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International Seminar on
EMERGING SKILL DEVELOPMENT TRENDS IN THE FIELD OF SCIENCES, SOCIAL SCIENCES & EDUCATION

EDITED BOOK

International Seminar on Emerging skill development trends in the field of Sciences, Social Sciences & Education

15 TO 17 JANUARY 2016

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केदार कश्यप

मंत्री
छत्तीसगढ़ शासन
आदिम जाति तथा अनुसूचित जाति, पिछड़ा वर्ग
अल्पसंख्यक कल्याण एवं स्कूल शिक्षा विभाग

शुभकामनाएं...

महाविद्यालय के सद्प्रयासों से प्रथम 'अंतर्राष्ट्रीय संगोष्ठी आयोजन की सूचना से हर्षित हुआ।

प्रसन्नता है, कि संगोष्ठी का विषय "Emerging Skill Development Trends in the Field of Sciences, Social Sciencs and Education" सामयिक एवं राज्य की हमारी प्राथमिकताओं एवं आवश्यकताओं के अनुरूप है। मैं आशान्वित हूँ कि संगोष्ठी के निष्कर्ष, शोधपत्रों की प्रस्तुतियां, राज्य के हमारे कौशल उन्नयन कार्यक्रम को गुणवत्तायुक्त एवं परिणाम मूलक बनाने में हमें समर्थन एवं सहायता प्रदान करेंगे।

संगोष्ठी में सहभागिता कर रहे समस्त प्रतिभागियों का छत्तीसगढ़ एवं बस्तर क्षेत्रवासियों की ओर से हार्दिक अभिनंदन है।

मेरी कामना है, कि संगोष्ठी में विचार-विमर्श, चिंतन एवं शोध प्रस्तुतियों की दिशा लोकहितकारी हों। मेरी अपेक्षा है, कि संगोष्ठी के महत्वपूर्ण विषय एवं श्रेष्ठ परिणाम अर्जित करने के यत्नों के, व्यापक प्रचार-प्रसार की समुचित व्यवस्था अवश्य की जाय।

पुनः क्राईस्ट महाविद्यालय के सद्प्रयासों हेतु बधाई एवं साधुवाद! कार्यक्रम की सफलता एवं 'शोध दर्पण' के सफल प्रकाशन हेतु मंगलकामनाएं.....

(केदार कश्यप)

प्रति,
प्राचार्य
क्राईस्ट महाविद्यालय
जगदलपुर, जिला बस्तर (छ.ग.)

संतोष बाफना

विधायक, जगदलपुर वि.क्षे. 86
सचेतक, भाजपा विधायक दल, छ.ग.

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क्रमांक/ Q   /विधायक/2016   जगदलपुर, दिनांक : 11./01./2016

संदेश

मै यह जानकार अभिभूत हूँ कि नगर के अग्रणी काईस्ट महाविद्यालय के द्वारा "Emerging Skill Development Trends in the Field of Science, Social Science and Education" विषय पर दिनांक 15 जनवरी से 17 जनवरी 2016 तक अंतर्राष्ट्रीय संगोष्ठी का आयोजन किया जा रहा है। इस अंतर्राष्ट्रीय संगोष्ठी से बस्तर के विद्यार्थियों को विशेष लाभ प्राप्त होगा ऐसा मेरा विश्वास है।

यह प्रसन्नता का विषय है कि इस अवसर पर महाविद्यालय द्वारा शोधार्थियों के शोध कार्यों को शोध पत्रिका एवं पुस्तक के रूप मे प्रकाशित किया जा रहा है। शोध पत्रिका के प्रकाशन से राष्ट्रीय एवं अंतर्राष्ट्रीय स्तर पर बस्तर की प्रतिभाओं को पहचान मिल सकेगी।

संगोष्ठी एवं शोध पत्रिका के प्रकाशन की सफलता के लिए मेरी हार्दिक शुभकामनाएं.......

संतोष बाफना

डॉ. शिवकुमार पाण्डेय
कुलपति

Dr. S.K.Pandey
Vice-chancellor

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Website : www.prsu.ac.in

स्वर्ण जयंती वर्ष Golden Jubilee Year 2013-14

Raipur, Dated: December 14, 2015

MESSAGE

I am happy to learn that Christ College, Jagdalpur is conducting an International Seminar on "**Emerging Skill Development Trends in the Field of Sciences, Social Sciences and Education**" from January 15-17, 2016.

I wish all the success to the participants and the stakeholders of the above. May Bastar which is known as "A Sleeping Giant", wake up and spread its rays all over the World.

(Dr. S.K. Pandey)

Fr. Dr. Paul Joseph
Principal
Christ College, Jagdalpur
Dist. Bastar (Chhattisgarh)

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S.No. 1776./BVV/2015   Jagdalpur, Date 12/01/2016

MESSAGE

It is a matter of immense pleasure to know that Christ College Jagdalpur is going to conduct one day International Conference on *"Emerging Skill Development Trends in the Field of Sciences, Social Sciences and Education,"* on January 15-17th, 2016 sponsored by CHHATTISGARH COUNCIL OF SCIENCE & TECHNOLOGY , RAIPUR.

Skill is valuable for our livelihood, survival and existence. It works better when it is coupled with experience, knowledge or wisdom. It is the test of man, moment and environment. It ensures the participation of a large number of eminent thinkers, teachers, researchers, educationists and students on this joyful occasion. It will have a meaningful impact on the partakers and would also be an important contribution in the direction of development of Emerging Skill Development Trends in the Field of Sciences, Social Sciences and Education. I am quite confident that the scholars will come out with valuable suggestions and recommendations which will be good for the nation and the people.

I wish that the discussion, deliberation and discourse on the given topic of the Conference would cover a wide range of sub-topics and themes that are relevant to teaching, research extension & Evaluation. It will also come out with concrete recommendations to improve and enhance the quality of Higher Education. I wish all the best to all the participants and guests, dignitaries and delegates in their personal and professional endeavours. I do hope grand success for the International Conference and I also visualize great future for the college.

(Professor N.D.R. Chandra)
Vice-Chancellor
Bastar University, Jagdalpur
(Chhattisgarh)

दिलीप वासनीकर

आई.ए.एस.

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कार्यालय कमिश्नर बस्तर संभाग,

जगदलपुर

दिनांक 13. 1. 2016

शुभकामना संदेश

मुझे यह जानकार अत्यंत हर्ष है कि प्रदेश तथा बस्तर संभाग के उच्च शिक्षा के क्षेत्र में अग्रणी काईस्ट महाविद्यालय, जगदलपुर के द्वारा दिनांक 15 से 17 जनवरी 2016 तक **An Emerging Skill Development Trends in the Field of Sciences, Social Science and Education** विषय पर अंतर्राष्ट्रीय संगोष्ठी का आयोजन किया जा रहा है।

मुझे आशा है कि महाविद्यालय द्वारा अंतर्राष्ट्रीय शोध पत्रिका "शोध दर्पण" के विशेष अंक में संगोष्ठी में शामिल हो रहे शोधार्थियों के शोध कार्यों का संकलन तथा लेख को पुस्तक के रूप में भी प्रकाशित किया जावेगा, जिसका लाभ महाविद्यालय में अध्ययनरत छात्र-छात्राओं को मिलेगा।

संगोष्ठी के सफल आयोजन हेतु मेरी तथा प्रशासन की ओर से हार्दिक सुभकामनाएॅं।

भवदीय

13.1.2016

(दिलीप वासनीकर)

प्रति,

प्राचार्य,

काईस्ट महाविद्यालय,

जगदलपुर, जिला-बस्तर,(छ0ग0)

राजेन्द्र झा
जिला शिक्षा अधिकारी,
जगदलपुर, जिला—बस्तर(छ.ग.), भारत

संदेश

यह जानकार मुझे अत्यंत प्रसन्नता हुई कि हमारे छत्तीसगढ़ के बस्तर संभाग में क्राईस्ट महाविद्यालय, जगदलपुर के प्रयास से An Emerging Skill Development Trends in the Field of Sciences, Social Sciencs and Education विषय पर पहली बार अंतर्राष्ट्रीय संगोष्ठी का आयोजन तक किया जा रहा है ।

इसके साथ ही यह भी गौरव का विषय है कि इस संगोष्ठी के शोध पत्रों के संकलन को अंतर्राष्ट्रीय शोध पत्रिका ''शोध दर्पण'' के विशेष अंक में प्रकाशन किया जा रहा है । इसके अलावा इस संगोष्ठी में आए विद्वानों के लेख को पुस्तक के रूप में भी प्रकाशित किया जा रहा है ।

आशा है कि इस तरह के प्रयासों का समाज एवं छात्र—छात्राओं के बौद्धिक अभिरूचि को बढ़ाने में बहुमूल्य योगदान होगा ।

संगोष्ठी के सफल आयोजन तथा शोध—पत्र एवं पुस्तक के प्रकाशन पर महाविद्यालय परिवार को मेरी हार्दिक शुभकामनाऍ ।

राजेन्द्र झा

Distt. Edu. Officer
Jagdalpur (C.G.)

प्रति

प्राचार्य
क्राईस्ट महाविद्यालय,
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Chapter-1

Life Skills for Life-Long Learning

Sohan Kumar Mishra
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&

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Abstract

Life skill means all aspects of generic skills which include the non-academic skills with cognitive elements. Life skills are identified to be the most important skills in the current era. Especially in the modern age of technology. The reorientation of education which is one trust of education for sustainability also relates the importance of these so-called? Life skills.

Vast research and expert opinions have been sought in the effort to determine the specific life skills to be implemented and used in higher institutions of learning. Based on the research findings obtained, seven soft skills have been identified and chosen to be implemented in all institutions of higher learning here. They are: Effective Communication skill, Critical Thinking, Team Work, Leadership Skill, Information Management, Analytical skill, Numeracy skill,

Creative Thinking skill, Reading and Writing skill, Personnel skill.

Life Long Learning

Most people associate learning with formal education at school, college, university etc. We are all told, from an early age, that we should 'get a good education'. Generally speaking it is true that a formal education and the resulting qualifications are important. Education may maximize our potential to find better, more satisfying jobs, earn more and, perhaps, become more successful in our chosen career. However, 'schooling' is only one type of learning. There are many other opportunities to further your knowledge and develop the skills you need throughout life. Knowledge can be acquired and skill-sets developed anywhere – learning is unavoidable and happens all the time. However, lifelong learning is about creating and maintaining a positive attitude to learning both for personal and professional development. Lifelong learners are motivated to learn and develop because they want to: it is a deliberate and voluntary act. Lifelong learning can enhance our understanding of the world around us, provide us with more and better opportunities and improve our quality of life.

There are two main reasons for learning throughout life: for **personal development** and for **professional development**. These reasons may not necessarily be distinct as personal development can improve your employment opportunities and professional development can enable personal growth.

Life Skills

The term 'Life Skills' refers to the skills you need to make the most out of life. Life skills are usually associated with managing and living a better quality of life. They help us to accomplish our ambitions and live to our full potential. Any skill that is useful in your life can be considered a life skill. Tying your shoe laces, swimming, driving a car and using a computer are, for most people, useful life skills. There is no definitive list of life skills. Certain skills may be more or less relevant to you depending on your life circumstances, your culture, beliefs, age, geographic location, etc.

Life skills are abilities for adaptive and positive behavior that enable us to deal effectively with the demands and challenges of everyday life, in other words psychosocial competency. They are a set of human skills

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acquired via teaching or direct experience that are used to handle problems and questions commonly encountered in daily human life. The subject varies greatly depending on social norms and community expectations.

Vast research and expert opinions have been sought in the effort to determine the specific life skills to be implemented and used in higher institutions of learning. Based on the research findings obtained, seven life skills have been identified and chosen to be implemented in all institutions of higher learning here. They are:-

1-Effective Communication skill	5-Information Management
2-Critical Thinking	6-Analytical skill
3-Team Work	7- Numeracy skill
4-Leadership Skill	8-Creative Thinking skill

Effective Communication skill

Communication is about more than just exchanging information. It's about understanding the emotion and intentions behind the information. Effective communication is also a two-way street. It's not only how you convey a message so that it is received and understood by someone in exactly the way you intended, it's also how you listen to gain the full meaning of what's being said and to make the other person feel heard and understood.

More than just the words you use, effective communication combines a set of skills including nonverbal communication, engaged listening, managing stress in the moment, the ability to communicate assertively, and the capacity to recognize and understand your own emotions and those of the person you're communicating with.

Effective communication is the glue that helps you deepen your connections to others and improve teamwork, decision making, and problem solving. It enables you to communicate even negative or difficult messages without creating conflict or destroying trust.

While effective communication is a learned skill, it is more effective when it's spontaneous rather than formulaic. A speech that is read, for example, rarely has the same impact as a speech that's delivered (or appears to be delivered) spontaneously. Of course, it takes time and effort to develop these skills and become an effective communicator. The more effort and practice you put in, the more instinctive and spontaneous your communication skills will become.

Critical Thinking skill

Critical thinking is an important element of all professional fields and academic disciplines (by referencing their respective sets of permissible questions, evidence sources, criteria, etc.). Within the framework of scientific skepticism, the process of critical thinking involves the careful acquisition and interpretation of information and use of it to reach a well-justified conclusion. The concepts and principles of critical thinking can be applied to any context or case but only by reflecting upon the nature of that application. Critical thinking forms, therefore, a system of related, and overlapping, modes of thought such as anthropological thinking, sociological thinking, historical thinking, political thinking, psychological thinking, philosophical thinking, mathematical thinking, chemical thinking, biological thinking, ecological thinking, legal thinking, ethical thinking, musical thinking, thinking like a painter, sculptor, engineer, business person, etc. In other

words, though critical thinking principles are universal, their application to disciplines requires a process of reflective contextualization.

Critical thinking is considered important in the academic fields because it enables one to analyze, evaluate, explain, and restructure their thinking, thereby decreasing the risk of adopting, acting on, or thinking with, a false belief. However, even with knowledge of the methods of logical inquiry and reasoning, mistakes can happen due to a thinker's inability to apply the methods or because of character traits such as egocentrism. Critical thinking includes identification of prejudice, bias, propaganda, self-deception, distortion, misinformation, etc. Given research in cognitive psychology, some educators believe that schools should focus on teaching their students critical thinking skills and cultivation of intellectual traits.

Critical thinking skills can be used to help nurses during the assessment process. Through the use of critical thinking, nurses can question, evaluate, and reconstruct the nursing care process by challenging the established theory and practice. Critical thinking skills can help nurse's problem solve, reflect, and make a conclusive decision about the current situation they face. Critical thinking creates "new possibilities for the development of the nursing knowledge." Due to the socio-cultural, environmental, and political issues that are affecting healthcare delivery, it would be helpful to embody new techniques in nursing. Nurses can also engage their critical thinking skills through the Socratic method of dialogue and reflection. This practice standard is even part of some regulatory organizations such as the College of Nurses of Ontario - Professional Standards for Continuing Competencies (2006). It requires nurses to engage in Reflective Practice and keep records of this continued professional development for possible review by the College.

Critical thinking also is considered important for human rights education for toleration. The Declaration of Principles on Tolerance adopted by UNESCO in 1995 affirms that "education for tolerance could aim at countering factors that lead to fear and exclusion of others, and could help young people to develop capacities for independent judgment, *critical thinking* and ethical reasoning."

Critical thinking is used as a way of deciding whether a claim is true, partially true, or false. It is a tool by which one can come about reasoned conclusions based on a reasoned process.

Team Work Skill
The ability to work with people from different social cultural background to achieve a common goal. Students are encouraged to play their role in the group and to respect opinions and attitudes of others in the group. They are also expected to contribute to the groups plan and coordinate the group effort besides being responsible to the group decision. This skill is also part of ESD as stated in the reorientation of basic education: the ability to work cooperatively with other people. If the future human capital can attain these skills, we can be rest assure that the future generation will collaborate ideas and cooperate a taskforce towards the well-being of the nation.

Leadership Skill

The ability to lead in various activities and tasks. This is an important criterion in ESD for planning and implementing ideas in a group. This skill is also important to lead in discussion and make decision.

Information Management Skill

Information management (IM) concerns a cycle of organisational activity: the acquisition of information from one or more sources, the custodianship and the distribution of that information to those who need it, and its ultimate disposition through archiving or deletion.

This cycle of organisational involvement with information involves a variety of stakeholders: for example those who are responsible for assuring the quality, accessibility and utility of acquired information, those who are responsible for its safe storage and disposal, and those who need it for decision making.

Stakeholders might have rights to originate, change, distribute or delete information according to organisational information management policies.

Information management embraces all the generic concepts of management, including: planning, organizing, structuring, processing, controlling, evaluationand reporting of information activities, all of which is needed in order to meet the needs of those with organisational roles or functions that depend on information.

Information management is closely related to, and overlaps, the management of data, systems, technology, processes and – where the availability of information is critical to organisational success – strategy. This broad view of the realm of information management contrasts with the earlier, more traditional view, that the life cycle of managing information is an operational matter that requires specific procedures, organisational capabilities and standards that deal with information as a product or a service.

Analytical skill

Analytical skill is the ability to visualize, articulate, conceptualize or solve both complex and uncomplicated problems by making decisions that are sensible given the available information. Such skills include demonstration of the ability to apply logical thinking to gathering and analyzing information, designing and testing solutions to problems, and formulating plans.

In 1999, Richards J. Heuer Jr., explained that: "Thinking analytically is a skill like carpentry or driving a car. It can be taught, it can be learned, and it can improve with practice. But like many other skills, such as riding a bike, it is not learned by sitting in a classroom and being told how to do it. Analysts learn by doing."[1]

To test for analytical skills one might be asked to look for inconsistencies in an advertisement, put a series of events in the proper order, or critically read an essay. Usually standardized tests and interviews include an analytical section that requires the examiner to use their logic to pick apart a problem and come up with a solution.

Although there is no question that analytical skills are essential, other skills are equally required. For instance in systems analysis the systems analyst should focus on four sets of analytical skills: systems thinking, organizational knowledge, problem identification, and problem analyzing and solving. It also can describe how one identifies a problem and subsequently works out the solutions.

Numeracy skill
Developing or refreshing your numeracy skills can give you a real boost in life. Better numeracy skills can: Make you more employable. Help you to develop a better understanding of the world around you. Save you time and money. Improve your mental health.

We don't all need to be great mathematicians, and we're not all rocket scientists, but an understanding of the basic principles of day-to-day numeracy, arithmetic and maths will help to open many doors.

Creative Thinking skill
How is it that some people always seem to be able to generate new ideas and think creatively, and others seem to struggle to do so? Regardless of whether you view yourself as a creative type or not, you can learn some useful skills and techniques which will enable you to tap into that creative 'right brain' thinking and bring a new perspective to innovation, problem-solving and managing change.

Although at first glance, creative thinking techniques may sometimes look a bit ridiculous, there are good principles behind most of them. However sceptical you may be about their potential, it's a good idea to approach them with an open mind. You may be surprised by the results.

Conclusion

As per the knowledge of life skill, long life learning, and some skills we can say our life may be meaningful. We can solve easily our daily life problems effectively. So we have to learn these life skills for Lifelong learning and give training to our child, students, teachers, teacher-trainees, our family members, friends, officers and leaders. Life skills are very essential for the development of society and country. Philosophical, sociological and psychological problems are also handled by these skills.

Chapter-2

Role of Capacity Building of Librarians in Digital Era

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Abstract

The digitalization is paving a way to knowledge eruption; the librarians have great responsibility to channelize this knowledge. In the Digital Age, librarians can no longer be simply information providers or the keepers of knowledge. Technological changes and the use of electronically stored and retrieval information systems have changed the way students, academicians, education administrators and researchers are able to access, retrieve, congregate and use information.

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The librarians are the information mangers and they provide tools and techniques to the library users. In the digital era the users are more relying on the digital information so that the librarians' role became very vital. The librarians should be proactive and receptive in their day to day tasks. A librarian must be able to participate actively in the knowledge sharing and educational process rather than gathering and disseminating information to the library users through workshops, orientations, training etc. They must ensure that there is effective and efficient flow of accurate information from the generators to library users in the digital environment.

The librarians are the key service providers in any organizations and they need special skills and talents to help the library users. In the age of digital era they should acquire such techniques and skills. The librarians must be able to address the changing and challenging trends to make libraries more accessible and information systems and services in the Digital era with an emphasis on examining contemporary problems, advances and solutions. The capacity building is necessary to librarians to translate information in to knowledge for the organizations and users.

The *Business Dictionary* defines "capacity building" as "planned development of knowledge, skills and other capabilities of an organization through acquisition, inducements, technology and training."[1] Capacity building takes place not only at the organizational level, it can also occur at the individual level. Its set of procedures allows individuals, groups, organizations and societies to develop skills that enable them to function effectively and overcome pressing challenges.[2] Capacity building has also been defined as the acquisition of abilities, skills, understandings, attitudes, principles, associations, practices, incentives, means and conditions that enable individuals, organizations, networks and broader social systems to function and accomplish development objectives over time.[3]

A growing body of literature examines the importance of capacity building for librarians in the Digital era. They have to get new skills and techniques to support the library users. But a modern-day librarian in the Digital Age must be sound in the storage, retrieval and dissemination of information with the aid of information communication technology (ICT).

Some of various factors are responsible for channelize these:
- e-learning
- Open Archives
- Library Consortia
- Metadata Standards
- Resource Sharing
- Industrial Interaction
- Digital Library Initiatives
- Recent Trends and Developments

New technology like ICT's is affected to main role of libraries. They changes in
- Society
- Culture
- Organisation and
- Professional learning in the digital era.

Libraries in the "age of innovation" Libraries today operate in a drastically new context
- Knowledge intensity,
- A rapid pace of technological innovation and
- Global economic dynamics characterize today's (industrialized) societies.

Due to technological change the role of books as sources of information and dissemination of knowledge, and the exchange and communication of knowledge via a variety of multimedia formats - including e-books - is emerging. This digital revolution has an immense impact on the library as a place of knowledge centred around a collection of books and information materials. Library users' behaviour is changing, the diversity in society is increasing and trends are emerging in rapid succession.

Some Challenges in India facing by Libraries
Now a day library facing some challenges in India some are:
- Effectiveness of IT based services
- Demand and supply of quality based library products and services
- Necessary of development of digital library Infrastructure
- Necessary of web based services
- Implement 4th law of library science save the time of user
- Concept of 24 X 7 services
- Resource sharing
- Advance tools and techniques of information storage and retrival
- Helpdesk
- Effective monitoring and feedback system
- Motivation of users behavior and reading habits
- Explosive growth of electronic reading information
- Increased production cost of Printed materials
- Need to develop healthy and user friendly environment
- Library networking and networks

In view of the above factors, Indian Library and Information Managers and Teachers are seriously engaged to organize various professional events and specialized training programs. Indian Library Association (ILA), Indian Association of Special Libraries and Information Centers (IASLIC), Medical Library Association of India (MLAI), Society for Information Science (SIS), Information Library Network

(INFLIBNET), Developing Library Network (DELNET), Indian National Digital Library in Engineering Sciences and Technology (INDEST), Madras Library Network (MALIBNET), Society for the Advancement of Library & Information Science (SALIS). Madras Library Association (MALA), Indian Association of Teachers of Library and Information Science (IATLIS), Libraries of Indian Institutes of Technology (IITs), Indian Institute of Science (IISc), Indian Institutes of Management (IIMs), National Institutes of Technology (NITs) various Departments of Library and Information Science of Universities are seriously engaged to update and upgrade the existing level of knowledge of library and information workers in India through conducting various professional training programs. These are the followings major areas:

- Capacity Building for specific sectors
- Implementation of Digital Libraries
- Information Literacy Program
- Implementation of Consortia Based Subscription for e-Journals/e-databases
- Creating the Awareness about the Open Source Software & Information Materials
- Creating E-Repositories and Digital Archives
- Digital Asset Management
- Creating Digital Culture
- Implementing TQM and ISO-9001: 2000
- Reorienting and redesigning the Curriculum for UG and PG Library and Information Science Programs conducted by the Departments of Library and Information Science of various Universities
- Building ICT Infrastructure
- Participation in Global Library and Information Science Activities

On conducting literature review and interaction with various professionals, it has been observed that Indian Academic Administrators of various leading technical Institutions in India are very cooperative and encouraging the Library and Information Managers to face the challenges of the changes to meet the increased and changed aspirations of users effectively and efficiently through working out an integrated and appropriate action strategy.

Capacity Building

It has been realized in every walk of life that the competency is the key to face the developmental challenges in the corporate world. It is fact that the success or failure of an individual or Institution largely depends on the level and the type of competency exist with particular institution or individual. It's known that competencies and skill are the basic building blocks of human resource management. In view of this fact, various institutions are deeply engaged in recruiting, training, evaluating, promoting, and paying for the competencies and skills available with their employees. The proper identification of employee's competencies and skills are the major concerns of various organizations globally. The competencies can be defined as the characteristics of individual, which affect the performance and behavior at work. The types of competencies, abilities, aptitude, and behavior are the main support ways of an organization's goals and strategies. The competencies have great practical and potential role to play in the development of individual and organization to ensure better results. Broadly the competencies can help individual and organization in the following ways:

- Translating strategic direction into action
- Helping to improve difficult relationships
- Clarification of behaviors that support important values and principles
- Establishment of standards of excellence
- Shifting the focus on organizational development
- Providing a base of feedback and evaluation of performances

➢ Inculcating open learning culture and environment
➢ Facilitating self directed work culture
➢ Creating interest for continuing development
➢ Promoting continuing professional education programme

Impact of Competency

The major impact of competency can be seen on the following aspects:

➢ Transparency and dynamism in library administration
➢ Closer and positive relations
➢ Innovation in library and information services
➢ Effective teamwork
➢ Enhanced self confidence amongst library professionals
➢ Flexibility and adaptability in attitude
➢ Increased strong interpersonal relations
➢ Organizational development
➢ Quality based library and information services

Capacity Building Roadmap for Technical Libraries

Based on experience of technical libraries, a road map can be worked out for the small, medium and large technical libraries keeping in view of the following factors:

➢ Self Analysis and Feasibility Study
➢ Developing Systems and Procedures
➢ Proper Documentation of Forms and Necessary Documents
➢ Team Building
➢ Resources Allocation
➢ Identification of Training Needs and Preparation of Training Calendar
➢ Strengthening Staff Users Interface
➢ Periodical Review and Monitoring
➢ Continual Improvement

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Chapter 3

Income Generation Programmes (IGPS) – As a Rehabilitation Strategy for Families Infected Affected With HIV/AIDS

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Introduction

Income generation simply means gaining or increasing income. There are three ways income can be generated. Firstly, income generation does not always mean the immediate getting of money, although in the end we use money to place a measurable value on the goods and services people produce. A second way a person can generate income is by astute investment of existing resources. A third way is to generate income to use their skills by serving another person who pays for the use of those skills. Income generation programmes generally cover a range of productive activities by people in the community. In summary, income can be generated by self-employment, by working for others or by adding to personal resources through investment.

People Living with HIV/AIDS (PLHIVs) and affected family members are one among disadvantaged persons in the community who, if provided with support, could become self-supporting. In other words they could begin to generate sufficient income to provide for themselves and, their families. It is for these people that Income-Generating Programmes are especially required.

The major economic problems of PLHVs are summarised below:-

- Lack of income generating assets and resources
- Lack of regular income
- Lack of access to finances
- Non-availability of regular employment
- Low wages
- Indebtedness
- Non-payment of proper wages
- Illiteracy Ignorance and Superstitions
- Stigma& Discrimination

Impact of economic problems in PLHIVs

PLHIVs have difficulty in generating income which has seriously affected their quality of life. The so called poverty line is described in many ways but at its most basic it identifies those persons who have such low income that they cannot exist without regularly calling upon the rest of the community for assistance to acquire the most basic things in life - food, clothing, shelter, education and good health. In some instances all of the PLHIVS communities are below the poverty line and assistance is not immediately available.

There are many PLHIVs whose income generating powers are very limited, indeed, in many cases so limited that they are unable to fully provide for themselves. Human resources are the single most important factor in the economic development of a country. People at or below the poverty lines have a negative effect on the total disposable wealth of a country. Income Generating Programmes (IGPs) seek to redress this imbalance by equipping these people with knowledge, skills, attitudes and values such that they become positive contributors to their nation's economy.In brief IGPs are designed to contribute to both the social and economic welfare of a community and a nation.

Purpose of Income-Generating Programmes

1) By empowering these people to identify their economic needs and explore ways and means of fulfilling those needs;
2) By developing self-confidence and ability to undertake income generating activities through appropriate and adequate training and motivation;
3) By providing opportunities for continuous upgrading of vocational knowledge and skills for gainful employment;
4) By developing a team spirit for working together for sustainable social and economic growth.

The major components of IGPs may include

✓ A bridge course to upgrade literacy and to promote social and technological awareness.
✓ Skill development comprising of the following
   o Basic skills commonly required
   o Trade skills at proficiency level
   o On-site training for real-life situations
   o Related trade theory to provide scientific understandings
✓ Entrepreneurial development comprising:
   • Enterprise skills
   • Book keeping skills
   • Marketing skills
   • Money saving skills

The above mentioned components can be included by government as well as non-governmental organizations while designing a IGP for PLHIVs. A thorough feasibility study with in-depth cost-benefit analysis can predict the success of an IGP and based on such studies an individual or a group can be supported for implementing IGPs.

Conclusion

In India about 3 million people are infected and affected with HIV according to the National AIDS Control Organization (NACO) Estimates. These people are the unfortunate group with multiple problems. Added to stigma and health complications they suffer from multifaceted economic issues. Though there are many government as well as Non-governmental organizations working for empowerment of HIV affected families a very few have dealt with IGPs because of the risk involved in implementing such programmes effectively. The concept of IGPs in HIV rehabilitation is not only to improve the income of HIV affected families, but also to boost their self-esteem and confidence to face the hardships of life. They are rarely employed because of the stigma and if at all employed have to work long hours for poor wages. The IGP programmes can substitute their income and give them flexible hours to work, which is essential because of their health condition. The income generation programme is an opportunity for economic development which can ultimately lead to improved living standards and better life span for HIV affected families.

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Chapter 4

Skill Development and Social Work

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Definitions for 'Skill Development'

In Layman's view, 'Skill' means an ability & capacity acquired through deliberate, systematic & sustained effort to smoothly & adaptively carryout complex activities or job functions involving ideas, things, & or people.

'A skill' is the learned ability to carry out a task with pre-determined results often within a given amount of time, energy or both. In other words the abilities that one possesses can be marked as one's Skill-Set.

'Skills' can be divided into two major domains

1. *General Skills*
   'General Skills' as the name suggests is general in nature and should be possessed by all regardless of their role in 'the Institution' or 'the Society'. 'General Skills' include Time Management, Teamwork, Leadership, Self-Motivation etc.

2. *Specific Skills*

'Specific Skills' as the word 'Specific' suggests are certain acquired skills possessed by an individual for a specific work/role. These skills can be attained via Education, Trainings, Experience, or under the guidance of one who is an expert in that Skill. Examples can be listed out as Drivers, MBBS Doctors, Engineers, Electricians, Teachers, Carpenters, Blacksmiths, Singers, Actors etc.

Usually these skill sets require more time, energy and resources to make an expert hence majority of People concentrate to be the master in a single trade or a single skill.

As the present Genre is very much attracted to exceptions, one can find people having Multiple Specific Skills. E.g. a Doctor who drives, an Actor who Sings or a Singer who Acts.
'Development' can be defined as "One's Growth along with his 'Institution' or the 'Society he/she belongs. In other words it means to hone the skill one possesses in a promotional way for him/her as well as for the stakeholders related to him.
According to Dr. BE Nzimande, Minister of Higher Education &Training, South Africa states that, "For our country to achieve high levels of economic growth, we need to address our social challenges such as Poverty & Inequality. We must work together to invest in education & training &skill development to achieve our vision of a skilled & capable workforce to support an inclusive growth path". 'Skill Development' is then, the intended output of education and training efforts, and it should be an enabler for growth".
Skill Development in Terms of Business

As an entrepreneur, the growth of one's business & the establishment of a legacy are paramount. Enhancing the capability of employees to improve the company's efficiencies in the employee's specific sphere of influence & thus ultimately improving the bottom line revenue of the company.

Skill development therefore can be defined as-

- To improve productivity in the workplace & the competitiveness of our business.
- To improve the quality of life of workers, their prospects of work & their mobility no matter any work they can do let it be small scale industries workers or private companies workers.

The current focus of Skill Development has shifted to the Learner & His/her needs and expectations from Vocational Education & Training. To empower the working populations, it is essential to start from the source, i.e. the learner. The voice of the learner is the focal point of the mission without which an effective conclusion to & attainment of the final goal would be incomplete. India has the advantage of younger population as compared to senior citizens which can be cultivated to build a skilled workforce in the near future. For these reasons & several others, the aim of the paper is to understand comprehend the issues surrounding vocational education & training by putting the learner best.

Skill Hierarchy Pyramid

Igor Kokcharov has detailed this with his Skill Hierarchy Pyramid:

The Major Objectives behind Skill Development should be

- To generate a new awareness among the youth & the public.
- To equip the youth to take up the responsibility of social development.
- To create critical awareness on the social, political,& cultural issues & problems
- To organize suitable consultations, seminars, workshops etc in order to create a positive image & empathy for the tribals.
- To create reading habit and provide references facilities for researchers.
- To make available information services in the field of employment & higher education.
- To promote art & culture as this may become distinct in nearby future.

Activities to Enhance Skill Development in Social Work

Skill Development and Social Work are two Separate but inter-related aspects of present Society. Both are imperfect without each other. Some of Activities which could be undertaken for the purpose of Long Term Development of present Society are:

- Strengthening Local/State Leadership
- Providing Theoretical & Analytical Inputs
- Information Gathering / Valid Data collection
- Researches/Studies & Documentation
- Building up Support System

- Making Linkage with wider Network of Non-Governmental Organisations/Tribal Organisations
- Allied Activities-Resources & Inputs For People 'S Empowerment Process
  -Collaboration with other supportive processes & movements
  -Library & Mass Awareness Building Programmes

Role of Social Work

The proper intervention of social work would be boosting of proper implementation of marketing strategies among the artisans as it can be Bell Metal Art, Terracotta, Bamboo Craft, Kosa Silk Sarees or Wooden Artifacts related to Indian Culture. It is not like they don't know the art but proper channelization of their product along with Generation Next Features is to be focused and hence leading to a global acknowledgement. Such commodities or piece of artwork should be designed by a designer analyst and the product should be in accordance with the market needs.

