To overcome such shortcomings in mathematics learning an effective learning procedure is needed.

Learning is defined as the result of the interaction between what the student is taught and his current ideas or concepts (Posner, Strike, Hewson & Gertzog, 1982). It is a process in which a student changes conceptions through capturing new ideas and knowledge and replacing the old with the new (Hewson & Hewson, 1991). The prior knowledge or existing knowledge is a leading factor in effective learning. They are the foundation upon which new knowledge is constructed. Duit and Treagust (2003) suggested that students hold deeply rooted ideas and conceptions that are usually alternative conceptions. It is those conceptions that determine whether students will assimilate the new information that teachers present to them. According to Kikas (2004) young children possess everyday concepts and explanations that frequently differ from scientific ones and therefore, learning at school means not only simple accumulation of knowledge and memorization of new facts but also reorganization of the existing knowledge. The existing knowledge may include intuitive ideas and theories of their own understandings and explanations about how the world around them works (Pine, Messer, &John, 2001). Those ideas which have no scientific basis are usually known as misconceptions or wrong beliefs, or alternative conceptions. The overgeneralizations on the basis of analogy, text books, and teachers are some other possible sources of misconceptions. Misconceptions are not unusual. In fact, they are a normal part of the learning process. We quite naturally form ideas from our everyday experiences. The instruction, however effective it is cannot help students understand the scientific conceptions without taking misconceptions into account because misconceptions mostly can prevent students from accepting the scientific conceptions. In other words, misconceptions are very resistive to instruction; therefore careful research on assessing misconceptions is necessary for overcoming them throughout the instruction.

To identify and measure students' misconceptions, different diagnostic tools have been developed and used such as interviews, multiple choice tests, concept maps and multiple-tier tests. Each of these tools has some advantages as well as disadvantages over the others. Interviews have advantage over multiple choice tests in terms of flexibility and depth of the investigation (Beichner, 1994; Osborne & Gilbert, 1980). However, interviews can be conducted on only a limited number of individuals and they need plenty of time. Multiple choice questions can be admistered to a large number of individuals, but cannot investigate the students' response deeply. In order to compensate the limitations of interviews and the ordinary multiple choice questions, researchers extended multiple choice tests into two or three tier tests. In a two tier test, which was first developed by Treagust (1988, cited in Tan, Goh, Chia, &Treagust, 2002) the first tier presents a multiple choice content question and the second tier presents a set of reasons for the given answer in the first tier. Also in the design of this type of diagnostic tool, interviews are conducted to form a list of misconceptions, which are used as distractors in the second tier. Griffad and Wanfersee (2001) claimed some negative aspects of the two-tier test. One of them is that the test results overestimate the percentage of misconceptions because gap in knowledge (lack of knowledge) cannot be discriminated from misconceptions. With the application of three tier- tests to determine misconceptions, researchers can obtain rich information about the individuals' misconceptions eliminated from lack of knowledge and errors. Three-tier tests have the advantage over the two-tier tests in terms of discriminating students' lack of knowledge from their misconceptions by means of the third tier items which assess how confident the students are about their responses for the first and second tiers.

The Main problem of the study

The main problem investigated in this study was to develop a three- tier test to assess the misconceptions about basic concepts in Geometry among the students of standard Eight'.

Meaning and Definition of Misconception

Misconception is defined as a mental representation of a concept which does not correspond to currently held scientific theory. It is defined as an incorrect conception or a wrong understanding by the online dictionary (2005). According to Malcolm Swan(2001), "a 'misconception' is not wrong thinking but is a concept in embryo or a local generalisation that the pupil has made. It may in fact be a natural stage of development."

A familiar example from the elementary school is the students' understanding of the relationship between the earth and the sun. While growing up, children are told by adults that the "sun is rising and setting," giving them an image of a sun that moves about the earth. In school, students are told by teachers (years after they have already formed their own mental model of how things work) that the earth rotates. Students are then faced with the difficult task of deleting a mental image that makes sense to them, based on their own observations, and replacing it with a model that is not as intuitively acceptable. This task is not trivial, for students must undo a whole mental framework of knowledge that they have used to understand the world.

The example of the earth rotating rather than the sun orbiting the earth is one of the many that teachers refer to collectively as misconceptions. Misconceptions can be categorized as follows : (Science teaching Reconsidered:A Handbook(1997))

- 1. Preconceived notions: They are popular conceptions rooted in everyday experiences. For example, many people believe that water flowing underground must flow in streams because the water they see at the earth's surface flows in streams. Preconceived notions plague students' views of heat, energy, and gravity (Brown and Clement, 1991), among others.
- 2. Non-scientific beliefs: It includes views learned by students from sources other than scientific education, such as religious or mythical teachings. For example, some students have learned through religious instruction about an abbreviated history of the earth and its life forms. The disparity between this widely held

belief and the scientific evidence for a far more extended pre-history has led to considerable controversy in the teaching of science.

- 3. Conceptual misunderstandings: These arise when students are taught scientific information in a way that does not provoke them to confront paradoxes and conflicts resulting from their own preconceived notions and non-scientific beliefs. To deal with their confusion, students construct faulty models that usually are so weak that the students themselves are insecure about the concepts.
- 4. Vernacular misconceptions: These arise from the use of words that mean one thing in everyday life and another in a scientific context (e.g., "work"). A geology professor noted that students have difficulty with the idea that glaciers retreat, because they picture the glacier stopping, turning around, and moving in the opposite direction. Substitution of the word "melt" for "retreat" helps reinforce the correct interpretation that the front end of the glacier simply melts faster than the ice advances.
- 5. Factual misconceptions: These are falsities that are often learned at an early age and retained unchallenged into adulthood. If you think about it, the idea that "lightning never strikes twice in the same place" is clearly nonsense, but that notion may be buried somewhere in your belief system. (The National Research Council (NRC) (1997))

Besides, Hammer (1996) listed some characteristics of misconceptions as follows:

- 1. Misconceptions are strongly held,
- 2. They differ from expert conceptions,

- 3. They affect in a fundamental sense how students understand natural phenomena and scientific explanations, and
- 4. They must be overcome for students to achieve expert understanding.

For this reason, identification and elimination of misconceptions about several concepts is a popular research area in educational research.

Significance of the study

There are several reasons for the significance of this study. First of all, Geometry is important in school curriculum for several reasons. It can be integrated with the other areas of mathematics. everyday life, and also because it offers such a wide range of opportunities for hands on exploration. Therefore teachers' do not neglect geometry and ensure that students attain this very important topic. For this, the conception of the basic geometric concepts in depth is a must. The main obstacle in this conception is the misconceptions. Assessing student conceptions by means of a diagnostic tool is inevitable for success in overcoming the misconceptions. That is, valid and reliable diagnostic tools are necessary to assess student misconceptions appropriately.

The literature shows that a three-tier test is most suitable to assess student misconceptions properly. Interviews are good at probing the thought process behind the students' answers to the questions. But it is difficult and time consuming to conduct interviews with a large number of students. In order to eliminate this, multiple choice tests have been used for diagnostic purposes. However multiple choice tests cannot assess students' answers deeply in spite of much superiority (Beichner, 1994). Two-tier tests have been assumed to be a great improvement in diagnostic assessment because they have the ability not only to administer to a large number of students but also to probe the student answers. But there is the chance of overestimating fraction the of misconceptions students hold. That is, an incorrect answer for both the tiers may be due to either a misconception or a lack of knowledge. However, three-tier tests have the ability to distinguish misconceptions from lack of knowledge. The third tier asks students whether they are confident enough about their answers for the first two tiers.

Methodology Population and sample

All Eight standard students in Kerala state were the population in this study. However, it is a fact that data collection from this population is difficult. Students from Kottayam District were selected as the accessible population for generalisation.

In this study three sample groups were drawn from the accessible population for conducting the interview, administering the open ended test and the three- tier test respectively. The purposive sampling method was used to select the sample.

Phases	Technique	Sample
Phase 1	Conducting Interview	15 students
Phase 2	Administering the Open ended test	100 students
Phase 3	Developing and Administering the Three -tier test	130students
Phase 4	Establishing the validity and reliability of the Three –tier test	130students

The preparation of the Three-tier test included four phases.

Phase 1: Interview

The purpose of the interview was to pick out the concepts where students formulate misconceptions. For the effective conduct of the interview the investigator prepared an interview guide .The interview guide was semi-structured, that is, only the main questions were included in interview guide. (For example , questions which demand to draw some shapes, give reasons and cite examples.) The sample consisted of 15 students including boys and girls.

Phase 2: Open ended Test

The Open ended Test was developed according to the observed student misconceptions during the interview and the related literature. Kerala state syllabus text books (standard1-V11&V111 1st part), question banks and online questions were reviewed in addition to the related literature to find some qualitative questions assessing students' conceptual understanding and assessing misconceptions. The test booklet comprised 10 questions with blank space to answer. Both Malayalam and English versions of the test were prepared. The sample for administering the test consisted of 100 students from seven schools including boys and girls from English and Malayalam medium. The answer sheets were analysed in detail to locate the misconceptions and categorise them based on the nature. The table below shows the major misconceptions identified through the Open ended test.

Sl.No.	Misconceptions	Frequency
1.	About types of angles-acute angles are same as acute angled triangles-the concept acute angle	19
2.	Linear pairs are parallel lines	19
3.	Parallelogram –the only shape is, , etc not a parallelogram	47
4.	Vocabulary-triangle-equilateral triangle, isosceles triangle, rightangled triangle	24
5.	point on a circle- inside the circle -centre of the circle	30
6.	As the area of a rectangle increases the perimeter also increases	20
7.	The measure of the angle increases as the length of sides increases	13
8.	About the concept parallelogram-same as parallel lines-any two lines, etc	38
9.	About the concept perimeter (rectangle, triangle)	20
10.	The features of rectangle-the sides may not be straight-the angles nearly 90 ⁰ -rectangular prism is also a rectangle(two dimensional and three dimensional)	48

Phase 3: The Three- tier Test

A thorough study of the related literature was done to find out the most suitable tool to identify the misconceptions in Geometry. There were a number of studies which discussed about the different tools to identify misconceptions. All of them were developed in physics or chemistry. Some researchers critically studied the different types of tools and they suggested that a three -tier test is the best tool to identify misconceptions. On the basis of this the investigator decided to develop a three- tier test on the basic concepts in Geometry. In the first tier all questions are of multiple choice types with four distractors each. Among the distractors at least one is a misconception. The major concepts included in this test are the basic geometrical shapes (triangle, angles, rectangles, squares, parallelogram, and circles) linear pairs, parallel lines, area of different geometrical shapes, angle measure etc. The second tier consists of four reasons; students are required to select a reason for the answer they selected in the first tier. If the given reasons are not satisfactory, they can use the blank space to add their reason as the fifth option. The third tier which is to make sure the certainty of the selections in the above two tiers contain two options such as a) I am sure of the answer, b) I am not sure of the answer. The selection of the third tier determines the confidence of the student about his selections. If a student selects the choice indicating a misconception in the first two tiers and chose I am sure of the answer in the third tier, it is considered a misconception and coded as '1'and the others as '0'.

For the development of the tool, the first draft of the tool was prepared with 45 items. This draft was given to three experts to validate it in terms of content, language, and the ability to pick out misconceptions. It was modified according to the feedback of experts and the second draft was administered to 6 students to identify the difficulties of the students while doing the test, vagueness of the instructions, and mistakes if any. The tool was then modified based on the information collected and a third draft of 39 items was prepared. It was given to a panel of 13 experts (secondary school teachers, teacher educators and teacher trainees) for expert validation. Their valuable suggestions helped the investigator to improve the items and find out the Content Validity Ratios (CVRs) of each item. Considering the table (content validity-Lawshe, 1975), items whose CVRs were more than or equal to 0.54 were selected because CVR 0.54 or more is significant at 0.05 level of significance for n=13. The final test retained only 25 out of the 39 items.

Variables

The tool provides data regarding seven variables for each student. The students' answers were recorded as 0 (incorrect answer/non –existing misconception) or 1(correct answer/existing misconception).The details are as follow:

Scores-1: They were produced by using a student's correct answers for only the first tier of items on the test. Student's answers for each item were coded as 0 (incorrect answers) or1 (correct answers) according to the first tier.

Score-2: They were produced by using a student's correct answers for the first two tiers on the test. That is, when the students' answers and reasons were correct, it was coded as 1; otherwise, it was coded as 0. Score-3: They were produced by using a student's correct answers for all the three tiers on the test. That is, the answer of a student who chose "Yes, I am sure" as well as the correct answer and the correct reason, was coded as 1; otherwise it was coded as 0.

Confidence levels: They were produced by using students' answers to only the third tiers which ask if a student is confident about the answers for the first two tiers .That is, "Yes, I am sure" selections were coded as 1, and the rest were coded as 0.

Misconception -1: They were produced by using choice selections indicating a misconception and a student's answers for only the first tier. For each item, choice selections indicating a misconception was coded as 1 and the rest were coded as 0.

Misconception -2: They were produced according to the first two tiers. When a student chose, both the choice indicating a misconception and the related reason the student was expected to have a misconception and it was coded as 1.

Misconception -3: They were estimated by using choice selections indicating a misconception and evaluating all the three tiers on the test. That is, when a student selected the choices indicating a misconception in the first two tiers and chose, "Yes I am sure", in the third tier, it was coded as 1 for the item.

Reliability and validity of the three tier test

The final form of the test was administered to 130 students. Some of the answer sheets received were incomplete. Finally the data from 111 students were analysed.

For statistically establishing the validity of the test, mainly three quantitative techniques were used. First of all, the content validity ratios were established. Secondly, the correlation between students' scores on the first two tiers (score-2) and the confidence levels on the third tier were investigated; because it is expected on a properly working test that students with higher scores are more confident about the correctness of their answers if they properly understood what they read on a test (Cataloðlu, E. (2002)). Here the correlation between score -2 and confidence level is found to be 0.358, which is significant at 0.05 level. It shows that the students with high scores are more confident of their correct answers than students with low scores. The low value was because there

are some students with high confidence levels in spite of their low scores and has misconceptions. Thirdly, to establish construct validity the correlation between score-2 and the achievement of the students were estimated. The result shows that there is a significant correlation (0.67) between students' score-2 and achievement.

To establish the reliability of the test, test-retest method and Cronbach alpha reliability of score-1, score-2 and score-3 were estimated. In test –retest method, the correlation between scores-1, scores-2, scores-3, misconception-1, misconception-2, and misconception-3 of the test and the retest were estimated. The values are given in the following table.