Indian Govt. along with some NGO's and GO's have taken up initiatives to Preserve and promote such arts rather than just focusing on the Livelihood aspect related to it.

Conclusion

The aspect of Skill Development in relation with Social Work is a vague but Dynamic. Justice with the concept would mean one of the most important strategies to empathetically built Leadership, Marketing Skills as well as Entrepreneurship Quality among the artisans as they know their work but these marketing skills would be helpful to them to be more independent and variant. The talent without resources would be same as a driver without a Vehicle. Hence the focus should be equally divided between Skill Development and Souk.

Chapter 5

Motivation for Learning

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Abstract

Virtually all students are motivated in one way or another. One student may be keenly interested in classroom subject matter and seek out challenging course work, participate actively in class discussions, and earn high marks on assigned projects. Another student may be more concerned with the social side of school, interacting with classmates frequently, attending extracurricular activities almost every day, and perhaps running for a student government office. Still another may be focused on athletics, excelling in physical education classes, playing or watching sports most afternoons and weekends, and faithfully following a physical fitness regimen. Yet another student—perhaps because of an undetected learning disability, a shy temperament, or a seemingly uncoordinated body—may be motivated to avoid academics, social situations, or athletic activities.

How Motivation Affects Learning

Motivation directs behavior toward particular goals. Social cognitive theorists propose that individuals set goals for themselves and direct their behavior accordingly. Motivation determines the specific goals toward which learners strive Thus, it affects the choices students make—for instance, whether to enroll in physics or studio art, whether to spend an evening completing a challenging homework assignment or playing videogames with friends.

Motivation affects cognitive processes. Motivation affects what learners pay attention to and how effectively they process. For instance, motivated learners often make a concerted effort to truly understand classroom material—to learn it meaningfully—and consider how they might use it in their own life;

Motivation increases initiation of and persistence in activities. Learners are more likely to begin a task they actually want to do. They are also more likely to continue working at it until they've completed it, even if they are occasionally interrupted or frustrated in the process. In general, then, motivation increases students' time on task, an important factor affecting their learning and achievement.

Motivation determines which consequences are reinforcing and punishing. The more learners are motivated to achieve academic success, the more they will be proud of an A and upset by a low grade. The more learners want to be accepted and respected by peers, the more they will value membership in the "in" group and be distressed by the ridicule of classmates. To a teenage boy uninterested in athletics, making or not making the school football team is no big deal, but to a teen whose life revolves around football, making or not making the team may be a consequence of monumental importance.

Motivation often enhances performance. Because of the other effects just identified—goal-directed behavior, effort and energy, initiation and persistence, cognitive processing, and the impact of consequences—motivation often leads to improved performance. As you might guess, then, students who are most motivated to learn and excel in classroom activities tend to be our highest achievers. Conversely, students who have little interest in academic achievement are at high risk for dropping out before they graduate from high.

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How to Motivate the Students

Teachers have a lot to do with their students' motivational level. A student may arrive in class with a certain degree of motivation. But the teacher's behavior and teaching style, the structure of the course, the nature of the assignments and informal interactions with students all have a large effect on student motivation. We may have heard the utterance, *"my students are so unmotivated!"* and the good news is that there's a lot that we can do to change that.

Intrinsic and Extrinsic Motivation

Educational psychology has identified two basic classifications of motivation - intrinsic and extrinsic. Intrinsic motivation arises from a desire to learn a topic due to its inherent interests, for self-fulfillment, enjoyment and to achieve a mastery of the subject. On the other hand, extrinsic motivation is motivation to perform and succeed for the sake of accomplishing a specific result or outcome. Students who are very grade-oriented are extrinsically motivated, whereas students who seem to truly embrace their work and take a genuine interest in it are intrinsically motivated.

12 Strategies for Motivation

1. Set goals. Be sure they are realistic and achievable. Make them small to start.

2. Establish rewards for progress toward your goals.

3. Expect set-backs and when they happen, re-direct and renew your energy toward your goals. Don't give up.

4. Use the power of positive thinking and believe in yourself. Overcome discouragement.

5. Tell others what you are trying to accomplish and seek support from loved ones.

6. Learn to say no to options and distractions that deter you from your goal. Obstacles are what you see when you take your eyes off the goal.

7. Establish routine and regular exercise; meditation, prayer or yoga, even if it is only 15 minutes   a day to start. This will help you to cultivate discipline.

8. Use positive imagery to help you achieve your goals. Imagine yourself as you will be and feel when your goal is achieved.

9. Spend time reflecting or talking to others about what has stopped you from achieving your goals in the past.

10. Post reminders and inspirational quotes in prominent places about what you want to achieve.

11. Get professional help and support to overcome physical or mental roadblocks (depression and anxiety are just two examples) and to bolster your efforts, no matter how small they may seem.

12. Practice extreme self care. Good health is essential to positive thinking and feeling, which will take you a long way toward achieving your goals.

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Conclusion

Motivation is an influential factor in teaching learning process. The success of learning depends on high or low motivation of students. It can drive learners in reaching learning goal. Therefore, motivation is the key of success in learning teaching process. High or low student motivation can be influenced by some factors. First, it is influenced by social live where students life. Second, it is influenced by the teacher. Third, it is influenced by the method used. Fourth, it is influenced by the learning environment.

In improving students' motivation we need pay attention some factors. First, we must set the interesting material. Second, we must set goals that are meaningful, realistic, and achievable for students. Third we must set interesting environment. Finally, if we can apply all strategies in teaching learning process, the students will reach learning goal easily.

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Chapter 6

3D Printing

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Introduction

Imagine a future in which a device connected to a computer can print a solid object. A future in which we can have tangible goods as well as intangible services delivered to our desktops or high street shops over the Internet. And a future in which the everyday "atomization" of virtual objects into hard reality has turned the mass pre-production and stock-holding of a wide range of goods and spare parts into no more than an historical legacy.

Such a future may sound like it is being plucked from the worlds of Star Trek. However, while transporter devices that can instantaneously deliver us to remote locations may remain a fantasy, 3D printers capable of outputting physical objects have been in both development and application for over three decades, and are now starting to present a whole host of new digital manufacturing capabilities. 3D printing may therefore soon do for manufacturing what computers and the Internet have already done for the creation, processing and storage of information.

Current Technologies

3D printing is an additive technology in which objects are built up in a great many very thin layers. The first commercial 3D printer was based on a technique called stereo lithography. Stereo lithographic printers remain one of the most accurate types of hardware for fabricating 3D output, with a minimum build layer thickness of only 0.06mm (0.0025 of an inch).

Another 3D printing technology based on the selective solidification of a tank of liquid -- or 'vat polymerization' -- is DLP projection. This uses a projector to solidify object layers one complete cross-section at a time, rather than using a laser to trace them out. One of the leading manufactuters of this kind of printer is envisionTEC with its Perfactory range of 3D printer hardware.

A final 3D printing technology that creates objects by using a light source to solidify a liquid photopolymer is known generically as 'material jetting', or commercially as 'polyjet matrix'. This was pioneered by a company called Objet (now a part of Stratasys), and forms object layers by emitting liquid photopolymer from an inkjet-style, multi-nozzel print head. After each layer is printed a powerful UV light is then used to set it solid before the next layer is printed. The really clever thing is that the Connex range of 3D printers created by Objet can jet several different materials from their print head, and in varying combination. This allows up to 14 of 120 potential materials to be printed at the same time. This means that objects can be printed with, for example, both hard plastic and rubber-like parts.

Rather than solidifying a photopolymer, another category of 3D printer hardware is based onmaterial extrusion. Here a semi-liquid material -- and most usually a hot thermoplastic -- is deposited from a computer-controlled print head. This process was invented by Scott Crump in 1988, who set up a company called Stratasys to commercialize his invention. Crump chose to name the technology 'fused deposition modelling' or 'FDM', and patented and trademarked these terms. Hence, while many people use the phrase 'FDM' to refer to this kind of 3D printing, only Stratasys actually makes FDM 3D printers. Others manufacturers refer to the same process as 'thermoplastic extrusion', 'plastic jet printing' (PJP), the 'fused

filament method' (FFM) or 'fused filament fabrication' (FFF). If you are getting the idea that the terminology used in 3D printing is a bit of a nightmare then you are right.

Whatever it is called, one of the key benefits of FDM is that objects can be made of out of exactly the same thermoplastics used in traditional injection moulding. Most FMD 3D printers can print with both ABS (acrylonitrile butadiene styrene), as well as a biodegradable bioplastic called PLA (polylactic acid) that is produced from organic alternatives to oil. Within a decade developments in synthetic biology are likely to make the direct production of PLA from a range of biomass materials quite common, hence allowing 3D printing supplies to be grown in many a back yard.

In addition to being used to output plastic objects, material extrusion printers have also been developed that can output other semi-liquid materials. The applications are already quite diverse, and range from 3D printers that can print in cheese or chocolate, to concrete printersthat may in future allow entire buildings (or large parts thereof) to be 3D printed. D-Shape have even created an enormous 3D printer that can build objects in a form of synthetic stone.

A third broad category of 3D printer hardware creates object layers by selectively sticking together successive layers of a powdered build material. This can also be achieved in two ways. Firstly, there are printers based on binder jetting (also sometimes known as 'inkjet powder printing'). Here a glue or 'binder' is jetted from an inkjet style print head to stick together successive powder layers. Most commonly the powder used is gypsum-based composite that needs to have its surface coated after printout if a robust object is required. Some binder jetting printers - such as the ZPrinter 850 from 3D Systems -- jet both a binder and coloured inks from five print heads, so allowing full-colour 3D objects to be created at up to 600x540dpi.

Other binder jetting printers can build objects by sticking together plastic powders, sand or even metals. Where a binder is sprayed onto sand, the final object is used as a mould in '3D sandcasting', with molten liquid metal poured into it. Once the metal has cooled solid, the sand is then broken away.

Binder jetting metal printing has been developed by a company called ExOne (who also make 3D sandcasting printers). Here a layer of bronze or stainless steel metal powder is laid down and a print head moves across it to selectively spray on a binder solution. A heating lamp then dries the layer, and a fresh layer of powder is rolled over it, and the process repeats. Once all layers have been output, the object is then placed in an oven to fully cure the binder. At this stage the object is still very fragile, but is put in a kiln where it is infused with additional bronze powder. The final result is a very solid object that is a least 99.9 per cent solid metal. You can see the results of this amazing process in my "Online 3D Printing" video embedded further down this page.

Rather than spraying on a binder, an alternative method to stick powder granules together is to apply heat. A well established 3D printing technology that works in this manner is selective laser sintering (SLS). This builds objects by laying down a fine layer of powder and then using a laser to selectively fuse some of its granules together. At present, SLS 3D printers can output objects using a wide range of powdered materials. These include wax, polystyrene, nylon, glass, ceramics, stainless steel, titanium, aluminium and various alloys including cobalt chrome. During printing, non-bonded powder granules support the object as it is constructed. Once printing is complete, almost all excess power is able to be recycled.

When SLS is used to directly produce metal objects the process is also called direct metal laser sintering (DMLS). Metal objects created by a DMLS 3D printer are about 99.99 per cent dense, and hence can be used in place of traditional metal parts in the vast majority of applications. While DMLS 3D prints metal objects directly, it is also common to use laser sintering to produce wax objects that are then sacrificed in a traditional lost-wax casting process. Here, once the wax object has been 3D printed a plaster mould is

poured around it. When heated, the wax then melts and is poured away, after which a liquid metal can be poured in. Once this cools the plaster is removed, leaving a metal object that -- in some senses -- began its life on a 3D printer.

A closely related 3D printing technique to SLS is known as selective laser melting (SLM). This uses a laser to fully melt the powder granules that form a final object, rather than just heating them enough to fuse them together. As yet another variant, a technique called selective heat sintering (SHS) uses a thermal print head -- rather than a laser -- to apply heat to successive layers of a thermoplastic powder, and as explained in depth There is also a very similar processes that uses an electron beam to fuse together metal powers, and which is known as 'electron beam melting'.

Finally, as yet another variant of powder solidification, there is a 3D printing technology called 'directed energy deposition' (also known as 'laser powder forming'). Here a powder of stainless steel, copper, nickel, cobalt, aluminium or titanium is blown into a high-power laser beam for deposition as a molten build material.

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Chapter 7

Skill Development through Sustainable Harvesting of Medicinal Plants to Enhance the Earning for Forest Dwellers

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In recent years medicinal plants are increasingly recognized as a source of significant livelihood opportunities for the rural poor and revenue for Government. The collection of medicinal plants provides critical sources of cash income to the rural communities especially the forest dependant tribes, landless poor and marginalized farmers. With a population above a billion and 147 million people living in 170,000 villages in the proximity of forest areas, majority of whom are poor, their survival is highly dependent on forest. This high dependency is creating tremendous pressure on forest.

Also the increasing preference for use of natural products for medicines, dyes, cosmetics and fragrance etc. the rate of extraction from the forest has increased tremendously. The last three decades have seen substantial growth in herb and herbal product markets across the world. Rapidly rising exports of medicinal plants during the past decade has raised worldwide interest in these products as well as in traditional health systems. According to the Secretariat of the Convention on Biological Diversity (CBD), global sales of herbal products totaled an estimated US$60 000 million in 2002. Besides the household consumption the global market of the Medicinal, Aromatic and Dye Plants (MADPs) and other NTFPs is estimated for US $59 billion per year.

Various reports suggest that 95 percent of the raw drugs used by Indian pharmacies come from wild resources. Approximately, 13 lakhs of plants are found worldwide and about 55000 medicinal plant species are used globally for different ailments. India has innumerable medicinal plants and about 2000 plants are used in preparation of Ayurveda, Unani, Siddha, Homeopathy, modern medicines and other health products. Due to increasing demand of medicinal plants in national and international markets threat of survival has increased manifold to wild species though this creates millions of mandays employment for forest dwellers, tribals and villagers of the area.

As per estimate 960 medicinal plant species are in trade. There are 193 species in high trade in India with annual requirement over 100 metric tons. More than 100 species are rare, endangered and threatened, of these 19 species in high demand. As a result of the overwhelming demand of these NTFPs by the industries, some of the species have either receded to interiors of forests or are at threat of disappearance from the ecosystem. While serious efforts have been made by the conservation agencies to promote sustainable harvesting of wild medicinal plants and promote best collection practices, guidelines available in India are generic providing little information to collectors as to how, when and how much to collect . They are generally guided, partly by economic considerations and partly on their own wisdom. Often it is the market and economy which overrides the issue of sustainability. Non-availability of sustainable harvesting practices for such important species of medicinal plants is therefore, one of the reasons for their poor quality.

The demand for the certified products are increasing in European and American markets and India being one of the major exporters of medicinal plants/ NTFP to these market, the need for certifying its product cannot be ignored. The demand for certified products calls for scientific certification system to ensure that the

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resources are managed sustainably. Inspite of this increasing demand, the medicinal pants are still not given due recognition in Forest Working Plan in the country which is still timber oriented, as a result of which there is a threat for sustenance of the MADPs in view of the ever increasing demand in the national and international market, exploitative and unsustainable harvesting practices and discrepancies in the Management Plan.

Presently, medicinal plants are collected from wild without any awareness to the stage of maturity and parts required to be collected. It is essential to ascertain the quality of a plant material before it is employed which is governed by following factors:

1. Place from where the plants are collected.

2. Climate, soil, habitat.

3. Ignorance about genuine raw drugs, its appropriate time of collection etc.

As the price paid to the dwellers tends to be very low, hence they apply destructive methods to generate their income. A critical factor in wild harvesting is the non-availability of skilled labour for good collection of herbs. Unmanaged collection practices results in depletion of medicinal plants population and the outcome of drugs are reducing day by day.

State wise, there are certain norms for collection of medicinally important plants. There are also restrictions on collection of some threatened medicinal plants species, collected from the wild sources. These species must be protected in nature through *in-situ conservation and ex-situ cultivation*, and existing laws.

However, unmanaged and over-harvesting/ urbanization, habitat loss and increasing demand have caused considerable threat to medicinal plant existence. This has compelled all stakeholders and Government to give a serious thought to evolve methods of sustainable harvesting practices to ensure sustainability. Looking at the concern for its conservation and sustainable management, some important issues and challenges on Sustainable Harvesting Techniques of Some Important Medicinal Plant Species has been prepared.

Objectives of Sustainable Harvesting

The main objectives of sustainable harvesting of medicinal plants are as follows:

(i) To ensure conservation of species through sustainable harvest.

(ii) To enhance earning of local people.

(iii) To eliminate drudgery to women and children mostly engaged in collection of medicinal plants/ NTFPs.

(iv) Capacity building among the local people towards conservation of natural resources and organizing themselves for better marketing access and to eliminate the possibility of distress selling of medicinal plants/ NTFP.

(v) General welfare of forests dependent communities and weaker sections.

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Concepts of Sustainability, Sustainable Forest Management and Sustainable Harvesting

Concept of Sustainability

Sustainability is the ability of the system to maintain a certain well defined level of performance over time and if required, to enhance the same in response to changing needs, either by itself or through linkages with other system without damaging the long term productivity of its resource base and essential ecological integrity of the system (Jodha, N.S., 1995).

Sustainability is a complex concept. There are more than 60 definitions given by various authorities, however they all cover at least one of the following components:

- **Ecological Sustainability:** concern with the long-term health of the environment;
- **Social Sustainability:** apprehension about the welfare of future generations;
- **Economic Sustainability:** condemnation of rapid population growth and awareness over the possibility to maintain economic growth in the face of resource scarcity (Van Kooten and Bulte, 2000).

Despite the variety of ideas on sustainability and broad discussions on the perspectives of economic growth, general meaning of sustainable development supposes economic development to be within certain ecological limits. Though basic principle for sustainable development that focuses on non-declining per-capita human well being over time and presumes the ability of the society to live within the limits of the Earth has become dominant, the following separate sustainability concepts can be distinguished (Perman, Ma and Mc Gilvray, 1996).

Sustainable Management of Medicinal Plants/ NTFPs

A sustainable system for exploiting non timber resources is defined as one in which fruits, nuts, latexes and other products can be harvested indefinitely from a limited area of forest with negligible impact on the species being exploited.

Harvesting of medicinal plants/ NTFPs, therefore, forms a key area of management in the tropical forests. Very little research is done in this area and hence data and information related to this area is lacking. Since this area is already much dented leading to the extinction of some of the valuable medicinal plants/ NTFPs, there is an urgent need to have some scientific basis of management of medicinal plants/ NTFP within a reasonable period of time to prevent further damage to these natural resources.

Defining Sustainable Harvesting

A sustainable system for exploiting non- timber forest resources is defined, as one on which fruits, nuts, latexes and other products can be harvested indefinitely from a limited forest area with negligible impact in the species being exploited.

Sustainable harvest of a resource ensures an undiminished flow of benefits from the resource to its users over time in such a way that the harvest of medicinal plants/ NTFP does not have any deleterious effect on regeneration of target population or any other species in the community or on ecosystem structure and functioning. A broad definition of sustainability includes inter-generational equity, that is, maintenance of site values and opportunity for future options for use.

Types of Unsustainable Harvesting

1. *Destructive Harvesting* – e.g. uprooting the whole tree/plant or devoiding the tree from bark, cutting, lopping, debarking, tapping for gum/ resin, latex etc.

2. *Premature Harvesting* – plucking of fruits before maturing resulting in low regeneration

3. *Overharvesting* – extracting more than the areas productivity

Importance Sustainable Harvesting of Medicinal Plants

Sustainability has become one of the most frequently used concepts today. Sustainable harvest of a resource ensures an undiminished flow of benefits from the resource to its users over time in such a way that the harvest of medicinal plants does not have any deleterious effect on regeneration of target population or any other species in the community or on ecosystem structure and function.

Species differ in their responses to harvest depending on the plant part extracted, natural history attributes and harvesting techniques. However, regeneration and population densities of some medicinal plant species are reported to be adversely affected by extraction. Such adverse effects, though, cannot be attributed to medicinal plant/ NTFP harvests alone, but rather to a combination of harvests, damaging harvesting practices and accompanying anthropogenic disturbances such as fire, grazing and fuel wood collection. In order is conserve valuable species of medicinal value and other NTFP yielding species, harvesting of plants and their products has to be sustainable. This paper, therefore, focuses on sustainable harvesting practices of various species of medicinal plants of ecological and economical importance. The medicinal plant species have been categorized on the basis of the parts used for medicinal purpose which are as follows:

1 Medicinal fruit yielding plants

2 Medicinal root / rhizome yielding plants

3 Medicinal leaves and flowers yielding plants

4 Medicinal bark yielding plants

5 Medicinal gum/ resin yielding plants

6 All plant parts being medicinal

Harvesting Methods for Some Selected Medicinal Fruit Yielding Plants

Terminalia bellerica (Baheda)

Phenological Characteristics: A handsome tree with characteristic bark, attaining a height upto 40 cm. found in deciduous forests throughout the greater part of India but not in the arid regions. Stems straight, frequently buttressed when large, leaves broadly elliptical, clustered towards the end of branches, flowers in solitary, simple, axillary spikes; fruits globular, obscurely 5 angled and ripen during November- February.

Useful Plant Parts: Fruits

Method of Propagation: Seeds

Prevalent Harvesting Practices: The gatherers either climbing on tree and shake its branches or lop the branches for collection of fruits. Sometimes even the entire tree is felled to ease collection of fruits.

Sustainable Harvesting Practices/ Protocols

(i) Selection of plant/ Tree for Harvesting (a) The trees should be divided among the gatherers for collection of fruits (b) The matured trees should be marked in red to be harvested for the collection of fruits

(ii) Characteristics of Plant Parts to be Harvested (fruit colour, weight, fibre and pulp): The fruit has five lengthwise ridges and is drupe-like in shape. The nut type fruits are picked while they are still unripe and green but mature. The seed of Harra (haritaki) fruit is oval in shape and abrasive in nature. It is covered by a firm and fleshy pulp.

(iii) Methods to be used for Harvesting: (a) The trees or its branches should not be disturbed while harvesting fruits (b) The area should be leaped with cow dung and mud or covered with gunny bags or black polythene sheets for easy citation of fallen fruits and also to avoid dust on the fruits (c) Only the fruits fallen on the covered ground should be collected

(iv) Time and Age of Harvesting: (a) The fruits of *Terminalia bellerica* mature during the months of November- February. Therefore, fruits should only be harvested during these months and not before that. (b) In order to comply with this the time of harvesting should be notified rangewise or divisionwise as the case may be.

(v) Extent of Harvesting: (a) Only 60 – 75 percent of the fruits should be harvested and the remaining should be left out for birds to help in dispersal of seeds and regeneration. (b) In order to fulfill this criterion the fruits in the top most branches should be left undisturbed.

(vi) Packaging for Transportation: The fruits should be packed in gunny bags for proper aeration.

(vii) Transport Method and Time: Transportation should be done in the evening or early morning to avoid moisture losses from the fruits.

(viii) Post Harvest Method: The fruits are sundried for 2 days and kept in a bamboo basket.

(ix) Ways to avoid loss/ wastage (spread on the floor, overlapping): Only the healthy ones should be collected and the raw and damaged ones should be discarded for regeneration and birds.

Ensuring Natural Regeneration of Species: (a) Seed bearing trees should be marked (b) Young ones (below 50 cm girth) should not be harvested (c) Natural seedling to be adopted and tended (d) Monitoring and Evaluation- a small committee of stakeholders should be formed to monitor compliance of the above prescriptions (Pandey, A.K. and Bisaria, A.K. 1997).

Emblica officinalis (Aonla)

Phenological Characteristics: A deciduous tree of small to medium size up to 8- 18 m meters in height with crooked trunk and spreading branches. Leaves simple, sub sessile; flower greenish yellow. Fruits nearly spherical pale yellow with 6 vertical furrows. Fruits are fleshy, about 2.24 cm in diameter and weigh about 5.68 grams. The stone of the fruit is six ribbed, splitting into three segments. Each contains usually two seeds: seeds 4–5 mm long, 2–3 mm wide. Each weighs about 572 mg.

Useful Plant Parts: Fruits

Method of Propagation: Seeds

Prevalent Harvesting Practices: The gatherers lop the branches of the tree for the collection of fruits. Even the unripe fruits are harvested. Sometimes the entire tree is cut for the collection of fruits.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: (a) Since greater number of trees are available specific area should be assigned to each gatherers for collection of fruits (b) The matured trees should be marked in red (c) Certain areas should be marked for seed production only and should be fenced (d) Since de pulping requires hard water boiling after which the seeds are damaged, the Seed Production Area (SPA) should be sufficient enough to produce adequate quantity of seeds not only for that area but for other areas as well.

(ii) Characteristics of Plant Parts to be Harvested (fruit colour, weight, fibre and pulp): (a) The fruits on maturity becomes dull green in color (b) Fruits collected should be off 1.5 to 2.5 cm in diameter. (c) Fruit should be clean without any spot. (d) Matured fruits are fleshy, about 2.24 cm in diameter and weigh about 5.68 grams.

(iii) Methods to be used for Harvesting: (a) The trees or its branches should not be disturbed while harvesting fruits (b) Fruit should be collected by the help of bamboo with hook and net. (c) The ground should be leaped with cow dung and mud or covered with gunny bags or black polythene sheets for easy citation of fallen fruits and also to avoid dust on the fruits (d) The fruits fallen on the covered ground should be collected (e) Ripe fruits on trees should be plucked with the help of sickle tied on a bamboo with a bag attached to it (f) The fruits after harvesting should be graded according to their sizes

(iv)Time and Age of Harvesting: (a) Emblica officinalis trees set fruits after four years and the fruits mature during the months of December- January. Therefore, fruits should only be harvested during these months and not before that. (b) In order to comply with this, the collection period in each area should be notified rangewise or divisionwise as the case may be.

(v) Extent of Harvesting: (a) Only 60 – 75 percent of the fruits should be harvested and the remaining should be left out for birds to help in dispersal of seeds (b) In order to ensure this, the fruits on the uppermost branches should be left intact. 10- 15 fruits from each tree should be left out.

(vi) Packaging for Transportation: The fruits should be packed in gunny bags or poly bags for proper aeration.

(vii) Transport Method and Time (night, early morning): Transportation should be done in the evening or early morning to avoid moisture losses from the fruits.

(viii) Post Harvest Methods: Fruits of Aonla are highly perishable in nature as the length of time between harvest and consumption is limited to a few days. Cold storage facilities are not generally available at the collection centers. The fruits must be stored in Zero Energy Cool chamber to enhance the shelf life of fruits by lowering down the temperature and maintaining high humidity inside the chamber.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Only the healthy ones should be collected and the raw ones should be left on trees. The damaged fruits should be discarded for birds and natural regeneration.

Ensuring Natural Regeneration of Species: (a) Trees should be marked as seed bearer (b) 10- 15 fruits from each tree should be left out (c) Natural seedling to be adopted and tended (d) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions.

Terminalia chebula (Harra)

Phenological Characteristics: Harra is a medium to large sized deciduous tree with a short clean trunk and a long expanding crown. The bark is dark brown, longitudinally fissured. The leaves are dark green, nearly opposite, shortly petioled, ovate oblong, obtuse or cordite at the base, when young clothed with glossy, silky hairs. The spikes are terminal. The flowers are small, white in colour. The fruit is a drupe and is oval, glabrous, irregularly and darkly grooved with five edges. Leaf fall occur in February- March and flowering in March- May along with new flushes.

Useful Plant Parts: Fruits

Method of Propagation: Seeds

Prevalent Harvesting Practices: The fruit bearing branches of the tree are lopped and fruits are collected from the lopped branches.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: (a) Tree selected for collection should be of 20-25 m in height. (b) Tree must be free from any disease or infection (c) The tree should not have harmful climber (d) The trees should be divided among the gatherers for collection of fruits (e) The matured trees should be marked with red paint.

(ii) Characteristics of Plant Parts to be Harvested (fruit colour, weight, fibre and pulp): Fruits should be of 3 – 5 cm in length. Matured fruits are hard and have a pale yellow colour.

(iii) Methods to be used for Harvesting: (a) The trees or its branches should not be disturbed while harvesting fruits (b) The fruits on maturity start falling on the ground and must be collected. (c) Fruit should be collected by bamboo stick making fruits to fall on the ground.

(iv) Time of Harvesting: (a) The fruits of *Terminalia chebula* mature during the months of November-March. Therefore, fruits should only be harvested during these months and not before that. (b) Collection should be done in early morning and evening (c) The time of collection should be notified range wise or division wise to the collectors.

(v) Extent of Harvesting: (a) Only 60–75 percent of the fruits should be harvested and the remaining should be left out for birds to help in dispersal of seeds. 50-100 fruits on every tree should be left out. (b) Good quality fruits should only be collected and the damaged ones should be left out (c) Fruits on the uppermost branches should be left undisturbed.

(v) Packaging for Transportation: The fruits should be packed in gunny bags for proper aeration.

(vi) Transport Method and Time (night, early morning): Transportation should be done in the evening or early morning to avoid moisture losses from the fruits.

(vii) Post Harvest Methods: Fruits should be dried in Sunlight for 4-5 days. Fruits should be stored in a place which is totally moisture free. The fruits can be stored in gunny bags for one year but fresh seeds germinate quicker.

(viii) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Only the healthy ones should be collected and the raw and damaged ones should be discarded for birds and natural regeneration.

Ensuring Natural Regeneration of Species (a) Trees should be marked seed bearer (b) Young ones (below 40 cm girth) should not be harvested (c) Natural seedling to be adopted and tended (d) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions.

Aegle marmelos (Bael)

Phenological characteristics: Bael is a medium sized tree upto 8 m height with a straight, sharp, axillary thorns and yellowish brown, shallowly furrowed, corky bark; leaves trifoliate, aromatic, alternate, leaflets ovate or lanceolate or ovate- lanceolate, crenate, pellucid- punctuate, laterals subsessile, and terminal long petioled; flowers greenish white, sweet scented in axillary panicles; fruits globose and woody berry with yellowish rind; seeds numerous, oblong, compressed, embedded in orange brown sweet gummy pulp. It flowers during May- July. Compete defoliation takes place in the following April during ripening of fruit. The new leaves and shoot takes place at the end of April and the flower buds appear almost simultaneously in May and fruit setting takes place in the third week of May. The fruits require about a year for ripening. By the end of October, they attain almost half of their full size.

Useful Plant Parts: Fruits and bark.

Prevalent Harvesting Practices: Gatherers climb the tree and collect the unripe fruits with the help of sickle tied on a bamboo stick.

Method of Propagation: Seed

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: (a) The trees should be divided among the gatherers for collection of fruits (b) Fruits should be collected only when it is matured (c) For extraction of bark, middle aged to matured trees corresponding to GBH of 80 cm and above should be selected.

(ii) Characteristics of Plant Parts to be Harvested (fruit colour, weight, fibre and pulp): (a) Fruits are deep green in colour initially but gradually fade with the advancement of maturity and become yellowish on ripening. Harvesting at this stage is recommended. (b) The tree should be debarked only when it shows flaking. The colour of the bark should be deep whitish brown for peeling.

(iii) Methods to be used for Harvesting: The fruits on maturity start falling on the ground and must be collected. These are also collected by shaking the tree or collecting the fruits with the help of stick with a net attached to it. The fruits are harvested with a portion of the fruiting stalk as it makes handling of fruits easier. Also the stalk serves as a signal of ripening as it gets easily detachable only in ripe fruits. The bark should be peeled with the help of a sharp knife in such a way that it does not injure the woody mass below. The tree should then be given rest till it heals. The next strip should be on the other side of the tree. The stripping should be done once in three years in one go in about 20 cm width.

(iv) Time and Age of Harvesting: The fruits of *Aegle marmelos* mature and set fruits after 5 years during the months of March- April. Therefore, fruits should only be harvested during these months and not before that when they are immature.

(v) Extent of Harvesting: (a) Only 60–75 percent of the fruits should be harvested and the remaining should be left out for birds to help in dispersal of seeds. (b) One incision of 20 cm width should be made covering half the girth of the tree. Second incision should be made covering the other half the next year. The tree should be given rest for a period of 2-3 years till it completely heals up.

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(vi) Packaging for Transportation: The fruits should be packed in gunny bags for proper aeration.

(vii) Transport Method and Time (night, early morning): The fruit being covered by hard shell can be transported any time as required.

(viii) Post Harvest Method: The fruits are sun dried for 2 days and then stored in polythene bags to avoid damage from moisture during the rainy season.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Only the healthy ones should be collected and the raw and damaged ones should be discarded for birds and for regeneration.

Ensuring Natural Regeneration of Species: (a) Trees should be marked as seed bearer (b) Natural seedling to be adopted and tended (c) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions.

Buchnania lanzan (Char)

Phenological Characteristics: It is common in our forests mostly in eroded ravine lands. It avoids waterlogged areas, but occurs locally in clay soils. It is dentified by dark grey crocodile bark with red blaze. A good species for afforesting bare hill slopes. It has poor coppicing capacity and produces root suckers sparingly. Flowers appear in pyramidal panicles of greenish while flowers in January - March. Fruits ripen from April to May and remain on the tree for quite a long time, drupe, globose (0.8 to 1.3 cms dia.), black when ripe. Stones hard, 2-valved; seeds biconvex, oily; the fruits and kernels are edible. Fruits can be collected from the tree in April-May and depulped to get the clean seed; the viability period is one year when stored in sealed tins.

Useful Plant Parts: Kernel

Method of Propagation: Seeds

Prevalent Harvesting Practices: Unripe fruits are collected from the forests. The gatherers hack the branches or climb the tree and beat its branches with the help of a stick for the collection of fruits. This practice weakens the tree which ultimately results into its death.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Tree for Harvesting: Tree should be selected from the area where they are more in number. Fruits should not be collected from stands where only one tree exists.