Sl.	Variables	es No.of Test score Re-test score		Correlation	Significant			
No.		students	Mean	S.D.	Mean	S.D.	between test	or not (at 0.05 level)
1	Score-1	111	977	3 65	9 5 5	3 4 5	668	significant
2	Score-2	111	7 73	3.65	7 34	3.45	787	significant
2	Score-3	111	6.15	3.80	5.60	3.07	759	significant
1	Miscon	111	0.15	5.00	5.07	5.42	.135	significant
4	ceprion-1	111	14.01	3.63	14.37	3.33	641	significant
5	Miscon ception-2	111	12.32	3.65	12.05	3.48	.48	significant
6	Miscon ception-3	111	15.35	6.29	16.01	6.66	.706	significant

The variables, number of students, mean standard deviation and correlation of scores on test &retest.

The Cronbach alpha reliability coefficient of score-1, score-2, and score-3were found to be .61, .679, and .753, respectively. These coefficients reflect the strength of the different tiers for measuring the conceptual understanding about basic concepts in Geometry.

Conclusion

The present level of mathematics learning among secondary school students reveals that there are many obstacles in mathematics learning. Most of the teachers experience that students' conceptions about mathematical concepts are very poor. Since mathematics is a logical science the thorough understanding of basic concepts in mathematics leads to better learning. Therefore assessing student misconceptions is very important for effective mathematics instruction. For this we need a suitable tool and the investigator hopes the three -tier test developed by her would help to assess the misconceptions of students in Geometry to certain extent.

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EFFECT OF COOPERATIVE LEARNING STRATEGIES ON INTERPERSONAL INTELLIGENCE OF SECONDARY SCHOOL STUDENTS

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Abstract

In the present scenario a teacher must think of the ways and means of stimulating and encouraging learning in the students. The students of large class have to cover the syllabus in a limited period of time. Chemistry is an important subject as a branch of Science. Chemistry teachers have a big responsibility to make students love and learn the subject Chemistry well. They should learn new ways to make Chemistry interesting and fun for their students. A person becomes a good achiever and self-reliant only by seeking support of others. The study aimed at comparing the Effect of Cooperative Learning Strategies on Interpersonal Intelligence of Secondary School Students. The design selected for the study was non-randomised control group pretest posttest design. A sample of 60 secondary school students was selected from two divisions of eighth standard for conducting the study. Both experimental and control group constitutes thirty members each. Interpersonal Intelligence inventory was administered to both the groups before and after experiment .the findings of the present investigation revealed that cooperative learning strategies like JIGSAWII and STAD are more effective than activity oriented method in developing interpersonal intelligence of secondary school students.

Key words: Cooperative learning strategies, Jgsaw II, STAD, Interpersonal intelligence, etc.

Introduction

Education is a process involving teaching and learning. Learning depends on instruction and a child cannot be treated an empty vessel into which any type of information can be passed on. A teacher must think of ways and means of stimulating and encouraging learning in the students. The students of large class have to cover the syllabus in a limited period of time. Economically advanced nations of the world are distinguished by the excellence of their educational system

Chemistry is an important subject as a branch of Science. Dori and Hamairi (2003), claims that chemical education is a complex human endeavor which involves deep understanding of diverse concepts and

* M.Ed student, Mangalam College of Education, Ettumanoor, Kottayam. Email: arungniravath@gmail.com ** Assistant Professor, Mangalam College of Education, Ettumanoor, Kottayam, Kerala requires a mental transfer between several modes of representation.

Chemistry teachers have a big responsibility to make students love and learn the subject Chemistry well. They should learn new ways to make Chemistry interesting and fun for their students. An individual has his own limitations. Individuality is the ideal of life. A person becomes a good achiever and self-reliant only by seeking support of others. An individual with the assistance and cooperation of other people will excel in life. In, Bible there is a saying that 'it is not good for the man to live alone. I will make a suitable companion to help him' (Genesis II, Words 18). God created man a masterpiece work in the world scenario. 'A man alone is not happy, noticed by God Almighty. An individual needs support in all paces of life due to the social influence.

According to Bhagavad Gita, 'The celestial controllers, served by selfless service, will give you all desired objects. One who enjoys the gift of celestial controllers without sharing with others is, indeed, a thief. (3.12). The one who makes no sacrifice, but grabs everything for oneself, without helping others, is like a thief. The spirit of cooperation and not competition or confrontation between human beings, between the nations, and between organizations seems to be hinted here by the Lord. Individuals are part of society and are social animals. It is important to enhance social abilities to thrive in the society. This includes the ability to interact with others, understand them and interpret their behavior. A learning environment that allows active participation of students in the learning process makes it possible for the students to have control over their learning and this leads improvement in students' learning and retention as to both the developmental and cognitive theoretical bases (Johnson, Johnson, & Stane, 2000;

Rossini & Jim, 1997; Springer, 1999), thereby prevailing classroom climate of cooperation. Among all the instructional strategies for enhancing science achievement, emphasis is laid on the importance of group work and this group work develops the interpersonal intelligence of students.

Need and Significance for the Study

Nowadays, students hesitate to learn the subject, Chemistry. One of the reasons for this hesitation is the lack of interpersonal intelligence in them. According to Gardner, (1983; 1993), students with strong interpersonal intelligence seek the support of group, value relationships, enjoy collaborative work, solicit input from others, enjoy sharing about themselves, display a winning personality and tend to be natural leaders. Students start learning Chemistry in the secondary level. So this is the best stage to develop interpersonal intelligence of students in learning Chemistry. For that it is necessary to adopt a more child-centered method to teach the subject.

Cooperative learning methods is one such method in which students must work in groups to complete tasks collectively toward academic goals. As our society and economy continually grow and transform, there is a greater need for adequate communication of information. If schools are to keep up with society and produce effective self sufficient citizens, learning must take place in a manner that promotes higher thinking and communicating skills.

The integration of cooperative learning with active learning activities leads to the development of critical and independent thinking skills, deeper understanding of concepts, and long lasting learning (Donmoyer 1996, Secules et al. 1997). Several studies (Forman 1981, Skon et al. 1981) have shown that students working together can produce problem situations characterized by higher cognitive levels of response better than those produced by individual children. Both thinking skills and science process skills are improved when using cooperative learning (Kyle, 1984). Cooperative learning, thus, is an effective method in developing the interpersonal intelligence of students in learning Chemistry.

Statement of the Problem

Chemistry is one of the vital subjects which is closely related to the daily life. Medicines, fertilizers, food items etc highlight the significance of Chemistry in an individual's life. But nowadays students hesitate to learn Chemistry by considering it as a difficult subject. Lack of child-centered approach in teaching and lack of interpersonal intelligence are the factors which lowers the achievement of students. This situation necessitates the need of a new approach in learning Chemistry. Hence the problem is entitled as 'Effect of cooperative learning strategies on Interpersonal Intelligence of secondary school students'.

Definition of Key Terms

Cooperative learning: Cooperative learning is defined as teaching strategies and structures that involve students working together in small groups. In the present study cooperative learning strategies like Jigsaw II and STAD are used for conducting the study.

Jigsaw II

Jigsaw II is the modification of Jigsaw I. In this approach, students work in four or five member teams, as in STAD. Instead of each student being assigned a unique section, all students read a common text, such as a book chapter, a short story or a biography. However each student receives a topic on which to become an expert. Students with the same topics meet in expert groups to discuss them after which they return to their home teams to teach what they have learned to their teammates. (Slavin, 1994).

Student Team Achievement Divisions (STAD)

It is a cooperative learning method for mixed ability groupings involving team recognition and group responsibility for individual learning. In STAD, students' are assigned to four member learning teams that are mixed in performance level, gender and ethnicity. (Slavin, 1994). The teacher present a lesson and then students work within their teams to make sure that all team members have mastered the lesson. Finally, all students make individual quizzes on material, at which time they may not help one another.

Interpersonal Intelligence: According to Gardner (2000), interpersonal intelligence is the social capacity which makes it possible to work effectively with others. In this study interpersonal intelligence was measured by using Interpersonal intelligence Inventory to assess an individual's pattern of interpersonal intelligence related to learning the subject, Chemistry at secondary level.

Secondary school students: Secondary school students are the students studying in the standards 8th, 9th and 10th in recognized schools of Kerala State. For this study students of standard 8 were selected.

Variables of the Study

Cooperative learning strategies (Jigsaw II and STAD) are the independent variables and Interpersonal Intelligence is the dependent variable of the study.

Hypotheses

• There exists significant difference in the effectiveness of Jigsaw II and

Activity Oriented Method on Interpersonal Intelligence of Secondary School Students.

- There exists significant difference in the post-test scores on Interpersonal Intelligence of Students in Jigsaw II and control groups.
- There exists significant difference in the effectiveness of STAD and Activity Oriented Method on Interpersonal Intelligence of Secondary School Students.
- There exists significant difference in the post- test scores on Interpersonal Intelligence of Students in STAD and control groups.

Objectives

- To compare the effectiveness of Jigsaw II and Activity Oriented Method on Interpersonal Intelligence of Secondary School Students.
- To compare the post-test scores on Interpersonal Intelligence of students in Jigsaw II and control groups.
- To compare the effectiveness of STAD and Activity Oriented Method on Interpersonal Intelligence of Secondary School Students.

• To compare the post-test scores on Interpersonal Intelligence of students in STAD and control groups.

Methodology in brief

Experimental method was adopted for conducting the study. Quasi experimental design in which non-randomised control group pretest post test design was selected for the study. The study comprise of two experimental groups and one control group. A sample of 90 students was selected as the sample and 30 each in two experimental groups and one control group. One experimental group (E1) was taught by Jigsaw II cooperative learning strategy and the second experimental group (E2) was taught by STAD. The control group followed the existing method of teaching (Activity Oriented Method). All the three groups were given the Interpersonal intelligence test before and after the experiment. After experimentation scores were collected for statistical analysis. Lesson transcripts of cooperative learning method- Jigsaw II. Lesson transcripts of cooperative learning method-STAD, Lesson transcripts of Activity Oriented Method and Interpersonal Intelligence Inventory are the tools and techniques used for the study.

Analysis of data

Comparison of post- test scores in interpersonal intelligence of students in the Experimental and Control groups

Table 1

Data and results of test of significance of post- test scores in Interpersonal Intelligence in the Experimental and Control groups

Groups	No. of Students	Mean	Standard Deviation	Critical ratio	Level of Significance
Experimental Group	30	113.2	10.0461	2.66	Significant at
Control Group	30	99.66667	25.92208		0.01Level

The mean scores of the experimental group (113.2) is greater than that of the control group (99.66). The critical ratio obtained is 2.66, which is highly significant at 0.01 level. Since the mean of experimental group is greater than that of the control group, it is inferred that experimental group is better than the control group.

• Comparison of Interpersonal Intelligence of the Experimental and Control groups based on pre- test and post- test scores using ANCOVA

The pre- test and post- test scores of the control and experimental groups were subjected to ANCOVA to determine the effectiveness of Cooperative learning strategies on Interpersonal Intelligence over Activity Oriented Method.

The result of analysis of variance revealed that the values obtained for fx and fy ratios are 1.02 and 7.10 respectively and are tested for significance at 0.05 level for df 1/58(The table value of F ratio for df 1/58 is 4.00 at 0.05 level and 7.01 at 0.01 levels respectively).

So the obtained F_x is not significant at 0.05 level (Fx = 1.02; p > 0.05). Since the F test applied to the pre- test scores F_x falls for short of significance at 0.05 level, it is clear that the x means do not differ significantly.

The table value of F ratio for df 1/58 is 7.01 at 0.01 level. So the obtained F_y is significant at 0.01 level (Fy = 7.10; p < 0.01). Since the F_y falls beyond the 0.01 level of significance, it can be tentatively interpreted that there was significant difference between the y means of the two groups. The final y scores were adjusted for differences in initial x scores. The summary of analysis of covariance of pre- test and post- test scores of students in experimental and control groups is given in the following table.

Sources of						MS _{y.x}	
Variation	df	SS _x	SSy	SS _{x.y}	SS _{y.x}	(V _{yx})	$\mathrm{Sd}_{_{y.x}}$
Among means	1	546.0167	2747.267	1224.767	1394.286	1394.286	
Within groups	57	30884.17	22413.47	19489.27	10114.88	177.4541	13.321
Total	58	31430.18	25160.73	20714.03	11509.17	1571.74	

Table 2

Summary of analysis of covariance of pre- test and post- test scores in interpersonal intelligence of students in the Experimental and Control groups.

 $F_{vx} = 1394.286/177.4541 = 7.85$

The obtained $F_{y,x}$ ratio was tested for significance. Since the table value of F ratio for df 1/57 is 7.01 at 0.01 level the obtained $F_{y,x}$ ratio is highly significant even at 0.01 level ($F_{y,x} = 7.85$; p < 0.01). It is clear from the significant $F_{y,x}$ ratio that the two final means which depend upon the experimental and control variables differ significantly after they have been adjusted for initial difference on x. The adjusted means of post-test scores(x,y means) of students in the experimental and control groups were calculated. The difference between the adjusted y means was tested for significance. The data for adjusted y means of post-test scores of students in experimental and control groups are given in the following table.

Data for adjusted means of post- test scores in interpersonal intelligence in the Experimental and Control groups

Groups	N	M _x	M _y	M _{y.x} (adjusted)
Experimental	30	98.9	113.2	111.29
Control	30	92.86	99.66	101.57
General means	95.88	106.43	-	

 SE_m between two adjusted means = 0.88

t value = 111.29 - 101.57 = 10.59

Adjusted y means for pre- test scores are tested for significance for df 1/57. The obtained t value is 10.59 and the table value for df 57 is 2.58at 0.01 level (t = 10.59; p < 0.01). The significant difference between the adjusted y means indicates that the students of the experimental and control groups differ significantly in their achievement in the post- test. So the mean of the post-test scores of experimental and control groups clearly show that the experimental group is superior in the interpersonal intelligence. It can be interpreted that the interpersonal intelligence of students taught through Cooperative learning strategies is better than those of students taught through Activity Oriented Method.

Comparison of post- test scores in Interpersonal Intelligence of students in the Experimental (STAD) and Control groups

The differences between the mean scores of the two groups were tested for significance by finding the critical ratio. The data and results of the test of significance are given in the table below.

Table 4

Data and results of test of significance of post- test scores in Interpersonal Intelligence in the Experimental and Control groups

Groups	No. of Students	Mean	Standard Deviation	Critical ratio	Level of Significance
Experimental Group	30	115	9.081866	3.044	Significant at 0.01 Level
Control group	30	99.66667	26.05011		

The mean scores of the experimental group (115) is greater than that of the control group (99.66). The critical ratio obtained is 3.04, which is highly significant even at 0.01 levels. Since the mean of experimental group is greater than that of the control group, it is inferred that experimental group is better than the control group.

Comparison of effectiveness of Cooperative learning strategy-STAD on Interpersonal Intelligence with the Activity Oriented Method

The pre- test and post- test scores of the control and experimental groups were subjected to ANCOVA to determine the effectiveness of Cooperative learning strategy STAD on interpersonal intelligence over Activity Oriented Method.

The result of analysis of variance revealed that the values obtained for fx and fy ratios are 0.923and 9.37 respectively and are tested for significance at 0.05 level for df1/58(The table value of F ratio for df 1/58 are 4.00 and 7.01at 0.05 and 0.01 levels respectively).

So the obtained F_x is not significant at 0.05 level (Fx = 1.02; p > 0.05). Since the F test applied to the pre- test scores F_x falls for short of significance at 0.05 level, it is clear that the x means do not differ significantly. The obtained F_x and F_y ratios were tested for significance. The table value of F ratio for df 1/58 is 4.00 at 0.05 level. So the obtained F_x is not significant at 0.05 level

($F_x = .923$; p > 0.05). Since the F test applied to the pre- test scores F_x falls for short of significance at 0.05 level, it is clear that the x means do not differ significantly.

The table value of F ratio for df 1/58 is 7.01 at 0.01 level. So the obtained F_y is significant at 0.01 level (Fy = 9.37; p < 0.01). Since the F_y falls beyond the 0.01 level of significance, it can be tentatively interpreted that there was significant difference between the y means of the two groups.

The final y scores were adjusted for differences in initial x scores. For that SS has been adjusted for any variability in y and SS y, and F ratio, $F_{y,x,were}$ calculated. The summary of analysis of covariance of pre- test and post- test scores of students in experimental and control groups is given in the following table

Table 5

Summary of analysis of covariance of pre- test and post- test scores in Interpersonal Intelligence of students in the Experimental and Control groups.

Sources of						MS _{v.x}	
Variation	df	SS _x	SS _y	SS _{x.y}	SS _{y.x}	(V _{yx})	$\mathrm{Sd}_{_{y.x}}$
Among means	1	673.35	3526.66	1541	1914.07	1914.07	
Within groups	57	42281.83	21812.67	24911.67	7135.17	125.17	11.18
Total	58	42955.18	25339.33	26452.67	9049.24	2039.24	

 $F_{vx} = 1914.07/125.17 = 11.18$

The obtained $F_{y,x}$ ratio was tested for significance. Since the table value of F ratio for df 1/57 is 7.01 at 0.01 level the obtained $F_{y,x}$ ratio is highly significant even at 0.01 level ($F_{y,x} = 11.18$; p < 0.01). It is clear from the significant $F_{y,x}$ ratio that the two final means which depend upon the experimental and control variables differ significantly after they have been adjusted for initial difference on x. The adjusted means of post- test scores(x, y means) of students in the experimental and control groups were calculated. The difference between the adjusted y means was tested for significance. The data for adjusted y means of post- test scores of students in experimental and control groups are given in the following table.

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Data for adjusted means of post- test scores in Interpersonal Intelligence in the Experimental and Control groups					
roups	N	M _x	M _y	M _{y.x} (adjusted)	

Table 6

Groups	IN	IVI _x	IVI _y	$M_{y,x}$ (adjusted)
Experimental	30	99.56	115	113.02
Control	30	92.86	99.66	101.64
General means		96.21	107.33	-

 SE_m between two adjusted means = 0.74

t value = 113.02 - 101.64 = 15.26

Adjusted y means for pre- test scores are tested for significance for df 1/57. The obtained t value is 15.26 is higher than the table value 2.58at 0.01 level for df 57 at 0.01 level (t = 15.26; p < 0.01). The significant difference between the adjusted y means indicates that the students of the experimental and control groups differ significantly in their achievement in the post-test. So the mean of the post- test scores of experimental and control groups clearly show that the experimental group is superior in the interpersonal intelligence. Hence it can be interpreted that the interpersonal intelligence of students taught through Cooperative learning strategy STAD is better than those of students taught through Activity Oriented Method.

Major Findings of the Study

- Jigsaw II is comparatively more effective than Activity Oriented Method in developing Interpersonal Intelligence of secondary school students.
- STAD is comparatively more effective than Activity Oriented Method in developing Interpersonal Intelligence of secondary school students.

Conclusions based on Findings

Above mentioned results indicated that students of experimental groups who were taught by cooperative learning method showed comparatively better results than that of students of control group who were taught with Activity Oriented Method. So Interpersonal Intelligence of students in the experimental group was better than that of students of control group. From this it can be concluded that cooperative learning strategies like Jigsaw II and STAD are proven to be an enormously effective method for learning if allows and encourages students to explain what they are learning to each other, learn each others' point of view, give and receive support from class mates and help each other.

Educational Implications

- Students working cooperatively tend to like each other better, including groups with disabilities, groups with different ethnic background and groups with both genders.
- Students in cooperative learning situations also show increased self-esteem, self-efficacy and confidence in the future. They tend to have a higher regard for school, for the subject they are studying and for their teachers. Cooperative learning is ideal

that individuals can learn in a group and are able to perform it alone.

- When teachers use cooperative learning strategies correctly, students learn more, enjoy it more and develop Interpersonal and study skills that they will use for a life time.
- The findings of the study will help the potentially outstanding young teachers, frustrated by inability to engage students in active learning and motivate them to higher levels of achievement, are so energized, when they implement cooperative learning that they stay with us and go on to produce amazing classroom students.

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EFFECTIVENESS OF COGNITIVE APPRENTICESHIP MODEL ON ACHIEVEMENT IN MATHEMATICS AT SECONDARY LEVEL

Priya Mathew* Dr. (Sr). Celene Joseph**

Abstract

Mathematics is considered to be a difficult subject by most of the pupils mainly due to its abstract nature. Intense dissatisfaction with the traditional system of instruction made it a necessary to reorganize the instructional system in the Mathematics classrooms. The explanations for low mathematics achievement of students could be that they (a) are not taught the appropriate strategies, (b) cannot regulate the study strategies and (c) do not understand how to apply them. The major objective of the study is to study the effect of Cognitive Apprenticeship Model of learning on Achievement in Mathematics when compared with existing method among secondary school students of Kerala state. the experimental method used in this study used the pre-test post-test non equivalent two group design. The finding of the study showed that there is significant effect of Cognitive Apprenticeship Model of Learning on achievement in Mathematics at Secondary Level and significant effect is also noticed under the categories of objectives: Knowledge, Understanding and Application. This study revealed the fact that the school curriculum and curriculum for teacher training should include provisions and activities that may enrich the Cognitive Apprenticeship Model in classrooms.

Key words: Cognitive Apprenticeship, Modeling, Coaching, Scaffolding/fading, Articulation, Reflection, Exploration, etc.

Introduction

Mathematics is essential to all learning and it is the base for all sciences and arts. Hence it forms an unavoidable part of the secondary school curriculum. Emphasizing the importance of Mathematics in education, the Education Commission (1964-66) wrote 'One of the outstanding characteristics of scientific culture is quantification.

Mathematics, therefore assumes a prominent position in modern education'. Mathematics is considered to be a difficult subject by most of the pupils mainly due to its abstract nature. National Curriculum Framework (2005) of India has rightly identified 'a sense of fear and failure regarding Mathematics among majority of

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children' as a major problem in teaching and learning of Mathematics. A detailed analysis of present way of teaching Mathematics may reveal the reasons for such problems. Evidently it is a logical subject, where knowledge and skill are built up systematically. Mathematics is one of the important subjects which need to be taught effectively. A major reason for children doing less well in school Mathematics seems to be the way the subject is taught in schools in India. Though everybody knows the defective status of Mathematics teaching, only very few people have attempted to find out the cause and implement the ways for improving Mathematics teaching.

Today child centered education is widely advocated everywhere. For meaningful child centered education different approaches of teaching need to be used for different subjects. In recent years it has been shown that the children learn more effectively if they are actively involved in learning situations, which means that the children learn best, when they themselves participate, handle and manipulate the equipment during practical activities. Various learning theories have focused on how learning should take place. Behaviourists' understanding of learning has been in use for a long period which was followed by information processing which has become an extended behaviourism. The conception of learning has changed from information processing to the construction of knowledge. This construction process never starts at zero, but always has its basis in an already existing knowledge structure. This existing knowledge or experience is the starting point for any interpretation of the new information leads to learning which is named as construction of knowledge. This learning is not determined by general laws but depends very much on the situation and the context in which it takes

place. Thus one's own learning process becomes an accelerating and structural element in learning.

The philosophy of constructivism believes that children construct their own understanding and knowledge of the world through experiencing things and reflecting on these experiences. Here child is creator of his own knowledge. The students construct their own knowledge by testing ideas based on their prior knowledge and experience, applying them to new situations and integrating the new knowledge gained with pre-existing intellectual constructs. The teacher is a facilitator who guides the students' critical thinking, analyzing and synthesizing abilities throughout the learning process. The teacher is also a co-learner in the process.

Constructivist approaches to human learning have lead to the development of a theory of Cognitive Apprenticeship. This theory holds that masters of a skill often fail to take into account the implicit processes involved in carrying out complex skills when they are teaching novices. To combat these tendencies Cognitive Apprenticeships are designed to bring these tacit processes into the open, where students (apprentice) can observe, enact and practice them with the help of the teacher (master). The concept of Cognitive apprenticeship originates from Social Constructivist Theory based on the work of Vygotsky. It is mostly related to the Situated Cognition Theory. Situated cognition is a theory of instruction that suggests learning is naturally tied to authentic activity, context and culture (Brown, Collins, & Duguid, 1989).Cognitive Apprenticeship provides practical steps for applying situated cognition theory. This model is also supported by Albert Bandura's (1997) theory of modeling which posits that in order for modeling to be successful, the learner must be motivated to learn, attentive able to reproduce the desired skill, must have access to and retain the information presented. Problem solving skills can be developed through the use of cognitive apprenticeship model in any academic field. This model is very helpful for acquiring problem soling skills in Mathematics.

Cognitive Apprenticeship Model of Learning

The concept of Cognitive apprenticeship originates from social constructivist theory based on the work of Vygotsky. Cognitive Apprenticeship model is mostly related to the situated cognition theory. Situated cognition is a theory of instruction that suggests learning is naturally tied to authentic activity, context and culture (Brown, Collins, & Duguid, 1989). It is more difficult to learn from unnatural activities. Cognitive Apprenticeship is an example of situated learning in which learners participate in a community of practice that is developed through activity and social interaction in ways similar to that in craft apprenticeships (Mc Lellan, 1994).

Brown, Collins, and Duguid (1989) describe "Cognitive Apprenticeship methods try to enculturate students into authentic practices through activity and social interaction in a way similar to that evident in craft apprenticeship." It is a theory of the process where a master of a skill teaches that skill to an apprentice. Apprenticeship is an old and well-established model for learning. Only in the last century and only in industrialized nations, formal schooling emerged as a widespread method of educating the young. Before schools appeared, apprenticeship was the most common means of learning and was used to transmit the knowledge required for expert practice in fields from painting and sculpting to medicine and law. Like the apprentice electrician or the interning future physician, cognitive apprenticeship seeks to engage learners in real-world scenarios in which they act and interact to achieve useful outcomes. The workplace has a number of strengths as a learning environment such as authentic, goal-oriented activities; access to guidance; everyday engagement in problem solving and intrinsic reinforcement.

Α Cognitive Apprenticeship environment allows both teachers and students to demonstrate and share their expertise. In this setting, the teacher's goal is to help students gradually take on more complex forms of reasoning and performance through observation and guided practices. The theory underlying the cognitive apprenticeship (Collins, Brown & Newman, 1989) is that learning is a constructive process when students can meaningfully incorporate new knowledge into their existing knowledge structure.

The nature of the teacher's assistance to learners consists of varying the degrees of the guidance. Cognitive apprenticeship includes high and low degrees of guidance by which learning begins with explicit modeling of an expert's actions with the expert verbalizing their cognitive processes or strategies. In working on a task more autonomously the support consists of coaching and scaffolding, consisting of procedures for analyzing tasks, generating explanations, etc. The emphasis is on how students learn to articulate and reflect on what they do during their learning process and thus pupils are encouraged to engage in self monitoring.

Significance of the Study

Intense dissatisfaction with the traditional system of instruction made it a necessary to reorganize the instructional system in the Mathematics classrooms. In the traditional classes of mainstreaming, students who have not done well in schools were humiliated, frightened and discouraged. The purpose of educational evaluation was to rank the students from best to worst. A reorganization of learning environment is inevitable to promote active learning and teaching.

In India, researches in the field of education are probing alternative ways and means of teaching mathematics during last two decades. Thus a lot of teaching has been going on into the theories of learning and a publication of these theories to the development of teaching strategies and models. Since mathematics is a subject of significance by itself and also concomitant to other subject areas, it is one of the compulsory subjects at the school level. Experience has shown that the majority of students normally fail in mathematics at the end of class X (NCERT, 2000). Kajapeer (2001) probed the reason for failure and backwardness in the subject and found it as the existing gap between research in the subject and its classroom practices.

The explanations for low mathematics achievement of students could be that they (a) are not taught the appropriate strategies, (b) cannot regulate the study strategies and (c) do not understand how to apply them. Cardelle Elawar (1992) observed that low achieving students are often found to be confused when they confound a mathematical problem and they are unable to explain the strategies they employ and find a correct solution.

Cognitive apprenticeship is the best example of an instructional arrangement that can be used to foster active student learning which is an important dimension of Mathematics learning and highly endorsed by mathematics educators and researchers. As this model enhances healthy relationship between teacher and student and among students themselves, it will affect Achievement in Mathematics. Cognitive apprenticeship provides a methodology for acquiring cognitive skill through six phases of teaching how to accomplish cognitive process: Modeling, Coaching, Scaffolding, Articulation, Reflection, and Exploration.

Most of the studies on Cognitive Apprenticeship Model were conducted in Western countries under highly artificial experimental conditions and relatively few studies had been reported in Indian situation. The possibility of this area is not much exploited in India, particularly in Kerala so far. This inspired the investigator to study the effectiveness of Cognitive Apprenticeship Model of learning over the existing method of teaching Mathematics at the secondary stage. The intension behind the present study is the experimentation of the strategy in the Indian context.