(ii) Characteristics of Plant Parts to be Harvested (bark colour): The fruits of Achar turn red to light black on maturity should be harvested when they ripe and become black in colour.

(iii) Methods to be used for Harvesting (especially designed sickle, basket, hand plucking, not breaking branches): Before the collection of fruits the ground surrounding the tree should be cleaned. Gatherers should be assigned certain number of trees and they could be trained to collect black ripe fruits which are edible. The fruits, on ripening start falling on the ground. The fallen fruits are collected. The fruits can also be plucked with the help of stick.

(iv)Time and Age of Harvesting (Period- season/ month): The tree matures and sets fruit after 12 years. The fruits mature during the months of April- May and therefore should be harvested only during that period and not before that.

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(v) Extent of Harvesting (quantity/ amount): 25 percent of the fruits should be left out to allow for natural regeneration.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): Gunny bags should be used for the transportation of the seeds.

(vii) Transport Method and Time (night, early morning): Early morning is the best time for transportation of achar seeds to prevent drying from direct sunlight during transportation.

(viii) Post Harvest Methods: Storage of chironji is a problem as it tends to become rancid on storing. This is one of the prime reason for the rise in trade in guthli form and discarding of chironji produced from hard driven chakki. The fruits are heaped on the cemented floor. Care should be taken that the floor where the fruits would be heaped is dry. Chironji loses its palatability and deteriorates in quality of not properly stored.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Seeds should be stored in absence of moisture to maintain its quality.

Ensuring Natural Regeneration of Species: (a) For ensuring natural regeneration of species fruits on the top canopy should not be disturbed. Fruits fallen on the ground and damaged should also be left out for the birds which would also help in dispersal of seeds. (b) Natural seedling to be adopted and tended (c) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (Bhatnagar, P. and Jain, S., 2005).

Embelia ribes (Baibidang)

Phenological Characteristics: This climbing shrub, with brownish gray roots and hairy reddish rootiets. The stem is whitish gray, studded with lenticels, with a mature girth of 45-72 cms. Leaves are coriaceous, elliptic, lanceolate 6-14 cms long and 2-4 cms broad, alternating, acuminate entire, perfectly glabrous and petiole 1.0 cm - 0.8 cm margined. Midrib prominent, inflorescence panicles 15-60 cms in length, upper panicles often 7.5-10 cm pubescent. Flowers pentamerous, minute, white or yellow. Fruit- a berry, 2.4-4 mm obovate to subglobular tipped with style, smooth, succulent, in dry condition with wrinkles with loss of calyx.

Useful Plant Parts: Fruits

Method of Propagation: Propagation takes place by seeds. But the germination takes a long time, commencement being around 65 days after sowing. Therefore vegetative propagation is done by layering and rooting of stem cutting. Propagation by stem cutting is found to be reliable.

Prevalent Harvesting Practices: The branches containing the fruits are lopped and the fruits are collected in shed.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: The shrub selected for harvesting should be of 1-2 m in height and should be free of diseases.

(ii) Characteristics of Plant Parts to be Harvested: The fruits on maturity become red in colour.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): Fruits should be plucked by hand and collected in a clean bamboo basket.

(iv)Time and Age of Harvesting (Period- season/ month): Harvesting should be done in the month of November and December when the plant has become 2 years old.

(v) Extent of Harvesting (quantity/ amount): 10 percent fruits should be left for regeneration.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The fruits of Embelia ribes are packed in bamboo basket for transportation.

(vii) Transport Method and Time (night, early morning): It is preferable to transport the fruits of this species in early morning or at night to avoid exposure from direct heat of the sun.

(viii) Post Harvest Methods: Winnowing should be done for removing impurities. Fruits should be dried in direct sunlight for 2-3 days. Fruits should be stored in neat and clean plastic bags to prevent moisture.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): While collecting the fruits of Embelia ribes, care should be taken not to mix with other species to maintain its quality.

Ensuring Natural Regeneration of Species: (a) Seed bearing plants should be marked (b) Young plants below 2 years old should not be harvested (c) Natural seedling to be adopted and tended (d) Monitoring and Evaluation ((FRLHT, 2002).

Piper longum (Pippali)

Phenological Characteristics: *Piper longum* is a slender, aromatic, climber with perennial woody roots, creeping and jointed stems and fleshy fruits embedded in the spikes. The perennial woody vine grows to four metres in height on supporting trees, poles, or trellises. It is a spreading vine, rooting readily where trailing stems touch the ground. The leaves are alternate, entire, 5-10 cm. long and 3-6 cm. broad. The flowers are small, produced on pendulous spikes 4-8 cm. long at the leaf nodes, the spikes lengthening to 7- 15 centimeters as the fruit matures.

Useful Plant Parts: Fruits

Method of Propagation: The plants are propagated by cuttings about 40- 50 cm long, tied up to neighbouring trees or climbing frames at distances of about 2 m apart; trees with rough bark are favoured over those with smooth bark, as the pepper plants climb rough bark more readily. Competing plants are cleared away, leaving only sufficient trees to provide shade and permit free ventilation.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: The plant should be free of diseases.

(ii) Characteristics of Plant Parts to be Harvested: The harvest begins as soon as one or two berries at the base of the spikes begin to turn red, and before the fruit is mature, but when full grown and still hard; if allowed to ripen, the berries lose pungency, and ultimately fall off and are lost.

(iii) Methods to be used for Harvesting: Eespecially designed sickle, basket, hand plucking, not breaking branches.

(iv) Packaging for transportation: Gunny bags, canasters and cartons etc.

(vii) Transport Method and Time: Night and early morning.

(viii) Post Harvest Method: The collected spikes are spread out to dry in the sun, and then the peppercorns are stripped off the spikes.

(ix) Ways to Avoid Loss/ Wastage: Spread on the floor, overlapping

Ensuring Natural Regeneration of Species (a) Seed bearing trees should be marked (b) Immature fruits should not be harvested (c) Natural seedling to be adopted and tended (d) Monitoring and Evaluation (MPMFPF, Bhopal).

Gloriosa superba (Kalihari)

Phenological Characteristics: The leaves are bright green, sessile, opposite or verticulate, ovate-lanceolate with cordate base, narrowed into a coiled tendril at its apex, glabrous and 10-15 cm X 2-5 cm in size. Flowers are axillary, solitary and forming a terminal corymb. As a most unusual and exotic flower, the Gloriosa lily generally comes within the spectrum of crimson and yellow colour. In a bud, the pale green petal faces the downwards. The flower colour is usually very bright ranging from red with yellow margins to very pale yellow forms with mauve or purple stripes. Fruits are in the form of capsules.

Useful Plant Parts: Seeds/ Tubers

Method of Propagation: *G. superb* is propagated by division of bifurcated V shaped tubers. But this result in very low multiplication rate and production of tubers cannot keep pace with demand for plants as they are required in large quantities. Seeds are another means of increasing the stock but it shows prolonged dormancy and lack uniform germination, thus leading to uneven crop stand. For plants propagated via seeds to make an effective display of flowers, 3- 4 years are required. The plants are therefore, best raised by tubers. These 'V' shaped tubers are normally cut into two pieces and used for propagation.

Prevalent Harvesting Practices: Normally, people collect Kalihari flowers in the month of August before maturity leading to the depletion of valuable plant. By collecting flowers before time, collectors do not allow the seeds to mature.

Sustainable Harvesting Practices/ Protocols: (a) Selection of plant for harvesting (b) Characteristics of plant parts to be harvested (c) Methods to be used for harvesting (especially designed sickle, basket, hand plucking, not breaking branches) (d) Time and age of harvesting (Period- season/ month) - Seeds/ tubers should be harvested during the months of February- March. (e) Extent of harvesting (f) Packaging for transportation (Gunny bags, canasters, cartons) (g) Transport method and time (night, early morning) (h) Post harvest method (i) Ways to avoid loss/ wastage (spread on the floor, overlapping)- High incidences of tuber borne virus results in infected plants, which has to be discarded.

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation (Pandey, A.K. and Mondal, A.K., 2008).

Bixa orellana (Bixa)

Bixa is a shrub or a small tree, 2.5 m in height, found throughout the hotter parts of India. Leaves 10- 20 cm x 6.5- 12.5 cm, cordate, acuminate, glaborous, petiole slender, flowers pink or white in terminal panicles, capsules red or green in colour, 3.8 cm long, ovoid or sub-globose, softly prickly, seeds trigonous with red puply testa. Flowering begins in the last week of August and continues upto mid October.

Useful Plant Parts: Seeds

Prevalent Harvesting Practices: The capsules are hand plucked.

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Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: After 30 days of flowerig, capsules begin to appear on tree which are ready for harvest by January. The seeds which are dry, hard, bright red and have a characteristic smell are considered good for dying.

(ii) Characteristics of Plant Parts to be Harvested: At full maturity, the colour of the capsules turn bright red or bronze. In case of pink flowered variety, the seeds at this stage appears to be coated with deep vermillion paint whereas in case of white variety, the seeds turn yellow or pale red. As soon as the capsules attain the characteristic colour, they are harvested as they burst open later. Good quality seeds are generally obtained from fully matured and dried fruits.

(iii) Methods to be used for Harvesting: Especially designed sickle, basket, hand plucking, not breaking branches.

(iv)Time of harvesting (period- season/ month): After 30 days of flowering, capsules begin to appear on tree, which are ready to harvest by January.

(v) Extent of Harvesting (quantity/ amount): Atleast 30 percentof the seeds should be left unplucked for regeneration.

(vi) Packaging for Transportation: Gunny bags, canasters and cartons.

(vii) Transport method and time: Nnight, early morning.

Ensuring Natural Regeneration of Species: *(*i) Seed bearing trees should be marked (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation.

Harvesting Methods for Some Selected Medicinal Roots/ Rhizomes Yielding Plants

Asparagus racemosus (Satawar)

Phenological Characteristics: It is an armed climbing under shrub with woody erected stems with recurved or rarely straight spines young stems very delicate, brittle and smooth; leaves reduced to chaffy scales and spines; cladodes triquetrous curved in tufts or 2-6; flowers white, fragrant, in simple or branched racemes on the naked nodes of the main shoots or in the axil of the thorns; fruits globular or obscurely 3 lobed, pulpy berries, purplish black when ripe, seeds with hard and brittle testa. The tuberous succulent roots are 30 cm to a meter or more in length, fascicled at the stem base, smooth, tapering at both ends.

Useful Plant Parts: Tuberous roots

Method of Propagation: Rhizome

Prevalent Harvesting Practices: (a) The tuberous roots are collected by uprooting the plant completely. The tubers attached to the plant including the rhizome (disc) are then cut giving them no chance to rejuvenate (b) After unearthing the roots it is never paced back as a result of which the roots remain open and exposed to sunlight leading t the death of plants within few days (c) The tuber collection is done throughout the year. On an average, a family collects satawar tuber for around 40 days a year whenever the stock is available. Such intensive harvesting reduces the number of plants sharply (d) There is no restriction on the time of harvesting. Similarly plants of al age group are harvested which puts a question mark on the future production capacity.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: Mature Asparagus plant, more than 3 years old, were selected for harvesting of the tuberous roots. The plant can be identified by observing the thickness (not less than 5 cm) of the climber at the collar region. Plant bearing flowers and fruits were avoided for selection in order to facilitate their multiplication phenomenon for maintaining the plant population.

(ii) Characteristics of Plant Parts to be Harvested: For harvesting the roots of Asparagus plant, mature plant with 5 cm diameter at the collar region should be selected. Flowers and fruits bearing plant should be avoided for harvesting roots.

(iii)Methods to be used for Harvesting: Especially designed sickle, basket, hand plucking, not breaking branches

1. *Implements used for Harvesting* (a) Axe: used for cleaning the unwanted plant found around the Asparagus to create working space (b) Pick axe: for digging the soil covering the tuberous roots (c) Hoe: to remove the loose dug out soil from the plant before harvesting and to replace it again after the roots is cut. (d) Hand cultivator: to separate the webs of tuberous roots lying in the soil (e) Secateur: used for pruning of tuberous roots close to the disc (rhizome) of the plant

2. *Harvesting Operation:* (a) To create working space around the climber, unwanted plants were removed by cutting them at the ground level. The area of around 1 m periphery of the plant is cleaned. (b) Soil is dug out from the collar region to the climber without disturbing the disc of the pant. Length and depth of digging depended upon the spread of tuberous root. Due care must be taken to protect the roots from cutting by pick axe (c) Tuberous roots of more than 15 cm in length should be selected for cutting. (d) Selected roots must be cut carefully from the disc using sharp secateurs without disturbing the disc of the plant. Dead and rotten tubers must be removed from the disc to check further infection to other tubers and to maintain the fresh tuber production capacity of the climber. (e) After cutting the tubers from the plant the dugout soil must be put back in place to cover the remaining tubers for facilitating further survival and continuous production of tubers for future harvesting.

(iv)Time and Age of Harvesting (Period- season/ month): The roots of more than 3 years of age should be harvested in March- May, before the onset of monsoon.

(v) Extent of Harvesting (quantity/ amount): Harvesting of tubers should be limited for 80 percent of the total number of tubers. 20 percent of the tubers must be left out at the disc for further survival of the plant.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The Asparagus roots are dried and packed in Poythene bags and then kept in gunny bags to protect from moisture.

(vii) Transport Method and Time (night, early morning): It can be transported at anytime of the day through trucks if quantity is large for supplying the pharmaceutical companies. For small quantities it is transported in bullock cart.

(viii) Post Harvest Methods: The roots are peeled and dried in sun for 4-5 days. Plastic bags and sell before the onset of monsoon. The whiter it is, the more prices it will fetch. On becoming reddish it fetches low price.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): (a) Immature plants less than 3 years old should not be harvested (b) Harvesting should be done after ripening of Asparagus fruit (c) Only 80

percent tubers more than 15 cm long should be harvested (d) Soil digging should be restricted to the spread of tuberous roots only and no extra soil must be disturbed (e) Rhizome should be kept intact.

Ensuring Natural Regeneration of Species: (i) Young ones (below 3 years old) should not be harvested (ii) Monitoring and Evaluation- Developing Village level Satawar Committed for monitoring the sustainable extraction of Satawar (Bhattacharya, P., 2007).

Chlorophytum borivilianum (Safed Musli)

Phenological Characteristics: *Chlorophytum borivilianum* (Safed Musli) is an annual herb with tubers, crown, leaf and flowers as different parts. Mainly its tuberous roots are used in ayurvedic medicines. It is a herb with sub-erect leaves and tuberous root system. It can grow upto a maximum height of 1.5 ft. Tubers can grow upto a depth of 10". Safed Musli is a tiny annual herb that grows well in tropical and sub-tropical climates with altitudes upto 1500 meters. It seeds are black in colour and triangular in shape. Two seeds are present in single locule. The flowers are small, usually white, produced on sparse panicles up to 120 cm long; in some species the panicle also bears plantlets, which take root on touching the ground.

Useful Plant Parts: Tuberous roots

Method of Propagation: (a) Musli is a tuberous plant and propagates only through the root. (b) Sexual vegetative reproduction is very rare and takes 18 months to mature.

Prevalent Harvesting Practices: Due to intense competition among the collectors, the roots of safed musli are harvested before maturity. In order to collect more roots the collectors dug the roots up from the soil without following any scientific harvesting technique and damage the root disc which helps in regeneration of the roots. No care is taken to replace back the root disc into the soil.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: The roots of Safed Musli should be uprooted only after seeding is over to allow for natural regeneration.
(ii) Characteristics of Plant Parts to be Harvested (bark colour): The leaves, on maturity, turns yellowish in colour which indicates that the root of Safed Musli has become matured and the seeds have shed for regeneration.
(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): At first the soil of 1 feet radius from the roots of Safed musli should be removed and the roots should be detached from the ground. The roots of Musli occur in cluster and in between the roots the root disc is present. The roots should be separated from the root disc. The disc should be replaced in the pit and covered with the dugout soil.

The roots are then kept in a basket and the basket is placed in a stream of flowing water to wash away the soil on the roots. After washing the soil it is heaped for 2-3 days and sun dried. Solar drier or tunnel drier could also be used to complete the drying process within few hours.

The roots are kept in heaps for 7-8 days during which water must be sprinkled over it once daily. After 7-8 days the upper layer of the roots gets loosened which can then be easily removed by hand. It is again spread over thin sheet of cloth and dried in the sun for 2-3 hours. On drying the weight of the roots is reduced by 75- 80 percent.

(iv) Time and Age of Harvesting (Period- season/ month): The roots are harvested in the months of October- November.

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(v) Extent of Harvesting (quantity/ amount): Only the roots should be harvested leaving the root disc in the soil for natural regeneration.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The roots should be graded according to the thickness of the roots before packing. The totally dried roots should be packed in polythene sheets at low temperature and then brought to the market.

In future the most suitable technique for packaging would be to vacuum pack the roots in aluminum foil. This way it could be stored for 2-3 months.

(vii) Transport Method and Time (night, early morning): The roots of Safed Musli should preferably be transported at early morning to prevent drying from Sun's heat.

(viii) Post Harvest Methods: For storing the roots for use as planting material, the roots along with its crown should be placed in a perforated plastic bag in 200^0- 300^0 C and 50- 65 percent humidity. The plastic bag should be covered with sand.

(ix) Ways to avoid Loss/ Wastage (Spread on the floor, overlapping): The roots should not be placed in cold storage as it is infected by fungal attack. It also affects the germination capacity of the roots. The roots should not be rubbed over stone as it removes the upper layer along with some quantity of pulp which degrades the quality of roots. It would be easier to peel the upper layer of the roots with knife.

Ensuring Natural Regeneration of Species: (i) Plants with green leaves should not be harvested as it indicates that the roots are still immature and seeds are not shed for regeneration. (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (Bhatnagar, P., 2003).

Ravoulfia serpentina (Sarpgandha)

Phenological Characteristics: It is an erect glabrous perennial shrub, attain a maximum height of 75 cm. Leaves are arranged in whorls of 3–4, flowers are white or pinkish, peduncle deep red, about 1.5 cm long and appear in small clusters. Fruits are round shaped, dark, purple or blackish. Stems are quadrangular, much branched, short petiole, oblong attenuate at both ends.

Useful Plant Parts: Roots.

Method of Propagation: Propagated through seeds and stem cuttings

Prevalent Harvesting Practices: The immature plants are totally uprooted for collection. All the plants of entire area are collected not leaving a single for regeneration. This has resulted in reduced production of the species so much so that it is threatened for extinction in wild.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: For harvesting Sarpagandha roots, stands where the frequency is high should be selected for harvesting. Areas where the frequency of the plant is very les should be left out for ensuring natural regeneration. Only matured well developed plants (above 70 cm in height) should be selected for harvesting.

(ii) Characteristics of Plant Parts to be Harvested: Plants above 70 cm in height should be selected for harvesting.

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(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): Sarpagandha roots can be harvested sustainably by harvesting its mature and developed roots only and spring the smaller ones (root suckers) for regeneration. Care should be taken to keep the root bark intact as it has higher alkaloidal content.

(iv) Time and Age of Harvesting (Period- season/ month): Roots should be collected in the month of December- January as the alkaloidal content is maximum during this period. The roots should also be collected after the maturity of seeds for regeneration of plants for next generation.

(v) Extent of Harvesting (quantity/ amount): At least 10 percent plants with mature seeds or some plants that are growing up and would bear seeds in future should be left behind.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The roots should be packed in gunny bags for proper aeration.

(vii) Transport Method and Time (night, early morning): The roots of Sarpagandha should be transported at night or early morning to prevent it from drying due to sun's heat.

(viii) Post Harvest Methods: After digging the roots are cleaned, washed and cut into 12- 15 cm pieces for convenience in drying and storage. The roots should be dried in shade and the dry roots posses' upto 8- 10 percent moisture. The dried roots are stored in clean polythene lined gunny bags in cool dry place to protect from mould.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Care should be taken to keep the root bark intact as it has a higher alkaloidal content.

Ensuring Natural Regeneration of Species: (i) Young plants should not be harvested (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation- Only single round of collection in the forest would be permitted so that the plants left over or regeneration purposes do not run the hance of being collected in the second round. It would be ensured through decisions taken by the community on where to go for collection in a particular period and monitored through collection records maintained by internal inspector. A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (Pandey, A.K. and Mondal, A.K., 2008).

Diascorea hispida (Baichandi)

Phenological Characteristics: Diascorea are tuberous herbaceous perennial lianas, growing to 2-12 m or more tall. The leaves are spirally arranged, mostly broad heart-shaped. The leaves are petiolate, often cordate, with strongly marked reticulate veining (unusual for a monocotyledon), sometimes lobed, occasionally palmately compound. The flowers are small, and borne in long racemes. They are individually inconspicuous, greenish-yellow, with six petals; they are mostly dioecious, with separate male and female plants, though a few species are monoecious, with male and female flowers on the same plant. The female flowers are followed by dehiscent capsules, usually trilocular, with 6 seeds, usually winged for wind dispersal, though many of the cultivated forms have become partially or highly sterile. The fruit is a capsule in most species, a soft berry in a few species. Many species produce bulbils in the axils of the leaves which have the morphology and appearance of condensed stems and in a few instances are relatively large and tuberous.

Useful Plant Parts: Tuberous roots

Prevalent Harvesting Practices: The whole roots are extracted

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: The climber should be free from any disease.

(ii) Characteristics of Plant Parts to be Harvested: The climber should be free from any disease. Rhizome collected should be large, round and swollen.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The rhizomes should be collected by the help of sharp, small sized instrument like khurpi.

(iv)Time of Harvesting (Period- season/ month): Best time for collection of rhizomes of Baichandi is December- January.

(v) Extent of Harvesting (quantity/ amount): 1/3 of total rhizomes should be left for regeneration purpose. Small rhizome should not be collected.

(vi) Packaging for Transportation: Gunny bags, canasters and cartons etc.

(vii) Transport Method and Time: Night and early morning

(viii) Post Harvest Methods: Rhizome should be cleaned well by running water. With the help simple chips cutting machine or power operated chopping machine, rhizome should be converted in chips. Chips should be boiled in water for 15-20 minutes. These chips must be washed in flowing water.

(ix) Ways to avoid Loss/ Wastage: Spread on the floor, overlapping

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) All the roots should not be harvested; around 80 percent of the roots should be left untouched for further regeneration (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation (http://www.appropedia.org/RootCrops 37, Retrieved July 14, 2008).

Hemidesmus indicus (Anantmool)

Phenological Characteristics: *Hemidesmus indicus* commonly known as Indian Sarpsarilla, is a slender, lacitiferous, twinning, sometimes prostrate or semi erect shrub, occurring over greater parts of India. Roots are woody and aromatic, stems numerous, slender, terete, thickened at the nodes; leaves opposite, short-petioled, very variable, elliptic oblong to linear lanceolate, often variegated with white above, sometimes silvery white with pubescent beneath, flowers are greenish outside, purplish inside, crowded in subsessile axillary cymes, follicles are slender, four inches long, cylindrical, sometimes curved, divaricate, seeds numerous, black, flattened with silvery white coma.

Useful Plant Parts: Roots

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting

(ii) Characteristics of Plant Parts to be Harvested: Minimum length of root should be 30-50 cm and 1 cm as thickness.

(iii) Methods to be used for Harvesting: Eespecially designed sickle, basket, hand plucking, not breaking branches. The soil around 75 cm. surrounding the plant and 45 cm at depth should be dug by sharp clean and small instrument. The roots 30- 50 cm in length or more with 1 cm diameter should be harvested.

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(iv) Time and Age of Harvesting (Period- season/ month): Collection period should be October and November.

(v) Extent of Harvesting: All immature, rotten, diseased and damaged roots should be left at site. 1/3 of the total matured roots should be left at site for regeneration.

(vi) Packaging for Transportation: Gunny bags, canasters and cartons etc.

(vii) Transport Method and Time: Night and early morning.

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) All the roots should not be harvested; 80 percent of the roots has to be left untouched for further regeneration (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation (Austin, A., 2008).

Cyprus rotundus (Nagarmotha)

Phenological Characteristics: *Cyprus rotundus* is a pestiferous perennial weeds with dark green glabrous culm, 0.5- 2 ft high, arising from a system of underground tubers. The plant has as elaborate underground system consisting of tubers, rhizomes and roots. The tubers are white and succulent when young and hard and black when mature. It thrives on all kinds of soil under varying climatic conditions.

Useful Plant Parts: Roots

Prevalent Harvesting Practices: The whole root of the plant is dug out.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Around 30-40 cm high plants should be selected for collection of roots.

(ii) Characteristics of Plant Parts to be Harvested: The leaves of the plant on maturity becomes yellowish in colour. The roots collected should be of 5-7.5 cm long and finger thickness.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The roots should be collected by sharp and medium size instrument. A portion of root should be left underground so that it germinates into a new plant in the coming monsoon.

(iv)Time and Age of Harvesting (Period- season/ month): The roots should be collected from December-January.

(v) Extent of Harvesting: The entire immature, rotten, disease and damaged roots should be left at collection site. 1/3 of the total mature roots should be left at site for regeneration.

(vi) Packaging for Transportation: Gunny bags, canasters and cartons etc.

(vii) Transport Method and Time: Nnight and early morning.

(viii) Post Harvest Method: The roots so collected should be kept in dry place. Roots should be washed with clean water 4 days 5 times and the sand and dust must be removed. The clean roots should be dried in shade for 2 – 3 days storage. The roots so collected should be stored in clean gunny bags. The place selected for storage should be free from rodents and termites.

(ix) Ways to avoid Loss/ Wastage (Spread on the floor, overlapping): While removing tubers there should not be any damage to the tubers.

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) (ii) 80 percent of the roots should not be harvested for regeneration (iii) (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation (MPMFPF, 2006).

Picrorhiza kurua (Kutki)

Phenological Characteristics: *Picrorhiza kurroa* has a long, creeping rootstock that is bitter in taste, and grows in rock crevices and moist, sandy soil. The leaves of the plant are flat, oval, and sharply serrated. The flowers, which appear June through August, are white or pale purple and borne on a tall spike; manual harvesting of the plant takes place October through December. The active constituents are obtained from the root and rhizomes. The plant is self-regenerating but unregulated over-harvesting has caused it to be threatened to near extinction. Flowers are borne on a scape in an indeterminate spike forming more or less a triangular head. Flowers are purple coloured, bisexual and having convex thalamus. Fruit is an ovoid capsule which dehisces by means of lateral splits. Seeds are extremely small. Embryo is enclosed in the large bladdery loose hyaline reticulate testa.

Useful Plant Parts: Roots and rhizomes

Method of Propagation: The natural regeneration takes place by seeds and rhizome. Cultivation by the means of rhizome is considered faster than that by seeds.

Prevalent Harvesting Practices: Kutki is collected from May to December while the fruit matures after September, threatening the sustainability of this species. Mostly men are involved in collection of this plant. Because of unscientific collection, procedure each year the availability of this species is decreasing and the farmers have to go further far from their communities to collect. The species is threatened to extinction because over-harvesting without any management system and domestication.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Plants should be selected from the stands where its frequency is higher. The plants should be matured and free of diseases.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The whole plant is pulled out manually. The mature plant with long rhizome is easier to harvest.

(iv)Time and Age of Harvesting (Period- season/ month): Harvesting season of Kutki is from October to December.

(v) Packaging for Transportation: Gunny bags, canasters and cartons etc.

(vi)Transport Method and Time: Night and early morning

(vii) Post Harvest Method: Collected Kutki is sun-dried and stored in dry place or packed in jute sacs. Generally, the post harvesting operations practised by the collectors are limited to cleaning, cutting into small pieces and drying in the sun.

Ensuring Natural Regeneration of Species (i) Seed bearing plants should be marked (ii) 80 percent of the roots should not be harvested (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation (Chopra & Ghosh, 1934; CSIR, 1972; Anonymous, 2001).

Harvesting System Some Selected Leaves Yielding Medicinal Plants

Gymnema sylvestris (Gudmar)

Phenological Characteristics: Gymnema sylvestris is a woody perennial climber with small yellowish flowers and simple opposite, ovate- elliptic hairy leaves. It is found in various deciduous forests of India.

Useful Plant Parts: Leaves and roots

Method of Propagation: Gymnema sylvestris is propagated through seeds as well as by stem cuttings. Seeds are reported to have short viability.

Prevalent Harvesting Practices: Normally, the collectors harvest the leaves by using a non-destructive method i.e. by cutting the whole vine and then collecting the leaves. Due to widespread prevalence of such unsustainable harvesting practice, the availability of Gudmar is decreasing day by day. The gatherers uproot the whole plant and then collect the leaves.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: The plant should be mature and disease free.

(ii) Characteristics of Plant Parts to be Harvested: Leaves colour

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The leaves should be collected by hand plucking in the months of December and January. The roots should be collected in the months of May- June by cutting the upper portion of the roots instead of uprooting the entire plant for regeneration for the left over portion of roots below the soil.

(iv)Time and Age of Harvesting (Period- season/ month): Leaves are usually collected during October-December and are cleaned and dried in shade. The roots are collected during summer.

(v) Extent of Harvesting (quantity/ amount): While harvesting leaves 70 percent of the leaves have to be left out and while harvesting roots 80 percent of the roots have to be left untouched.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The dried leaves and roots should be packed in polybags to protect from moisture.

(vii) Transport Method and Time (night, early morning): The dried leaves and roots can be transported preferably at night or in the early morning.

(viii) Post Harvest Methods: The leaves are cleaned and dried in shade for 2 days and then collected in poly bags to protect from moisture. The roots are cleaned, washed, cut into pieces and then dried.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Only the healthy and matured ones should be harvested. Immature ones should be left untouched.

Ensuring Natural Regeneration of Species: (i) Young plants should not be harvested (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation (Pandey, A.K. and Mondal, A.K., 2008).

Harvesting System Some Selected Flowers Yielding Medicinal Plants

In general, flowers must be harvested (or if specified, flowering tops) when they have just opened or shortly enough afterwards to avoid any faded or brown blossoms. The flower buds must be collected before the buds

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open and at early morning. The departure of insects must be encouraged by shaking the material and then by allowing it to sit for some time. Flowers must be handled carefully to prevent degradation as these are generally more delicate than other plant materials. The flowers rich in essential oils must be handled carefully to prevent bruising that could result in essential oil degradation. Some healthy flowers, particularly in top canopy could be left out to bear fruits and seeds for dispersal.

Woodfordia fruticosa (Dhawaiphul)

Phenological Characteristics: *Woodfordia fruticosa* is a shrub, 1 m. tall, much branched; Bark pale-brown, peeling off in fibres, young parts with small black glands; leaves sub sessile, linear-lanceolate, 3-10 cm long; Flowers in fascicled axillary racemes; calyx tube ca 1 cm long, red; Petals small, red; Stamens much exserted, filaments filiform, red, ovary 2-celled; Fruits ellipsoid, ca 1 cm long, enclosed by persistent calyx-tube; Seeds numerous, wedge-shaped, brown, smooth. Flowering time is December to May.

Useful Plant Parts: Flowers

Method of Propagation: Seeds

Prevalent Harvesting Practices: The gatherers lop the whole branch carrying flowers. The flowers are then collected from the lopped branches and then dried in shade.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Well grown shrub must be selected for collection of flowers.

(ii) Characteristics of Plant Parts to be Harvested: The shrub selected for collection of flowers must be free from any kind of disease or infection.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The bunch of flowers should be collected by surfing by hand.

(iv)Time and Age of Harvesting (Period- season/ month): Flowers of Dhawai should be collected in the month of February- March.

(v) Extent of Harvesting: 30 percent of the flowers should be left on the plant for regeneration while 20 percent of the population should be left untouched.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The dried and completely pure flowers should be filled in airy bags and must be sealed to protect from the attack of insects.

(vii) Transport Method and Time (night, early morning): The dried flowers of Woodfordia may best be transported early morning or at night.

(viii) Post Harvest Method: Foreign material should be winnowed by hands. The flower so collected must be kept in clean plastic or gunny bags. Flowers should be spread on clean and dry surface and sundried for 2-3 days.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): The flowers collected should not be mixed with other species to maintain its quality. It should also be dried on clean and dry surface to avoid degradation due to dust. Dried flowers should not be collected and left for regeneration.

Ensuring Natural Regeneration of Species (i) Seed bearing plants should be marked (ii) Natural seedling to be adopted and tended (iii) (iii) Monitoring and Evaluation.

Terminalia arjuna (Arjun)

Phenological Characteristics: It is a large sized deciduous tree. It grows all over the country. Tree grows up to 25 m height; bark grey, smooth; leaves sub-opposite, 5–14 × 2–4.5 cm., oblong or elliptic oblong, glabrous, often inequilateral, margin often crenulate, apex obtuse or sub-acute, base rounded or sometimes cordate; petioles 0.5–1.2cm; glands usually two. Flowers are small and white in colour. Fruit 2.3–3.5 cm long, fibrous woody, glabrous with 5 hard wings, striated with numerous curved veins. Flowering time April–July in Indian conditions. Seeds hard, germinate 50–76 days (50–60 percent).

Useful Plant Parts: Bark

Prevalent Harvesting Practices: For extracting the bark deep incisions are made irregularly all around the bole of the tree. This practice results into injury to the cambial layer. Ultimately the trees develop permanent scars and wounds all around the bole which attract insects and pests and ultimately becomes cause for the death of the tree.

Method of Propagation: Seeds

Sustainable Harvesting Practices/ Protocols

(i) Selection of Tree for Harvesting: The medium aged trees (preferably 60- 90 cm and above girth) should be selected for scientific extraction of barks which does not create permanent scars. Further, in smaller size trees (below 90 cm.) not more than one extraction (blaze) of bark per year should be done. In older trees gradually 2-3 extractions at different height but without going deep into the cambium layer (2.5 cm or so) should be allowed at the most.

(ii) Characteristics of Plant Parts to be Harvested: Bark colour.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): (a) The tree girth should be divided into 2- 3 equal parts and bark should be extracted from one part. It is most desirable to extract once in a year in younger trees and maximum 3 in older trees. (b) For 60-90 cm girth there should be one blaze, for 90 – 120 cm girth the number of blaze could be two and for more than 120 cm maximum permissible blaze should be 3. (c) Care should also be taken in putting the blaze on the bole. The bark should be extracted from the same tree after two years from the opposite side of the blaze without destroying the tree. (d) Non compliance of these requirements may lead to death of trees and should therefore be avoided.