Objectives of the Study

- 1. To study the effect of Cognitive Apprenticeship Model of learning on Achievement in Mathematics when compared with existing method among secondary school students of Kerala state.
- 2. To study the effect of Cognitive Apprenticeship Model of learning on Achievement in Mathematics in terms of its cognitive components when compared with existing method among secondary school students of Kerala state.

Hypotheses of the Study

1. There is significant effect of Cognitive Apprenticeship Model of learning when compared with existing method on Achievement in Mathematics among secondary school Students of Kerala State. 2. There is significant effect of Cognitive Apprenticeship Model of learning when compared with existing method on Achievement in Mathematics in terms of cognitive components among secondary school Students of Kerala State.

Methodology

Design of the study

The investigator adopted an experimental method to find out the effectiveness of Cognitive Apprenticeship Model of learning. The design selected for the present study is pre-test post-test non equivalent two group design. Two groups of students of class VIII were selected for the study and one group was selected randomly as experimental and other as control group. Experimental group was exposed to Cognitive Apprenticeship Model of Learning and the control group was taught by existing method of teaching. The duration of experiment was one month with twenty lessons of 45 minutes duration.

Sample of the study

The investigator randomly selected two VIII standard classes from St. Mary's Higher Secondary School, Kidangoor, Kottayam district of Kerala State. Among the two classes one was randomly selected as experimental group and the other as control group consisting of 38 students each. Thus a group of 76 students from two classes was treated as sample.

Tools and Techniques

For the present experiment, the following tools were used for treatment in the experimental and control groups.

a) Instructional material based on Cognitive Apprenticeship Model of learning

For the experimental treatment, instructional material based on the Cognitive Apprenticeship Model of Learning on the topics 'Polygon' and 'Quadrilaterals' of standard VIII text books of Kerala State Syllabus were prepared by the investigator. The investigator used the six steps involved in Cognitive Apprenticeship Model described by Allan Collins (1991) and his colleagues. The different steps involved in the preparation of instructional material are shown in the Table 1.

Sl. No.	Steps	Activity
1	Modeling	 Show students how to do tasks. Build a conceptual model of the processes Explain reasons why things happen that way Provide rationale for processes
2	Coaching	 Observe students attempt a task Provide assistance as needed Offer hints, feedback, and guidance
3	Scaffolding/fading	 Offer little support, guidance and reminders Assists students to manage complex task performance If necessary, complete those parts of the task that students have not yet mastered Gradual removal of support (fading)

 Table 1

 Steps involved in the Cognitive Apprenticeship model of Learning

4	Articulation	 Require their students to explain what they are doing Encourage students to explicate their knowledge, reasoning, and problem solving strategies
5	Reflection	 Encourage students to reflect on their tasks Provide students to compare their work with masters, other students, and with an internal cognitive model of the relevant expertise
6	Exploration	 Encourage students to solve new, but similar tasks Push students to be independent learners Force to engage in exploration

b) Instructional material based on existing method

For the control group, the instructional material based on the existing method on the topics 'Polygon' and 'Quadrilaterals' of standard VIII text books of Kerala State Syllabus were prepared by the investigator.

c) Achievement Test in Mathematics

The Achievement test in Mathematics on the topics Polygon' and 'Quadrilaterals' was developed by the investigator and was used as a pretest and posttest.

d) Raven's Progressive Matrices Test

In order to statistically equate the experimental and control group the investigator administered the Raven's Progressive Matrices Test as pre test to measure Intelligence.

Statistical Techniques

The investigator used t- test and analysis of co-variance (ANCOVA) for the analysis of the data pertaining to the study.

Results

1. Effectiveness of Cognitive Apprenticeship Model of Learning on Achievement in Mathematics

To find out effectiveness of Cognitive Apprenticeship Model of Learning on Achievement in Mathematics, posttest scores of the experimental and control groups were compared using the ANCOVA by taking pre test scores and intelligence as covariate. The results are presented in Table 2.

Table 2

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Source	Sum of	Degrees of	Mean	F	Р			
	Squares	freedom	Square	ratio	value			
Between group	220.088	1	220.088	38.506	.000			
Within group	411.530	72	5.716					
Pretest score of Achievement								
in Mathematics (Covariate)	200.289	1	200.289	35.042	.000			
Intelligence (Covariate)	57.163	1	57.163	10.001	.002			

Sum of Squares, Mean Square Variance, Degrees of freedom, F ratio and p-value of the scores on Achievement in Mathematics

The F values is found to be 38.506 ($F_{(1,72)} = 38.506$; p<0.05). This indicates that Cognitive Apprenticeship Model of Learning has significant effect on the Achievement in Mathematics when the pre test scores of achievement in mathematics and intelligence are considered as covariates.

2. Effectiveness of Cognitive Apprenticeship Model of Learning on Achievement in Mathematics under each category of

objectives: Knowledge, Understanding and Application

To find out effectiveness of Cognitive Apprenticeship Model of Learning on achievement in Mathematics under the category of objectives (knowledge, understanding and application) the pre-test and post-test scores of experimental and control groups were compared using 't' test. The results are presented in Table 3.

Table	3
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Test of significance of the difference between the mean achievement scores of experimental and control group in pre test and post test under each category of objectives: Knowledge, Understanding and Application

Objective		Group	Ν	Mean	Std.	t
-		-			Deviation	value
Knowledge	Pre test	Experimental Group	38	4.34	1.547	0.355
		Control Group	38	4.45	0.978	
	Post test	Experimental Group	38	8.37	1.550	2.27*
		Control Group	38	7.55	1.589	
Understanding	Pre test	Experimental Group	38	7.89	2.011	1.98*
		Control Group	38	6.97	2.047	
	Post test	Experimental Group	38	12.84	2.499	3.03*
		Control Group	38	11.16	2.343	
Application	Pre test	Experimental Group	38	2.89	1.110	1.26
		Control Group	38	3.21	1.069	
	Post test	Experimental Group	38	6.66	1.615	4.84*
		Control Group	38	5.18	0.955	

* Significant at 0.05 level

The t values (post test) are found to be 2.27 (t=2.27; p<0.05); 3.03 (t=3.03; p<0.05); and 4.84 (t=4.84; p<0.05) respectively. This indicates that Cognitive Apprenticeship Model of Learning has significant effect on the Achievement in Mathematics under each category of objectives: Knowledge, Understanding and Application.

Findings of the Study

- 1. There is significant effect of Cognitive Apprenticeship Model of Learning on achievement in Mathematics at Secondary Level.
- 2. There is significant effect of Cognitive Apprenticeship Model of Learning on achievement in Mathematics under the categories of objectives:

Knowledge, Understanding and Application.

Conclusion

Cognitive Apprenticeship attempts to promote learning within the social context, both outside and inside school. Also the learning process advances through collaborative social interaction and the social construction of knowledge. In problem-based learning environments, students acquire cognitive competence by working on real problems that challenge their current level of thinking, rather than working solely on isolated parts of a problem or on problems they will never encounter outside of school. Activities that encourage a reflective and strategic stance toward learning should be embedded in the regular activities of a classroom. When teachers make aspects of learning and problem solving visible, and help students identify their own strengths and strategies, they can have a lasting impact on how their students learn once they leave their classroom. With the rise of the situated cognition paradigm in cognitive science, cognitive apprenticeship has become increasingly prominent as model of instruction. Cognitive apprenticeship has proved successful in promoting students' problem solving ability as well as in shaping the social interactions between teachers and students to goal-oriented problem solving. By design the environment creates a high degree of interaction rather than having an individual work in isolation. This interaction may take the form of collaborative problem solving, direct instruction, informal assessment, or coaching. Through these interactions, the roles of the members are defined. Cognitive apprenticeship model lessons present opportunities for pupils to work and think together in groups about various concepts of a particular topic. Therefore, the school curriculum and curriculum for teacher training should include provisions and activities that may enrich the Cognitive Apprenticeship Model in classrooms.

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SPORTS CONTRIBUTIONS TO HUMAN RIGHTS

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Abstract

In this fast moving world where everyone is in a race it is difficult to protect the human rights violations. People don't have time for their fellow beings and people are not aware that their rights have been violated. Human rights of the vulnerable individuals are continued to be blown in the air and seldom these people gets justice. It is quite necessary that the principles of human rights are taught efficiently to all. Sports serve as a powerful media to educate people about human rights. Sports are universally accepted and have universal laws. Sports exhibit the principles of equality. Sport is natural to humans and they love the company of it. Lessons learned in the field of sports and games are long-lasting. The educator must be able to define the principles of human rights and connect it with the sporting situations to make the learner concretize the concept of human rights.

Key words: Sports, Human rights, Diseases, Health, Education, Gender inequality, Inclusion, Peace-building, etc.

Introduction

It is necessary to define the concept sport for the purpose of effective analysis of its contributions. Sport is considered as any physical activity which has the character of play and which involves a struggle with oneself or with others, or a confrontation with natural elements". If this activity involves a competition, it must then always be performed with a spirit of sportsmanship. There can be no true sport without the idea of fair play. Sport thus defined is a remarkable means of education

Objectives

1 Provide extracurricular education on human rights to young people in primary and secondary schools in the absence of National and State Human Rights Curriculum

- 2 Teach human rights in a way that is child-centred, respecting their interests, experiences and ideas and that is fun, interactive and playful
- 3 Engage with young people in a way that is memorable, sustaining a life long connection between fair play on the field and in life.

Sport and games are emerging as an effective teaching and learning methodology for human rights education across the globe. People in the world are more and more into sport. Media has glamorised the sport as never before. More and more people follow sport and their sport icons through various

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means of media. Sport dominated all forms of media and taps into deeply held myths of national identity.

The historic relationship between sport & human rights

Although using sport in education for human rights, development and peace is cutting edge, the relationship between sport and human rights can be traced back to antiquity.

The Ancient Olympic Games, which took place between 776 BC - 398 AD did so during a recognized truce between states in one of the earliest examples of respect for Humanitarian Law. Sport again played a role in facilitating peace on the battlefields of World War 1 during the 1914 Christmas Day Truce.

Sport has also provided a very public platform to expose human rights abuses across the globe. At the 1936 Berlin Olympics, the achievements of Jesse Owens undercut Adolf Hitler's glorification of Nazism and white supremacy. The gloved fists of African American sprinters highlighted civil rights abuses in the USA in 1968. And in the 1980's sport boycotts helped end Apartheid in South Africa.

Sport and International Human Rights instruments

The relationship between sport and human rights is also referred to in a number of international instruments.

International protection of the right to sport has been championed by UNESCO, firstly in 1964 through work it undertook with the International Council of Sport and Physical Education. The Declaration on Sport, though now only a text of historical interest, does provide a useful definition of sport. UNESCO adopted the first International Charter of Physical Education and Sport, which enunciated for the first time sport and physical activity as a fundamental human right. This right was reinforced in 1989, with the enactment of the Convention on the Rights of the Child and the creation of a Right to Play.

UNESCO's work laid the foundations for the United Nations General Assembly to adopt a resolution on sport as a means to promote education, health, development and peace.

In 2005 the UN Office on Sport for Development and Peace (UNOSDP) was established heralding an international movement that is yet to reach critical mass.

During the Beijing Olympics and the 60th Anniversary of the UDHR, the United Nations released Harnessing the Power of Sport for Development and Peace: It gave some recommendations to Governments, which set out a platform for National governments to use sport to combat 5 global problems -

- a) Disease and health
- b) Education
- c) Gender inequality
- d) Inclusion of people with disabilities
- e) Promotion of peace-building.

The document gave four reasons why the United Nations uses sport for development and peace:

- a. Sport has Universal Popularity
- a. Sport connect people and communities
- a. Sport is a communications platform
- a. Sport has potential to empower, motivate and inspire

While sport alone cannot prevent conflict or build peace, it can assist in peacebuilding. Peace building is a continuous process ranging from the prevention of violence, to humanitarian relief and early recovery, to the long-term construction or reconstruction of society. Through sport, we can engage those people whose lives and livelihoods are at risks. Through sport, we can reconnect the social bonds and interactions between families, neighbourhoods and local communities that have been torn by violence.

Human Rights Education uses sport as a vehicle for learning. Although each of these programs is unique, they share five common beliefs about the power of sport to educate for and advance human rights:

1. Promotes positive values in people

Sport is one of those rare activities which call upon the body, mind and the will all at the same time. Sport and physical activity programs are widely believed to be powerful vehicles for teaching children and youth social and life skills and acquiring positive attitudes, values and morals. Some of these skills are team-building, communication, Problem-solving, community, self-esteem, personal responsibility, empathy, moral development; resiliency and improved inclination for educational achievement.

2. Encourages active participation and engagement in human rights

Sport acts a motivator to learn about human rights by presenting students with an opportunity to run around in the shoes of others; to wear a different team's colours and thereby develop empathy and understanding. Sport transforms complicated human rights principles like Freedom, Respect, Equality and Dignity - into easy to understand concepts. Because human Rights acquire their meaning in practice - in the reality of daily lives - sport provides a useful entree for human rights to tap into deep, meaningful experiences.

3. Ensures human rights education is genuine and lasting

A measure of successful learning is that the learner is able to recall and apply what they have learned in relevant contexts and situations in the longer term. Sports universal popularity makes it the perfect vehicle for educational engagement. Educating about human rights through sport elevates otherwise dry, technical legal discussion into a fun exercise which energises individuals and groups. Sport appeals to the child in us all. Creating a childcentred, secure, supportive, stimulating and stress free environment to discuss human rights ensures that the learning is genuine and lasting.

4. Demonstrates the power of Fair Play

"Fair play is the essence of any game or sport that is worthy of the name and is as essential in professional or amateur sport. Fair play requires not only strict, but also glad and willing adherence to the rules, both in the letter and in the spirit. It implies respect for one's opponent and for oneself."

Sports contain moral self criticism - a complete honesty towards ones opponent, even in the heart of the most strenuous contest - is this attitude of mind which makes it possible for sport to make its priceless contribution to human rights and international understanding.

5. Is conflict catharsis

Finally sport is a cathartic release of conflict - in the expending of energy, physical strength and opposition within a safe environment bounded by rules of engagement - the need for other forms of conflict resolution - violence and war - to settle disputes is diminished. Sport has a real role to play in peace building between peoples and nations.

Conclusion

The secret to human rights education lays in respecting sport. For too long we have thought of the international human rights framework only as legal texts forming a body of international law. Yet they are so much more. Not least the human rights framework is the only codification of commonly held universal and internationally recognised values.