(iv) Time of Harvesting (Period- season/ month): The most desirable practice would be to extract barks after rainy season (after October) so that there is no possibility of fungal infection. Similarly, during extreme hot season and ensuing rainy season also (May - September) the extraction should not be resorted to.

(v) Extent of Harvesting (quantity/ amount): Extent of harvesting/ extraction from trees has been indicated under 5 (iii) above. However, in order to ensure perpetual resource management it is necessary to select plus trees (based on form of the tree and growth). Such plus trees should be marked with red band at breast height so as to distinguish it from other lot. These trees mostly occur along the perennial streams and moist patches. In a length of a km or so it may be desirable to reserve at least 10 such plus trees. These trees should not be allowed to be debarked and they be kept for seed collection and natural dissemination.

(vi) Packaging for Transportation (Gunny bags, Canasters, cartons): The barks are normally put in a gunny bags and transported to destination. Gunny bags should be such to aloe free movement of air to ensure gradual drying.

(vii) Transport Method and Time (night, early morning): The bark of Terminalia arjuna can be transported any time as per the convenience.

(viii) Post Harvest Method: The bark obtained from Terminalia arjuna tree is dried in shade for 5-6 days. Sometimes solar drier is also used for drying the bark. Thereafter, it is desirable to stack the gunny bags in loose heaps to permit air circulation. This way it can be stored for 2 years without any change in its quality.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Properly chipped material (5-6 cm long) and about 2 cm. thick should be uniformly collected. Sharp implements (axe etc.) could be used for debarking so that it does not cause damage to tree barks. Blunt implements often powder or cut into very small pieces which are difficult to transport and this causes avoidable wastage.

Ensuring Natural Regeneration of Species: (i) Minimum 10 trees per km. length should be marked as plus tree and should not be allowed to be debarked (ii) Young ones (below 60 cm girth) should not be debarked (iii) Natural seedling to be adopted and tended. Plantation activities should also be encouraged. (iv) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions. Status of natural regeneration normally reflects the status of sustainable harvesting (http://www.worldagroforestrycentre.org, Retrieved January 15, 2008).

Gum Yielding Medicinal Plants

Flow of gum is more in hot weather. Therefore, tapping should be done between October- June. The stem of the tree should be divided into three zones and each zone should be tapped in one year. The blazes of the subsequent year should be alternating or staggering with the previous years of blazes i.e. old and fresh blaze should not be in the same longitudinal row. After 3 years of tapping, sufficient rest should be given to the tree to rejuvenate from the injury.

Commiphora wightii (Guggal)

Phenological Characteristics: It is a shrub or small tree, reaching a maximum height of 4 m, with thin papery bark. The branches are thorny. The leaves are simple or trifoliate, the leaflets ovate, 1-5 cm long, 0.5-2.5 cm broad, irregularly toothed. It is gynodioecious, with some plants bearing bisexual and male flowers, and others with female flowers. The individual flowers are red to pink, with four small petals.

Useful Plant Parts: Gum

Method of Propagation: Stem cutting

Prevalent Harvesting Practices: (i) The stem and branches of tree is blazed at different places in the months September- June (ii) Deep blazes (3 inches deep) 1-2 inches in length are made on the stem and branches of the tree (iii) Gum oozing is maximum in the morning and evening and takes place for 15- 20 days (iv) Around 0.5- 1.5 kg of gum is extracted from a single tree (v) The tree becomes susceptible to fungal attack (vi) The same tree is continuously blazed for 2-4 consecutive years as a result of which the stem becomes weak and falls down under strong wind (vii) Due to unscientific method of extracting gum the traders are reluctant to purchase the gum and therefore, very little price is paid for the gum to the collectors.

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Sustainable Harvesting Practices/ Protocols

(i) Selection of Tree for Harvesting: It is advisable to select trees which are fairly well grown and are uniformly distributed in the area. The experience shows that 8- 10 years old trees are good for gum tapping. However, since the tree is of small to medium size, each tree should not have more than one blaze in a year. After the scars have been healed, then only second blaze should be made opposite to the first one. This way, each tree may have 4 blazes in 4 years after which a rest of 2 years is recommended

(ii) Characteristics of Plant Parts to be Harvested (bark colour): Dark brown colour of the bark is indicative of maturity of the bark which should be selected for harvesting.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): (a) The ground area within 1 m radius of the selected tree is cleared to allow the gum tapper to stand at ease (b) The tree trunk is also cleaned of debris and loose barks using a piece of cloth (c) The tree is lopped and the lopped branches are cut into 1-2 cm pieces with the help of cutting pliers during mid January to mid February (d) The pieces are then dried in the sun (e) These pieces are then powered and with the help of solvent extraction method the gum is extracted (f) The gum oozed out from the cut surface of the attached branches is also collected. (g) The gum extracted through this process is translucent, shiny and golden in colour (h) This process should be repeated after every two years

(iv)Time and Age of Harvesting (Period- season/ month): Guggal plants typically begin yielding resin after 5 years. But 8- 10 years old trees are good for tapping gum. The tree must be tapped for resin from November to January**.**

(v) Extent of Harvesting (quantity/ amount): Each tree should be blazed only once a year. Second blaze should be made only after the first one is healed up.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): It is packed in basket made of Nyctanthus arbotristis (Harshringar) which is widely distributed and grows as weed. This species is harvested for preparing baskets used for local storage of gums. Lantana, another weed can also be used for storage of gums. This is also an eco friendly approach. In areas where both the species are not found bamboo basket could be prepared for storage of gums and can be transported in trucks.

(vii) Transport Method and Time (night, early morning): The gum should preferably be transported at night to avoid exposure to excessive heat during the day time. This will help in avoiding wastage and maintaining quality of the gum.

(viii) Post Harvest Methods: The extracted gum is dried in the sun stored in polythene line bags with 15- 25^0 temperatures and 8- 10 percent moisture.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Deep blazes (3 inches) should not be made to avoid exposure of the cambium layer for prevention of fungal attack and destruction of entire tree. Infected tree should not be used for tapping.

Ensuring Natural Regeneration of Species: (i) Seed bearing trees should be marked (ii) Young ones (below 80 cm girth) should not be harvested (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions.

Sterculia urens (Kullu)

Phenological Characteristics: Very common in all forests. It is always conspicuous especially in hot season from the light coloured, almost white smooth bark. It grows in sandstone, quartzite (not on laterite) rock. It prefers ferruginous and rocky soil but avoids loam or heavier soils. It is a drought resistant species. Flowers in crowded, erect, pyramidal panicles appear in December to March. The follicles ripen in April-May and shed the seeds. Fruits of 4 to 5 sessile radiating follicles are covered outside with stiff, stinging bristles; orange to bright red when ripe. Seeds are 3 to 6 in each follicle, 6 mm long, oblong, dark brown and shining.

Useful Plant Parts: Gum

Prevalent Harvesting Practices: (a) The stem and branches of tree is blazed at different places in the months September- June (b) Deep blazes are made on the stem and branches (c) Due to these unscientific technique of blazing tree, it becomes susceptible to fungal attack (d) The same tree is continuously blazed for 2-4 consecutive years as a result of which the stem becomes weak and falls down in strong wind (e) Due to unscientific method of harvesting gum the traders are reluctant to purchase the gum and therefore very little price is paid for the gum to the collectors.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant/ Tree for Harvesting: 8 years old tree with 90 cm or more girth at waist height- (a tree whose trunk matches the entire arms- reach of a normal individual) is considered for gum tapping.

(ii) Characteristics of Plant Parts to be Harvested (bark colour): Healthy tree should be selected for tapping gum. The diameter of the selected tree should not be less than 90 cm.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches) (a) The ground area within 1 m radius of the selected tree is cleared to allow the gum tapper to stand at ease (b) The tree trunk is also cleaned of debris and loose barks using a piece of cloth (c) At waist height on the tree trunk, a 12- 15 cm horizontal incision is made using a sharp sickle. The ends of the incision is joined by another, higher crescent shaped incision on the trunk (d) The two incisions should be deepened with the help of sickle so that each incision is about 3 cm deep. The bark between the incisions should not be removed. (e) The bark bounded by the incisions should be beaten using a small mallet or the blunt end of the sickle till it becomes soft and pulpy and should be left for a fortnight. (f) After a fortnight the beaten bark between the incisions that would have dried and died, is removed. The blaze is then exposed. A thin layer of live bark from top crescent is removed to initiate gum flow. The blaze then becomes ready for tapping. (g) The area in and around the blaze is cleaned with cloth and a small polythene sheet is attached to face the blaze using thorns. (h) The gum starts oozing out in the form of large irregular drops and drips on the polythene sheets. The polythene sheet is left on the tree for 48 hours. (i) On the 3rd day remove thorns from lower end of polythene attached to the blaze with the help of sickle and bamboo basket hanging from elbow by coir rope handle. The polythene is held in one hand with gum collected on it. (j) The thorns are now removed from the upper end of the polythene. Now holding the sickle in the left hand the gum stream is cut to disconnect the gum collected on the polythene sheet from the flows oozing from the trunk. The polythene with its gum is carefully placed in the bamboo basket. (k) A new clean polythene sheet is attached to the blaze. If the gum flow has ceased, the crescent shaped incision is freshened by slicing a thin layer from it using the sickle. (l) The gum tapping step 9-11 every 3rd day, till the blaze is too high on the trunk for the tapper to reach easily. Then is the time to start preparing a new blaze. (m) The new blaze should be made diametrically opposite the first blaze. The same steps are repeated on that side for another 3 years. Then a third blaze may be made on one side between the two. Similarly the fourth blaze would be made on the side opposite to the 3rd blaze on the trunk. (n) After a tree has been tapped for 12 consecutive years in

this way, the wound from the first blaze should have healed up completely and the trunk on that side would be ready for tapping again.

(iv)Time and Age of Harvesting (Period- season/ month): The gum tapping is done in hot season from October- June during which, gum oozing is maximum.

(v) Extent of Harvesting (quantity/ amount): Only one blaze per tree should be made at a time.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): It is packed in basket made of *Nyctanthus arbotristis* (Harshringar) which is widely distributed and grows as weed. This species is harvested for preparing baskets used for local storage of gums. Lantana, another weed can also be used for storage of gums. This is also an eco friendly approach. In areas where both the species are not found bamboo basket could be prepared for storage of gums and can be transported in trucks.

(vii) Transport Method and Time (night, early morning): It is preferable to transport at night to avoid exposure to excessive heat during the day time. This will help in avoiding wastage and maintaining quality of the gum.

(viii) Post Harvest Method: (a) The gum bearing polythene sheets are inverted and emptied on to a larger polythene sheet that has been spread over a bamboo mat on a raised platform. The platform should be at least of waist height and constructed in an open, dust free and sunny space to allow the gum to dry quickly. Pieces of bark, leaves and other extraneous material should be removed from the semi solid gum using a pair of forceps. The gum pellets are sun dried until they become brittle. (b) The dried gum is then sorted into grades on the basis of colour and amount of impurities. (c) The dried gum should be stored in clean and air tight polythene bags ready for the market.

Ensuring Natural Regeneration of Species: (i) Young ones (below 80 cm girth) should not be harvested (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (Bhattacharya, P.; Joshi, B., Bhagat, N.K. and Hayat, Faiz, 2003).

Boswellia serrata (Salai)

Phenological Characteristics: *Boswellia serrata* is a moderate size to large deciduous tree with a light spreading crown and somewhat drooping branches. It usually has short bole of 3.6- 4.5 m in length. Ordinarily it attains a girth of 1.2- 1.8 m and a height of 9-15 m. Bark is very thin, grayish- green peeling off in papery flakes. Blaze flushed with lighter and darker pink, exuding small drops of resin. Leaves alternate, estipulate, imparipinnate. Flowers white crowded towards end of branch but not terminal. The leaves turn yellowish to light brown in December and commence to fall in quantity. During the season the trees are recognizable from a distance by the light brown colour of their foliage. By the end of January to the end of April, the trees are leafless and remain so till the new leaves appear in May- June. The racemes appear at the ends of branches from end of January to March or April when the tree is leafless or nearly so; sometimes flower appear before the old leaf fall or after the fresh leaf sprout. The drupe ripens in the month of May- June.

Useful Plant Parts: Gum

Prevalent Harvesting Practices: Blazes are made by debarking the stem with the help of sickle shaper, semi- circular sharp edged iron blade locally called as "schilchy". The height of tapping is 5-6 m above ground level. The debarking is done by circular scaling upto 10 cm of bark upto a depth of 0.25 cm of tree trunk. As the collection season advances, the scaling of bark continues upwards and finally the total height

of debarked portion of stem extends upto 40- 45 cm. For the fresh renewing of tapping, they are debarked usually 2.5- 3 cm above the upper tapping limit with he help of "Schilchy". At the commencement of the season the tapping is renewed after nearly 50- 60 days after which fresh debarking is done. As the collection season advances, this frequency is increased to almost weakly for cleaning the oleoresin duct for continuous secretion of gum.

The oozing oleoresin from the tree trunk is collected in the small bell shaped metallic pot called "Dhati" which is rubbed against the blazed gum secreting area of the tree. Gum collection is stopped from mid June to October for recovery of its wounds and regeneration of Salai tree.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant Ttree for Harvesting: Salai trees, between the age group of 35- 60 years, yield maximum gum due to highly active resin secretion glands. Trees falling outside this age have less active resin secretion glands and hence, produce less gum.

(ii) Characteristics of Plant Parts to be Harvested (bark colour): Only middle aged, healthy Salai tree of 61 cm. girth and above should be tapped.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The gum tapping technique from the Salai tree prescribed by Mr. O.P. Bhargava in 1951 in his Working Plan has the following tapping rules: (a) Only healthy Salai tree of 61 cm girth and above should be tapped, the blazes being confined to the main stem between 0.6 cm above the ground level and the point of first main branching. (b) The initial blaze should not exceed a width of 10.16 cm and a depth of 0.6 cm and a minimum period of two weeks should elapse before it is freshened. (c) Freshening should not be done more than twice a week and the initial scrapping should not exceed 2.54 cm at each freshening. (d) Over mature salai tree of over 91 cm girth should be tapped to death before felling. Such tapping should start 5 years before final felling. (e) The tapping season is prescribed to be 60 days in the year commencing in July with freshening upto September or early October, with tapping commencing again in November. The peak yields are obtained in July, December and February while in August, November and April the yields are normal. In the remaining months the yields are lowest.

Another method of gum tapping has been prescribed by MFP branch of FRI, Dehradun which is as follows: (a) The bark of the tree which is about 1 cm thick, containing maximum number of resin canals, are connected to those in the wood. Hence blazing should be confined to bark only and that to upto a depth not exceeding 0.6 cm. (b) Tapping should be confined to trees of and above 90 cm girth at breast height. (c) The season of tapping should be from October- November to end of May, depending upon the locality as the oleoresin obtained during the rains is darker in colour and inferior in quality. It should be stopped before monsoon. (d) Blaze is made on trees at 15 cm above the ground level with an adze. One blaze is made on the tree upto 90 cm girth, with an additional blaze for every 50 cm increase in girth. The size of the blaze should be limited to 30 cm vertical length x 20 cm width x 0.6 cm thickness. (e) The oleoresin starts oozing out soon after the blaze is made. The first collection is done after a month when freshening is also done. Thereafter freshening should be done fortnightly. At every freshening 1.6 cm of bark is removed on the upper side. In the season 20 cm of bark is removed during the freshening. The spacing between the blazes at the end of 1 year of freshening may vary from 28.8- 62.5 cm. (f) For continuous tapping, the bole is divided into 3 zones, each one being tapped for one year. Thus, three zones would be covered in three years. For making another horizontal row of blazes in subsequent years 5 cm of space may be left above the blazed portion. The blazes of the subsequent year's horizontal rows should be alternating or staggering with previous year's blazes i.e. the previous and the fresh blazes will not be in the same longitudinal row.

(iv)Time and Age of Harvesting (Period- season/ month): The yield of resin from Salai tree is maximum during the period between October to February, due to favourable temperature for gum secretion. During this period the ducts continue to secrete resin and their passage is not blocked up due to drying of gum as it starts happening in the following months of dry summer.

(v) Extent of Harvesting (quantity/ amount): Blazes should not be more than 0.6 cm deep and only one zone should be tapped in a year.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The gum is kept in polybags to protect from moisture.

(vii) Transport Method and Time (night, early morning): Like other resin and gums it is preferable to transport at night to avoid exposure to excessive heat during the day time. This will help in avoiding wastage and maintaining quality.

(viii) Post harvesting Methods (aerated, spread): It is dried in shade and packed in basket made of *Nyctanthus arbotristis* (Harshringar) which is widely distributed and grows as weed. This species is harvested for preparing baskets used for local storage of gums. Lantana, another weed can also be used for storage of gums. This is also an eco friendly approach. In areas where both the species are not found bamboo basket could be prepared for storage of gums and can be transported in trucks.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Since oleoresin ducts are found just below the bark of Salai tree, for the collection of gum, scaling of bark without damaging the trunk is required. If some damage is done to the secretion glands, the healing phase will prolong which would bring down the quantity of gum secreted.

Ensuring Natural Regeneration of Species: (i) Young ones (below 80 cm girth) should not be harvested (ii) Natural seedling to be adopted and tended (iii) Monitoring and Evaluation- A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (http://www.nrc-map.org/Research/guggal.htm, viewed on 25 June, 2008).

Whole Plant Medicinal

Andrographis paniculata (Kalmegh)

Phenological Characteristics: *Andrographis paniculata* is an erect annual herb, chiefly found in the plains throughout India from Himachal Pradesh to Assam and Mizoram and all over South India. Stem dark green, 0.3- 1.0 m in height, 2-6 mm in diameter, quadrangular with longitudinal furrows and wings on the angles of younger parts, slightly enlarged at the nodes; leaves glabrous, upto 8.0 cm long and 2.5 cm broad, lanceolate, pinnate; flowers small in axillary and terminal racemes or panicles; capsules linear- oblong, acute at both ends, 1.9 cm X 0.3 cm; seeds numerous and yellowish brown in colour. The plant flowers during August-November and the whole pant starts maturing during February- March. Because of its well-known medicinal properties, it is also cultivated - quite easily, because it grows in all types of soil. Moreover, it grows in soil types where almost no other plant can be cultivated, particularly "serpentine soil," which is relatively high in aluminum, copper and zinc. Such hardiness helps account for its wide distribution.

Useful Plant Parts: Whole plant

Method of Propagation: Seeds

Prevalent Harvesting Practices: Since the entire plant is used for medicinal purpose for the cultivated ones, the entire plant is uprooted. For wild collection the common practice is to cut the plant with the help of sickle at a height of 10- 15 cm above the ground.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Normally well grown plants of 60- 100 cm in height should be selected for harvesting. Plants with mature pods should be left for regeneration. Fruits bearing plants should be harvested. The young ones should be left to have ramifications of roots for further regeneration. Some old plants should also be left for dissemination of seeds.

(ii) Characteristics of Plant Parts to be Harvested (bark colour): Dark green plants indicate that they are still growing and therefore, dull green to brown plants with solid stem may indicate the stage of maturity. Fruits bearing plants should be harvested. Local gatherers can also indicate best stage for harvesting.

(iii) Methods to be used for Harvesting (especially designed sickle, basket, hand plucking, not breaking branches): Harvesting should be done by sickle at a height of 4-5 cm from ground.

(iv)Time and Age of Harvesting (Period- season/ month): Harvesting should be done in the month of November. It is desirable that Forest Department or other state authorities should educate gatherers about the maturity period before which harvesting should not be done. JFM committees and Gram Sabha could also be involved in prescribing regulatory mechanism and its compliance for sustained production and maximum benefit to gatherers and consumers.

(v) Extent of Harvesting (quantity/ amount): Minimum 30 percent plant should be left, selected from amongst the most vigorously growing and well distributed should be left out as future germ plasm. It may be desirable to guide the JFM committees to earmark certain patches on rotation basis to act as germ plasm bank. In Dhamtari Forest Division, this type of deferred harvesting planned and implemented by JFM committees have given good results. Harvesting should be done in one cycle a year.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The material should be collected and stored under shade. Once the material has turned into brown to black it can be stored in gunny bags for long haul. For transporting small quantities of harvest to small distance, paper packing boxes (cartons) with perforation all around can also be used.

(vii) Transport Method and Time (night, early morning): The harvested material should preferable be transported at night or early morning to avoid moisture loss.

(viii) Post Harvesting Method: The whole plant material should be cut into pieces of 4-5 cm and dried in shade taking due care of contamination from physical impurities and other flora and fauna. It should be stored in aerated place with wooden platform to ensure aerated condition. It should be stored in single, not with any other spp.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): The material should not be transported in very dry form as it is liable to break into smaller pieces and become dust. It is therefore reliable to transport the material during night. To avoid wastage, the material properly packed without allowing too much drying should be preferred.

Ensuring Natural Regeneration of Species: (i) 30 percent of the plants should be left out for seeding and natural regeneration. (ii) Young plants should not be harvested (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation- Only single round of collection in the forest would be permitted so

that the plants left over or regeneration purposes do not run the chance of being collected in the second round. It would be ensured through decisions taken by the community on where to go for collection in a particular period and monitored through collection records maintained by internal inspector. A small committee of stakeholders should be formed to monitor compliance of the above prescriptions (SFRI, 2005; Pandey, A.K. and Mondal, A.K., 2008).

Azadirachta indica (Neem)

Phenological Characteristics: Neem is a fast-growing tree that can reach a height of 15-20 m, rarely to 35-40 m. The branches are wide spread. The trunk is relatively short, straight and may reach a diameter of 1.2 m. The bark is hard, fissured or scaly and whitish-grey to reddish-brown. The alternate, pinnate leaves are 20-40 cm long, with 20-31 medium to dark green leaflets about 3-8 cm long. The flowers (white and fragrant) are arranged axillary, normally more-or-less drooping panicles which are up to 25 cm long. The fruit is a glabrous olive-like drupe which varies in shape from elongate oval to nearly roundish, and when ripe is 1.4-2.8 x 1.0-1.5 cm in size.

Useful Plant Parts: Virtually all parts have medicinal values (eg. Leaves, seeds, bark, roots).

Prevalent Harvesting Practices: Many times in order to maximize collection, gatherers driven by market forces sometimes resort to lopping of branches for seeds and leaves. However, these practices are few and rare. The common practices are collection of seeds from the ground. Care needs to be taken to use part of the seeds for raising nursery stocks so that every thing used for medicinal purpose. Moreover, it has to be remembered that neem is a profused seed bearer, the germination is very good (over 80 percent) and plant percent is also very high and therefore there is no imminent threat to the species. The only care has to be taken to protect the young plants because people have tendency to pluck the apical buds for chewing and soft stems for making tooth sticks. Roots are also eat away the tender ones which delays plant establishment. This species responds well to hormone treatment for clonal propagation.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Seeds are collected from ground and therefore there is no need for plant selection. The fruits produced by any tree normally fall on the ground and people collect the fallen fruits/ seeds.

(ii) Methods to be used for Harvesting: Neem tree being a profuse seed producer and the seeds fallen on the ground are collected, there is no need for any specially designed instrument for harvesting. The ground under the tree cover should be cleaned. The fallen fruits from the tree should then be collected and collected in gunny bags or bamboo baskets. Plastic coated bags or air tight containers should not be used.

(iv)Time of Harvesting: The fruits of the Neem tree can be harvested during May- August.

(v) Packaging for Transportation (Gunny bags, canasters, cartons): As per the prevalent practice, it is transported in gunny bags and also in the bamboo baskets. Villagers sometimes use both for transportation.

(vi) Transport Method and Time (night, early morning): Seeds can be transported any time as per convenience.

(vii) Post Harvest Methods: Neem seeds have the reputation of not keeping adequate viability for a long time. It is generally considered that after 2 to 6 months' storage, germination percent is near or equal to zero. Seeds should be stored at $15°$- 25^0C in moisture free environment in cotton bags keep a higher germinative

capacity than those stored in tight containers. The seeds are also stored in earthen pots buried in sand in some areas.

Ensuring Natural Regeneration of Species: (i) Young plants should not be harvested (ii) Natural seedling to be adopted and tended.

Swertia chirayata (Chirayita)

Phenological Characteristics: An erect, annual, 60-125 cm tall, stem robust, branching, cylindrical below, 4 angled upwards, containing a large pith, leaves broadly lanceolate, 5 nerved, sub sessile; flowers greenish yellow, in large panicles, capsules egg shaped, many sided, 6 mm in diameter, sharp pointed, seeds smooth, many angled. The flowering occurs from July- October.

Useful Plant Parts: Whole plant

Method of Propagation: The natural regeneration of plant takes place by seeds, when the seeds become biologically mature having high potentiality of viability during November (Bhattarai, 1996). The viability of seeds is very low if seeds are collected before November.

Prevalent Harvesting Practices: Collection is done manually without using any instruments. Whole plant is pulled out.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: Stands where the plant is scarce should be left undisturbed. Harvesting should be done from the areas where the frequency of the plant is very high. The plants should be matured and free of diseases.

(ii) Characteristics of Plant Parts to be Harvested: The plant should be harvested when the seed is setting. The plants are collected when the capsules are fully formed for further propagation.

(iii) Methods to be used for Harvesting (Especially designed sickle, basket, hand plucking, not breaking branches): The plants should be cut 15 cm above the ground so that it regenerates in the following monsoon.

(iv)Time and Age of Harvesting (Period- season/ month): Chiraita should be harvested after three years of growth when the plant is well developed, after the plant has flowered and produced fruit. If harvesting is done after the seeds mature, then the plant can naturally regenerate. Harvesting Chiraita without considering the age of the plant and seed maturity reduces regeneration significantly. November-December is the appropriate time for harvesting.

(v) Extent of Harvesting: Chiraita should be harvested from the stands where the frequency of the species is higher. Stands where the species is scarce should be left undisturbed. About 30% of the matured plants should be left unharvested where the frequency is higher.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The dried plants tied up in a slip of bamboo into flattish bundles each 1 m long and upto a kg in weight.

(vii) Transport Method and Time: Nnight and early morning.

(viii) Post Harvest Method: The whole plant should be dried in shade. Then small dried bundles of Chiraita is collected into big bundles and sold to the local traders.

(ix) Ways to Avoid Loss/ Wastage (Spread on the floor, overlapping): Chiraita is mostly collected from government forest, which has no control over collection. Who comes to collect first, will collect more and earns more money. Thus, there is always competition for collection and collectors collect before seed dispersal. Seeds are only the medium for the propagation of this plant, so care should be taken to collect the plants after seed dispersal to ensure future regeneration.

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) Young ones (below 60 cm height) should not be harvested (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation- The areas where the frequency of this species is less should be marked and the gatherers should be prevented to collect Chirayita from this area. A small committee should be formed to monitor the compliance of the condition (Annon, 1998; UDWDP, 2007; http:// www. ansab. org/ UserFiles/ chiraito. pdf, Retrieved July 4, 2008).

Stem Yielding Medicinal Plants

Tinospora cordifolia (Giloe)

Phenological Characteristics: The stem of *Tinospora cordifolia* is succulent with long filiform fleshy aerial roots from the branches. The bark is creamy white to grey, deeply left spirally, the space in between being spotted with large rosette like lenticels. The leaves are membranous and cordate. The flowers are small and yellow or greenish yellow. In auxiliary and terminal racemes or racemose panicles, the male flowers are clustered and female are usually solitary. The drupes are ovoid, glossy, succulent, red and peasized. The seeds are curved. Fruits are fleshy and single seeded. Flowers grow during the summer and fruits during the winter.

Useful Plant Parts: Stem

Method of Propagation: Propagated through stem cuttings

Prevalent Harvesting Practices: The entire plant is uprooted for the collection of stem.

Sustainable Harvesting Practices/ Protocols

(i) Selection of Plant for Harvesting: The matured plants whose leaves are shed in the months of February-March are selected for harvesting.

(ii) Characteristics of Plant Parts to be Harvested: Matured Tinospora stem is 3-4 inches in diameter and is brownish in colour.

(iii) Methods to be used for Harvesting (especially designed sickle, basket, hand plucking, not breaking branches): When the leaves start shedding in the months of March- April, the stem is cut leaving 1 foot above the ground with the help of a sharp instrument. The stem is then cut into sizes of 3-4 inches long. The stem is sold in the market in the name of Giloe or Guduchi. The left over portion of the stem attached to the ground again germinates into a new plant.

(iv)Time and Age of Harvesting (Period- season/ month): The stem is harvested in the month of April when all the leaves of the plant is shed.

(v) Extent of Harvesting: The stem is harvested leaving 1 foot of the stem above the ground so that it germinates into a new plant in the coming monsoon.

(vi) Packaging for Transportation (Gunny bags, canasters, cartons): The cut and dried stem are packed in clean and moisture free polythene bags.

(vii) Transport Method and Time: Night and early morning

(viii) Post Harvest Method: The cut stems are then dried in shade. These are then graded according to the thickness of the stem. These are then packed in clean and moisture free polythene bags and stored.

Ensuring Natural Regeneration of Species: (i) Seed bearing plants should be marked (ii) Young ones (less than 3 inches in diameter) should not be harvested (iii) Natural seedling to be adopted and tended (iv) Monitoring and Evaluation (Pandey, A.K. and Mondal, A.K., 2008; Singh, S.S., Pandey, S.C., Srivastava, S., Gupta, V.S., Patro, B. and Ghosh, A.C., 2003; http:// sfri. nic. in/ pdf files/ Medicinal % 20 Plants.pdf, Retrieved 31 July, 2008).

Recommended Harvesting Methods for Plants with All Parts Medicinal

The following points have to be borne in mind about harvesting of plants with all parts having medicinal value:

Regular Monitoring of Plant Population: *Plants with all parts having medicinal value are to be listed in each area and inventory has to be carried out about their distribution, population richness, etc.*

The Area may be Subjected to Deferred Collection: The area may be divided into suitable blocks and collection may be done from one or two blocks and others may be rested.

The constantly increasing global demand for the medicinal plants has increased the attraction for money not only to middleman but also to local traders. The local traders in turn, offer better prices, incentives and also pester the collectors (in case he is under his debt) to harvest as much as possible. The primary collectors, therefore, collect as much as possible to maximize the collection in absence of any State regulation.

The forest department has paid little emphasis on the collection of medicinal plants. In most cases the local staff, who is given the responsibility of managing and protecting the resource, hardly recognizes the extracted medicinal plants, even in their raw form, as they have not received any training on it. Therefore, the trader is in overall command at the grass root level not only to harvest the medicinal plants mercilessly but also to collect it on his terms and conditions.

Appropriate harvesting rules and regulations considering seasonality and critical regeneration period is required to be established to ensure the harvesting of plant parts at their correct time and within their proper limits. There is a need for a national level legislation with emphasis on conservation. Also there is a need for the nodal agency to work as a trading house for the benefit of collectors and traders. The nodal agency can also take active role in curbing exploitative practices like quality cuts, exploitative trade, short- weighment, barter and exploitation in resale. Therefore, for sustainable collaboration with local communities and large pharmaceutical industries, the opportunities for local enterprises, both government and private, must be taken up with urgency.

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Chapter-8

Women Empowerment and Skill Development with Special Reference to Chhattisgarh

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Abstract

Women empowerment and skill development are complementary to each other because the easiest way to make a woman empowered is to make her skilled. Skill development provides economic power in the hands of women for which they were earlier totally dependent on males. Economically independent woman feels more confident about her life and about her personal decisions and this is exactly what skill development mission aims at.

The National Skill Development Mission launched in 2008, has continuously been working in this field. In Chhattisgarh too Chhattisgarh State Skill Development Mission (CSSDM) has been launched but the challenges are many since in India only 2 % of the population is of skilled workers out of which roughly half of the population is of females and condition of these women is worse as even this small fraction is concentrated in informal sectors with low wages and poor working condition, the high dropout rate of girls in the state and lack of infrastructure facilities further increase the problem, hence a gender sensitive training program with an understanding of local customs and traditions is the need of the hour.

 In spite of all the challenges faced C.G. has emerged with new hopes. Plans and possibilities are immense here, what is needed is only their implementation, by providing quality training and through continuous innovation and improvements the days are not far when the state will be known for its skilled youth and empowered woman.

Introduction

Gone are the days when women were treated as showpiece of the home and men only were held responsible for the development of society. In her search for equality women have now surpassed their male counterparts in the domains previously reserved for males like engineering, technology and space science etc. The last few years have witnessed a considerable increase in the enrolment of girls in polytechnic and engineering their growing interest in the manufacturing sector has paved the path of the success .No doubt in their quest for equality women have the right to get whatever men have got.

It requires five keys to transform a women's life namely.   1. Food and water 2. Peace and security 3.Health services 4.Education 5. Financial independence. Financial independence is the key of women empowerment as it provides economic power in the hands of women for which they were earthier totally dependent on males. Economically independent women feel more confident towards their personal lives, their personal decisions and this confidence can only pave the path of women empowerment because

employment for a women is not merely the way of earning money, it's a matter of her self-esteem, search for identity in the male dominated society. Sociologist Robert Blood (1965) observed.

"Employment emancipates women from domination by their husbands andsecondarily raises their daughter from inferiority to their brothers."

Objective of the study

The study has been conducted

1.To understand the present status of skill development in Chhattisgarh

2. To understand the problems and challenges for skill development in the State

3.Sill development initiatives and their impact women

Research Methodology

The research paper is an exploratory work aiming at the analysis of finding current status challenges and possibilities and future job prospect for women in Chhattisgarh. It is based on secondary data sourced from journals magazines and website etc.

Present Status of skill in India

The 11th five year plan (2002-2012) has recognized India'smassive need to train millions of formal and informal workers and to raise the proportion of skilled workers from mealy 2% to about 50% by the year 2022 .Women form about half of the total workforce (148 millions) but they are largely concentrated in informal sectors working in low wages in poor working conditions and lack of safety and protection. The skill status of women in India is as follows.

Distribution of persons with marketable skills
(Figures in percentage)

S.no	Skill Status	Rural Area		Urban Area	
		Men	Women	Men	Women
1	No skill	89.9	93.7	80.4	88.8
2	Some skill	10.1	6.3	19.6	11.2
3	Total	100	100	100	100
4	Sample size	183464	172835	109067	99283

The figure shows that the percentage of skilled work force of women is less in comparisons with men which in turn is again very less in rural areas than in Urban area.SO there is an urgent and dire need for a sustainable skill development program for women forces focusing our attention to the rural and remote areas.
The National skill development mission was launched in 2008 which is a three tier body headed by Prime Minister which work for skill development by identifying the needs and providing training programs.

3. Status of skill development in Chhattisgarh

Chhattisgarh is a small newly originated state of India having the population of about 2 cores 55 lacks out of which about 1 core 27 lacks population is of females, hence women constitute roughly half of the population of the , sex ration in the state is 991 females on 1000 males which is far better than the sex ratio of the

country as a whole which is only 943. Presently the female literacy rate of the state is 60.24 and it is important to note that from the year 2001 to 2011 male literacy in the state has increased by 2.89where as there has been remarkable increases in the female literacy rate by 8.39%, another striking feature of the census is that about 42% of this population comes from scheduled castes and scheduled tribes .So it is the need of the hour to frame policies and their execution focusing on these backward and undermarginalized proportion of women folk and to bring them to the main stream of development.

Measures taken by Government of Chhattisgarh

Chhattisgarh state government has always been committed to uplift the states of women by making them economically independent. Chhattisgarh State Skill Development Mission (CSSDM) iscontinuously working on this field.*" Target of 12.5Million per the Hon. Prime Minister of India vision "* 42 Govt. ITI's have been upgraded with the help industries like SECL, Bhilai Steel Plant, NTPC etc Many private industries like Jindal Steel and Power, Monnet Ispat, Heera group of Industries etc have also had their contribution. Many training programs are being conducted for the dropout girls and for women under the banner of Integrated Women and Child Development Scheme like the course of stitching, beauty parlous courses, basic computer training etc. but still the challenges are many because government has a target of training a huge mass with limited resources.

Challenges with respect to skill development of women

Dropout rate of girls is high is Chhattisgarh, In higher education there is only 7% enrolment most of the girls leave the school after 10th or even after 8[th]standard. Our education system is faulty in the sense it is not skill oriented and it breeds only large mass of educated degree holders with no employment. Lower level of education and poor quality of education of female trainees inhibits their knowledge acquisition in formal sector especially in English and computer related courses.

There is no adequate hostel facilities for the girls of remote areas and they can impart only limited hour for training programs there are some socioeconomic barriers , gender norms are changing slowly but still parents are sometime hesitant for education of girls specially in the fields related with technology.

Polytechnic institutes have often been criticized for outdated courses and for poor quality of trainingprogrammers becauseof lack of technologically equipped infrastructure and skilled trainers. Few institutes providing quality education are far from the reach of students of remote areas, no of these institution are also very less in comparison with the large number of trainers.

There is lack of proper mechanism for monitoring and evaluation of these training programs especially in government sectors there is no involvement of private sector which is also a reason behind their backwardness.

Inadequate infrastructure, lack of funding and poor quality of training programmes are some other hurdles for this newly emerged state.

Hence we have seen that a gender based training program is focused on developing capabilities rather than simply imparting skill and itemphasises on strategic needs for women. The need is to frame the policy programs with an understanding of local customs and traditions.

Suggestions

- Education is the first requirement for the success of these programmes as it changes the attitude and quality of knowledge acquisition hence quality education and basic knowledge of English is necessary for the fruitful output of a training program.
- Number of IITs should be increased specially in the remote tribal areas to make accessible for students of scheduled areas, the outdated courses should be replaced by new relevant course catering to the needs of modern employment requirement.
- Vocational courses should be introduced from the school level only after 8th or at least from 10th standard so that the girls get better livelihood opportunities.
- Participation of private sector should be encouraged to enhance the quality of training programs. Germany has one of the most successful training programme and it has set an example for others.

"The key to success of the TVET system in Germany is that it is led by the private sector of the total financing for training and skill development in Germany only 16 percent is borne by the government while rest of the 84 percent is contributed by the private sector."

Where as in India there is very less contribution of private sector, by increasing their contrition the quality of theirprograms can be enhanced.

- Gender sensitive training program should be framed keeping in mind the ground realities of a particular area, since the girls have limited hours available for training, they are not much familiar with latest technologies their literacy level is also very low so the training should be focused on providing basiccommunication skill, problem solving, team work and other behavioral skillso that they find their new work place familiar and suitable.
- Instead of introducing new skills the skills already known by the girls prove more suitable as it increases their acceptability to the program hence courses like fashion designing and beauty parlor courses are more suitable for them because they are familiar with basic stitching skills and these courses do not require much educational qualification and even at home they can earn their live hood without much investment.
- In the courses like computer software training programmes and technical courses there should be provision for the placement of these candidates in the government and other sectors.
- By ensuring that NSDC aided organizations place at least 70% of its trainees NSDC has been able to facilitate employment of many workers to a large extent. So similar efforts should be taken by CSSDM in the state.
- Steps should be taken to bring awareness among parents to remove their fear regarding training of women.
- The quality of training programmes should be high to match up the standards and demands of market.
- Time to time evaluation and monitoring of these trainings has hold be done to check whether there is discrepancies between the training imparted and the needs of society .Forsustable skill development quality assurance is must and can be achieved only by regular mounting and evaluate

Conclusion

Chhattisgarh inspite of being a small state dominated by tribal population, has great possibilities in the field of skill development,there has been a considerable increase in the enrolment of woman in ITIs and engineering colleges which itself proves women's increasing interest towards technology, earlier they were limited to the of teaching and field related to arts but their increasing participation in the fields of technology

has put the sexes on equal footing. They are gradually and steadily marching into the domains earlier reserved formals. In C.G. the self-help Groups have emerged playing significant role in empowering women. Women like PhulbasanBai and Sharmshad Begum who were awarded by Padmshree and CG State. Mini Mata Samman have set an example before the nation. It is a matter of pride for Chhattisgarh that India's first national skill development university is going to be opened in Raipur in Chhattisgarh, definitely it will open new ways of success for women. Chief Minister Dr. Raman Singh has announced that CG is the first state in the country to have provided skill development as a right for the local youth. Hence we can say that plans and possibilities are immense here what is needed is only their implementation. If the training programs are focused on providing quality training through continuous innovations and improvements the days are not far when Chhattisgarh will be known for its skilled youth and empowered women.

Chapter 9

Skill Development Analysis of Innovative development in frontier areas of Biotechnology

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Introduction

Biotechnology is the use of living system and organism to develop or make products or process for specific use. A goldmine of opportunities in the corporate world, biotechnology enriches the way we do and teach sciences which has emerged as a global players on the international scene. Depending on tools and applications, it often overlaps with the fields of bioengineering, biomedical engineering etc. In the late 20th and early 21st century biotechnology has expanded to include new and diverse sciences such as genomics, recombinant gene techniques, applied immunology and development of pharmaceutical therapies and diagnostics tests. Advances in the life sciences offers opportunities for the revolutionizing human welfare activities primarily through improvement in the quality and quantity of healthcare. The UN human development reports (HDR) "making new technologies work for development (UN, 2001)" identified biotechnology as a key avenue for socio- economic advancement of the developing countries.

Skills and Development in Biotechnology

Skill and development means of developing yourself and your skill sets to add value for the organization and for your own career development. Fostering an attitude of appreciation for lifelong learning is the key to workplace success. Continuously learning and developing ones skill requires identify the skills needed for mobility and then successfully seeking training or on the job opportunities for developing those skills. Developing your skills begin with assessing which skills are important for your desired development. Once you have identified the skills you need to develop to achieve your career goals your next step is identified how you will develop your skills. The two main avenues for developing your skills are through education and training, secondly by developmental experiences.

Innovations in Biotech Professionals

As global economic completion becomes increasingly driven by technology and innovation , there has emerged a heightened interest in the biotechnology technological advantage of nations .in the field of biotechnology biotech professional put a high emphasis on soft skills , which are personal attributes that enhances your interaction , job performances and career prospects and second technical knowledge . Divergent views on what capacity development might mean in relation to biotechnology. It conclude by suggesting that policy needs to take a multidimensional approach to capacity development in line with innovation system perspective but it also argues that policy needs to recognize the needs to develop the capacity of diversity of innovation system and that a key part of the capacity development task is to bring about the integration of these different systems at strategies points in time.

In biotechnology biotech professional should be trained with technical skill. It is important to develop technical skills as an integral part of your personal development efforts. Strong technical skills can save you time, increase your income and enable you to extract the most. Knowledge and skill needed to accomplish biotechnology.

Innovations in Biotechnology

- Strategies biotech initiatives in the developing world
- Medicinal firms , biotech industries , biotech park, biotech professionals , biotech museums
- Living modified organisms in agriculture and development
- Capacity –building in biotechnology for development
- Developing market oriented ventures
- Women in partnership with biotechnology
- Transfer of technology in south-south co-operation

Biotechnology & India

After India becomes an independent nation in 1947 Prime Minister Jawaharlal Nehru is socialist vision to improve the quality of life for the masses identified a central role for science and technology. He once said 'The future belongs to science and those who makes friends with science. In India a revolution taking place many biotech industries establish in India and launching new genetic modified products, preservative food , medicine. Indian government and private firms also started establishing biotechnology parks. Biotechnology parks in several developing countries reveal a political commitment in transforming the potential of modern biotechnology knowledge into reality for the benefit of all strata of society. Main objectives of this biotechnology parks are to bring together women entrepreneurs, scientists, financial sponsors and industry for purposes of generating openings for skilled employment of women.

List of women's biotechnology parks in Chennai

- Biotechnology incubator, Chennai
- Bioinformatics and genomics centre, Chennai
- Women 's biotechnology park , Kelambakkam
- Medicinal plants biotechnology park, Madurai
- Marine biotechnology park, Mandapam area

Conclusion

A goldmine of opportunities in the corporate world, biotechnology enriches the way we do and teach sciences which has emerged as a global players on the international scene. Depending on tools and applications, it often overlaps with the fields of bioengineering, biomedical engineering etc. As global economic completion becomes increasingly driven by technology and innovation, there has emerged a heightened interest in the biotechnology technological advantage of nation's in the field of biotechnology biotech professional put a high emphasis on soft skills, which are personal attributes that enhances your interaction, job performances and career prospects and second technical knowledge.

Biotechnology is a motor of technological advancement in both the developed and developing countries though at different levels in scope and content. The simple production of cheese and fermented food to the industrial production of antibiotic and genetics elaboration of biopharmaceutical and novel crop illustrate the breath and depth of biotechnology endeavor and practice worldwide. This reviews provides several examples of different types of biotech activities that are being employed for development in the developing world.

The practice of biotechnology different in many developing countries is indicative of biotechnology being accorded high policy status in national development of its significance in the eradication of poverty and of its use in the empowerment of women in applying the technology for human and welfare.

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Chapter 10

Digital Library

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Introduction

A Digital Library is a special library with a focused collection of digital objects that can include text, visual material, audio material, video material, stored as electronic media formats, along with means for organizing, storing, and retrieving the files and media contained in the library collection. Digital libraries can vary immensely in size and scope, and can be maintained by individuals, organizations, or affiliated with established physical library buildings or institutions, or with academic institutions. The electronic content may be stored locally, or accessed remotely via computer networks. An electronic library is a type of retrieval system.

Digital libraries will start gaining ground in India in the present century. We are heading toward an environment in which digital information may substitute for much print-based information. A library's existence does not depend on the physical form of documents. Its mission is to link the past and the present, and help shape the future by preserving the records of human culture, as well as integrating emerging information technologies. This mission is unlikely to change in the near future.

Characteristics

•   DLs are the digital face of traditional libraries that include both digital collections and traditional, fixed media collections. So they encompass both electronic and paper materials.

•   DLs will also include digital materials that exist outside the physical and administrative   bounds of any one digital library

•   DLs will include all the processes and services that are the backbone and nervous system of libraries. However, such traditional processes, though forming the basis digital library work, will have to be revised and enhanced to accommodate the differences between new digital media and traditional fixed media.

•   DLs ideally provide a coherent view of all of the information contained within a library, no matter its form or format

•   DLs will serve particular communities or constituencies, as traditional libraries do now,though those communities may be widely dispersed throughout the network.

•   DLs will require both the skills of librarians and well as those of computer scientists to be viable.

Functions

•   Access to large amounts of information to users wherever they are and whenever they need it.

•   Access to primary information sources.

•   Support multimedia content along with text

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- Network accessibility on Intranet and Internet

- User-friendly interface

- Hypertext links for navigation

- Client-server architecture

- Advanced search and retrieval.

- Integration with other digital libraries.

Purpose

- Expedite the systematic development of procedures to collect, store, and organize, information in digital form.

- Promote efficient delivery of information economically to all users.

- Encourage co-operative efforts in research resource, computing, and communication networks.

- Strengthen communication and collaboration between and among educational institutions.

- Take leadership role in the generation and dissemination of knowledge

Advantages

The advantages of digital libraries include

- Nearly unlimited storage space at a much lower cost

- Re-allocate funds from some staff, collection maintenance, and additional books.

- No physical boundary

- Round the clock availability

- Multiple access

- Enhanced information retrieval.

- Preservation for some print material

- Added value

- Universal accessibility

Limitations

- Lack of screening.

- Lack of preservation of a fixed copy

- Lack of preservation of "best in class"

- Difficulty in knowing and locating everything that is available, and differentiating valuable from useless information.

- Job loss for traditional publishers and librarians

- Costs are spread and many become hidden.

Challenges in Creating Digital Library

Some challenges that occur during the development of digital libraries are-

- Technical Architectures

- The building of digital collections

- Digitization

- Metadata

- Naming, identifiers, and persistence

- Copyright/Rights management and

- Preservation

Need for Digital Library

The Internet and World Wide Web provide the impetus and technological environment for the development and operation of a digital library. The Internet provides the TCP/IP and or its associated protocol for accessing the information and web provide tools and technique for publishing the information over Internet. In the digital environment it is reasonable to say that a central back up or archive should be created at the national level, which will store information output of the region as well as information from outside the country. Some of the requirement for digital libraries is:

1. Audio visual: Color T.V., V.C.R., D.V.D., Sound box, Telephone etc.

2. Computer: Server, P.C. with multimedia, U.PS. Etc

3. Network: LAN, MAN, WAN, Internet etc.

4. Printer: Laser printer, Dot matrix, Barcode printer, Digital graphic printer etc

5. Scanner: H.P. Scan jet, flatbed, Sheet feeder, Drum scanner, Slide scanner, Microfilming scanner, Digital camera, Barcode scanner etc

6. Storage devices: Optical storage device, CD-ROM, Jukebox etc.

7. Software: Any suitable software, which is interconnected and suitable for LAN and WAN connection.

Conclusion

There will be continuing expansion of digital library activities. LIS and computer science professionals face challenges that will lead to improved systems.. Digital libraries will build upon work being done in the

information and data management area. Digital library field is still quite new, it seems strange to be talking .However, in this fast-moving environment, the initial digital libraries resulting from digitization projects, or even virtual collections, are being enhanced as user expectations and technology capabilities allow. Digital libraries are not going to replace the physical existence of document completely but no doubt to meet the present demand, to satisfy the non local user digitization must be introduced so that at least libraries becomes of hybrid nature. The initial cost of digitization is high but experiment shows that once digitization is introduced then the cost to manage this collection will be cheaper than that of any traditional library. Day by day the cost of digitization is decreasing, the online publication is increasing, the needs of user are shifting towards a different environment so it's needless to say that after one or two years my library or your library will go to be digitized so it's the pick time to all informational and library professional that they geared themselves to take the challenge.

Chapter 11

icine Found in Bastar

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Abstract

Bastar is a district of the Chhattisgarh state with Jagdalpur as district headquarter.The district has an area of 10755.79 km^2.

Health care is defined as the active process by which an individual achieves physical and mental well- being. It means health care actively tries to avoid illness and it consists of ill-people and health care provides.

Long before the development of modern medicine, indigenous health care practices had always been an integral part of Indian culture. With the advent of allopathic medicine this indigenous system was over shadowed , but due to their rich heritage their importance was never reduced. The medicines of the indigenous system on the other hand have less sideffects.

Bastar region is blessed with tribal people which called Bastar adivasi and very rich in the medicinal plants which is used for treatment of the serious diseases by the technique of the aadiwasi people living over here. Earlier these medicines were used by the munis for the treatment of any disease in later on now it is used in the field of ayurvedic and unani. The tribal people are the real custodians of the tribal medicinal plant.

Since the beginning of 20th century most researchers in the field of biology were focused on ethno medicines. Worldwide expeditions and explorations were made to generate the data on medicinally important plants which are being used by various tribal communities and local peoples. It becomes the need of time for today, to use the plant based medicines as alternative healthcare system.

Keyword**:-** *MPU = Mode of preparation and use of herbs.*

Introduction

Tribal medicine is a part of traditional medicine and is mainly practiced by the tribal in the forest. It is still in the primitive form. A study about tribal medicine will be incomplete without the background of traditional medicine.

From the survey it is noticed that there is a strong believe among the tribal people that the efficacy of the therapy is lost if it is revealed to strangers, who have no faith in nature and their medicine.

The tribal people divide the diseases into two categories:

1. Related to the body.
2. Related to mind and divine powers.

Different types of medicinal plant found in bastar region

Arandi Common Name - castor Botanical Name - *Ricinus Communis* Local Name – Arandi, Jada Place – Bastar Disease – Ovarian disease, Indigestion, Arthritis, Sciatica, Back pain etc. MPU – It is used in the form of oil and powder and its derivatives for the manufacture of soap, lubricant etc.	
Bhui Neem Common name – Kalmegh Botanical name – *Andrographis Paniculata* Local Name – Bhui neem Place – Bastar Disease – Malaria, Liver complaints, fever, diabetes, common cold, sinusitis, tonsillitis etc. MPU – crushed leaves are used to prepare tablets for malaria and other diseases, root extract for controlling diabetes.	
Karanja Common Name – Karanji Botanical Name – *Pongamia pinnata* Local Name – Dithouri Place – Bastar Disease - Muscular pain, Arthritis, Skin disease, Itching, Dental problems (stem brush) etc. MPU – as form of oil (seed) and paste (leaf), as a brush (stem).	
Salfi Common Name – Salfi Botanical Name – Caryota Urens Local Name – Salfi , Bastar beer Place – Bastar Disease – for heat stroke in summer MPU – Extract in the form juice from the tree.	
Bhaskatiya Common Name - Patal kumhara Local Name – Dhepari Place – Bastar Disease – Dental problems MPU – Extract from root and stem by boiling	

Chhui Mui Common Name – Lajwanti Botanical Name - *Mimosa Pudica* Local Name - Lajkurhin, Chhuimui Place – Bastar Disease – Hemorrhoids, Ovarian disease, body pain, diarrhea, piles, dysentery, wounds, Ulcer, Vaginal disease, swelling, burning sensation etc. MPU – Extract from root by crushing, paste of leaves.	
Bamboo Common Name – Bamboo Botanical Name – *Bambuso arundinacct* Local Name – Baans Place – Bijapur (South Bastar) Disease – Wound Healing MPU – Green bamboo is scratched with a knife and powdered, thus obtained is used externally to heal fresh wound.	
Raasnajadi Common Name – Blepharis Botanical Name –*Blepharis permum* Local Name – Raasnajadi Place – Narayanpur (Central Bastar) Disease – Rheumatic arthritis MPU – Juice extract from root is given for 3 weeks daily.	
Latkinna-chidchidy Common Name – chaff flower, prickly chaff flower, devil's horsewhip. Botanical Name – *Achyranthes aspera* Local Name – Latkinna-chidchidy Place – Bhopal pattnam (West Bastar) Disease – Anti-fertility MPU – Root paste mixed with milk and given internally on empty stomach.	
Pharasbel Common Name–Phul, Kesu, Tesu phool, Latapalas. Botanical Name – *Butea Superba* Local Name – Pharasbel Place – Sukma (South Bastar) Disease – Haemathuria MPU – Paste of streamed bark given on empty stomach.	

Kudsaadi Common Name – Bhamber, Indian squirrel Tail. Botanical Name – *Colebrookia* Local Name – Kudsaadi Place – Konta (South mast Bastar) Disease – Cough- cold MPU – Leaf is chewed with its juice swallowed to relieve cough.	
Peeth-laha Common Name – Skunk vine Botanical Name – *Paederia foetida* Local Name – Peeth- laha Place – Pakanjur (West Bastar) Disease – Malaria MPU –The fresh stream is made into a ring and tied around the back of the patient.	
Bhirra Common Name – Ceylon satinwood, Bhirra Botanical Name – *Chloroxylone swietaenia* Local Name – Birra Place – Barsur (Central Bastar) Disease – Headache, wound healing MPU – Paste of leaf and root is given internally. The paste is also used as balm.	
Anwl Common Name – Tarwar , Tanners Cassia Botanical Name – *Cassia Auriculata, Senna* Auriculata Local Name – Anwl Place – Kondagaon Disease – Diabetes, Asthma, Skin disease, Urethritis, constipation, dysentery, pain, rheumatism etc. MPU – The extract from the seeds is taken orally. Parts used- roots, bark, leaves, flower, seed, gum. (avoid during pregnancy and breast feeding)	
Guava Common Name – Amrud Botanical Name – *Psidium gueyava* Local Name – Bihi ki chal Place – Antagarh (North Bastar), other regions also. Disease – piles MPU – The paste is used locally, paste of leaves used on head for dandruff.	

Upka- Patti => Common Name – Blistering Ammannia Botanical Name – *Ammania Baccifera* Local Name – Upka-patti Place – Keskal (North Bastar) Disease – Abdominal pain MPU – Leaves boiled and after discarding the water the hot paste is applied around the abdomen.	

Summary

Bastar has widespread forest which consists of so many plants and trees, which we thought that it is unwanted and destroy them, but after our survey we know that it is very useful as a medicinal plant, which is used by tribal peoples in the form of medicine for all type of disease.

Tribals have developed strong magico-religious health care systems and they wish to survive and live in their own style. They live and interact within their own homogenous and culturally firm system wherein common beliefs, customs and practices connected with health and disease has been found to be intimately connected with the treatment of disease. On almost all the indices of health, the status of tribal was poor.

The tribals are affected with various kinds of diseases like malaria, diarrhea, dysentery, amoebiasis, cholera, dengue, swine flu and anthrax. They are most affected with the tropical diseases like malaria, sickle cell anemia, dengue, tuberculosis etc. Water borne diseases like worm infestations and skin diseases are very common among the tribal population because of drinking the polluted stream and spring water without any hesitation. Infantile diseases such as measles, whooping cough, polio etc are all affecting and debilitating the tribal constitution.

Similarly, tribals suffer from alarming decreases in their nutritional intake.
Traditionally, the tribals were able to medicate themselves from the wealth of herbs, leaves, roots and plant extracts.

Conclusion

Bastar region is the blessed with tribal people which called Bastar adivasi and the herbal plants which is a medicine of the indigenous system on the other hand and have less side effects.

Ethno medicine has become an interdisciplinary science. If we look at a scientific monograph of a medicinal plant, it can be concluded that knowledge of Alternative and Complementary Systems of Medicines like Ayurveda, Botany, Pharmacognosy, Phytochemistry, Biochemistry, Ethno pharmacology and Toxicology are important aspects of herbal medicine.

The accessibility and availability of the health services in the tribal areas are more remarkable, but the tribal population cannot afford the health services. The tribals are more traditional and are relatively isolated and lead more or less most monotonous life. Because of the poor economical back ground, the health indicators in the sample population are at low profile.

Traditionally, the tribals were able to medicate themselves from the Wealth of herbs, leaves, roots and plant extracts.

Chapter 12

Nucleoside Analogs: Advance Development using Genetic Drugs

Abhilasha Mandal

Christ College Jagdalpur

Introduction

Pathogenic microbes have for long duped mankind when it comes to their eradication with the use of antibiotics. They make this possible by undergoing mutations at their genomic level to synthesize better proteins and enzymes, which help them to survive in antagonistic environs and to bypass the metabolic pathways that are being interfered by the commonly used drugs. But, not anymore! This has been made possible by the approach of silencing pathogen genes by bringing about damage to the genetic component of the pathogen, via molecules popularly known by the organic chemists as Nucleoside analogs.

Nucleoside antimetabolites: Historical background -Hints regarding the efficacy of nucleotides analogs as antimicrobial agents were provided by scientists well before the greatest discovery in biology in the twentieth century-the double Helical structure of DNA by Watson and Crick in 1953.

In 1940, Woods and Fildes explained the action of sulphonamides on bacteria by suggesting that they interfered with utilization of a necessary nutrient, paraa-aminobenzoic acid, a process closely related with the bacterial DNA synthesis. Later George Hitching hypothesized that since all cells required nucleic acids, it might be possible to stop the growth of rapidly dividing cells(for example, bacteria, tumors and protozoa) with antagonists of nucleic acid bases. When Are-A(9-ß-D-arabinofuranosyladenine), first synthesized by Lee, *et al* and later found as antibiotic produced by *streptomyces anitibioticus,* inhibited the growth of both DNA and RNA viruses, attention was directed towards the conversion of purine and pyrimidine bases and their mimics into their the development of Ara-C (9-ß-D-arabinofuranosyladenine), Ara-U(9-ß-D-arabinofuranosyluracil), Ara-T9-ß-D-arabinofuranosylthymine) and Ara-AMP 9-ß-D-arabinofuranosyladenine monophosphate) as antimicrobials.

Discoveries of innumerable molecules after this by the scientists of the Wellcome Research Laboratories have made the field of nucleoside antimetabolites replete with valuable therapeutics as well as information for the synthesis of newer and better drugs. The name of **Gerteude B. Elion, a Nobel Laureate,** is closely associated with this research group since 1944. Acyclovir or acycloguanosine, the most effective antiviral against herpes simplex virus, owes its existence to the scientists of Wellcome Research Laboratories.

William prusoff, the creator of 5-IdUrd (5-Iododeoxyuridine or Iodoxuridine) – the halogenated pyrimidine nucleoside analog with antiviral properties, should not go unmentioned when we talk about nucleoside analogs.

What are nucleosides?

Genes: The information carriers from one generation of a living species to the next primarily comprise deoxyribonucleic acid (DNA). This DNA and its transcript, the ribonucleic acid (RNA), are made up of four standard nitrogenous bases which are ubiquitous in the living world. These bases are divided into two categories based on difference in their structure. They are the purines – adenine (A) and guanine (G) and the pyrimidines - thymine (T) and cytosine (C), found in DNA whereas uracil (U) replaces thymine in RNA. The alphabet A.G.T. & C stand for the the nucleic acid bases. In the primary structure of the nucleic acids, these bases are present as Nucleotide. Each Nucleotide consists of a Nucleoside (a base linked with a

molecule of the cyclic sugar 2 –deoxy-D-ribose in DNA and D-ribose in RNA), which is further linked to phosphoric acid. Two nucleosides are joined to each other via a phosphodiester linkage- the backone of the nucleic acid polymer.

Structural features of Nucleoside Analogs

Nucleoside Analogs can carry modifications in their aglycon moiety (nucleic acid base) or their glycone moiety (sugar)or both.

In the double helical structure of DNA, the four bases form specific pairs only based on commands laid down by nature,as discovered by chargaff and now know as chargaff's rules.according to these rules,adenine always pairs with thymine or uracil (in some helical regions of RNA, although it not a double helix) through two hydrogen bonds while guanine always pairs with cytosine through three hydrogen bonds. Based on the two categories into which the naturally occurring nucleic acid bases are divided, nucleoside analogs with modifications in the base portion can also be of two types: purine and pyrimidine nucleoside analogs.

Modifications in the aglycone determine the base pairing efficiency and stacking ability of the molecule, whereas modifications in the glycone determine the nucleic acid chain propagation capacity or phosphodiester bond formation ability of the analog when the latter is utilized during replication and transcription processes of dividing cells.

The efficacy of newly developed nucleoside analogs can be screened broadly via three methods:

(a)microbiological (b) biophysical and (c) molecular biological

Microbiological studies involve the screening of antiviral, antibacterial and antifungal properties of these molecules. This can be done either in vitro using microbial or cell cultures in which the capacity of the pathogen to proliferate in the presence and absence of the drug is monitored or in vivo where an animal model infected by the pathogen is treated by the molecules under study and its response to them is observed.

Biophysical method is more commonly used by organic chemists to assess the potency of the nucleoside analogs they design and synthesize form time to time. One such method involves studies on the binding efficiency of the modified bases present in the nucleoside analogs and is also called as hybridization. The underlying principle of this technique is monitoring the denaturation of a DNA duplex with increasing temperature. Naturally occurring DNA double helix denatures or uncoils within a narrow range of temperature and the temperature at which the total DNA content unzips halfway through is referred to as its melting temperature or tm.to study the binding efficiency of a base modified nucleoside analog, it is chemically converted into a short sequence of nucleotides (modifiedolig onucleotide) which is allowed to hybridize (paring of all the bases in the oligomer) with a complementary strand (oligonucleotide) also chemically synthesized and easily available in the market. This duplex is then subjected to an increasing range of temperature and it tm value is obtained. For a nucleoside analog to be efficient its tm value must be as near to the tm value of the natural DNA duplex as possible or may be higher. Such an analog has better Chances of getting incorporated into the nucleic acid chains during replication and transcription, thereby leading to formation of defective and non-functional proteins enzymes within the pathogen.

Chain termination ability of a nucleoside analog can be assessed by a molecular biology technique,where the analog is first converted into its triphosphate form and then incubated with a DNA primertemplate and DNA polymerase enzyme (devoid of its mismatch repair ability) During incubation, the enzyme synthesizes a daughter strand that may incorporate the analog.If the latter is a chain terminator, further elongation of the new DNA stand stops. The partial duplex is denatured at this stage and the length of the incomplete

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daughter strand is measured by polyacrylamide Gel Electrophoresis (PAGE). This gives clues about the location of nucleoside analog in the daughter strand , by comparing the location with the sequence of nucleotides in the template strand, it can be pointed out as to which natural base does the analog best pairs with.

Though a number of nucleotides analogs have been discovered in bacteria and can thus be said to be occurring in nature yet many of these antimetabolites have been and are being synthesized in laboratories all over the world.

Nucleosides analogs

Nucleosides analogs are the molecules that mimic the naturally occurring nucleosides. The mimicry lies in their structure, which are similar yet different from the molecules existing in nature.

The mechanism of action of nucleoside analogs translates itself either into the acceptance of these analogs by the enzymes responsible for the synthesis and application of nucleic acids in a cell, or into binding to these analogs to the active sites of those anzymes in place of the natural substrates and blocking any further actions to be brought about by them.

Talking about the former category, the most important enzymes involved are DNA and RNA polymerases, which bring about the duplication of DNA and transcription of DNA to RNA, respectively. The nucleoside analogs, being similar in structure to the four naturally occurring nucleosides, get incorporated into the growing DNA or RNA daughter chains by bluffing these enzymes, Thereafter the turn of events can be divided into two categories.

a) If the analogs carries a modification in its sugar moiety, viz. lack of 2-hydroxyl or 3-hydroxyl or both, such that phosphodiester bond formation in the growing daughter chain in prevented, **chain termination** occurs. In other words, further lengthening of the nucleic acid polymer does not take place and thus DNA or RNA synthesis is prevented.

b) However, if these analogs do succeed in bringing about completion of the nucleic acid daughter chain biosynthesis, the newly synthesized DNA or RNA chains comprising them when enter the final metabolic step of protein synthesis (transation), due to lack of exactness in the structure of these analogs, causes formation of defective protein or non-functional enzymes. These proteins and enzymes, being mandatory for the existence of the living being, when become unavailable or non-functional, the latter loses the ability ot exist and proliferate. When this living species is a pathogenic microbes, these nucleoside analogs, by inhibiting its growth and multiplication by the above described mechanisms act as antibiotics.

Here lies a catch to the use of these wonder drugs: will these analogs not interfere with the nucleic acid metabiolism of the host cells, which have been infected by the pathogen molecules? In other words, will the genetics drugs not becomes toxis for the patients, also living being, who take them as medicines to get themselves cured of the diseases being caused by the pathogen? The answer to this ambiguity in the behavior pf the drug lies in selectively inhibit the growth of the disease-causing pathogen and not the host cell. Here come the roles of drug designing and drugs delivery, other vast and indispensable fields of pharamaceutical chemistry. Cell biologist and biochemists also have profound roles to play when the problem of selectivity comes up; their studies n structure, function metabolic pathway etc. of host and pathogen cells provide valuable insights into the properties that distinguish the two. These difference can then be utilized by the drug designers to arrive at the perfect model of an antibiotic which, though lethal for the disease-causing microbe, leaves the host cells unharmed.

Let us understand selectivity in slightly greater detail through the example of Acyclovir or acycloguanosine, an acyclic purine nucleoside analogs and the most potent drug against herpes simplex virus till date.

Acyclovir selectively inhibits the proliferation of herpes simplex virus (HSV), types 1 and 2 and varicella zoster virus (VZV) and has extremely low toxicity for the normal host cells. This specificity is due to the ability of these viruses to synthesize a viral thymidine kinase enzyme capable of phosphorylating acyclovir to a monophosphate (acyclo-GMP). This nucleotide form of acyclovir triphosphate (acyclo-GTP) by cellular enzyme. Acyclo-GTP acts as more potent inhibitor of viral DNA polymerases than of the celluiar polymerases. The viral DNA polymerases incorporate acyclo-GMP into the DNA primer-template to a much greater extent than do the cellular enzymes. The viral DNA polymerase binds strongly to the acyclo-GMP terminated template and is thereby inactivated .