In the words of Francesca Klug, architect of the British Human Rights Act, human rights education through sport is an idea whose time has come. Through this unexpected but creative alliance, new life will be breathed into the idea of human rights, positioning human rights educators and advocates to occupy a more prominent position domestically and internationally.

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CONTINUOUS AND COMPREHENSIVE EVALUATION: CERTAIN REFLECTIONS

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Abstract

Continuous and Comprehensive Evaluation is intended to provide a holistic profile of the learner through assessment of both scholastic and non-scholastic aspects of education spread over the total span of instructional time in schools. To bring about the improvement in the quality of education and the holistic development of the child who is tomorrow's global citizen, evaluation process should focus on Formative and Summative aspects. By comprehensive evaluation, it is meant that, evaluation should not concern itself only with knowledge but it shall also take into account the factors that are inherent in students' growth such as skills, understanding, appreciation, interest, attitude and habits. In other words, evaluation should cover all the learning experiences of the learner in curricular as well as non-cognitive areas. In this paper, the author tried to focus on the concept, meaning, features and objectives of CCE besides highlighting the barriers involved in the implementation of the new system of evaluation i.e. CCE. Further, the impact of implementing CCE is also dealt in detail along with certain suggestions to improve the standard of CCE and thereby reducing the work stress among teachers.

Key Words: CCE, Summative, Formative, Barriers, Impact, etc.

Introduction

Within the realm of educational planning, many things are always changing: the structure of the education system, curriculum and textbooks, modes of teaching, methods of teacher training, the amount and type of provisions to schools such as science laboratories, textbooks, furniture, classroom supplies, and so on. These changes may lead to an improvement, or worsening of the situation, in the quality of an educational system. Evaluation system is one such aspect. Education aims at making children capable of becoming responsible, productive and useful members of society. Knowledge, skills and attitudes are built through learning experiences and opportunities created for learners in school. It is in the classroom that learners can analyze and evaluate their experiences, learn to doubt, to question, to investigate and to think independently (CBSE, 2009). The scope of evaluation in schools extends to almost all the areas of learners' personality development. It should include both scholastic and co-scholastic areas, i.e. it should be *comprehensive* in nature. This is in line with the goals of education. Evaluation is continuous and reveals the strengths and weaknesses of learners more frequently, so that the learners have better opportunity to understand and improve themselves. It also provides feedback to the

* Assistant Professor, Indian College of Education, Opp. to VIT, Katpadi, Vellore – 14. Email: anu2599@gmail.com teachers for modifying their teaching strategies. Continuous and Comprehensive Evaluation (CCE) refers to a system of school-based evaluation of students that covers all aspects of students' development. It is a developmental process of assessment which emphasizes on two fold objectives. These objectives are Continuity in evaluation and assessment of broad based learning and behavioural outcomes on the other.

Difference between Assessment and Evaluation

'Assessment is a process of determining 'what is'. It is an opinion or a judgment about somebody/something that has been thought about very carefully. Assessment provides faculty members, administrators, trustees, and others with evidence, numerical or otherwise, from which they can develop useful information about their students, institutions, programs, and courses and also about themselves. This information can help them make effective decisions about student learning and development, professional effectiveness, and program quality. *Evaluation* uses information based on the credible evidence generated through assessment to make judgments of relative value; the acceptability of the conditions described through assessment'.

'Assessment provides feedback on knowledge, skills, attitudes, and work products for the purpose of elevating future performances and learning outcomes. Evaluation determines the level of quality of a performance or outcome and enables decision-making based on the level of quality demonstrated' -Marie Baehr (Vice President for Academic Affairs and Dean of the Faculty, Coe College, United States). Assessment is usually used in assessing learning but evaluation is used to deduce the result or label the quality of final product. Assessment is done to improve a performance or outcome and Evaluation is to determine the quality of a performance or outcome and to make decisions based on the quality.

Concept of CCE

The Central Board of Secondary Education (CBSE), in its commitment to the cause of education by setting quality benchmarks and enhancing the teachinglearning process in schools, has over the years, initiated many reforms. The scheme of Continuous and Comprehensive Evaluation (CCE) was implemented by the Board as a sequel to various other educational reforms. The inbuilt flexibility of the learning process with equal emphasis on Scholastic and Co-Scholastic areas has refurbished classroom teaching, and as the assessment is holistic, it is also largely realistic. The CCE has also facilitated the Principals and teachers to rethink and redesign the teaching-learning process in more pragmatic, creative and ingenious ways (CBSE, 2012).

Over emphasis on examination marks focusing on only scholastic aspects makes children assume that assessment is different from learning, resulting in the 'learn and forget' syndrome. Besides encouraging unhealthy competition, the overemphasis on Summative Assessment system also produces enormous stress and anxiety among the learners. It is this that has led to the emergence of the concept of Continuous and Comprehensive School-Based Evaluation.

The major emphasis of CCE is on the continuous growth of students ensuring their intellectual, emotional, physical, cultural and social development and therefore will not be merely limited to assessment of learner's scholastic attainments. It uses assessment as a means of motivating learners in further programmes to provide information for arranging feedback and follow up work to improve upon the learning in the classroom and to present a comprehensive picture of a learner's profile. The CBSE before winding up the Class X Board Examination completely made the Board Examination optional as an interim measure. A student may appear either for Board Examination or for the Examination conducted by their own school. The CBSE is issuing the same certificate and mark sheet for both the examinations. There is no difference at all in the certificates and marks sheet issued for the two.

That CCE is a pedagogically sound student assessment system which evaluates each student's academic and extracurricular attainments is self evident. The centrepiece of CBSE's exam reforms, it's a vast improvement over the conventional exam-centric evaluation system. Under CCE, every student's performance is appraised continuously through formative assessment (FA with 40 percent) and summative assessment (SA with 60 percent). FA is based on informal tests, assignments, project work, group activity etc and covers academic subjects as well as life skills such as creative and critical thinking, and decision-making with weightage also given to extra-curricular activities. Teachers are given the discretion to enhance academic grades of students who have performed well in non-scholastic activities. On the other hand, SA is conducted on the basis of students' performance in written first term and final exams with weightages of 20 and 40 percent respectively. The first term exam is conducted by schools themselves with students given the option to choose between writing the class X final exam conducted by CBSE or the school.

Meaning of Continuous and Comprehensive Evaluation (CCE)

In this scheme the term 'continuous' is meant to emphasise that, evaluation of identified aspects of students' 'growth and development' is a continuous process rather than an event, built into the total teachinglearning process and spread over the entire span of academic session. It means regularity of assessment, frequency of unit testing, diagnosis of learning gaps, use of corrective measures, retesting and for their self evaluation.

The second term 'comprehensive' means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of students. Since abilities, attitudes and aptitudes can manifest themselves in forms other then the written word, the term refers to application of variety of tools and techniques (both testing and non-testing) and aims at assessing a learner's development in areas of learning like: Knowledge, Understanding/Comprehension, Applying, Analyzing, Evaluating and Creating.

In order to improve the teaching learning process. Assessment done should be both Formative and Summative. Formative assessment is a tool used by the teacher to continuously monitor student progress in a non-threatening, supportive environment. It involves regular descriptive feedback, a chance for the student to reflect on the performance, take advice and improve upon it. It involves students' being an essential part of assessment from designing criteria to assessing self or peers. If used effectively it improve student performance can tremendously while raising the self esteem of the child and reducing the work load of the teacher. *Formative assessment* is thus carried out during a course of instruction for providing continuous feedback to both the teachers and the learners for taking decisions regarding appropriate modifications in the transactional procedures and learning activities.

Summative assessment is carried out at the end of a course of learning. It measures or 'sums-up' how much a student has learned from the course. It is usually a graded test, i.e., it is marked according to a scale or set of grades. The comprehensive evaluation necessitates the summative assessment of cognitive abilities as well as the assessment of health habits, work habits, cleanliness, cooperation and other social and personal qualities through simple and manageable means of tools. The comprehensive evaluation not only helps in checking all the standards of performance in both scholastic and co-scholastic areas, but also in decision making regarding various aspects of teaching-learning process, promoting the students, increasing quality, efficiency and accountability (Rao, 2001).

The process of assessing the students' progress in achieving objectives related to scholastic and co-scholastic domain is called comprehensive evaluation. It has been observed that usually the scholastic areas such as knowledge and understanding of the facts, concepts, principles etc. of a subject are assessed. The co-scholastic elements are either altogether excluded from the evaluation process or they are not given adequate attention. For making the evaluation comprehensive, both the scholastic and coscholastic should be given importance. Simple and manageable means of assessment of coscholastic aspects of growth must be included in a comprehensive evaluation scheme.

Features of Continuous and Comprehensive Evaluation

• The 'continuous' aspect of CCE takes care of 'continual' and 'periodicity'

aspect of evaluation. Continual means assessment of students in the beginning of instructions (placement evaluation) and assessment during the instructional process (*formative evaluation*) done informally using multiple techniques of evaluation.

- Periodicity means assessment of performance done frequently at the end of unit/term (summative). The 'comprehensive' component of CCE takes care of assessment of all round development of the child's personality. It includes assessment in Scholastic as well as Co-Scholastic aspects of the pupil's growth.
- Scholastic aspects include curricular areas or subject specific areas, whereas co-scholastic aspects include life skills, co-curricular, attitudes, and values.
- Assessment in scholastic areas is done informally and formally using multiple techniques of evaluation continually and periodically. The diagnostic evaluation takes place at the end of unit/term test. The causes of poor performance in some units are diagnosed using diagnostic tests.
- These are followed up with appropriate interventions followed by retesting.
- Assessment in Co-Scholastic areas is done using multiple techniques on the basis of identified criteria, while assessment in Life Skills is done on the basis of Indicators of Assessment and checklists.

(Source - Examination Reforms, NCERT)

The Objectives of CCE

The main objective of the continuous and comprehensive evaluation (CCE) is the school- based evaluation of the pupil on a continuous process throughout the year. The other part of it is the assessment of the pupil in the other co-scholastic areas like sports, arts, culture, music etc. The teachers have to be trained professionally so that their judgment when made through an honest and objective appraisal without bias is the basis of CCE. Some other objectives of CCE are;

- To help develop cognitive, psychomotor and affective skills.
- To lay emphasis on thought process and de-emphasise memorization.
- To make evaluation an integral part of teaching-learning process.
- To use evaluation for improvement of students' achievement and teaching learning strategies on the basis of regular diagnosis followed by remedial measures.
- To use evaluation as a quality control devise to raise standards of performance.
- To determine social utility, desirability or effectiveness of a programme and take appropriate decisions about the learner, the process of learning and the learning environment.
- To make the process of teaching and learning a learner-centred activity.

Barriers in Effective Implementation of CCE

"CCE is a great idea and a muchneeded educational reform. Implemented in ideal conditions, it is student centric facilitating diagnosis of every student's learning needs and development of teachinglearning strategies to enhance academic performance. It also encourages cocurricular and extra-curricular education. CCE offers schools a great opportunity to eliminate rote learning and swotting for exams. But this pedagogic system is not easy to implement and requires extensive teacher training and support. Yet with teachers preoccupied with assessment rather than diagnosis and redressal of student learning needs, CCE has become all about clerical recording of information in daily assessment sheets rather than helping children set and achieve higher standards. Rigorous and continuous teacher training is the precondition of effectively implementing CCE in spirit and practice. Otherwise there will be dilution of standards and massive marks inflation", says Maya Menon, founder director of The Teacher Foundation, a Bangalore-based teachers training organisation empanelled by CBSE to conduct CCE teacher training workshops.

With schools given full freedom and authority to assess students' performance, school managements and teachers are assessing and evaluating their class X students too liberally. Moreover, apprehensive about being accused of favouritism or being too strict, teachers tend to err on the side of generosity in CCE's formative and summative assessment examinations. Though CBSE has mandated that all schools maintain "evidence of assessment" in either of the two school terms for random checking by board officials to ascertain fair and unbiased evaluation, instances of teachers being pulled up is rare.

Dramatic increase in record keeping and documentation duties is a common lament of teachers of CBSE schools countrywide. Under CCE's formative assessment which covers evaluation of nonscholastic attainments, teachers have to maintain assessment sheets on each student's co-curricular and extra-curricular activities as well as records in the form of anecdotes or achievements for proof of life skills, team work and attitudes towards teachers and peers. According to Joshi (2013), the difference in standards of schools, roadblocks in communication with stakeholders and diversity of socio-economic backgrounds has been the biggest challenge in implementing CCE. The results of the research study of Singhal (2012) revealed that currently the perception of government school teachers about CCE is average which indicates moderate acceptability of CCE by the teachers. The teachers are not adequately prepared for the effective execution of CCE in government schools. Further the study revealed that the large number of students in the classes, lack of appropriate training, inadequate infrastructure and teaching materials and increased volume of work act as barriers in smooth execution of CCE. Lack of seriousness among the students towards academics was also reported as a serious concern of the teachers.

Some of the observations (Rao, 2001) related to the evaluation practices of teachers made were as follows:

- Evaluation practices carried out in schools are still conventional in their nature and purposes.
- Continuous assessment is not followed systematically even though the teachers were trained through inservice programmes.
- Competencies are not assessed through planned procedures of evaluation.
- One does not get a fair and realistic picture of what students have actually mastered.
- Undue reliance on recall is found, rather than enabling the students to transfer and apply what they have learnt to different concepts and problems.
- Formative feedback followed by identification of learning difficulties and provision of remedial instruction were not carried out.

• The personal and social qualities are totally ignored due to lack of awareness of what to be evaluated and how to evaluate.

In the existing conditions of evaluation system carried out in schools, it was felt essential to equip the teachers with necessary knowledge and skills in planning the evaluation tools and in proper assessment of students both in cognitive and noncognitive areas.

Impact of Implementation of CCE

Since implementation of CCE in CBSE schools countrywide, there's been a steady increase in the number of students clearing the class X board examination, and an unprecedented rise in the number of 90plus percenters. In the very first year of CCE in 2011, the percentage of students passing CBSE's class X exam rose to 98.6 percent (91.1 percent in 2010), with the number of students averaging 90 percent-plus recording an all-time high. Of the 1 million students countrywide certified by CBSE in 2011, 3.8 percent (38,377) scored a perfect cumulative grade point average (CGPA) of 10 (91-100 percent). Assessment liberalisation has clearly set in. The national pass percentage in the CBSE class X exam of 2012 rose to 98.19 percent and 98.94 percent this year. CCE has prompted grades inflation. In many schools marks are given liberally or tests made simple to boost institutional reputation. Also after the introduction of CCE, academic syllabuses have been diluted especially for science subjects, and standards have fallen.

Some CBSE officials admit that the implementation of CCE in the board's affiliated schools is far from satisfactory. For instance, in the first-ever internal study (2013) of proof of assessments submitted by schools, CBSE found only 31.57 percent of schools following CCE "in letter and
spirit". The board had asked 5,000 randomly selected schools to show the evidence of assessments they made for the first term of the 2012-13 academic year. After examining the evidence for over a month, CBSE found most schools had turned the formative assessment under which teachers are advised to evaluate student performance through assessment of project work and practical's rather than paper-pencil tests, into just 'another test'. While 31.57 percent of schools were categorised as 'good' for having successfully implemented CCE, nearly half were rated 'average'. According to the feedback report prepared by the board, 18.28 percent of schools needed to radically improve existing CCE practices.

For instance, on May 13 the Gurgaonbased The Curriculum Company (TCC) released the conclusions of a survey which interviewed 1,482 teachers and 18 principals in 100 schools across four cities (Delhi, Chandigarh, Pune and Chennai) to assess onthe-ground impact of CCE. According to the TCC report titled Khoj ('search'), there are severe implementation lacunae in CCE. Field researchers who conducted the interviews report that a majority of teachers are not comfortable with the tools of daily evaluation and assessment; training is inadequate; and more than 50 percent of teachers failed to attend the few training sessions conducted. Teachers complain that their workload has increased considerably leaving them no time to foster creativity in classrooms.

"The objective of Khoj was to evaluate the impact of CCE and suggest solutions. The survey indicates there are severe gaps in the implementation of CCE at all levels — starting from teacher orientation, training, to actual implementation in the classroom. Most teachers surveyed say the training given was insufficient and they are not confident about using the new assessment rubrics. After the introduction of CCE, teachers in CBSE schools are spending 29-30 percent more time on daily assessments and paper work as they are obliged to maintain detailed records for each student. Consequently, they have less time to innovate and improve actual teaching in the classroom. Moreover, high teacher-pupil ratios in most schools have made the teacher's job very difficult. The result is that the prime objective of CCE i.e. to identify each student's learning needs and address them effectively is not being achieved. Unfortunately an excellent and well-researched evaluation system which discourages rote learning and encourages holistic development of students has been derailed, because of failure to provide proper support and training to teachers", says Ujwal Singh, an alumnus of IIM-Bangalore.

Benefits of CCE for Students

While there's no denying that CCE has expanded teachers' roles and responsibilities, the benefits this learning outcomes assessment pedagogy confers upon students are manifold. In particular, its focus on developing non-scholastic capabilities hitherto ignored and marginalised in an academics and exams-obsessed system, was long overdue. For the first time in the history of Indian school education. CBSE has detailed an exhaustive list of non-scholastic areas including life skills, attitudes and values, outdoor education, performing arts, creative and literary pursuits, etc for which students should be rewarded. On the other hand students who weren't very academically inclined are faring much better because of the 360 degree assessment that CCE mandates.

Continuous evaluation helps in bringing awareness of the achievement to the child, teachers and parents from time to time. They can look into the probable cause of the fall in achievement if any, and may take remedial measures of instruction in which more emphasis is required. Many times, because of some personal reasons, family problems or adjustment problems, the children start neglecting their studies, resulting in sudden fall in their achievement. If the teacher, child and parents do not come to know about this sudden fall in the achievement and the neglect in studies by the child continues for a longer period then it will result in poor achievement and a permanent deficiency in learning for the child.

Suggestions to Improve the Standards of CCE

- 1. Earning the confidence of teachers in order to introduce the CCE framework is very important.
- 2. Teachers in affiliated schools need to be well prepared and adequately trained to deliver the new examination system as CCE teacher training sessions being conducted currently are inadequate, with a maximum of five training workshops per year.
- 3. More attention is needed for diagnosis, remedial and redressal of student learning needs as teachers are preoccupied with assessment, documentation and records-keeping.
- 4. Rural schools should be better equipped to implement this studentfriendly system, on par with the urban schools, as they are finding it very difficult to understand and execute it.
- 5. With the increase in teachers' workload and emerging as a serious problem, the CBSE has to adapt customised software for all concerned schools to reduce the load of records-keeping.

- 6. All the classrooms should be equipped with interactive white boards and teachers need to be properly trained to handle classes with ease and deliver lessons.
- 7. A tablet-based classroom management platform will also facilitate student assessment and data analysis.

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EFFECTIVENESS OF CURRICULUM BASED DYNAMIC ASSESSMENT ON ACHIEVEMENT IN PHYSICS OF AT-RISK STUDENTS

Dr. Prasanth Mathew*

Abstract

Curriculum Based Dynamic Assessment is a generic model that serves as an overlay for assessment in relation to virtually any curriculum content for students of all ages. It represents an attempt to maximize the link between assessment and instruction through interventions that go beyond mere knowledge acquisition and facilitates the learner's movement into higher levels of mental functioning. Curriculum Based Dynamic Assessment ensures greater scope for better academic performance of at-risk students through its pretest-intervene retest format with the inclusion of intervention that addresses the processing demands of the selected tasks in relation to the processing capabilities of the learner.

The present study, Effectiveness of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students is an experimental study. The design adopted was pre-test, post-test equivalent group design. The study was conducted on the sample of 96 atrisk students of standard IX selected from eight different schools. Of the eight selected schools, four schools were randomly assigned as the experimental group and four schools as control group. The tools used were Lesson transcripts based on Curriculum Based Dynamic Assessment model and Achievement tests. The results indicate that Curriculum Based Dynamic Assessment model has significant effect on achievement in Physics of at-risk students.

Key Words: Curriculum Based Dynamic Assessment model, At-Risk Students, Achievement in Physics.

Introduction

The increased concern in education today is to meet the needs of all learners, even in the most restrictive environments. Teachers need to help implementing their students' individualized education plans. It is no longer sufficient to limit prescriptions to objectives and outcomes. The call one hears is for realistic ideas for reaching the desired states of education. Teachers and parents express their desire to know what works specifically for their children, and Dynamic Assessment provides a basis for generating this information.

Vygotsky's "Zone of Proximal development" gains significant attention in Dynamic Assessment which aims at

* Assistant Professor in Physical Science, P.K.M. College of Education, Madampam, Kannur, Kerala. **Email:** drprasanthmathew@gmail.com directing learners from their baseline performance to more optimal performance through appropriate intervention. To promote learning, it would be necessary to address the student's emerging, rather than already developed, mental functions and leading these into the next level of development. The purpose of assessment should be the identification of maturing functions, and these functions can best become evident in the context of support from a more experienced mediator (Brown & Campione, 1986). It is in this interactive context that the emerging functions become evident and their characteristics available for description and intervention.

One of the issues of applying any assessment to educational content concerns the difficulty of matching what is assessed to what is taught. The only true match comes from curriculum-based assessment because the content of the curriculum is the content of the assessment (Fuchs & Fuchs, 2002).

Curriculum Based Dynamic Assessment (CBDA)

Curriculum Based Dynamic Assessment (CBDA) is a generic model that can serve as an overlay for assessment in relation to virtually any curriculum content for students of all ages. CBDA begins with selection of relevant curriculum content and construction of an appropriate curriculum based assessment (CBA) to serve as both the pre test and posttest. The dynamic component enters after this step, applying the pretest-intervene or mediation -retest format with the inclusion of intervention that addresses the processing demands of the selected tasks in relation to the *processing* capabilities of the learner. In this model, the delineation of processes of both the task and the learner are virtually identical and are analyzed to determine the extent of the match

or mismatch. It is the extent and the nature of the mismatch that characterizes the individual's learning problem. The defining characteristic of the diagnostic approach to dynamic assessment is the inclusion of intervention or mediation.

The overall process of carrying out the CBDA (Haywood & Lidz, 2007) includes the following steps:

- 1. Determine the content area and how this will be assessed in pretest-retest.
- 2. Conduct a process analysis of the content area: What process demands does this make on the learner?
- 3. Conduct a process analysis of the learner based on what has been learned to this point from observation, interview, file review, and administration of other procedures.
- 4. Design intervention that is relevant to the specific content area.
- 5. Administer the CBDA pretestintervene-retest format.

The need to carry out a process analysis of the task and the learner is central to the CBDA approach.

At-Risk Students

Prior to the 1980's, terms such as 'Educationally Disadvantaged' and 'Culturally Deprived' were commonly used to describe the 'students at risk'. The term referred to the students who are experiencing learning problems in the regular class rooms and are therefore at risk of school failure or of identified for special education services. Donnelly (1987) defined, "at risk students as students who are not experiencing success in school and are potential drop outs. They are usually low academic achievers and exhibit low self- esteem." They have a tendency to be thought of as less competent learners. Sometimes these children create a lot of behavior problems to society and school. They may not be motivated as well, they come to class late and they have a hard time getting their work. The problem with most at-risk students is that often we never see them as at-risk until it is too late to easily counteract the situation.

The school and community have certain roles in the development of these students and should try to improve their skills and bring them to the main stream of the society. One of the most common and effective ways of aiding at risk students is through 'out of school programmes' such as summer school and after-hours programmes. After school programming is one of the most effective ways of making a difference for at risk students.

Significance of the Study

The review of the studies related to curriculum based dynamic assessment and the importance of assessing the learning potential of at risk students are found to be few in number. Most of the studies are conducted in the areas of language and mathematics. Mathematics has been a frequently targeted domain (Berman, 2001; Gerber, Semmel, & Semmel, 1994; Jitendra & Kameenui, 1993; Warren, 2006), with reading (Abbott et al., 1997; Carney&Cioffi, 1992) and language (Barrera, 2003; Kozulin&Garb, 2002) with science lesson (Chan, Ashman & Van Kraayenoord, 2000). The investigator while working with the at risk students at various levels found out that the difficulties faced by the students in learning physical science are not yet noticed. It is also understood that no such effective interventions based on the curriculum which assess their learning potential have been developed. So it is an urgent need to develop an intervention programme which could assess their learning potential within their curricular context and which could enhance their attention, perception, memory, language, reasoning and metacognitive processing. It is expected that the present study may throw light on the problems and remedial programmes for at risk students.

Objectives of the Study

- 1. To develop Curriculum Based Dynamic Assessment model of learning Physics.
- 2. To study the effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at risk students.
- 3. To study the effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at risk students with respect to subthemes.
- 4. To study the effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at risk students with respect to gender.

Hypotheses of the Study

- 1. There is significant effect of Curriculum Based Dynamic Assessment model on Achievement in Physics of at risk students.
- 2. There is significant effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at risk students with respect to subthemes
- 3. There is significant effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at risk students with respect to gender.

Research Methodology

Method

Experimental method was used for the study. The design adopted was pre-test post-test equivalent group design.

Variables

The Curriculum Based Dynamic Assessment Model is considered as the independent variable and the achievement in Physics is considered as the dependent variable.

Sample

The study was conducted for students of Standard IX, having low academic performance, (i.e. students at risk) in Physics. The sample for the study was selected from eight different schools (cooperative schools of the college) after having discussion with the concerned teachers of the respective schools on the learning problems in Physics faced by the students. 12 students, both boys and girls, were selected from each school for the study. The total sample thus consisted of 96 at-risk students. Of the eight selected schools, four schools were randomly assigned as the experimental group and four schools as control group.

Instruments

- 1. Lesson transcripts of Curriculum Based Dynamic Assessment model in Physics developed by the investigator.
- 2. Achievement Tests in Physics developed by the investigator

Procedure

Based on the discussion with the concerned teachers regarding the learning

problems of the students, the investigator developed the intervention programme with the support of experts in the field of Physical Science teaching, incorporating advanced technology including computer assisted supporting materials. The investigator developed twelve lessons on CBDA model on themes "Energy" and "Motion". The design of each lesson consisted of a pretestintervene or mediation -retest. The investigator also prepared two similar achievement tests based on the fundamentals of the themes "Energy" and "Motion" and randomly selected one test as pre- test, and the other test as post-test. The pre test was administered for both the experimental and the control groups. The intervention programme was administered only for the experimental group after their regular schooling. On completion of the programme the post test was administered for both the groups. The scores were tabulated and tested for statistical significance.

Results and Discussion

1. Effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students.

To find out effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students, the pre test and post test scores of the experimental and control groups were compared using't' test.

Table1

Test of significance of the difference between the mean achievement scores of experimental and control group in pre test and post test.

	Groups	N	М	SD	t
Pre-test	Experimental	48	14.06	6.22	0.38
	Control	48	14.50	5.16	
Post test	Experimental	48	25.98	5.75	8.19*
	Control	48	15.50	6.80	

*Significant at 0.05 level

The t value (post test) is found to be 8.19 (t= 8.19; p<0.05). This indicates that Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students.

2. Effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students with respect to subthemes. To find out effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students on the subthemes "Energy" and "Motion", the pre test and post test scores of the experimental and control groups were compared using 't' test.

Table2

Test of significance of the difference between the mean achievement scores of experimental and control group in pre test and post test with respect to subthemes.

Themes		Groups	N	M	SD	t
Energy	Pre-test	Experimental	48	6.06	3.30	-1.78
	-	Control	48	7.21	3.03	
	Post test	Experimental	48	13.15	3.18	7.36*
		Control	48	7.52	4.24	
Motion	Pre-test	Experimental	48	8.00	4.42	0.89
		Control	48	7.29	3.29	
	Post test	Experimental	48	12.48	3.20	6.99*
		Control	48	7.98	3.10	

*Significant at 0.05 level

The t values (post test) are found to be 7.36 (t=7.36; p<0.05) and 6.99 (t=6.99; p<0.05) respectively. This indicates that Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students with respect to subthemes.

3. Effect of Curriculum Based Dynamic Assessment model on achievement in Physics of at-risk students based on gender.

To find out effect of Curriculum Based Dynamic Assessment model on achievement in Physics of boys and girls, the pre test and post test scores of boys and girls of the experimental and control groups were compared using't' test.

Table 3

Test of significance of the difference between the mean achievement scores of experimental and control group in pre test and post test based on gender.

Gender		Groups	Ν	М	SD	t
Boys	Pre-test	Experimental	27	14.93	5.50	-0.05
		Control	27	15.00	5.54	
	Post test	Experimental	27	26.56	3.90	6.89*
		Control	27	15.35	7.50	-

Girls	Pre-test	Experimental	21	12.95	7.01	0.11
		Control	21	13.15	4.82	-
	Post test	Experimental	21	25.24	7.55	4.44*
		Control	21	15.70	6.28	

*Significant at 0.05 level

The t values (post test) are found to be 6.89 (t=6.89; p<0.05) and 4.44 (t=4.44; p<0.05) respectively. This indicates that Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students with respect to gender.