On tha basis of differences between cellular and HSV- specified enzymes, the high potency and selectivity of acyclovir for herpes simplex virus can be understood thus:

a) The herpes virus specified thymidine kinase phosphorylates acyclovir; cellular thymidine kinase does not. The normal cells contain an enzyme other than thymidine kinase, which is capable of phosphorylating acyclovir to a very small extent.

b) The amount of acyclo-GTP formation in HSV-infected cells is generally 40-100 times greater than the amount formed in normal host cells.

c) Viral DNA polymerases are inhibited at considerably lower concentrations of acyclo-GPT than are the cellular DNA polymerases. In other words, acyclo-GTP is a bettar inhibitor of HSV DNA polymerases than of cellular DNA polymerases, which results in greater degree of chain termination of tha DNA template with tha viral enzyme.

d) Tha acyclo-GMP terminated template inhibits viral DNA polymerase 50 times more strongly than an active template.

Tha above-mentioned selectivities together culminate into 300-3000 fold toxicity of acyclovir to herpes viruses than to tha host cell.

Nucleoside analogs: Other Applications

Nucleoside analogs constitute a pharmacologically diverse family that comprises, besides antiviral agents, cytotoxic compound and immunosuppressive molecules like Cladribine, Fludarabine and Cytarabine or Ara-C (9-ß-D-arabinofuranosyladenine). Arc-C is extensively used in the treatment of acute leukemia. The mechanism of action here too is the same as that of nucleoside analog which act as antibiotics.

The question of specificity of these nucleoside analogs towards cancer cells arises here also. A survey of research literature on chemotherapeutics, regarding this problem, reveals that selectivity of such antimetabolites for neoplastic cells probably depends of the individual anabolic and catabolic enzymes. Catabolic enzyme levels generally much lower in tumor cells than in normal cells. In addition, mitotic rate, drug transport and metabolite pool sites influence selective toxicity.

An important enzyme that needs to be mentioned at this stage is thymidylate synthetase. This enzyme is responsible for de novo syntheses of dTMP(2-seoxythymidne monophosphate) form dUMP(2-seoxythymidne monophosphate), the only pathway for formation of dTMP for DNA in cells, Nucleoside analogs, which block the activity of this enzyme, act as potent antitumor agents. Thomas I. Kalman, of the University of buffalo, New York, is activity engaged in the designing and development of mechanism based inhibitors of the enzyme.

The purine analog allopurinol (jointly developed by Gertrude B. Elion and George Hitchings of the Wellcome excellent Laboratories) has exhibited of gout and hyperuricemia. Xanthine oxidase is the enzyme responsible for the formation of uric acid from hypoxanthine and gout is a painful condiction of excessive uric acid formation followed by its deposition in the body tissues and joints. Allopurinol competitively inhibits xanthine oxidase by acting as its substrate and decreases both serum and urinary uric acid levels.

Besides their therapeutic value, nucleoside analog find wide applications as tools in the field of molecular biology. A number of them have been developed as universal nucleosides, which can pair with any of the four naturally occurring bases, in genes, without discrimination. Universal base analogs are used to artificially produce mutant gene libraries. Gense from such libraries are used for protein engineering, a technique which emerged in the early eighties with the advent of site-specific mutagenesis, i.e., with the ability to introduce specific amino acid substitutions in protein sequences through mutagenic oligonucleotides (very small sequences of nucleotides). Mutant proteins, resulting from this technique can be used to monitor the importance of naturally occurring proteins in living systems, or to develop novel proteins of therapeutic or nutritive value to humankind and non-existent in nature till now.

Chapter-13

Skill Development in the Field of Accountancy

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Introduction

Skill development is one of the essential ingredients for India's future economic growth as the country transforms into a diversified and internationally-competitive economy. Skill development is going to be the defining element in India's growth story. Firstly, we need to re-define the relationship of education, employment and skills development. Secondly, as a very large population, India would never be able to upskill all of its youth across the country through the conventional education framework. India has gradually evolved as a knowledge-based economy due to the abundance of capable, flexible and qualified human capital. However, there is a need to further develop and empower the human capital to ensure the country's global competiveness. Identifying the skills that lead to success in accounting will not only increase your job satisfaction, but also make it easier for you to build towards your long-term career goals. Accounting is among the most essential business processes that deals with the evidence flow between particular business units, managers & shareholders as well. The hardship of the accounting process depends on the kind and size of the business it is meant to accomplish. Accounting is a very important term to our modern society. It is the career for men and women who at the start have their eyes set on top positions in industry, management, government, and general business. Accounting is a basic need of every businessman. It's so important to our society. None of the business organization can operate without is. They are there-somewhere-in every business.

Skills required for Accounting Career

No matter which area of accounting you enter, you will need strong analytical and computer skills. You will also need to develop a fine-tuned ability to synthesize data to identify trends and predict possible outcomes. Other skills that arerequired to achieve success in an accounting career include:

Teamwork. Accounting is a team-oriented career; many junior accountants start as members of a team responsible for performing an audit or preparing financial statements. Learning to coordinate and communicate with team members is a key skill in accounting.

Innovation. Technological innovation has introduced major changes in all career fields, and accounting is no different. New electronic systems for creating and submitting financial statements and for data analysis appear regularly, demanding that accountants remain nimble in their ability to learn and adapt to new technology.

Initiative. Accountants bear the primary responsibility for auditing, organizing, and managing a client's financial information. The ability to recognize when a task must be completed and the willingness to take on such work proactively often separate great accountants from merely competent ones. Work with senior partners and develop mentorship relationships, and watch closely to cultivate a sense of when initiative is required.

Communication. Accountants communicate regularly with clients, colleagues, and other individuals. Since many of the people with whom you will share your work have little formal training in accounting or

bookkeeping, the ability to communicate in clear terms what you have accomplished for them remains essential. Communication is also key to effective teamwork and to building a professional network of clients and colleagues – including not only other accountants, but also attorneys, IT professionals, and others whose work overlaps with yours.

Organization

Accountants are important people. They manage a lot of responsibility, which means that they generally stay pretty busy.To be a good accountant you need to have a system to keep track of those responsibilities – such as any portfolios you manage, the transactions you handle, and any important dates and deadlines you need to meet – to ensure that you fulfill all of your duties to the best of your ability.

Time management

Good time-management skills go hand-in-hand in with strong organizational capabilities. A system for managing your workload is only effective if you also know how to budget your time. As an accountant, you'll need to manage competing priorities and juggle myriad tasks – while completing everything on time. The ability to work within deadlines and to continually re-prioritize your to-do list will take you far. Not only will it impress your boss, co-workers and clients, it will also help you to maintain a healthy work/life balance and keep your day-to-day productive.

Adaptability

The accounting industry is highly dynamic, so accountants who are able to adapt quickly and easily are at a distinct advantage.In addition to being able to provide better services to their clients, adaptable individuals are more likely to learn and grow in their careers because they see each new challenge as an opportunity to learn and test their skills.Embrace change – learn to make the most of every curveball that your work throws your way. On a related note, it's also great to be proactive. Although it takes a bit of extra effort to be informed about changes as they happen, it definitely pays off: it will keep you on the cutting edge of the industry, earn you the respect of your peers and ensure that others look to you when planning ahead.

Openness

Honesty and integrity are highly valued in the accounting world. Accountants – and the firms they work for – pride themselves on adhering to the strictest ethical standards. It's why the public, other businesses and the government know that they can trust accountants to always look out for their best interests. Being transparent when making decisions and giving advice has the added benefit of improving your working relationships. It will make teamwork easier and will help you to foster an environment that is respectful and collaborative.Many accountants work on larger teams, so the importance of being trusted can't be overstated. Get into the habit of thinking about the consequences of your actions each time you have to make a big decision.

Leadership

Being a good leader means knowing how to mentor and teach, and making yourself approachable and available to the people you're responsible for. You have to balance being a role model and the person in charge while still being part of the team. It also takes confidence, patience, and the ability to delegate – traits which don't come easily to most people.

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In accounting, leadership skills also include strategic thinking and long-term planning. Many accountants provide consulting services, which means that they offer advice and business solutions to help companies improve their operations, so the ability to look ahead is key.

Role of Computer Knowledge in the field of Accountancy

Jobs in the accounting field are expected to see a growth rate of 10 to 19 percent during the decade ending in 2020, according to O-Net Online. The accounting department, accountant or bookkeeper is responsible for producing the financial reports needed to determine the profitability of a business. With the introduction of computers that small businesses could afford, the accounting industry began requiring greater computer literacy and improved computer skills for its workers.

Spreadsheet Software

Preparing spreadsheets is a common task in the accounting field. A good grasp of spreadsheet software, such as Lotus 1-2-3 or Microsoft Excel, is desirable. Familiarity with the more advanced formulas contained within the software can help make spreadsheet preparation easier. For example, there are formulas to calculate the monthly payment on a loan if you know the principal, interest rate and loan term. Spreadsheet formulas allow accounting staff members to produce "what-if" scenarios to see the effect of a given change, such as how much would the payment increase if the interest rate is 1 percent higher or the loan term is one year less.

Word-Processing Software

An important part of an accounting job is typically to provide management with accurate, timely information to use in making decisions. Information might be conveyed through reports generated by a software package, or it might be necessary to condense, consolidate or organize the information into a report. Most accounting jobs also require the preparation of letters and memos to vendors, customers, managers or co-workers.

Accounting Software

A company might use an off-the-shelf accounting software package to record its financial transactions. Programs such as Quickbooks, Peachtree and AccountAbility allow clerical personnel to prepare invoices for customers, enter invoices received from vendors and print checks. Depending on the package purchased, a payroll, fixed asset or inventory module may be included. At month-end, financial statements can be printed quickly. Knowing your way around one or more of the common accounting software programs can be advantageous.

Payroll Software

Companies may use an outside payroll preparation service to print paychecks and prepare payroll tax returns. Two well-known payroll-processing companies are ADP and Paychex. Each uses a proprietary software to enable clients to enter the data needed to prepare the payroll. Alternatively, a company might use the payroll module attached to its accounting software to prepare paychecks. Either way, knowing the fundamentals of computerized payroll systems can be beneficial.

Other Software

As responsibilities increase in the accounting world, additional software skills might be needed. There are software programs to manage projects, conduct audits, track depreciation on fixed assets and prepare tax returns. In addition, a number of software programs exist that are specific to a particular industry, such as American HealthTech Financial.

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Basic Computer Skills

In addition to software packages that are geared toward the accounting field, jobs typically require proficiency in basic computer operations. Managing email accounts, saving and printing files and performing data backups are common tasks. Because of the typical high amount of data entry required, proficiency with the 10-key number pad on a computer keyboard is desirable.

Importance of Computer skills in Accounting.

While it may seem like the field of accounting depends mostly on your ability to crunch numbers and complete equations, it's actually incredibly important that you have an excellent grasp on a variety of programs and computer skills in general. Because so much accounting these days relies on specific programs, and the realm of accounting is growing with each day to accommodate the quickly changing landscape of modern business, it's imperative to have a solid fundamental knowledge of computers, as well as possess skills for working with specific programs, such as Simply Accounting, Sage Accpac or QuickBooks. You'll especially need to have a great grasp on computer software if you're planning on making it as an accountant for hire, or attempting to freelance as an accountant, because various people and companies won't all use the same software.

computer-based accounting is not only tremendously easier and more efficient but it's much more accurate, to boot. It's much easier to keep track of data, as well as properly analyze it and use it for calculations when it's stored digitally.

Computer-based accounting has become the norm because it's not only more accurate and safer than traditional methods, but it provides workplaces with a much broader range of options than traditional, paper-based accounting. There's ample opportunity to use the data being analyzed to churn out pie charts, graphs, year-to-year comparisons and much more, with only the click of a button.

when it comes to accounting software, there's whole lot more to the scene than just knowing how to use Excel. Even then, many people assume that being proficient in Excel just means being able to open the program and enter data into a table, which definitely isn't the case. Excel is powerful spreadsheet software that can do thousands of intricate calculations and produce incredible results with your data. However, when it comes to the accounting world it's still not the end of the line when it comes to important software you have to know your way around.

Business admin courses will teach you a lot more than just Excel, you can be sure of that. If you're doing any health care training or attending a legal assistant school, these are also programs that accounting and accounting software feature heavily in, so a very good grasp on using a computer is essential to success. Tax software like Quicken is exceptionally popular, as are accounting software programs such as QuickBooks. It's best to be familiar with a range of products, as you'll never be sure what your employer is going to be using. Better to be safe than sorry!

When it comes down to it, having a handle on the fundamentals of using a computer and accounting software mean that you'll be much more prepared for a rewarding career as an accountant. While knowing programs is great, having a real handle on the use of technology in general is the stepping stone to success.

Conclusion

So to conclude there are numerous job opportunities in India and world over for skilled people , there are ample number of skill development centers across the country, there are various schemes by government where in student does not have to pay a single penny from his pocket for getting trained, all this seems to be

a perfect environment for getting trained and getting placed , just a word of caution, choose the skill centre very carefully as this is the first stepping stone for a career ahead. Accounting skills and abilities are practical and useful in any business, big and small. People with accounting aptitude are typically detail-oriented and are good in analysis and logical thinking. Accounting skills are not just about math, they are also logic and analysis. The ability to organize and synthesize information also is important, since a lot in accounting is about classification and reporting. So to succeed in accounting career one should all technical and computer skills as well.

Chapter-14

Vocational Education Beneficial and Importance

Mrs Yogita Jiwane (Asst. Prof. Disha College) & Dr. Saummya Tiwari (Asst.Prof., Disha College)

Introduction

One of the weaknesses of Indian education system is that it does not gives due importance to vocational education. As a result there is a mismatch between the skilled manpower required and skilled manpower available. Every year, various colleges churn out millions of graduates who do not have the specific skill sets required by the market. This has resulted in a situation where on the one hand there are scores of unemployed graduates and on the other hand there is a huge shortage of skilled workers such as plumbers, electricians, etc.

Importance and Need

To rectify this situation vocational training programs need to be promoted in a big way. This may include secretarial practices, computer operator and programme assistant, library assistant, architectural draughtsman ship, desktop publishing, electrical technician, electronics mechanic, refrigeration and air conditioning, plumbing, tailoring and dress making, hair and skin care, fruit and vegetable preservation programs, etc. In fact, education is useless if it does not make people fit for a livelihood. While educational institutes have increased by leaps and bounds since Independence, many products of these institutes are found to be not even capable of earning a livelihood. This is the result of bad and haphazard planning on the part of the educationists. Educational institutions have failed to lay any stress on the quality of the education that they impart, or the subjects they teach. These institutes still follow the subjects of study introduced in our curriculum by the British rulers which have lost their significance for us today being free Indians. Hence, there is a bankruptcy of achievement by our educated children.

Besides a lop-sided curriculum, our primary education has been neglected which has led to a vacuum in the basic literacy standards. As a result colleges turn out plain and simple graduates and postgraduates who are absolutely unemployable when they come out of their colleges. Hence, instead of increasing the numbers of colleges for general studies, it would be better to introduce more of vocational centres and institutes for the large number of children coming out of schools.

At present, vocational educational in India aims to develop skilled manpower through diversified courses to meet the requirements of mainly the unorganized sector and to instill self-employment skills in people through a large number of self employment oriented courses. Vocational education is being imparted through Industrial Training Institutes (ITIs) and polytechnics. However, this has to start at school level itself. When children leave school, they should posses some skill which can be further developed and they can get a job based on that skill. Students can be taught skills like painting, drawing, and clay modelling etc., as a part of the syllabus.

They could have it as an extra-curricular activity which they would enjoy and at the same time get groomed for the skill. These children, as they enter college they can start learning repair and mechanical jobs etc. This process would enable the students to develop some skills and also show their aptitudes. For these children college would be their vocational centre. These centres could, at a higher level also give degrees or diplomas in the skills of the study. The entire educational system has to be built in a manner that will guarantee to the children a basic livelihood, once they come out after completing their education. Once the students get vocational education, their main aim of getting employment will be fulfilled and many a problems would be

solved. It will be good for the country also, for the masses of the young will be in a position to join the mainstream of nation building as soon as they come out of their education outfit.

Today, the economy's the world over are changing into knowledge based economies. This changing face of technology the world over requires an individual to be specialized in a particular skill. Only a person who is expert in a particular field can get a good job. Vocational education training institutes impart specialized and practical knowledge to a person and help them become independent at a particular age. Vocational education training can be provided for a number of courses like health, technical, art, administration and other courses. These subjects can be further classified into specialized courses. For example, health can be divided into massage therapy, dieticians, and nutritionist. Any person can select any course of his choice and inclinations.

Although the field of education has made progress in the past ten years, this less regulated area of the education sector - vocational training— seems to have lost its importance. This has led to the widening gap between the supply and demand for skilled manpower across various industries. This shortage of skills has translated directly into unemployment among an increasing number of graduates who pass out every year and are forced to be re-trained in order to become marketable.

According to a recent study conducted by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), there will be a deficit of 40 million working professionals by the year 2020 and about 41% of the employers are faced with the difficulty of filling positions because of the dearth of suitable talent and skill in their industry.

The lack of a formal degree and the belief that the vocational track is only suitable for people from a lesser financial background has resulted in the declining popularity of this area. While students from a middle-class background are lured into academic pursuits and take up conventional degrees, pursuing a vocational education has remained a less-explored arena. Vocational education is primarily non-academic in nature and offers practical training and skills needed to pursue an occupation straightaway. It provides students with courses directly aligned to land a job in a chosen profession or a skilled trade. The end result of vocational education is to enable an individual to attain self-employment.

Career options
Vocational education offers a wide variety of options in administrative, business, computer technology, printing, agriculture, automobile, craftsmanship, laboratory, librarian and cosmetic fields. Specifically, these courses include Typewriting, Secretarial Practices, Computer Operator, Desktop Publishing, Laboratory Technician, Librarian, Mechanic, Electrical Technician, Plumbing, Refrigeration and Air Conditioning, Tailoring, Beautician, etc.

Candidates with vocational training can find work in several state and central government organisations, non-profit groups, academic institutions and sometimes even in private companies. These jobs are often posted on newspapers and online portals and will provide instructions to candidates on the application process. Usually, selection to these positions will be made on a skill-based test conducted by the employers. Further, candidates with strong vocational education background, also opt for lecturer and teaching roles in the polytechnic colleges and vocational training institutes which match the government job scales.

Eligibility and skills
Students who have completed their 10th standard or have an equivalent diploma from polytechnics are eligible to pursue vocational education instead of going to college for higher education. Courses that focus on basic employability skills such as spoken and written English and workplace skills are also taught.

Students and sometimes even adults who are looking to change careers enrol at Industrial Training Institutes (ITI) and at private coaching institutes that offer vocational training.

They also work part time as apprentices to learn practical skills. While income from such part time jobs may not be significant, the combination of learning a new trade while simultaneously studying for two to three years at a vocational training institute may be the much needed solution to resolve the deficit of a skilled workforce.

Job market

As per the ideals of HRD minister Kapil Sibal, the Indian government has recently propelled the 'National Vocational Education Qualification Framework' (NVEQF), whose mission is to employ students immediately after they have completed their school.

A new curriculum that encompasses vocational education besides science and commerce streams has been proposed for all the different boards. This will enable students to become skilled at vocational training while in pursuit of higher education either at school or college thereafter. Students who have undergone vocational training can find employment in a variety of fields such as in call centres, infrastructure sector, office administration, banking, tourism, hotel management, retail, agriculture, printing, beauty salons etc. If only students would pursue vocational skills training, it would quench the need for trained workers throughout the nation in the various industries, and thereby reduce unemployment.

Conclusion

The faculty of these Vocational education training institutes should be highly experienced and be able to impart practical knowledge to their students. As a result the students should be able to have a real life and practical industry experience. The students may also be provided with internships and stipend for motivation to perform better and excel in their jobs. Doing their job under the supervision of an expert would be a great learning experience for them as it would help them perform better in their job. For working professionals it would be a way to hone their skills while making money.

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Chapter 15

The behavioral risk Factors with Malaria Relevance in Muria Tribe of Bastar (C.G)

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Introduction

Malaria is one of the most successful parasites ever known to mankind. After thousands of years, it remains the world's most pervasive infection, affecting at least 91 different countries and some 300 million people. The disease causes fever, shivering, joint pain, headache, and vomiting. In severe cases, patients can have jaundice, kidney failure, and anemia, and can lapse into a coma. It is ever-present in the tropics and countries in sub-Saharan Africa, which account for nearly 90 percent of all malaria cases. The majority of the remaining cases are clustered in India, Brazil, Afghanistan, Sri Lanka, Thailand, Indonesia, Vietnam, Cambodia, and China. Malaria causes 1 to 1.5 million deaths each year, and in Africa, it accounts for 25 percent of all deaths of children under the age of five. The history of malaria stretches from its prehistoric origin as a zoometric disease in the primates of Africa through to the twentieth century. A widespread and potentially lethal human infectious disease, at its peak malaria infested every continent, except Antarctica. The present study was undertaken to explore the relationship of behavioral risk factors with malaria prevalence in Muria Tribe of Bastar Chhattisgarh.

According to world Malaria report 2014, 22% of India's Population live in high transmission areas, 67% live in low transmission areas and 11% live in malaria free areas (Sharma 2015)

In 2013 0.88 million cases have been recorded with 128 million tests being conducted on the suspected case with P.falciparum causing 53% and P.vivax causing 47% of the infections. the Incidence of malaria in India accounted for 58% of the cases in the south Asia region of WHO,(Ashwani 2007).

At present official figures for malaria in India available at National Vector Borne Diseases Control (NVBDCP) indicate 0.7 – 1.6 million confirmed cases and 400-1000 deaths annually (2008).

Many studies have been conducted in investigate risk factors of malaria. (Gamaga1991,Ghebreyesus 2000, Menesh 2004, Butraporn 1986, Fungladda 1987, Worrall 2014, Dhillion 1965).

The Muria are an *adivasi* (scheduled tribe) of the Bastar district of Chhattisgarh, India. They are part of the Gondi people. Traditionally they are economically homogenous and strive to work as a collective. They have mixed-sex dormitories where adolescents are sent to practice premarital sex, sometimes with a single partner and sometimes serially. They have an omnivorous diet, with liquor playing a key role in their society in this tribe after taking the data through tools of data collection some finding has been taken by researcher which is shown below-

Research Method

Sample size is drawn from the Tribal area of Kondagaon district at Baderajpur and Vishrampuri village. A total of 125 samples were collected from villages. The data will be collected by random sampling. The primary data will be collected by interview schedule, observation (Semi participatory), focus group discussion.

Table 1 Marital Status of Muria family.

S.N.	Status	Number	Percent
1	Married	113	90.4
2	Unmarried	12	9.6
	Total	125	100

The table 1 Shows information regarding marital status that the deferent frequency related to the marital status i.e. married (90.4%), Unmarried 9.6% and no one is divorcee respectively.

Table no 2 Occupation of Muria family.

S.N.	Occupation	Number	Percent
1	Former	104	83.2
2	Peon	2	1.6
3	Service	4	3.2
4	Teacher	13	10.4
5	Student	2	1.6
	Total	125	100

It can be seen from the table 2 that the highest frequency occupation (83.2%) shown by Former. The frequency of peon is very low (1.6%)

Table no 3 Source of heard communication/advertisement about malaria.

S.N.	Source	Number	Percent
1	ANM	16	12.8
2	Doctor	53	42.4
3	Peoples	8	6.4
4	TV	32	25.6
5	News Paper	16	12.8
	Total	125	100

It is obtained from the table 3 that 42.4% had been heard by Doctor, 6.4% are heard by Peoples about malaria

Table no 4 Methods to prevent malaria infection.

S.N.	Methods	Number	Percent
1	Bed Net	70	56.00
2	Bed Net, Closing door	8	6.4
3	Bed net, Spray	7	5.6
4	Spray and Personal hygiene	1	0.8
5	Don't Know	14	11.2

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6	Other	2	1.6
7	Personal hygiene	7	5.6
8	Personal hygiene, Bed Net	16	12.8
Total		125	100

It can be seen from the table 4 that the highest frequency shows Bed Net 56.00% and the lowest frequency of 0.8% Bed net, Spray, Personal hygiene method of prevent malaria infections.

Table no 5 Symptoms of malaria.

S.N.	Symptoms	Number	Percent
1	Fiver, Cold, Shivering	39	31.2
2	Cold, Shivering, Thirst	1	0.8
3	Fiver, Cold, Thirst	9	7.2
4	Fiver, Cold,	18	14.4
5	Fiver, Swearing, Cold, Thirst	14	11.2
6	Fever Cold, Shivering, Thirst	16	12.8
7	Fiver, Sweating, Cold	5	4.00
8	Fiver, Sweating, Cold, Shivering	4	3.2
9	High temperature, Sweating, Cold, Shivering, Thirst	5	4.00
10	High temperature, Cold, Shivering	8	6.4
11	High temperature, Cold, Shivering, Thirst	1	0.8
12	High temperature, Cold, Sweating, Thirst	1	0.8
13	High temperature, Sweating, Cold, Shivering	4	3.2
Total		125	100

It is seen from the above table 5 that the highest frequency 31.2 % Fiver, Cold, Shivering of Symptoms of malaria and the lowest frequency is 0.8 % high temperature, cold sweating and thirst.

Enhance the quality and efficiency of the Primary Health Centre (PHC) service network, focusing on targeted regions and population groups. Provide comprehensive essential PHC services, focusing on rural areas, and increase access for vulnerable and marginalized groups, such as poor and migrant populations. Gradually establish a medical assistance system within PHC services, to ensure universal access for women and children to an essential package of quality health.

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Chapter 16

Value Education: Base for Humanity

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Education based on vlaues leads to humanity

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7. Bibliogaphy

1. Introduction

We the people came in this world to perform our duties and work with dedication, politely and with kindness. It shows our humanity towards the society. The values are connected with the various feelings and emotions of the people. So to expect respect from others we should give respect to others also. Education, knowledge, values, emotions, moral and human values, feelings all are interconnected and direct us to the right path. It has been analyzed that people talk about the values but not implement and follow them. Why? Because of attitude and dignity of proudness. They don't think that all are one and have to leave this world without taking anything. Only our work, image, nature, name will be remembered by people. So, why to show so many attitudes to others. It is values and behavior by which we are analyzed. To be a good human being it is the values which are seen by others. These values are learned at home and then in school. When we are in touch with the external environment with the society it start changes with different views as we interact with different people outside. Values are the base of our future. These are helpful for the human development. To maintain these values we should first implement and follow then only we can guide others. Values are principles or standards of behavior; one's judgment of what is important in life. "They internalize their parents' rules and values" Values play a central role in how we construct and live our lives, including decisions relating to work and careers. Yet they are sometimes a hard concept to grasp. Understanding what values are, and identifying those which are most important for you, can help you achieve a satisfying balance in your life through and outside work.

2. Object of the Study.

To spread the message of values for the sustainable development of humanity among human beings and in the society.

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3. Definition and Meaning

According to business dictionary Values are the things that you believe are important in the way you live and work. They (should) determine your priorities, and, deep down, they're probably the measures you use to tell if your life is turning out the way you want it to.

Values are Important and lasting beliefs or ideals shared by the members of a culture about what is good or bad and desirable or undesirable. Values have major influence on a person's behavior and attitude and serve as broad guidelines in all situations. Some common business values are fairness, innovation and community involvement.Values are Beliefs of a person or social group, a set of emotional rules that people follow to help make the right decisions in life, to decide what is right and wrong, and how to act in various situations.

These values sometimes become strong beliefs in one's life. It leads to oppose other's strong beliefs. Instead it should make human perfect in differentiating between good and bad, right and wrong in life. It makes human rational thinking about the values.

So, what is of value for human being is called Value Education

According to the free dictionary the meaning of values are defined as follows:

1. An amount, as of goods, services, or money, considered to be a fair and suitableequivalent for something e lse; a fair price or return.

2. Monetary or material worth: the fluctuating value of gold and silver.

3. Worth in usefulness or importance to the possessor; utility or merit: the value of aneducation.

4. Often **values** a principle or standard, as of behavior, that is considered important ordesirable: "The speech was a summons back to the patrician values of restraint andresponsibility" (Jonathan Alter).

5. Precise meaning or import, as of a word.

6. Mathematics A quantity or number expressed by an algebraic term.

7. Music The relative duration of a tone or rest.

8. The relative darkness or lightness of a color. See Table at color.

9. Linguistics The sound quality of a letter or diphthong.

10. One of a series of specified values: issued a stamp of new value.

The origin of value is from: from Old French, feminine past participle of **valoir** 'be worth', from Latin **valere**.

4. Need of Value Education

In this world every human being having and living with some aim. To fulfill this aim one has to frame out of values which lead to success. What is value and what is valuable is important in life. Education and knowledge based value clear aims of one's life. Person without any value is like empty vessels.

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Why we need values in our life? There are several reasons to have values whether moral, education in our life. As they helps us to achieve goals in our life. It elaborates on what role one has to play as responsible human being at the level of individual, family, society and nature.

Society gives us a lot thing so; it is our responsibility to serve society also.

With these moral, social, economic etc. values one will be clear concepts in mind and have a purposeful, meaningful life to serve the society.

Why value education is important in the society in today's world?

Certain basic guidelines for deciding what will qualify as a course on value education:

Universal- with respect to time, space & individual.

Rational- in the sense that it appeals to human reasoning.

Secular- is not dependent on any cast or creed or religion or sect.

AII-encompassing- it covers all dimensions (thought, behavior, work & realization) & levels (individual, family, society, nature & existence) of human living.

Natural for Human Being & Nature- It is naturally acceptable to every human being and there is every provision in Nature for its fulfillment.

Must ensure harmony with Human Being and Nature— Only with right understanding one can ensure its behavior with human being for mutual happiness (i.e "Ubhay Shukh") and make program to work with rest of the nature for mutual prosperity (i.e. "*Ubhay Samriddhi*").

One has to be clear that right understanding is based on the process of "Self-Study" not on the basis of scriptures ("Shaastra"), not on the basis of any equipment/ instrument and not on the basis of other human being.

What is value Education is about?

- It is the Conscience, Science & Sense of living which implies...
- It is a process of dialogue between what you are and what your want to be.
- It is a process of self-exploration and self-evolution.
- It is a process of knowing oneself and through that knowing entire existence.
- It is a process of recognizing one's relation with every unit in existence & fulfilling it.
- It is a process of knowing human conduct, human character and living accordingly.
- It is a process of being in harmony in oneself and in harmony with entire existence.
- It is a process of *Swatantrata* and *Swarajya.*

Swatantrata (Self organized) - being in harmony in oneself

Swarajya (Self Expression, Extension) - living in harmony with others

"Value Education" brings about the innate harmony in existence and clarifies that man by understanding this harmony is able to be in harmony within him and with others in society and rest of nature. This is value based living. This in turn leads to human conduct, education, constitution and order in the society.

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In our Constitution of India it is provided freedom of all types and education to the citizens of India.

Value Education only proposes and asks its listeners to investigate and explore into their own inner self and connect to what is innate and intact in all of them as something which is universal, natural and all-fulfilling for them as well as others. One can do this irrespective of his/her own religion or faith or beliefs.

5. Impact on Society

Values of all types are degrading in this globalized world now days. To cope up with this problem again the importance of value education is taking rapid growth with a positive output. The main source is the spiritual values which make up mind of the human to think about the values in life. Then comes the moral, cultural, social etc. values. Now the importance of values is increasing day by day in every aspect. To stop the inhumane behavior, cruelty, unethical behavior, injustice and more people are diverted towards the meditation, yoga and spiritual teachings. That's why now yagya, hawan, are organized for clean environment and also the people should have pure mind, soul and thought.

Objectives of Value Education

a. To improve the integral growth of human begins.

b. To create attitudes and improvement towards sustainable lifestyle.

c. To increase awareness about our national history our cultural heritage, constitutional rights, national integration, community development and environment.

d. To create and develop awareness about the values and their significance and role.

e. To know about various living and non-living organisms and their interaction with environment.

Environmental Education is also value based which is beneficial for the society in different ways in the form of value oriented:

1. Human Values

Preparation of text-books and resource materials about environmental education can play an important role in building positive attitudes about environment. The basic human value 'man in nature' rather than 'nature for man' needs to be infused through the same.

2. Social Values

Love, compassion, tolerance and justice which are the basic teachings of most of our religions need to be woven into environmental education. These are the values to be nurtured so that all forms of life and the biodiversity on this earth are protected.

3. Cultural and Religious Values

These are the values enshrined in Vedas like 'Dehi me dadami te' i.e. "you give me and 1 give you" (Yajurveda) emphasize that man should not exploit nature without nurturing her. Our cultural customs and rituals in many ways teach us to perform such functions as would protect and nurture nature and respect every aspect of nature, treating them as sacred, are it rivers, earth, mountains or forests.

4. Ethical Values

Environmental education should encompass the ethical values of earth-centric rather than human-centric world-view. The educational system should promote the earth-citizenship thinking. Instead of considering human being as supreme we have to think of the welfare of the earth.

5. Global Values

The concept that the human civilization is a part of the planet as a whole and similarly nature and various natural phenomena over the earth are interconnected and inter-linked with special bonds of harmony. If we disturb this harmony anywhere there will be an ecological imbalance leading to catastrophic results.

6. Spiritual Values

Principles of self-restraint, self-discipline, contentment, reduction of wants, freedom from greed and austerity are some of the finest elements intricately woven into the traditional and religious fabric of our country. All these values promote conservationism and transform our cons meristic approach.

Preaching and teaching of these values are now popular to fight against the unethical and immoral things going on in the world. It's the individual as well as group efforts which had taken steps to spread the moral and value education in the society. First of all individuals need to improvement before correcting society. Now every year World Yoga Day will be celebrated.

The concept of "Vasudev Kutumbukum" is again imprinted in the mind of individual as everyone or the other needs peace and calm.

6. Conclusion

It is important and necessary to have values in life. It is values which we learn at home and schools which in turn make us a good human being. To have values in our life shows ways and creates aim and objective of life.

With these objectives we live with good morals and decide what is right and wrong in our life. By values we can make a right decisions and lead to success. Value Education is included as syllabus in schools and colleges so that the students can learn moral and ethical values in their life as they are the future of tomorrow. Corporate World is imbibing ethical code of conduct, ethical values to serve humanity in the society. They are performing their corporate social responsibilities very well. It upon human and an individual to inculcate moral values and maintain the ethical behavior in the society. The values and ethics are the need of the hour in this global world.