Findings of the Study

- 1. Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students.
- 2. Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students with respect to subthemes.
- 3. Curriculum Based Dynamic Assessment model has significant effect on the achievement in Physics of at-risk students with respect to gender.

Conclusion

The findings of the study highlight the effectiveness of Curriculum Based Dynamic Assessment on the academic achievement in Physics of at-risk students. The study indicates that the academic performance of at risk students can be enhanced through appropriate interventions that foster their attention, perception, memory, cognition and metacognition. Curriculum Based Dynamic Assessment can be effectively used for assessing the learning potential of the learners and for enabling even the less competent learners to reach higher levels of performance through proper mediation. By administering the Curriculum Based Dynamic Assessment pretest-intervene-retest format the learners can be taken through a dynamic process of learning to help them for more optimal performance. The study proves Curriculum Based Dynamic Assessment as an effective model for enabling the at-risk students to reach higher levels of performance by adopting appropriate intervention techniques that enhance learning.

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ADJUSTMENT OF ADOLESCENTS IN ASSOCIATION WITH SOCIO-DEMOGRAPHIC VARIABLES

Jessy N. C.*

Abstract

An individual needs to change or modify himself in some way or the other to fit into or accumulate himself with his environment. Adjustment is the maintenance of a harmonious relationship between man and his environment. In this study, the investigator made an attempt to find out the Adjustment of adolescents in association with Socio-demographic variables. The investigator selected the sample of 420 Secondary School Students from Kannur District by using random Sampling Technique. The standardized Adjustment Inventory prepared by D.N.Srivastava and Govind Tiwari and a personal data sheet prepared by the investigator were the tools used for the study. The result revealed that there exist significant association between the Adjustment of adolescents and the sociodemographic variables.

Key Words: Adjustment, Socio-demographic variables, Socio-economic status etc.

Introduction

Human nature is a complex phenomenon and Human life is becoming complex day by day. Every human being faces ever-new problems as he goes through the life. Hence it is essential that he knows and understands himself. An individual as he / she grow gone through tremendous changes. His needs, desires, temperament, attitude, opinions, aspirations etc. undergo continuous modifications. All the dimensions of his personality go on changing as he grows and matures from infancy to adulthood. Various changes take place in one's life. The phase of various changes during adolescence is faster than during infancy or childhood. The adolescent becomes a new individual from physical, mental, social and moral point

view and he develops many types of interests. Thus adolescence is a period of revolutionary changes.

Adjustment during the period of adolescence will determine to a large extent what he or she will be as a person as an adult. The problem of adjustment has been in existence on earth since the appearance of the human race. The process of adjustment starts right from the birth of the child and continues till his death.

Every human being seeks adjustment to various situations. He constantly makes efforts to adjust himself to his surroundings because wholesome adjustment is essential for leading a happy life and gaining satisfaction. The process by which a living

* Assistant Professor in Malayalam, P.K.M.College of Education, Madampam, Kerala, India. E-mail:jessy_nc@rediffmail.com organism acquires a particular way of acting or behaving or changes an existing form of behavior or action is called adjustment. By and large, behavior is always an effort at adjustment. As one grows from a child to an adult one find it necessary for adjust oneself to different circumstances and consequently, adjustive behavior increases in number, in complexity and in variety. According to Coleman (1975) "adjustment is the outcome of the individual's attempt to deal with stress and meet his needs; also his efforts to maintain harmonious relationship with the environment". "Adjustment is the interaction between a person and his environment. An individual is adjusted if he is adjusted to himself and to his environment (Aruna, 2003).

Adjustment is a continuous interaction of an individual with himself, with other people and with his world. Broadly speaking, the process of need arousal and satisfaction may be called as adjustment. Since the process of need arousal is continuous throughout the life of human beings, he accomplishes it fairly or badly in different ways during his life time.

In this modern age achievement is considered as a key factor for personal progress. Moreover, the whole system of education revolves around academic achievement. Adjustment problems of adolescents will affect their academic achievement. Adolescents are the future adults and efforts should be made to develop them into well-adjusted and less frustrated people.

An adjusted and normal child is one who attacks problems directly, accepted and tolerates normal amount of frustration, acts rationally, makes sincere efforts to reach his goals, enjoys company of others, is cheerful and energetic and possesses an optimistic view of life and things around him (Aggarwal, 2003) .When the needs of adolescents are not fulfilled or they fail to reach their goal, they experience frustration, which poses threat to the normal adjustment process. Frustration may be caused by many situations in our daily life ranging from annoyance to the thwarting of life goals.

Need and Significance of study

The main aim of education has always been the total development of the students' personality. The progress of a country depends on the maximum exploitation of its human resources. Adolescents account for about 1/5th of Indian population. Human life is becoming complex day by day. As mentioned above we have to try to achieve the aim of education, for that teachers should be aware of the importance of adjustment of adolescents. Adjustment behavior is essential for personality development. In the present circumstances adolescents are facing many difficulties in life. These difficulties have given rise to many problems such as anxiety, tension, frustration and emotional imbalance in day-to-day life.

Considering all these aspect, the investigator tried to investigate on the association of adjustment of adolescents with socio-demographic variables (Gender, Type of school, Religion and Socio-Economic Status). This study was conducted on the IX standard students of different schools in Kannur District, Kerala.

Objectives of the Study

- 1. To explore the difference in adjustment of adolescents with respect to socio-demographic variables
 - a. Gender
 - b. Type of school
 - c. Religion
 - d. Socio Economic Status

- To find out the association between adjustment of adolescents and sociodemographic variables
 - a. Gender
 - b. Type of school
 - c. Religion
 - d. Socio-Economic Status

Hypotheses of the study

- 1. There is no significant difference in the adjustment of adolescents with respect to socio-demographic variables.
 - a. Gender
 - b. Type of school
 - c. Religion
 - d. Socio Economic Status
- 2. There is no significant association between adjustment of adolescents and socio-demographic variables
 - a. Gender
 - b. Type of school
 - c. Religion
 - d. Socio-Economic Status

Variables of the Study

In the present study the variables are

1. Adjustment

2. Socio demographic variables

The major functional variables in this study are Adjustment and Sociodemographic variables.

In this study **Adjustment** refers to the scores obtained by the students in the adjustment inventory by Dr.D.N.Srivastava and Dr.Govind Tiwari.

Socio-demographic variables refer to the gender, type of school, religion and socio-economic status. Gender refers to the boys and girls in different schools in Kannur District in Kerala. Type of school refers to different type of organization like Govt.School, Govt.Aided School and Unaided School and Religion refers to Christian, Hindu and Muslim. The individual's socio-economic status has been decided in terms of his/her parent's educational level and the annual income of the family.

Tools Used for the Study

The tools used for the study were

- 1. The standardized Adjustment Inventory prepared by D.N.Srivastava and Govind Tiwari
- 2. Personal data sheet prepared by the investigator to collect information on Socio demographic variables.

Sample of the Study

Secondary school students in the Kannur district were the population of the present study. With the help of random sampling technique the investigator selected 420 IXth class students from nine different schools of Kannur district as sample.

Statistical Techniques

Test of significance was employed to find out the difference in adjustment with gender and one way ANOVA was employed to find out the difference in Adjustment of adolescents owing to the difference in Type of school, Religion and Socio-Economic Status. Chi-square test was employed to find out the association between Adjustment and socio-demographic variables.

Results and Discussion

1. Difference in Adjustment with Socio-Demographic Variables

The significance of the difference between the mean scores of adjustment with

respect to gender was found out by't' test and the results are presented in the table 1.

The significance of the difference between the mean scores of adjustment with

respect to type of school, religion and Socioeconomic status were found out by one way ANOVA and the results are presented in the tables 2, 3&4.

Table 1

Test of significance of the difference between the mean scores of Adjustment with respect to Gender

Variables	N	Mean	SD	t
Boys	208	14.76	6.37	8.32**
Girls	212	20.20	7.01	*

** Significant at 0.01 level

From the table 1, it is found that the mean scores of adjustment of boys and girls.

Table 2

Test of significance of Difference in adjustment of adolescents owing to the difference in Type of School.

Variables	N	Mean	SD	t
Between Groups	2	65.48	32.74	0.6265
Within Groups	417	21791.50	52.26	
Total	419	21856.98		

From table 2, it is found that there adjustment of students with respect to type of school.

Table 3

Test of significance of Difference in adjustment of adolescents owing to the difference in Religion

Variance	Degrees of Freedom	Sum of squares	Mean square	F Ratio
Between Groups	2	1345.23	672.62	13.67**
Within Groups	417	20511.76	49.19	
Total	419	21856.99		

** Significant at 0.01 level

From table 3, it is found that there is significant difference in the

adjustment of students with respect to Religion.

the unreferree in Socie Leononice Status.								
Variance	Degrees of	Sum of squares	Mean square	F Ratio				
	Freedom		_					
Between Groups	2	1631.25	815.61	16.82**				
Within Groups	417	20225.74	48.50					
Total	419	21856.98						

Table 4 Test of significance of Difference in adjustment of adolescents owing to the difference in Socio-Economic Status

** Significant at 0.01 level

From table 4, it is found that there is significant difference in the adjustment of students with respect to Socio Economic status.

2. Association between Adjustment of Adolescents and Socio-Demographic Variables In order to find out the association between adjustment of adolescents and sociodemographic variables Chi-square test was employed. The data and results are presented in the table 5, 6, 7&8.

2.1. Association between Adjustment of Adolescents and Gender

Table 5

Test of significance of association between adjustment of adolescents and gender

Gender Adjustment	Boys	Girls	Degrees of freedom	Chi-square value
Low	74(54.5)	36(55.5)	2	41.31**
Average	108(101.0)	96(103.0)		
High	26(52.5)	80(53.5)		

** Significant at 0.01 level

Number in parentheses represent the expected frequencies f_{e}

Number outside parentheses represent the actual observed frequencies f_a

From table 5, it is found that there is significant association between adjustment of adolescents and gender.

2.2. Association between Adjustment of Adolescents and Type of School

Table 6

Test of significance of association between adjustment of adolescents and Type of School

Type of School	Aided	Unaided	Govt.	Degrees of	Chi-square
Adjustment				freedom	value
Low	16(31.4)	53(47.1)	41(31.4)	4	32.63**
Average	84(58.3)	72(87.4)	48(58.3)		
High	20(30.3)	55(45.4)	31(30.3)		

** Significant at 0.01 level

Number in parentheses represent the expected frequencies f_e

Number outside parentheses represent the actual observed frequencies f_a

From table 6, it is found that there is significant association between adjustment of adolescents and Type of School.

2.3. Association between Adjustment of Adolescents and Religion

Test of significance of association between adjustment of adolescents and Religion								
Religion Adjustment	Christian	Hindu	Muslim	Degrees of freedom	Chi-square value			
Low	56(46.9)	45(44.8)	9(18.3)	4	17.86**			
Average	88(86.9)	85(83.1)	31(34)					
High	35(45.2)	41(43.2)	30(17.7)					

Table 7

** Significant at 0.01 level

Number in parentheses represent the expected frequencies f_e

Number outside parentheses represent the actual observed frequencies f_a

From table 7, it is found that there is significant association between adjustment of adolescents and Religion.

2.4. Association between Adjustment of Adolescents and Socio-Economic status

Table 8

Test of significance of association between adjustment of adolescents and Socio-Economic status

Socio-Economic status Adjustment	Low	Average	High	Degrees of freedom	Chi-square value
Low	31(25.1)	53(49)	26(35.9)	4	24.95**
Average	53(46.6)	94(90.8)	57(66.5)		
High	12(24.2)	40(47.2)	54(34.6)		

** Significant at 0.01 level

Number in parentheses represent the expected frequencies f_e

Number outside parentheses represent the actual observed frequencies f_a

From table 8, it is found that there is significant association between adjustment of adolescents and Socio-Economic status.

Conclusions Based on the Major Findings

Based on the results of the study it is concluded that there exists significant association between Adjustment of adolescent students and socio-demographic variables. It is found that there is significant association between adjustment of adolescents and gender. An analysis of the mean values shows that boys better adjustments than girls. It is found that there is significant association between adjustment of adolescents and Type of School. An analysis of the mean values shows that the students studying in government schools are better adjusted followed by unaided and aided schools. It is found that there is significant association between adjustment of adolescents and Socio-Economic status. An analysis of the mean values shows that the students belonging to low socio-economic status is better adjusted followed by average socio-economic status and high socioeconomic status. It is found that there is significant association between adjustment of adolescents and Religion. An analysis of the mean values shows that the students belonging to Christian are better adjusted followed by Hindu and Muslim religion.

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CLOUD COMPUTING APPLICATIONS IN ACADEMIC RESEARCH

Dr. Dineshan Koovakkai*

Abstract

Cloud computing, a recent development in technology, is revolutionizing all human activities including research. The use of the cloud based applications especially the ones which are available free save the time and money of the researcher. The cloud services can be used by the researcher from data collection to report writing. Online questionnaires, plagiarism checking, standard referencing etc are the important areas where cloud computing applications can effectively be used by the researcher. The quality and perfection in the research report can also be achieved with the help of these tools. The present paper highlights the possible applications of cloud computing in academic research.

Key Words: Cloud Computing. Academic Research. Online Data Collection. Plagiarism, Checking. Referencing, etc.

Introduction

Academic Research has become comparatively easy and error free with the advancement in technology and the increased level of use of modern tools and techniques in all areas of research. The laborious tasks of literature search, data collection, analysis, typing and referencing which were accomplished manually, spending a great amount of time, energy and money, are now being done with ease and less effort because of the use of computers and allied technologies.

The online resources provide 'any one-anytime-anywhere' access to the academic resources with least cost and portability. Cloud computing, the latest development in computer technology, provides all time access to the online resources with cost advantage. Cloud service providers, being large companies operating at large scale, are able to serve small users as well as giant corporations. The cloud computing resources are always available and payment is made only for the amount of the resources/services used (Kushida, Murray & Zysman, 2011). Many of the cloud services are available free, though at a small scale. The economy, ease of access and anytime availability of the cloud based resources and services attract all levels of people and people in all walks of life are using these services knowingly or unknowingly. Academic researchers are more on the path of using cloud services especially the free services like online data collection tools.

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Cloud Computing Applications

Cloud computing is simply a system in which a firm hires the service of another company in a remote location in storing its data and for other computing applications. Here, a portion of the computing service and storage needs of a firm is handled by a trusted third party instead of the firm itself maintaining the server and other items. The firm hires these services for fee which is always less than the cost of maintaining their own server and other infrastructure (Bushhousen, 2011).