At last I can only quote this statement:

We must shift our perceptions of seeing culture as a 'nice' or optional add-on to an essential component of human development

For human development values and value education is necessary otherwise there is no difference between human and animal.

As education increases knowledge and knowledge makes human being a good citizen. Due to liberalization, industrialization and globalization rapid changes are occurring in almost all social sciences. The value possessed and their attitudes according to the changes should be known up to date vast changes are occurring in the education. So called philosophical foundations of India are declining day to day with the country in a state of social turbulence, the goals and functions of formal education need to be reassessed and updated. Through education we can change the world.

Chapter 17

The Patterns of Sometometric Measurement among School Going Dhruwa Children of Bastar

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Indian Council of Medical Research (ICMR) initiated systematic studies in this direction in 1957 and its efforts continue even today in the form of nutritional surveys and community health programes in various parts of the country. The physical growth in development of children is a compels subject and is intimately linked with their nutritional status, health and general well being. Implementation of growth programs in populations calls for greater awareness on the part of people and concern in the minds of opinion leaders, planners and health professionals about the subject and a thorough understanding of all those factors which are likely to affecting parents should be motivated to maintain growth charts so as monitor children's height, weight gain etc.

Falkner (1966) stated that growth refers to the mul tiplication of cells and to size changes, while development concerns the maturation of such structures and their concomitant functions. The whole process is extremely complex and a mass of processes are interacting upon each other.According to Tanner (1978), it is essential to have crossectional surveys as part basis for constructing standards for height and weight and other measurements in a given community and periodic surveys are valuable in assessing the nutritional progress of country of particular socio-economic groups, of the health of the child population as a whole one maim drawback of such surveys is that they can never reveal individual differences in rate of growth of in timing of particular phases, for instance, the adolescent growth spurt. Whereas from a longitudinal study, we can have a complete description of phenomenon of growth. But is costly time consuming and laborious. The W.H.O. is another out growth of the United Nations and is primarily concerned with the health of the people all over the world. Still another subdivision is the United Nations Educational, Scientific and Cultural organization (UNESCO).

Some of researches have concentrated on tribal growth and to assess their nutritional and health profiles Gupta, P.R.,et al., .(1978): Bansal, T.J.S. (1969) Kaul, S.S. (1975) Bhargawa, S.k et al (1983): Mathur, Y.C.,et al Mitra, K. (1940).(1972): Shinde.R. Pardkh, P.And Kaul, K.K.(1980): Udani. P.M. (1963) The previous study of this field some of the tribes of central India called Muria, Bhatra, Halba, Gond and Khond which are largely concentrated in the forest of Madhya Pradesh and the Eastern Ghats of Orissa and Andhra Pradesh (Sharma 1986, Sharma & Sharma 1977 et al.1985, Sharma 1968)

Objective of the present study

(1) To study of growth pattern among Dhurwa Children of Bastar (C.G.).

Land and People

Bastar district is one of the biggest district of c.g. state, this Bastar district is divided into 7 districts namely Bastar, Dantewada, Beejapur, Narayanpur and Kanker, Sukma, Kondagaon district. Bastar is tribal

populated region of Chhattisgarh Bastar is Roughly bisected by the Great Indravati River, The most dominant tribal groups of Bastar are the Gond, Halba , Bhatra ect.

Dhurwa Tribe

That Dhurwa were tilled recently referred by the name of the parja. Preseny all of them world like to identified them selvesas the Dhurwa only Tagara or thakara {the basket makes} sub division of parja tribe in Bastar. It will suffice that the Tagara sub division of parja tribe are today known by the term Dhurwa. The term Dhurwa once the headman of the villages..

The present study is based on the data collection of school going of Dhurwa children of both sexes belonging to age group 3 to 11years of age are included. The data were collation from different school of 5 villages chitapur, Dhurguda, Posrshaguda, Badegrawand, Kalcha) of Bastar Dist (C. G)The sample consisted 216(108Girls,108 Boys) children selected using purposive stratified sample design and was followed up cross sectional method. The subjects were selected due care was taken to include only those children who were physically and mentally normal and did not suffer from any significant illness. The respondents were first informed about the purpose of the investigation and were then interviewed to elicit general information.

The two anthropometric measurements were obtained following standard procedures of anthropometric described by Weiner and Laurie (1969) and Singh and Bhasin (1968), the bilateral measurements were taken on the left side of the individual with the minimum possible clothing. The instruments have been devised by anthropologist from taking accurate measurement in living human being. The Anthropometry, rod, and tape instrument was used during fieldwork taking anthropometrics measurements for present report. A cross sectional data on 216 (boys108, girls 108) Dhurwa i, e.Chest Girth and Waist Girth

Result and Discussion

The data has been subjected to statistical treatment such us mean, standard deviation (S.D), standard error of mean, standard error of standard deviation ,coefficient of variation (C.V), annual growth and t – values considered in the presents study simple forms of distance curves and velocity curves for each trait are presented. The graphic representation facilitates to obtain the clear picture of pattern of growth among Dhurwa children of 3-11 years age.

1 Chest Grith

(A) Dhurwa Boys (Table 1, Figures 1&2)

The Dhurwa boys show range in chest girth from 50.28 c.m to 62.20 c.m and its lowest magnitude is observed at the age of 3 year (50.28 c.m.) and highest at the age of 11 years (62.20 c.m.) The mean chest girth Dhurwas boys show is not uniform increment from 3 to 11 years. It is sharp from 3 to 4 years and again from 5 to 6 years. The (S.D.) 2.18 c.m to 2.48 c.m. are on lower side and (C.V.) values show variation from 4.33% to 3.98% at 3 to 11 years.

(B) Dhurwa Girls (Table 2. Figures 1 & 2)

The mean chest girth ranges from 49.58 c.m to 61.94 c.m (3 to 11years) and it lowest magnitude is observed at the 4 years (49.50 c.m) and highest at the age of 10 years(62.96cm) However the increase in chest girth is observed uniform from 5 to 8 years and this trend is found comparatively rapid from 5 to 6 years and again

from 9 to 10 years Dhurwa girls exhibit (S.D.) value in range from 2.13 c.m to 2.59 c.m and (C.V.) values varies from 4.29% to 4.18% at 3 to 11 years.

2. Waist Grith

Dhurwa Boys (Table 3, Figures 3 & 4)

The mean waist girth ranges from 49.93 c.m to 58.46 c.m (3 to 11 years) and the lowest mean value is found at the age of 3 years (49.93 c.m) and highest at the age of 4 years (58.39 c.m). It is evident from table that the increase is mean waist firth is uniform for 5 to 8 years and its increase is observed comparatively rapid from 3 to 4 years. Dhurwa Boys exhibit (S.D.) value in range from 1.53 c.m to 2.53 c.m and (C.V.) values varies from 3.06% to 4.32% at 3 to 11 years.

(B) Dhurwa Girls (Table 4, Figures 3&4)

The mean values waist girth ranges from 49.24 c.m to 57.c.m The increase in waist girth is not observed uniform among Dhurwa girls the total increment of mean waist girth is found 7.99c.m from 3 to 11 years However the increase in mean waist girth is seen comparatively rapid from 5 to 6 years. The maximum annual increment in waist girth is 3.65 c.m and minimum annual increment is found 0.05 However the annual loss of waist girth is seen between 3 4 years.(-1.13 c.m) and again10 to11 years(- 0.39 c.m).The (S.D.) 2.06 c.m to 2.56 c.m are on lower side and (C.V.) values show variation from 4.18% to 4.47% at 3to 11 years.

Summary & Conclusion

The Growth and nutrition problems of the vast tribal population of India are as varied as the tribal groups themselves who present a bewildering diversity and variety in their socio economic, socio-cultural and ecological settings. Healthy growth and development depend more upon Good nutrition than any other factor. Because Growing children are building bones, teeth, muscles, and blood, they need more nutritious food to meet the Body needs. There is needed to start programmers for their needs. Simultaneously education should be given in such a way that they become aware of utilizing their money resources for nutritious foods and for the betterment of their health

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Table 1

MEAN VALUES STANDARD DEVIATIONS COFFICIENT OF VARIATION (C.V.)AND ANNUAL GROWTH OF **CHEST GIRTH** AMONG THE DHURWA BOYS OF BASTAR

Age in Year	No.	Mean	± C.M.	S.E.	S.D.	±	S.E.	C.V.	Annual Growth	
									Absolute	%
3	12	50.28	±	0.63	2.18	±	0.44	4.33	-	-
4	12	50.58	±	0.50	1.74	±	0.36	3.44	0.3	0.60
5	12	53.06	±	0.59	2.05	±	0.42	3.86	2.48	4.90
6	12	55.63	±	0.54	1.88	±	0.38	3.37	2.57	4.84
7	12	57.59	±	0.73	2.52	±	0.51	4.37	1.96	3.52
8	12	59.44	±	0.92	3.2	±	0.65	5.38	1.85	3.21
9	12	57.65	±	0.85	2.95	±	0.60	5.11	-1.79	-3.01
10	12	57.00	±	0.81	2.79	±	0.57	4.89	-0.65	-1.13
11	12	62.20	±	0.72	2.48	±	0.51	3.98	5.2	9.12

Table 2

MEAN VALUES STANDARD DEVIATIONS COFFICIENT OF VARIATION (C.V.) AND ANNUAL GROWTH OF **CHEST GIRTH** AMONG THE DHURWA GIRLS OF BASTAR

Age in Year	No.	Mean	± C.M.	S.E.	S.D.	±	S.E.	C.V.	Annual Growth	
									Absolute	%
3	12	49.58	±	0.61	2.13	±	0.43	4.29	-	-
4	12	49.50	±	0.82	2.84	±	0.58	5.73	-0.08	-0.16
5	12	53.58	±	0.83	2.86	±	0.58	5.33	4.08	8.24
6	12	55.70	±	0.87	3.02	±	0.62	5.42	2.12	3.96
7	12	57.07	±	0.80	2.77	±	0.57	4.85	1.37	2.46
8	12	60.60	±	1.13	3.90	±	0.80	6.43	3.53	6.19
9	12	60.07	±	1.29	4.46	±	0.91	7.42	-0.53	-0.87
10	12	62.96	±	1.26	4.35	±	0.89	6.90	2.89	4.81
11	12	61.94	±	0.75	2.59	±	0.53	4.18	-1.02	-1.62

Table 3

MEAN VALUES STANDARD DEVIATIONS COFFICIENT OF VARIATION (C.V.)AND
ANNUAL GROWTH OF **WAIST GIRTH** AMONG THE DHURWA BOYS OF BASTAR

Age in Year	No.	Mean	± C.M.	S.E.	S.D.	±	S.E.	C.V.	Annual Growth Absolute	%
3	12	49.93	±	0.44	1.53	±	0.31	3.06	-	-
4	12	58.89	±	0.21	0.74	±	0.15	1.25	8.96	17.95
5	12	50.22	±	0.61	2.1	±	0.43	4.18	-8.67	-14.72
6	12	53.91	±	0.77	2.68	±	0.55	4.97	3.69	7.35
7	12	55.08	±	0.63	2.18	±	0.44	3.95	1.17	2.17
8	12	56.95	±	2.29	7.95	±	1.62	13.95	1.87	3.40
9	12	53.73	±	0.70	2.44	±	0.50	4.54	-3.22	-5.65
10	12	56.51	±	0.84	2.92	±	0.60	5.16	2.78	5.17
11	12	58.46	±	0.73	2.53	±	0.52	4.32	1.95	3.45

Table 4

MEAN VALUES STANDARD DEVIATIONS COFFICIENT OF VARIATION (C.V.) AND
ANNUAL GROWTH OF **WAIST GIRTH** AMONG THE DHURWA GIRLS OF BASTAR

Age in Year	No.	Mean	± C.M.	S.E.	S.D.	±	S.E.	C.V.	Annual Growth Absolute	%
3	12	49.24	±	0.59	2.06	±	0.42	4.18	-	-
4	12	48.11	±	0.37	1.27	±	0.26	2.63	-1.13	-2.29
5	12	50.75	±	0.70	2.41	±	0.49	4.74	2.64	5.49
6	12	54.40	±	0.81	2.79	±	0.57	5.12	3.65	7.19
7	12	54.45	±	1.01	3.50	±	0.71	6.42	0.05	0.09
8	12	55.67	±	0.96	3.32	±	0.68	5.96	1.22	2.24
9	12	55.67	±	0.86	2.99	±	0.61	5.37	0	0.00
10	12	57.62	±	1.09	3.77	±	0.77	6.54	1.95	3.50
11	12	57.23	±	0.74	2.56	±	0.52	4.47	-0.39	-0.68

Figures

Fig-1 - Distance curve with respect to Chest Girth among Dhurwa children of Bastar C.G.

Fig-2 - Velocity curve with respect to **Chest Girth** among Dhurwa children of Bastar   C.G.
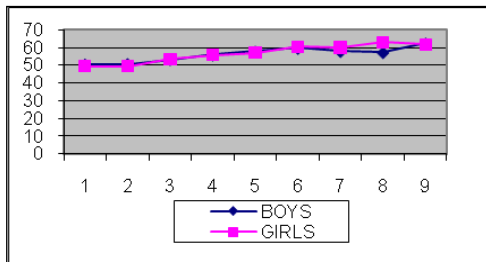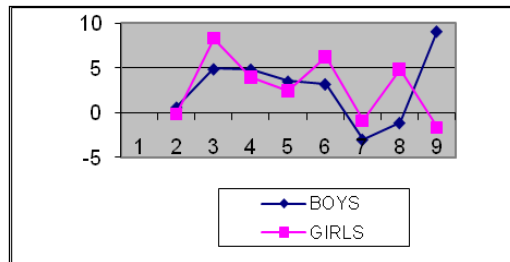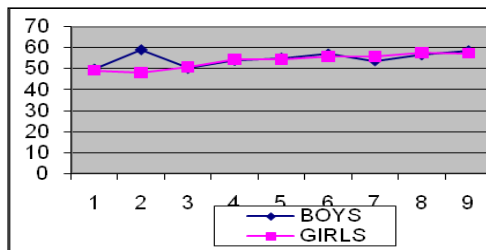

Fig-3- Distance curve with respect to Waist Girth among Dhurwa children of Bastar C.G.
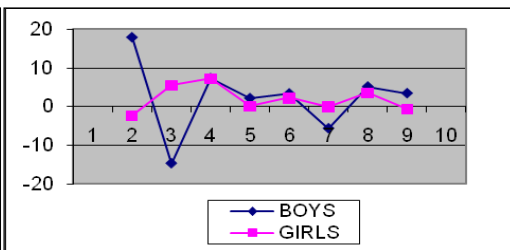
Fig-4 - Velocity curve with respect to Waist Girth among Dhurwa children of Bastar C.G.

Chapter 18

Emerging Knowledge and Skills gained in the field of Bioinformatics

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An Introduction to Bioinformatics

Bioinformatics is an interdisciplinary scientific discipline that addresses problems related to the collection, processing, and analysis of the vast amounts of data describing the structure and function of biological systems, combining aspects of computer science, molecular biology, chemistry, and mathematics. Bioinformatics merges computer and information science with the study of genetic information and biological structures. Bioinformatics allows researchers to open new windows of insight into our genetic makeup, providing pathways to understanding disease processes, and creating novel diagnostic and treatment strategies. As a Bioinformatics Major It is useful in developing and emerging:-

Knowledge

• Knowledge of fundamental biological processes at organism, physiological, cellular and molecular levels.

• Basic understanding of principles of chemistry and their applications to living systems; properties of bio-molecules and their contribution to structure and function of cells.

• Understanding of computer programming methodology; including algorithm design and program development. Capability of designing and applying software tools for biological data analysis.

• Proficiency in the use of mathematical tools including discrete mathematics, calculus, and statistics.

• Integrated knowledge and technical skills gained from diverse scientific disciplines of biochemical, mathematical, computational and life sciences; understanding key problems, possible solutions, and latest advances in bioinformatics.

• Understanding of the process of scientific inquiry, preparation for rigorous research, quantitative problem solving skills, data analysis and interpretation of results.

Skills

• Design, conduct and interpret scientific research.

• Conduct statistical analysis.

• Apply a scientific approach to problems.

• Communicate findings using models, charts and graphs .

• Communicate new research findings to lay audiences.

Bioinformatics, which is an amalgamation of career fields of molecular biology and information technology. Knowledge of computer science to manipulate and process complex research and medical data.You may also be responsible for conducting research using bioinformatics theory and methods in areas such as pharmaceuticals, medical technology or biotechnology; and in addition design databases and develop algorithms for processing and analyzing genomic information or other biological information.

Bioinformatics and Biotechnology

Biotechnology and bioinformatics are two new knowledge-intensive sectors often cited as possibilities for repeating the software success story. We now look at the biotechnology and bioinformatics industries

globally and identify predominant trends in these industries. Modern biotechnology says that, "a set of techniques that involve manipulation or change of the
genetic patrimony of living organisms" (Ramani, 2002: 381), is a very research-intensive
area; include Bioinformatics. Application areas for biotechnology include drug products and vaccines, medical diagnostic tests, biotechnology-based foods, environmental cleaning, industrial biotechnology and forensic science. The need for Bioinformatics capabilities in Biotechnology has been precipitated by the explosion of genomic information resulting from the Human Genome Project and other attempts at genomic sequencing, phylogenetics, Molecular Modeling.

Bioinformatics and Computer Science

Growth of computer science in U.S. universities and the rapid growth of defense-related markets for software created opportunities for the employment of software developers, many of
whom went on to use their skills in civilian markets (Mowery, 1999:157). Parallely it has also show a vast development in India with Multifunctional Knowledge and Skills. The government of India can take some credit for the establishment of computer science faculties in the Indian Institutes of Technology and other institutes of higher learning, and the creation of an excellent engineering education system that has been the source of much of the top talent for the software industry. Internet sources, Servers, Algorithms , Programming languages pertaining to sequence of Biological Molecules are responsible to cut short the time period of labourous working and provide quick analysis. Bioinformatics companies provide the computational tools and databases that made genomic research possible.

Bioinformatics and Chemistry

India's potential in chemical services (Hari, 2001) may not be extendable to biotechnology because of the lack of modern biology expertise unlike in Chemistry and Chemical Engineering where India has multiple decades of experience. An emerging technologies developed in Chemical Sciences as NMR Spectroscopy, X-Ray Diffraction Techniques, Various Chromatography Techniques.are useful in providing appropriate information related to biological molecules(protein, nucleic acids and enzyme).The reading of Biological Molecules can be Amplified by Scientific Computational Tools such as BLAST, FASTA, Pfam, EMBL, DDBJ, PROSITE, contributing to Bioinformatics. The vast quantities of diverse biological data generated by recent biotechnological advances have led to the development and evolution of the field of bioinformatics. This relatively new field facilitates both the analysis of genomic and postgenomic data and the integration of information from the related fields of transcriptomics, proteomics, metabolomics and phenomics along with proteomics and genomics.

Bioinformatics and Mathematics

Specially designed Mathematical Algorithms and organised computer databases are at the core of all bioinformatics operations. Algorithms, that are necessarily complex, make voluminous data easy to handle for defined purposes, in an amazingly short time, a process that is humanly impossible. The requirements of such an activity make heavy and high level demands on both the hardware and the software capabilities of computers. It is only possible because of applying the algebraic mathematical expression inorder to make a programm. Drug designing is possible because of the probability of hitting a Core Drug Molecule or probability of interaction to form a covalent bond in a well integrated manner.

Bioinformatics and Society

There are various pros and cons running towards these field in society. But With recent news stories pounding us with tales of genetically altered foods, human cloning, and other subjects that were once the

province of social critics, it's hard to get a handle on what's really happening in the brave new world of genetics. It is Responsible to Converge the Ethical Issue minutely in a more arranged Manner. Today in the World of Science and Technology, major impact occurs to witness the declination of certain ethical issues such as less or no use of animal slaughtering for research purposes. Just a biological sample from it is sufficient to give the full fledge information pertaining to its structure and function etc.

Lastly

Bioinformatics is the summed up collaborative interdisciplinary field of various field responsible to bring huge changes in the society in Multidimensional Knowledge and Skill forms.

Chapter 19

Developing Management Skills

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Introduction

"Management is what the modern world is all about."

Management - "Management is defined for conceptual, theoretical, and analytical purposes as that process by which managers create, direct, maintain, and operate purposive organizations through systematic, coordinated, cooperative human efforts".

Skills management - Skills management is the practice of understanding, developing and deploying people and their skills. Well-implemented skills management should identify the skills that job roles require, the skills of individual employees, and any gap between the two. Managerial skill is the ability to make business decisions and lead subordinates within a company.

The skills involved can be defined by the organization concerned, or by third party institutions. They are usually defined in terms of a skills framework, also known as a competency framework or skills matrix. This consists of a list of skills, and a grading system, with a definition of what it means to be at particular level for a given skill.

To be most useful, skills management must be an ongoing process, where individuals assess and update their recorded skill sets regularly. These updates should occur at least as frequently as employees' regular line manager reviews, and certainly when their skill sets change. Skills management systems record the results of this process in a database, and allow analysis of the data, typically to assist with project staffing or hiring decisions.

In order to perform various management functions effectively and assume multiple roles, managers must be skilled. Skill refers to practical ability or expertness in an action or doing something. Robert Katz identified three managerial skills essential to successful management: Technical, human, and conceptual skills.

a) **Technical skills** - Technical skill involves process or technique knowledge and proficiency. Managers use the processes, techniques and tools of a specific area. For example, the person who is responsible to maintain files in an organization must have technical skill relating to 'how files are maintained' and he learns this through practice. Managers are responsible to maintain workflow in the organization. Workflow involves the initiation of action, that is, who will initiate action and who will receive it. For prescribing workflow, managers must have technical knowledge of the work concerned. Managers are responsible to maintain order in the work system, that is, there should be place for everything and everything should be on its place. For maintaining effective order system, managers must have knowledge of work system and workflow.

b) **Human skills-** Also referred to as human relations skills, involves the ability to interact effectively with people. Managers interact and cooperate with employees. To make interaction effective, the manager must have good interpersonal skills so that he can understand others and make himself to be understood by others. To resolve conflicts in an organization, manager must be a good compromiser, smoother, and negotiator.

c) **Conceptual skills-** Also known as general management skills, refer to the ability to see the whole picture to reconsise significant elements in a situation and to understand the relationship among these elements. Conceptual skill involves the formulation of ideas. Managers understand abstract relationships, develop ideas, and solve problems creatively.

Thus, technical skill deals with things, human skill concerns people, and conceptual skill has to do with ideas. If one wants to be a manager, one must nurture and develop qualities of courageousness, decisiveness, trustworthiness and self-confidence. Management also needs focus and skills. To be a successful manager, one has to realize the importance of management skills. There are different levels of management. Since managers at different levels perform different types of functions, managers at different levels require different skills:

a) **Top management skills-** These are skills relating to balancing, integrating, setting priorities, setting and developing standards, conceptualizing, leading, matching oneself with one's job, and delegating.

b) **Middle management skills-** Managers in the middle management require human relations skill, motivating skill, and integrative skill.

c) **Supervisory management skills-** Supervisors may also be classified into front- line, intermediate, and senior. Since they are directly concerned with operatives where the actual operations of the organization take place, supervisors should possess skills which help them to get things done by operatives. Every supervisor in the organization should have sound technical knowledge of his field to provide proper instructions and guidance to operatives, interpersonal skill to develop cohesive operative- management relations, accuracy in work, motivational skill for creating proper work environment, and communication skill for interacting with higher management.

Management skills is important because it can place a company on the leading edge of technology and product manufacturing which can then lead to a higher level of success than that of competitors. Another important attribute business managers should strive to possess is effectiveness. When developed and deployed correctly, this trait will have a positive effect on every decision and business transaction made concerning all aspects of the company.

Improving ones skills will require a rigorous and disciplined process for setting an agenda that will be designed to concentrate on the important aspects of the business. Instead, it is critical to think about how important various items are and how the business will be impacted if they do not receive the proper attention they deserve.

One should structure meetings in such a way that real decisions will be reached. This will also entail concentrating on business management skills. This strategy will help to formulate and carry out the plans that will keep business going in order to facilitate customer satisfaction and overall company improvement.

Conclusion

In this economic environment, the ability to adapt to change is crucial. Adaptation requires leadership. And, companies struggle to find leaders who can drive them through periods of transformation. As the pace of change accelerates and diverse technologies converge, new global industries are being created (for example, telecommunications). Technological change alters the fundamental structure of firms and calls for new

organizational approaches and management skills. By developing management skills, one will have the opportunity to provide company with the effectiveness needed to place ahead of the competition.

There are different types of skills in the corporate world. Soft Skills, communication skills, business writing, corporate presentation, public speaking, sales, marketing, leadership and managerial skills are few of the skills. Many employees get thrust into supervisory and managerial positions with little training. Nothing can help a team succeed like a good manager. A manager's level in the organization determines the relative importance of possessing technical, human, and conceptual skills. Top level managers need conceptual skills that let them view the organization as a whole. Conceptual skills are used in planning and dealing with ideas and abstractions. Supervisors need technical skills to manage their area of specialty. All levels of management need human skills so they can interact and communicate with other people successfully.

Management skills are an important contribution to any company. Because of this, they should be developed to their full potential in order for a manager his or her organization to be successful.

Chapter 20

Issues Related to Securing Customer Database through Cloud Computing

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Defintion

Cloud computing means storing and accessing data and information over the Internet rather than accessing data and program on computer's hard drive. It is a new technology,has evolved through a number of phases which include grid and utility computing, application service provision (ASP), and Software as a Service (SaaS), which facilitates to store and access information over the Internet at very fast speed without giving much stress on the single host side. One of the first milestones in cloud computing history was the arrival of Salesforce.com in 1999, which pioneered the concept of delivering enterprise applications via a simple website.

According to NIST (National Institute of Standards and Technology-Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models, and four deployment models.

Introduction

Now a days, cloud computing is most popular and widely used technology, used by many organization, either in private or public sector and observer says that it has great future if it provides a higher level security.

The cloud model- **Software as a service (SaaS)**-it has the capability to give the permission to the customer, to access the provider's application which is running on any other cloud infrastructure. **Platform as a Service (PaaS)-** The capability of this service is to give permission to customer to deploy onto the cloud infrastructure without installing any platform or tools on their local machine to run their own applications. **Infrastructure as a Service(IaaS)-**It has provided the capability to the customer to access various resources such as storage, networks and other fundamental computer resources, customer can also run arbitrary software such as operating systems.

SaaS provides the minimal customer interaction and control or extensibility with the application, it provides high degree of integrated functionality.Whereas in PaaS model, it provides greater extensibility and greater control with the application because of lower degree of abstraction. But in case of IaaS, provides greater customer control over security than PaaS and SaaS.

Now the question is arise, how to secure customer's information from any internal and external malfunctioning and interference or misuses. As the information and resources are sharing via Internet through world wide, cloud provider must be responsible for securing customer's as well as organization data. Today, large and small organization and thousands of employees are depending on cloud services. Cloud models are providing security at different levels such as the SaaS provider is responsible for the security of data while is being processed and stored.

Facts based on reserach

The cloud security Alliance has released a document that describes the current state of mobile computing and top threats in this area such as information stealing mobile malware, insecure networks(Wi-Fi), vulnerabilities found in the device OS and the official application, insecure marketplace and proximity based hacking.

There are number of security issues/ concerns associated with cloud computing but these issues fall into two broad categories-

-Security issues faced by cloud services.
-Security issues faced by their customer.
In both the case the provider must ensure that their infrastructure is secure and that their client's data and application are protected.

According to a recent **Cloud security Alliance Report**, insider attacks are the third biggest threat in cloud computing. In order to secure customer's data provider stores data in a single datacenter, so that all the users data can be access and shared easily, but these method sometimes causes a problem, it may because one user can access others data very easily even though the data is confidential.
For these, customer must be alert for their identity security, information, personnel information physical security of their system (Such as hardware and any other peripheral devices), may aware about their data and information availability to other customer, and also about the application security authentication from the service provider for the customer is also necessary. In an organization, authentication for different cloud user must be provided by the higher level. Third party involvement in accessing datacenters may sometimes cause unauthorized accessing of organization data or customer data. Database in Cloud security architecture will be more effective if the corrective defensive implementation is done.
Third party or vendor has an important role to provide a complete information about the cloud models, services and security either private cloud, public or hybrid cloud.

Gartner says, the customer should arise the question with vendors before selecting a cloud vendor-

1. Privilege user access- In organization at a time large amount of data are processed through cloud computing. Hence it is very important to secure information from external, used by others there may be very sensitive and highly risky.
2. Regulatory Compliance- In any case customer their self responsible for securing their own data or information instead of service provider, providing the services.
3. Data location- customer those who are using cloud system for storing data, actually don't that where their data is stored. Sometimes it may require to know about their storage of data. so customer may need scheduled enquiry.
4. Data Segregation- In cloud environment, data is sharable by others customer also, so data must be in encrypted environment as well as customer must assure that their data will not be misused by others even when they are in sharable form.
5. Recovery- customer does not know that where their data is stored, but they must assure that their data in cloud environment must recover if any discrepancies are happened.
6. Investigative support- Gartner says-"Cloud services are especially difficult to investigate, because logging and data for multiple customers may be co-located and may also be spread across an ever-changing set of hosts and data centers. "
7. Long term viability-Gartner says "Ask potential providers how you would get your data back and if it would be in a format that you could import into a replacement application.

UK Government committed £ 1.9 billion to cyber security over the course of the current parliament including a National Cyber Centre designed to act as a single point of contact to simplify and strengthen government effort on cyber security and improve engagement with industry.

According to a **RightScale survey of IT professionals**- Hybrid cloud system, where app and data storage is shared between MSPs and on-premise systems, remain the preferred approach. Currently, 82% of enterprises use a hybrid cloud model. 88% of enterprise store data on the public cloud, and 63% use a private cloud. Currently, 68% of cloud users store less than 20% of their workload than private networks online. More than half of survey respondents reported that an additional 20% of their portfolio is currently Cloud-ready but still being stored on premises.

This statistical figures clears that how cloud techniques are used by any organization. This may help to think how we customer, any organization or cloud service provider can design their security format.

Conclusion

The cloud software market, specifically Identity and access management software, will grow by 35.76 per cent CAGR in the next five years, according to research, hence the new challenges are also coming to handle various threat which possibly occur with the growing of new cloud computing technology. Researcher and developer are giving lots of stress towards the risk and threat management of customers as well as for the organization data. As the use of cloud computing is more and more increasing at world wide, the chance of risk is also increasing due to sharable property. Now it is becoming a more challenging to secure information of each customer and organization or enterprises, those who are using cloud techniques. Maintaining the database at server side and client side is the next step towards the security of information. There are several methods and techniques have been developing for both cloud service provider as well as customer. Most importantly customer must be aware for their own id and password and also regularly look for new challenges and a threat that is frequently occurs. The awareness of customer and third party vendor or cloud service provider may apparently reduce the cause of risk. The organization must hire the experienced and knowledgeable computer user who is aware of the hardware and software related issues also be has the technical knowledge. The New strategy should be developed with the increasing of cloud computing features. Each features has some pros and cons, it will be a best practice to develop the new concept, methods and mechanism to handle large data and information, and possible risk and threats for security. Cloud computing is a vast concept and it has various feature where organization(world wide) can view their future at a great extent but issues related with the securing data and information of internal and external, is more challenging. To overcome this challenge each and every one must be aware and should have complete knowledge about the overall cloud computing system and architecture.

Chapter 21

Skill Development in the Field of VFX

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Introduction

Visual effects (abbreviated VFX) are the processes by which imagery is created and manipulated outside the context of a live action shot. Visual effects involve the integration of live-action footage and generated imagery to create environments, which look realistic, but would be dangerous, expensive, impractical or simply impossible to capture on film. Visual effects using computer generated imagery have recently become accessible to the independent filmmaker with the introduction of affordable an easy to use animation and compositing software. It is often integral to a movie's story and appeal, although it must be carefully planned and choreographed in pre-production with the use of multiple tools and technologies such as graphic design, modeling, animation, and similar software, while special effects such as explosions and car chases are made on set. A visual effects supervisor is usually involved with the production from an early stage to work closely with production and the film's director design, guide and lead the teams required to achieve the desired effects.

Categories:

1. **Matte Paintings and Stills**: digital or traditional paintings or photographs which serve as background plates for keyed(it is the combining of visual elements from separate sources into single images) or rotoscoped elements(it is an animation technique in which animators trace over footage, frame by frame, for use in live action and animated films).
2. **Live-Action Effects:** keying actors or models through bluescreening and greenscreening.
3. **Digital Animation:** modeling, computer graphics lightning, texturing, rigging, animating, and rendering computer generated 3D characters, particle effects, digital sets, backgrounds.
4. **Digital Effects (Digital Fx):** Constituted as the various processes by which imagery is created and manipulated with or from photographic assets. Digital effects often involve the integration of still photography and computer generated imagery (CGI) in order to create environments.

Scope

VFX is highly exciting and youthful career option, which is rewarding too. It enables you to create characters, give them life, fill colors and others pay for work which you do! Field animation especially computer animation is advancing at a very rapid scale in the terms of technology and expertise. There is no dearth of opportunities because the media industry is booming.

The animation industry in India will grow at 22 percent every year, according to the latest report by NASSCOM*(The National Association of Software and Services Companies). Many big studios and companies like Walt Disney, Sony Pictures & Turner Entertainment which make animated films, T.V ads & computer games are off-shoring animation content to India. Many Indian animation studios and production houses are packed with work be it ousourced from abroad or in house projects for the market in India.

We now view images on and in many ways and formats from cinema, television, computers, tablets, smart phones to even billboards. All these commercial films, games, and images will have had some animation or visual effect treatment added to them. Continuing expansion of this area offers career opportunities in film and television production, games development, educational programming and web content creation.

Trained and talented people are required for such projects. After training, some major field of scope are:

- Modeling artist
- Character animator
- FX artist
- Compositor
- Motion graphics artist
- Match moving artist
- Lighting artist
- Render artist
- Layout artist
- Digital artist
- Digital sculptor
- Rigging artist
- Roto & clean-up artist
- Video editor & many more.