In the cloud system, the participating institution will be the owner of the data and the security, storage and networking aspects are the responsibility of the service provider. Generally the cloud service providers provide three types of services: Infrastructure as a Service (IaaS) in which storage and networking are provided, Software as a Service (SaaS) in which the service provider provides computing applications and Platform as a Service (PaaS) in which a platform is provided by the service provider for running the application developed by the participating institution (Tiwari, Shrivastava, Pandey & Tripathi, 2011).

Cloud Computing Applications in Academic Research

Cloud computing applications are now being increasingly used by the research scholars knowingly or unknowingly for various research related activities from data collection to referencing. The web based survey tools are using cloud services for the online collection of data. Even the Google Drive can be used for small scale cloud based online data collection. The online plagiarism checking software packages also use the cloud platform. The referencing standard is always a matter of confusion to the researchers. But, the online reference tools which use the cloud technology help the researchers a lot to create standard references in the required style.

The use of the cloud based applications especially the ones which are available free saves the time and money of the researcher. The quality and perfection in the research report can also be achieved with the help of these tools.

Cloud Application in Online Data Collection

In social surveys, collecting data is a herculean task for every researcher. Much of the time and efforts are spent for this exercise. However, with the development of cloud computing technology several web based survey tools are available even free of cost. The important web based survey tools available include: basic survey tools (like *SurveyMonkey*, *Zoomerang*, *Survey Gizmo and PollDaddy*), integrated solutions (like *Constant Contact*, *FormSite* and *Moodle*) advanced survey packages (like *Qualtrics*, *QuestionPro*, *LimeSurvey* and *Key Survey*) (Leland, 2011).

SurveyMonkey

SurveyMonkey is an online survey tool which can be used for social surveys, market research and other surveys online. It has different plans such as Basic, Select, Gold and Platinum (https://www.surveymonkey. com/). The free version (Basic) provides facility for 10 questions in one questionnaire and a maximum of 100 responses can be received. The Select plan provides facility for unlimited questions, but the maximum response is limited to 1000. The Gold and Premium plans provide unlimited question option and the facility to receive unlimited responses. Table 1 shows the detailed plans and pricing of SurveyMonkey.

Plans and Pricing of SurveyMonkey*						
Plan	Pricing	No. of Questions	No. of Responses			
Basic	Free	10	100			
Select	Rs. 690 per month	Unlimited	1000			
Gold	Rs. 8990 per year	Unlimited	Unlimited			

Table 1

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*Liable to be changed

Zoomerang

Zoomerang, the online survey and poll tool is now part of the SurveyMonkey family. Users can login as the Zoomerang user, but all the data will be passed over to the SurveyMonkey. The plans and pricing are now as same as that of SurveyMonkey (http:// /www.zoomerang.com/).

SurveyGizmo

SurveyGizmo is an online survey tool like any other online survey tool (http:// www.surveygizmo.com/). It has Free, Basic, Professional and Enterprise plans. The Free plan limits the response to a maximum of 350, but the other plans give facility for both unlimited questions and responses. Table 2 shows the details.

Plans and Pricing of SurveyGizmo*

Plan	Pricing	No. of Questions	No. of Responses
Free	Free	Unlimited	350
Basic	\$ 19 per month	Unlimited	Unlimited
Professional	\$ 75 per month	Unlimited	Unlimited
Enterprise	\$ 159 per month	Unlimited	Unlimited

*Liable to be changed

PollDaddy

PollDaddy provides facility to collect data via website, e-mail, iPad or iPhone. The survey editor provided in PollDaddy facilitates creation of different types of questions including multiple choice, free text

and Likert type (http://polldaddy.com/). Its Free, Pro and Corporate plans do not impose any limitations to questions but the maximum number of responses a researcher can receive from one survey is limited to 1000 in the free plan, 10000 in Pro and 50000 in Corporate plan. Table 3 shows the plans and pricing of PollDaddy.

Plans and Pricing of PollDaddy*						
Plan	Pricing	No. of Questions	No. of Responses			
Free	Free	Unlimited	1000			
Pro	\$ 200 per year	Unlimited	10000			
Corporate	\$ 899 per year	Unlimited	50000			

Table 3

* Liable to be changed

Constant Contact

Constant Contact is basically an online market survey tool which can be used for social responses. The standard pricing for Constant Contact is \$ 15 per month. A free trial version is available for 60 days (http:// www.constantcontact.com).

FormSite

FormSite provides facility to build web forms, online surveys, questionnaires

and polls. The most important advantage of FormSite is data portability (http:// www.formsite.com/). It has five different plans from Free to Pro 3. The number of questions and the maximum number of responses possible are different in different plans. The plans and pricing of FormSite can be seen in Table 4.

Plans and Pricing of FormSite						
Plan	Pricing	No. of Questions	No. of Responses			
Free	Free	50	10			
Deluxe	\$ 9.95 per month	100	500			
Pro 1	\$ 19.95 per month	200	1000			
Pro 2	\$ 49.95 per month	300	2500			
Pro 3	\$99.95 per month	1000	5000			

Table 4

* Liable to be changed

Moodle

Moodle is a free Learning Management system which provides a number of educational applications including surveys. The survey module in Moodle is a 'course activity' which provides a number of survey instruments including Constructivist Online Learning Environment Survey, Attitudes to Thinking and Learning Survey etc. (http://docs.moodle.org/25/en/Survey_ module).

Other Online Data Collection Tools

Other important online data collection tools include Qualtrics, QuestionPro, LimeSurvey, Key Survey etc which are also giving similar services for the online data collection.

Cloud based Plagiarism Checking

Plagiarism is becoming a threat to the very academic honesty where the academics knowingly or unknowingly use the idea or the content without acknowledging the creator of the knowledge. With the spread of online resources copying things from the works others has become easy. At the same time detecting such unethical practice can be identified with more ease and accuracy with the online tools. Plagiarism detection tools range from free online service to high priced commercial products (Dineshan Koovakkai, 2011). Some of the popular plagiarism detection tools include Plagiarism Detect.com, Dupli Checker, Plagiarism Checker, CopyTracker, Plagium, Chimsky, Turnitin etc. Many of these tools work in the cloud environment where the text submitted to them will be compared with the materials in their own databases or other online resources. The plagiarism checking tools not only prevent plagiarism but help the researcher to find out the exact source to give proper references as well.

Cloud Application in Referencing

Acknowledging the works consulted is mandatory for upholding higher academic honesty. To give a proper base for the work also, it is necessary to cite the relevant works previously done. Any academic writing warrants a style for the in-text citation and referencing. Researchers are always confused with the multiplicity of the styles followed in the scholarly writing. There are a number of referencing tools available online. Zotero is, perhaps, one of the most widely used cloud based referencing tool. It helps the researcher to prepare the reference list in the require style like MLA, APA or Chicago.

Conclusion

Academic research will never be a prolonged process of manual data collection, unnecessary copying and monotonous report writing, if modern technology like cloud computing is utilized in an effective way. The widespread use of cloud computing applications makes it possible for the researchers to get the data at his/her fingertips. The unethical practice of copying down of the works of others without acknowledging them also is out of question now with the ease of plagiarism checking online. The standard form of referencing which has been a headache to the researchers is now a click ahead. There is no doubt that a researcher with adequate knowledge of these technologies can save half of his/her time to complete the research work maintaining proper standard.

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TEACHER EDUCATION AND ITS RELEVANCE IN THE PRESENT SCENARIO

Prof. K. Jacob Mathew*

Abstract

Education is an ongoing process of improving knowledge and skills, it is also – perhaps primarily – an exceptional means of bringing about personal development and building relationships among individuals, groups and nations. To make the future of a nation is secure it is imperative to invest in the preparation of teachers Teacher education includes a variety of teaching skills, sound pedagogical theories and professional skills. Teachers are now required to upgrade and enhance their competency and skills regularly. Delors Report in 1996 emphasized education as a treasure within and develop a comprehensive vision of a learning society based on four pillars viz. Learning to know, Learning to do, Learning to be and Learning to live together. Education has a crucial role to play in promoting values of peace based on equal respect of self and others.

Key Words: Teaching skills, Four pillars of education, Learning to know, Learning to do, Learning to be and Learning to live together

Introduction

Education is an ongoing process of improving knowledge and skills, it is also perhaps primarily – an exceptional means of bringing about personal development and building relationships among individuals, groups and nations. Quality of a nation depends upon the quality of its citizens, which in turn depends upon the quality of their education, which ultimately depends upon the quality of their teachers. Teachers constitute the most important component to any education structure. Teachers play a crucial role in the development of a nation and the world as a whole. Teachers play an important role in maintaining and improving the standards of primary, secondary and

higher education. To make the future of a nation is secure it is imperative to invest in the preparation of teachers. The quality and extent of learner achievement are determined primarily by teacher competence, sensitivity and teacher motivation.

The destiny of India is shaped in the classrooms. Teachers are the builders of the nation. They prepare persons and create manpower for every sector of human activity. They are responsible for creating a learning society which continuously evolves in its social, cultural and ethical aspects. Teachers are known for their commitment and capacity to remain lifelong learners. They provide education to the younger generation and also guide the society. Indian teachers have

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enjoyed an exalted position of highest dignity, status and honour. The situations have changed too fast during the last couple of decades. Teacher education includes a variety of teaching skills, sound pedagogical theories and professional skills.

Teaching skills would include providing training and practice in the different techniques, approaches and strategies that would help the teachers to plan and impart instruction, provide appropriate reinforcement and conduct effective assessment. It includes effective classroom management skills, preparation and use of instructional materials and communication skills. Pedagogical theory includes the philosophical, sociological and psychological considerations that would enable the teachers to have a sound basis for practicing the teaching skills in the classroom. The theory is stage specific and is based on the needs and requirements that are characteristic of that stage. Professional skills include the techniques, strategies and approaches that would help teachers to grow in the profession and also work towards the growth of the profession. It includes soft skills, counseling skills, interpersonal skills, computer skills, information retrieving and management skills and above all lifelong learning skills.

An amalgamation of teaching skills, pedagogical theory and professional skills would serve to create the right knowledge, attitude and skills in teachers, thus promoting holistic development .Changes are everywhere and all around. But all changes are not in the positive direction. Certain changes are inevitable. Globalisation has become a reality. It has changed the shape of classrooms. It has changed the role and functions of the teachers and expanded their universe of activity and self-learning. Teachers are now required to upgrade and enhance their competency and skills regularly. Globalisation has made it imperative that the meaning and role of education, of teaching and learning are constantly redefined to meet the real needs and demands on individuals and society. The International Commission on Education for Twenty- First Century (Delors Report) in 1996 emphasised education as a treasure within and develop a comprehensive vision of a learning society based on four pillars.

Learning to know – Which refers to broad based general knowledge combined with a deeper study of some subjects and the skill of learning to learn to benefit from learning opportunities.

Learning to do - Which refers to the acquisition of occupational skill and broad competencies needed to deal with changing situations and to work in teams with student teacher.

Learning to be - Which refers to the ability to develop ones personality –around a set of core values and potential (memory, reasoning, aesthetic sense, emotional drive, physical capacities, communication skills etc.)

Learning to live together - which refers to the understanding of other people and appreciation of the growing dependence of individuals, communities and nation.

Another important area of concern for Teacher Education is the pace of increasing mechanization, urbanization and similar other practices which are blindly adopted for achieving quick economic growth. All the above factors have resulted into a crisis of values and value systems. In confronting the many challenges that the future holds in store, humankind sees in education an indispensable asset in its attempt to attain the ideals of peace, freedom and social justice.

Values are those standards or codes of conduct conditioned by ones cultural

contexts, guided by conscience shape his life pattern by integrating his beliefs, ideas and attitudes to realize the cherished ideals and aims of life. The purpose of value education is to build responsible citizens with commitment to the nation and concern for the whole universe.

It has been observed that the erosion of human values can perhaps bring the catastrophe much earlier than even the global war fare. For teacher education institutions therefore, it would be appropriate to think in terms of developing adequate programs of education in human values. Value education or provision of education in values in the teacher education programmes, both in preservice and in-service assumes the highest priority. What seems to be emerging fast is that provision of scientific and technological education alone will not take us nearer to the new economic order. It has to be followed by an intensive programme of Education in human values. In order to develop future citizens who promote equitable and sustainable development for all sections of society and respect for all, it is necessary that they be educated through perspectives of gender equity, perspectives that develop values for peace, respect the rights of all, and that respect and value work. In the present ecological crisis promoted by extremely commercialized and competitive lifestyles, children need to be educated to change their consumption patterns and the way they look at natural resources. There is also a increasing violence and polarization both within children and between them, that is being caused by increasing stress in society. Education has a crucial role to play in promoting values of peace based on equal respect of self and others

Teacher educators have a crucial role to play in shaping the future of the country. This would largely depend on the kind of educational experiences they themselves go through and also provide to the teachers and students, particularly in the context of nurturing values that can really go along way not only in ushering a new era in Education but also in making the country great in true image of its great heritage. Whatever policies may be laid down, in the ultimate analysis these have to be implemented by teachers as much through their personal example as through teaching learning processes. India has reached the threshold of the development of new technologies which are likely to revolutionize the classroom teaching. Unless capable and committed are teachers in service, the education system cannot become a suitable and potential instrument of national development

The learning environment of a school depends, to a large extent in its teachers. No school can develop into an educative community, capable of releasing the student's creative capacities, if the teachers maintain their authority through various kinds of attitudes and punishments. A confident and competent teacher will win the love and confidence of his pupils. Functional maturity of the teacher in displaying skills to manage the classroom situations will ensure that pupils in school learn something for their social behavior and success in work place.

In the present era of globalization and privatization, it has become extremely essential that the teachers are provided full support for their academic development and recognition so that they are fully prepared to face the challenges of Education. All possible efforts are required to provide facilities to the teachers thereby making room for enhancing their professional efficiency and academic development.. Managers of the schools and colleges should play an important role in providing facilities for teaching and research capabilities of the teachers. Teachers of the schools and colleges should also come forward to make use of the Government schemes to enhance the quality of their profession.

Let me conclude with the words of Swami Vivekananda

"God sleeps in stones,

Awakens in plants,

And speaks only through Man,

Man is the highest temple of God".

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All the references should be in alphabetical order and is made in APA Style.

Tables should be kept short, and numbered sequentially in the appropriate location. Titles and column headings should be brief and descriptive.

Acronyms and abbreviations should be spelt out in full when first used in the manuscript.

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