Technologies

Visual Effects (VFX) are the digital basis of film and TV – brought into action right after on-set production is complete. Visual effects are like a celluloid soil that can be stuffed into any kind of movie or short film. It is the final polish that enhances scene. Visual effects generation is complicated business – and many large scale films, games and pictures require entire farms of computers to deliver the stunning visuals we see. However, the area of animation and visual effects is always on the move with new techniques and equipment being produced almost daily.

That doesn't mean you can't delve into this world, though. In fact, we'd be spoilt for choice with the tools available for visual effects generation. Here are some well-known tools:

1. **3D Studio MAX:**

   3DS Max is arguably the best 3D graphics software in the world right now. Adopted by professionals for 3D animations, models, games and images, it features Python scripting. Avatar was a visual extravaganza – it is getting three sequels by the way. It's good to know that 3ds Max was used for Avatar's Visual Effects. Employed in many of the top Hollywood film productions, videogames and TV commercials, but also priced for the home studio, this full-featured 3D modeling, animation, rendering and effects solution has everything you need to create high-quality content.

2. **Blender**

   Blender is open-source software, therefore its source code is available and it's totally free to use. It is very keyboard shortcut-driven, so you don't have to dig layers deep into a menu just to find an action. Blender's first large professional project was the movie Spiderman 2.

3. **Nuke**

   Nuke is node-based multiplatform software which is available for Microsoft Windows, Mac OS and Linux. Nuke makes composting easier, especially when dealing with 3D elements. Nuke has been

used in post-production for Resident Evil: Extinction, The Hobbit. It's free to use for non-commercial purposes.

4. **Adobe After effects (AE):**

Out of all the heavy software developed by Adobe, AE is among the most loved. AE is layer oriented, i.e. each media object occupies its own track. After Effects was used some of the best movies of all time like Iron Man 3 and Oblivion.

5. **Toon Boom Software:**

Toon Boom Software is the software which made 2D animations much easier and user-friendly. 2D movies/TV productions like The SpongeBob SquarePants, Family Guy used this software on its production.

India's position in the field of VFX world

The fastest growing animation industry is set to grow to USD 2.9 billion by 2015 from the present USD 1.8 billion. "India's animation industry has immense potential to grow and it is estimated to grow to USD 2.9 billion by 2015 from the present USD 1.8 billion," *St. Angelo's Computer Education CMD Agnelorajesh Athaide* said in a statement.

The country also requires fresh talent for this growing industry. There are about 300 animation and 40 VFX companies in India. Animation industry needs more than 40,000 animators from India. The industry currently employs about 12,000 people with nearly 3,000 working as freelance animators, Athaide said.

The industry provides various career options like, 2D / 3D animators, visualisers, 2D / 3D designers, graphic designers, multimedia, programmers, 3D modelers, web designers, content developers, compositors, technical trainers, AV editors, pre & post-production executive, image retouch specialist, movie reviewer / critic, virtual merchandiser, drawing specialist and creative designer. A student who begins his career with salary of Rs 10,000 per month can easily be earning Rs 30,000-35000 per month within 2-3 years, Athaide said.

Today many universities offer a degree in animation which is three-year government recognised degree programme offered by UGC universities which implies that this degree is on part with other degrees offered by every college. There is a immense opportunity for animators in areas like advertising, entertainment both films /television, architecture, medicine, education, aeronautics, engineering, printing, communication, to mobile application and gaming.

In what could give a major boost to the animation segment, the Centre has now decided to establish a National Centre of Excellence for Animation, Gaming and Visual Effects and a Moving Image Museum at Mumbai. There are also plans for upgrading the Films and TV Institute of India, Pune, and adding new streams of courses to meet the demand in new emerging areas as well as an effort is being made to upgrade The National Film Archives of India for preserving classic films.

Conclusion

India is already showing that it can provide the talent and entrepreneurial drive in this Industry with companies that played a major role in production of films like Avatar and Life of Pi. Movies such as Krish and Ra.One in the Indian film industry are making increased use of animation and VFX techniques. India also needs to look inwards at the immense potential there is to convert comic book cartoon characters like Chacha Choudhary. You have already seen success with animated versions of Ramayana, Chota Bheem and

Bal Hanuman. Not to mention the possibilities with the expanding games and new media smart phone content.

I believe that the animation and visual effects industry in India has a very optimistic future, not only with the film industry UK, USA and games companies who are always looking for a talented, young and enthusiastic workforce, but also India has its own huge film and media industry. You could see this in adverts for Amul butter, they have come and long way in the last decade or so. As the general public expects films and other media to become more sophisticated, more animation and visual effects artists will be needed. Students studying this area have the opportunity to work in many varied areas.

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Chapter-22

Productive Potential of Forest Resources : An Additional Livelihood Generating Forestry options (An innovative approaches for skill development)

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Forests are the world's most important and most valuable renewable natural resource and also repositories of terrestrial biological diversity. Forestry as a sector plays a vital role in the socio-economic and rural development of the country apart from its role in maintaining ecological stability . Forests are a traditional source of a multitude of products particularly food, fodder ,gum , resin, silk,, lac, medicine and timber and sustain a very large human population. Forests also provide year round supply of other minor forest products e.g. fibers and flosses, tendu leaves, mahua flowers , animal products, mushroom, non edible and essentials oils etc. (Bashir et al., 2010).

Livelihood systems represent a complex set of diversified, interlinked and interdependent activities. Livelihood approaches are passing through a rapid transition phase on account of globalization hence necessary insights for minimizing the adverse impact of externalities is very much required. Further, in view of fast changing climate it is important to mostly / improve the livelihood systems so that the tribal communities can cope up with these abnormalities. While some of the traditional livelihoods practices are adversely impacted upon by emerging macro polices and climate change, new opportunities are created in the process. Given the situation, the challenges for practitioners and researchers is to continue evolving innovative techniques and approaches to provide livelihoods opportunities to the poor without them being excluded from the cycle of change.

In over country and particularly in the tribal region of Chhattisgarh, the livelihood of tribals depends on agriculture, non timber forest produce and livestock etc. Tribal communities can be considered as the most vulnerable community in this changing world. Their livelihood systems are also quite different as compared to non tribal community. Additional livelihoods generating forestry options can greatly helps in improving their livelihood and socio-economic condition.

The Present study was undertaken to document additional livelihood generating forestry options can help in employment and income generation to the tribal people of Chhattisgarh. The present investigation are designed from within their socio-economic contexts where tribal people live, thereby exploring their specific empowerment needs, social problems and level of community participation. The research and extension efforts in additional livelihood generation forestry options in the state has been minimal and the issue varies from region to region. Some options are introduce as allied enterprises like bee keeping and lac culture and micro enterprise like low-cost mushroom cultivation , agroforestry practices & forestry nursery establishment, value addition of non wood forest produce etc. are frequently adopted by the many tribal peoples of country.

The details of the important forestry options are discuss in this article .The issue varies from region to region, however the broad options for tribal regions may be similar. The following issues must be taken into consideration for improving livelihood and food security.

Prospectus and potential of mushroom cultivation among tribal people of Chhattisgarh

The prospects and potential of mushroom cultivation among tribal people of Chhattisgarh, which reveals that the tribals are keen to learn and cultivate the edible mushrooms. The Mushroom cultivation activities

demonstrating alternate means of supplementing the income and / or diet are as fallows - The low cost mushroom cultivation technique are very simple to cultivate in village level and on farmland. The production method are adopted by the tribal people of Chhattisgarh due to the realization of its potential for improving their economic status and malnutrition.

The nutritive importance and medicinal values of edible oyster mushroom can be useful in general health problem prevailing in the tribal and rural community. Mushroom cultivation can be used as a tool for socio-economic upliftment of the tribal people which are basically depended on the motherhood forest. It is an ecofriendly process in which agro forestry waste rich in lignin, hemicelluloses and cellulose are converted into platable protein. Mushroom are a good source of digestible protein, fibres, vitamins and minerals (Bano1963,1975; Verma, 2000).

Looking to this aspects a mushroom production/ cultivation is a good option in tribal region where malnutrition and anemic conditions prevails commonly so that this nutritional vegetable can be supplemented. The study suggested that the tribal people are keen to learn mushroom cultivation and they easily develop the skill. They know the taste of mushroom hence, marketing of fresh mushroom can easily be handled by them in the local market.

The low cost mushroom production technology are initiated and designed by the various eminent ethnomycologists and scientists in our country. The author also expertise in the sector of forestry research, mushroom research and ethnomycological research etc. For the technological information & suggestions related to the above options , any interested people/ growers should be contact at the Department of Forestry & Wildlife, Bastar University, Jagdalpur (CG).

Prospectus and potential of Lac Industry in Bastar Region :

The present investigation was carried out at two villages Sarona and Narharpur of Kankerdistrict during February-2015 to June-2015. This investigation was completed through questionnaire and personal interview among the selected farmers. This study was completed for the lac cultivators and the lac processing industry.

This study indicates that the main source of income of lac dominated villages is lac production. It also reports their socio-economic structure, livelihood through lac cultivation along with technology adoption, prospect, marketing of lac and constraints.

Now day's lac cultivation has become very popular all over the world due to its uses, a source of high income, suitable for ST/SC categories people etc. Scientific methods of lac cultivation provide high income and reduce risk.

Lac, the valuable and versatile resin of commerce, is an insect product cultured on a number of host plants in India, Thailand, Indonesia, Vietnam, China and many more countries. The lac industry can be subdivided into three different sections: lac production, lac processing and lac products. India is blessed with congenial climate, vast natural resources in the form of host plants and cheap labour man power available in geographically handicapped areas. The investment on fixed assets and recurring expenditure is higher in lac processing compared to that in lac production. But, the income from lac production is higher , compared to processing. The processing industry has been going through rough weather regularly since 1970s due to erratic supply of raw materials and price variations. Not only for a healthy processing sector, but also to provide additional source of livelihood, huge investment in lac production is needed; government funding in this sector is insufficient and private participation in the form of contract farming appears to be the solution.

Lac is a natural, biodegradable, non-toxic, odourless, tasteless, hard resin and non-injurious to health. The lac insect is a pest on a number of plants both wild as well as cultivated. The tiny red-coloured larvae of lac insect settle on the young succulent shoots of the host plants in myriads and secrete a thick resinous fluid

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which covers their bodies. The secretion from the insects, form a hard continuous encrustation over the twigs. The encrusted twigs are harvested and the encrusted twigs scraped off, dried and processed to yield the lac of commerce which is regarded as NWFP of great economic importance to India.

The resin is obtained after processing the raw Lac (Stick Lac) comprised of a natural raw material with exceptional environmentally compatible properties, which is biodegradable and generally recognized as physiologically safe. Lac is produced by tiny lac insects which thrive on three commercial hosts, namely kusum (*Schleichera oleosa*) palas (*Butea monosperma*), ber (*Zizyphus mauritiana*), and as substitutes the tender twigs of species host trees viz., *Flemingia semialata, Ficus religiosa, Acacia auriculiformis, Cajanuscajan, Litchi chinensis* etc. Raw lac is the source of three valuable, natural and renewable products i.e. resin, dye and wax. Rangeeni and kusmi are the two strains of lac insect which are classified based on preference of the insect for specific host plants.

Lac production in different states, it has high potential for generating employment for both men and women in forest and sub-forest areas of Jharkhand, Chhattisgarh, Madhya Pradesh, West Bengal, Maharashtra, Odessa and parts of Uttar Pradesh, Andhra Pradesh, Gujarat and North Eastern Hills region. It is a highly remunerative crop, paying high economic returns to the farmers and also foreign exchange to the country through its export. The cultivation of lac on a large number of hosts of different kinds, its collection by numerous small growers, the variations in the yield depending on the type and size of the host, the cultivation practices and climatic conditions present serious difficulties the estimation of production of this insect based crop. With timely and accurate estimation of lac production, lac growers, processors, traders, exporters and policy makers can plan their operations in time. Accuracy in production estimate would be helpful in precision planning by all concerned. Besides knowing the present status, it would be helpful in regulating imports, planning for enhanced exports, reasonable prices and reliability in supply of lac based products.

The study reported under **"Prospectus and potential of Lac Industry in Bastar Region"** was carried out at two different villages of Sarona and Narharpur blocks of Kanker districts in Chhattisgarh during February-2015 to June-2015 . The recommendations and conclusions of the study as above are as follows, which were observed during survey in Habib Shellac Industry Kanker and Sarona and Narharpur villages of Kanker district, Chhattisgarh. Selling and primary processing of lac produced is done by the villagers . Usually as in practice scrap lac is purchased in local hat-bazars by the middleman and later he sells the commodity to the big traders adding his margin of profit. Due to this existing chain of selling and purchasing the grower in many a times is deprived of actual higher prices to which he is entitled.

Apart from these reasons following are the major constraints of lac marketing-

1. Lack of information on current prices of lac to the lac growers.

2. All the markets in which lac growers sell lac are unregulated.

3. Scattered lac producers and growers sell lac in a very small quantity. This leads to imperfect competition price in the market.

4. Selling of lac without any value addition fetches low prices.

5. Lack of infrastructure facilities like storage and support services in the market where lac is sold.

6. Sometimes farmers indebted to local trader hence resorted to village sales.

To counter these constraints following steps can be taken for efficient marketing of lac -

1.   Formation of marketing societies or any other forms of farmers' organization for marketing, maintenance of proper records and supervision over purchase.

2.   To strengthen infrastructure and support services in the market.

3.   Grading and standardization facility should be in the market.

4.   The area of efficient production and procurement of lac should be demarcated and strategy be devised to ensure marketing efficiently.

5.   Value addition at growers' level will help in to get better prices to lac growers.

Lac processing and product industry should invest in lac production through profit sharing with the lac growers. This will help in attaining required investment needed for lac cultivation and stabilization of lac production. Fix the cost price every two to three months, every year or every harvesting season.

There are many agencies who are better buyers of the lac product like ship industry, electrical equipment industry, medicine industry, food preservative industry, cosmetic industry, leather industry etc. But till now direct contact with such industries have not been explored. The direct sale will eliminate the middlemen and the benefits accrued by middlemen will be the farmers' benefit subsequently. A processing center is also planned, so that the raw lac can be processed within proximity to yield better returns and generate more income for the rural youth of Chhattisgarh especially in Bastar Region of the state.

Prospectus and potential of Sericulture in Bastar region

Sericulture has provided downstream employment and income generation in rural and semi-urban areas, high participation for low-income and socially under privileged groups, a larger role for woman development, and huge potential for contribution to export earnings. Rural poverty has many forms and is much more complex phenomenon. Poverty alleviation requires suitable policy interventions and appropriate technological options that can increase agricultural productivity without adversely affecting the productive capacity of natural resources. Silk a way of life in Chhattisgarh has become an inseparable part of Indian culture and tradition should be considered for rural management and development. Although the state is famous for the production of golden yellow tasar silk yet it offers good scope for the production of tasar silk. Sericulture has the potential to develop as a subsidiary to agriculture and provide gainful employment to sizable mass in the state. This will help not only improve the economy but also preserve the rich cultural heritage of the state. However, during last few decades, pace of its development in C.G. has been rather stagnant mainly due to reluctance of younger generation to take it up as a means of livelihood.

Present in Chhattisgarh three types of silk viz., Mulberry, Tasar and Eri silk are producing. Tasar culture is practiced on the forest plants in wild condition. The advantage of tasar culture is that it does not require any investment of plantation, rearing appliances, electricity and other essentials like mulberry sericulture. Sericulture, or silk production, from the moth*, Bombyx mori* (L.) has a long and colorful history unknown to most people. Although there are several commercial species of silkworms, B. mori is the most widely used and intensively studied, and techniques for its rearing are the most improved. This insect is the sole living species in its family, Bombycidae, and has been domesticated for so long that it probably no longer survives in the wild.

Traditionally the sericulture cultivation and production in Bastar district of Chhattisgarh have been passing through many phases of historical time scale. And there is marked regional variation in terms of mulberry cultivation, raw silk production and cocoon production in Bastar district. The information were collected from Bastar district of CG . The production of Mulberry silk is in large scale at Regional Silk centre Bademarenga , located at Tokapal block of Bastar district , Chhattisgarh. Production is being carried out by tribal women (Self Help Groups) , which inspire people to carry out Mulberry silk production and through they can generate income so as to full fill the needs of their livelihood.

The Self Help Groups train the local people about rearing techniques; also in the area they provide rearing sheds for Mulberry silk rearing. Each group consists of 10 to 12 members, in which the number of female members is more. Women's play an important role in the silk industry and have raised their status in the community.

Throughout the study we know that Sericulture is important role in improving the livelihood of rural people. It also has improved the economic status of the Chhattisgarh. Production of Silk has increased to a vast level,

with the introduction of new Scientific methods of Mulberry Silk Production, it has now become very easy for rearing Silkworm. By applying this Scientific methods such as Shoot rearing and Tray rearing the formation of cocoon has also increased resulting in the increase in quantity of Silk being produced. Sericulture and silk production have an enormous potential in our country provided it is made available to rural people, especially women, and its marketing is organized independently. It can serve as an excellent mode for employment generation and augmentation of income. This requires not only providing fresh technological inputs to primary producers but more importantly, evolving and establishing new systems of organizing production and marketing.

The Present study are undertaken to document additional livelihood generating forestry options can help in employment and income generation to the tribal people of Chhattisgarh. The present investigation are designed from within their socio-economic contexts where tribal people live, thereby exploring their specific empowerment needs, social problems and level of community participation. The research and extension efforts in additional livelihood generation forestry options in the state has been minimal and the issue varies from region to region. For the technological guidance , information & suggestions related to the above options , any interested people/ farmers/ growers should be contact at the Department of Forestry & Wildlife, Bastar University, Jagdalpur (CG).

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Chapter 23

Appropriate Tehnological Options for Rural Development of Chhattisgarh

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Some Facts about Chhattisgarh

Chhattisgarh state as compared to Madhya Pradesh has a much lower population density of 130 persons per Sq. km compared to the 158 of Madhya Pradesh. While Chhattisgarh has 30.49 percent of the land area of the undivided Madhya Pradesh, only 26.7 percent of the total villages are in Chhattisgarh. Both of these, when taken together point to a state with relatively longer road per person. Chhattisgarh currently has 24.6 kilometers of road for every 100 square kilometers of area whereas the undivided Madhya Pradesh has 22.8 kilometers for every 100 square kilometers of area. In terms of village roads Chhattisgarh has 1.3 kilometers of village roads for every village, compared to 0.92 kilometer for undivided Madhya Pradesh and 0.78 kilometers for the state of Madhya Pradesh

About 46% of the geographical area of the state is covered with forest. Nearly one-third of the forests comprise Sal forest produce which is an extremely valuable asset of the state and provides livelihood to large numbers of our population. Timber wood has an important place among the major forest produce. It contributes about forty percent of the total forest revenue. Nearly ten thousand industrial units depend on forests for their raw material base. Chhattisgarh produced a substantial 36 percent of the total power generated in undivided Madhya Pradesh, contributing 42 percent Thermal and 14 percent of Hydel power. In terms of power consumption, Chhattisgarh consumed around 24 percent of total consumption in 1996-97 and 1997-98.

Chhattisgarh region is as well known for its rich cultural heritage as for its abundant deposits of natural resources. A variety of mineral resources are found in this region, diamond, gold, iron-ore, coal, corundum, bauxite, dolomite, lime, tin, granite to name a few.

Minerals of Chhattisgarh

Deposits of cumberlite pipe are found in Pailikhand. High quality iron-ore deposits are found in the Bailadila hill ranges as well as in Dalhi-Rajhara. Abundant deposits of lime stone are found in the districts of Raipur, Bilaspur, Durg and Bastar facilitating the growth of several large cement plants in the area. The basic amenities available to the people of Chhattisgarh are presented in Table-1 and the coal mining by the SECL is presented in Table-2.

<div align="center">

Table-1 Basic Amenities

</div>

Basic amenity	All	Rural	Urban
Access to electricity	31.8%	25.4%	61.2%
Access to safe drinking water	51.2%	45.1%	79.6%
Access to toilet	10.3%	3.3%	42.4%
Access to all three	7.6%	1.5%	35.6%
Access to none of the three	36.1%	41.9%	09.6%

Table-2 Details of Coal Mining by SECL

Item	Unit	ACTUAL	% Growth
Total Production	M.T.	101.15	105.36
O/C Production	M.T.	83.58	105.66
U/G Production	M.T.	17.57	103.96
Obr	MM3	107.01	100.76
Overall Oms	Te	5.26	113.61
Oc Oms	Te	15.76	109.83
U/G Oms	Te	1.26	107.69
Coal Offtake	MT	103.02	107.31
Wagon Loading	FWW/DAY	4709	96.54

Chhattisgarh's human resources, at varying skill levels, would be the key to the State's future and prosperity. Known for their sincerity and hard work, "Chhattisgarh" promises to make a name for themselves both in the 'brick as well as the 'click' economy. The State Government has taken a range of decisions in all social sectors for developing the State's human resources. Expansion of small scale and village industries based on agricultural, forest and mineral resources would also be taken up to add value to produce and to generate employment. Emphasis would be on vocational and employment oriented education.

Innovative Decisions Taken by the Government

State Government is reviewing the relevance of the present academics in primary schools and adopting the following steps:

▪ Use of IT enabled education,

▪ Free IT education for poor girls of all categories in Secondary and Senior Secondary Schools under the Indira Soochna-Shakti Yojana and

▪ IT education in all Secondary and Senior Secondary Schools through private participation on user charge basis for other students.

Technology- Our Necessity

Higher education especially; technical education is the back bone for optimal development of the region. Underground mines have already successfully introduced thick seam extraction with cable bolting, depillaring of contiguous seams with floor pinning and Powered Support Longwall for maximization of production.

Chhattisgarh has one of the foremost industrial areas of the Country in Bhilai that houses numerous ancillary industries around the Country's most profitable steel plant in the Public Sector. There is a similar concentration of industries in Korba, with power plants of the National Thermal Power Corporation, the Chhattisgarh State Electricity Board and aluminum producing unit Balco

Goals of Rural Energy Systems: The goals of rural energy system in the state are:

 a) Must be instruments of sustainable rural development.

b) Must advance rural economic growth that is economically efficient, need-oriented and   equitable, self-reliant and empowering and environmentally sound.

 c) For an energy system to be in the interests of the rural poor, it must qualify from three points of view.

(i) It must increase the access of the rural poor to affordable, reliable, safe and high quality energy.

(ii) It must strengthen their self-reliance and empower them.

(iii) It must improve the quality of their environment (starting with their immediate environment in their households).

Strategies of Rural Energy

(i) Reduction of arduous human labour (especially the labour of women) for domestic activities and agriculture.

(ii) Modernization of biomass as a modern energy source in efficient devices,

(iii) Transformation of cooking into a safe, healthy and less unpleasant end-use activity,

(iv) Provision of safe water for domestic requirements,

(v) Electrification of all homes (not merely villages),

(vi) Provision of energy for income-generating activities in households, farms and village industries.

Characteristics of Rural Energy Systems

▪ Supply sources

▪ Energy mix patterns

▪ Problems and Potentials for development

Characteristics varies from place to place, depends on numerous factors such as:

(i) Availability, (ii) accessibility, (iii) affordability, (iv) alternatives, (v) income level (vi) socio-cultural practices and (vii) climate, etc.

APPROPIATE TECHNOLOGICAL OPTIONS FOR RURAL DEVELOPMENT

Some of the techno0logical options that may be useful for rural development of the state are discussed below.

Water Harvesting

Nature is kind to Chhattisgarh in terms of rainfall as compared to several other states of the country. Average rainfall in the state is around 1400 mm. About 90% of the total rainfall occurs in the Monsoon season i.e. July to September. But due to large variation in the yearly rainfall, the agriculture of the state which is mainly paddy is affected. It is obvious that irrigation is the prime need of the state. During the post monsoon season there is severe scarcity of water in major portion of the state. Even during the monsoon season, there is break of rainfall sometimes for one week to 10 days. Upland paddy production is severely affected. This calls for harvesting of rain water and its use during the time of need.

Design Aspects of Water Harvesting Structures and Characteristics of Water harvesting structures

● It is practiced mainly in arid and semiarid regions, where surface runoff often has an intermittent character.

● It is based on the utilization of runoff and requires a runoff producing area and a runoff receiving area.

● Because of the intermittent nature of runoff events, storage is an integral part of the water harvesting system.

Components

Each water harvesting system should therefore have the following four components:

• Runoff producing catchment,

• Runoff collection scheme,

- Runoff storage facility and
- Cultivated or cropped area.

Effects of Supplementary Irrigation (SI)

When rainfall is not sufficient, supplemental irrigation (SI) is provided to save the crop at critical periods. It has three major effects: (i) yield improvement, (ii) stabilization of production from year to year (increasing reliability), and (iii) providing the conditions suitable for economic use of higher technology inputs, such as high yielding varieties, fertilizers, and herbicides, irrespective of seasonal rainfall. Water harvesting structures or farm ponds are constructed to store the excess runoff during the rainy season.

Purpose of Farm Ponds

The ponds are water harvesting structures; solve several purposes of village needs such as supply of water for irrigation, cattle needs, social activities etc. apart from fish production. Ponds also play a key role in flood and sediment control if constructed in large numbers. They have also significant role in rainfed farming cultivation.

Estimation of the required storage volume of water

i) Need for live stock is calculated. Large live stocks such as horse, cattle require about 17 ha-cm (1700 m^3) per year per 100 heads and small livestock like sheep, goat, and hogs require about the same amount per 1000 heads. (ii) Volume of water required for irrigation is calculated by knowing the command area, crops grown, soil type and climatic condition. (iii) Probable volume of water to be lost through evaporation and seepage is estimated. (iv) Minimum depth of water needed for fish culture is decided. (v) An extra volume of 10% is added to adjust for some unforeseen water losses from the pond.

Selection of Farm Pond Site

(i) Economical point of view, a pond should be located at a site where the largest volume can be obtained with least volume of earthwork and by submerging minimum area.

(ii) This condition generally occurs at a site, where the valley is narrow and the side slopes are relatively steep. Such sites help to reduce the area of shallow water, which in turn reduces the evaporation loss.

(iii) It should require a short dam below a broad pond area with steep sides.

(iv) Removal of trees and other vegetation should be minimum.

(v) The site should have suitable foundation for the dam.

(vi) There should not be excessive seepage through the foundation.

Design of Farm Ponds: The design consists of the followings:

- Determination of pond capacity,
- Design of embankment,
- Design of mechanical spillway,
- Design of emergency spillway, and
- Seepage control arrangements from the pond.

Problems of Siltation

Water harvesting structures can easily get silted and life will be over in few years unless the contributing catchment is properly treated for prevention of soil erosion. Soil conservation measures should be scientific as per soil, slope, rainfall and vegetative conditions. Depending upon the need, agronomical (vegetative) or engineering measures or both should be provided.

Agronomical Measures: Conservation tillage practices, contouring and vegetative controls like strip cropping are the important low cost conservation measures to control soil erosion by water. Initially only

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these measures should be attempted and when they are not sufficient then only the costly engineering measures should be taken up.

Engineering measures for erosion control: They include bunding and terracing. Bunding can be either contour bunds or graded bunds depending upon the rainfall, slope and soil conditions. Terraces can be either bench terraces or broad base terraces.

Low Cost Farm Implements

Efficient implements should be used. They increase the labour efficiency, reduce the cost, quality of work improves and provides comfortable working condition. Some examples are:

(i) Improved (IIT) Bullock Cart, (ii) IIT Puddler, (iii) Lowland paddy seeder, (iv) IIT Mini-Combine, (v) Cono Weeder etc.

Post-harvest and processing

Huge amount of vegetables and fruits arte produced and the farmers do not get remunerative price during the peak season. Sometimes, large amount is spoilt or thrown away. This necessitates the introduction of post harvest and processing technology. Some examples are:

(i) Cereal puffing machine, (ii) Dehydration technology for fruits and vegetables, (iii) Mechanized processing of dairy products,. (iv) Drum Parboiler for paddy parboiling, (v)   Smokeless Chula, (vi) Grain Puffing Machine, etc.

Soil Health Maintenance

The green revolution in the country has been accompanied with the use of high yielding varieties of crop, high doses of chemical fertilizers, insecticides, pesticides etc. This has adversely affected the soil health. To regain the soil health, the following practices are needed.

• Integrated nutrient management,

• Industrial and bio-waste utilization,

• Biofertilizers and bio-pesticides use, and

• Large scale adoption vermicompost technology.

Energy Efficient Pumpset

As in other parts of India, most of the farmers in Chhattisgarh also use 5 horse power diesel engine pumpsets for pumping water either from open sources or from shallow tubewells. These pumpsets consume about one litre of diesel per hour. There are some basic problems in their operation. Each pumpset is fitted with a foot valve at the bottom, which is used only during the priming but consumes lot of energy during the whole operation. A part of the pumped water is used to cool the diesel engine excessively and thermal efficiency of the engine reduces. Sometimes the head at which the pump has to work is low and still full fuel supply takes place. All these things contribute to high fuel consumption. The fuel consumption can be substantially reduced by adopting the following steps.

❖ **Priming**

i)   The foot valve is removed from the suction pipe.

ii)   A big screen is fitted at the bottom of the suction pipe so that no debris enters.

iii)   For priming, a hand pump is fitted on the delivery bend of the pump.

iv)   During priming, one person puts his palm at the outlet of the delivery bend and one person operates the hand pump.

v)   Water enters the suction pipe, pump casing and starts flowing through the hand pump. Thus priming takes place.

vi)   When the pump has to work against high delivery head, one gate valve should be fitted on the pipe on which the hand pump is fitted. Otherwise, pumped water will flow through the hand pump outlet.

By adopting above modification, 15 to 17% diesel consumption can be saved.

❖   **Cooling**

i)   The water flow from the pump into the cooling jacket should be stopped by sealing the outlet of the cooling water from the pump.

ii)   One bracket should be welded on the vertical arm of the delivery bend.

iii)   On the bracket one 25 litre capacity bucket with two side holes one at the bottom and one at the top should be placed.

iv)   The bucket should be filled with ordinary cool water.

v)   On the bottom hole one flexible pipe should be fitted and connected to the cooling inlet of the engine jacket.

vi)   Flexible pipe fitted with the top hole should be connected to the cooling outlet of the engine jacket.

vii)   When the engine will run, cool water will flow from bucket into the jacket by gravity from the bottom pipe and will come back to the bucket through top pipe due to thermo siphon effect.

viii)   The warm water coming out of the jacket will have a temperature of about 80 ^{0}C.

ix)   This will provide a suitable temperature to the engine and its thermal efficiency will increase. The diesel consumption will reduce by about 20%.

x)   The warm water will evaporate from the bucket and due to latent heat of evaporation, cooling will take place. To make up the loss, water should be periodically added in the bucket.

❖   **Fuel Supply System**

i)   When a high head is not required, the fuel supply can be reduced by pressing the fuel cut-off lever.

ii)   The lever may be tied with a small rope or rubber band so that the speed is reduced from 1500 to 1100 rpm.

By doing so, about 15 to 20% fuel consumption can be reduced.

Thus, if all the above three steps are followed, 40 to 50% of the fuel consumption can be reduced in small diesel engine pumpsets

Cavity Wells (Tubewell without Filter)

Cavity well is a shallow tubewell without a strainer. It is best suited for shallow (<3 m thickness), confined aquifers with finer materials. Under such situation, a traditional tubewell with filter will not work as the fine materials will clog the filter and from shallow aquifer satisfactory discharge can not be obtained in a filter type tubewell. Cavity well is a low-cost tubewell technology which is a boon for the marginal farmers. Drilling and installation costs are lower as no filter is used. Only difference is that some quantity of sand from the aquifer is removed by using suitable technique so that a cavity is formed in the aquifer. Water is stored in the cavity and pumping is similar to that of pumping from an open well. Over the years, this technology has been disseminated to different parts of the country. Today several hundred thousand cavity wells exist for irrigation purpose in the places where traditional shallow tubewells with filter are not feasible.

Intensification of Fish Culture-Integrated Agri-Aquaculture

Chhattisgarh has 58514 Rural Pond area covering 0.744 lakh ha and 1734 Irrigation reservoirs covering 0.887 lakh ha. A total water area of 1.631 lakh ha was available for fisheries development at the end of 2010-11. Out of the available water resources, 0.679 lakh ha rural pond area and 0.837 lakh ha irrigation reservoir water area, thus totalling 1.516 lakh ha has already been brought under fish culture till 2010-11.

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The yield of fish in the whole country in general and especially, in Chhattisgarh is very low. Different shortcomings are enumerated below.

- Usually the water bodies are not optimally used.

- Stocking density is very low, about $1/m^2$.

- Artificial feed is not applied.

- No aeration is provided.

- Average yield of Chhattisgarh is about 2.2 t/ha. It can go upto 10 t/ha if properly practised.

Plan for Intensive Culture

Stocking density of fish can be increased from $1/m^2$ to a value in the range of 3 to $5/m^2$ of waterspread area. A farmer having a fish pond, a nearby source of water, say, a tubewell and land for cultivation of crops can use this technology. Due to high stocking density, water will get polluted with ammonia nitrogen and other nutrients. The 'so called **polluted water**' for fish is '**enriched water**' for the crop as it contains some useful nutrients for the crop. The polluted water of pond is partly pumped out or drained for irrigation purpose. The same amount is filled up by supplying water from the source, which may be a tubewell. Thus both the fish and crop productivity can be increased with the use of fewer resources. This may be called Integrated Agri-Aquaculture System. The details of the system are given below.

Integrated Agri-Aquaculture Systems

- Increases in overall productivity in relation to water use are desirable in the context of rising pressure to utilize water more efficiently.

- Integrated agri–aquaculture systems (IAAS) involving various crop, livestock and aquaculture subsystems help to provide income whilst rehabilitating the soil through better on-farm nutrient recycling.

- Fishpond waste water is a viable source to supplement irrigation water to the crop as well as bridge the gap of chemical fertilizer requirement, especially nitrogen to a marginal amount.

- The integrated agri-fish farming can play an important role in increasing food production as the integrated farming system is better than crop monoculture in terms of resource utilization, diversity, productivity, and both the quality and quantity of the food produced.

- Integrated rice-fish farming also provides various socioeconomic and environmental benefits.

Experiment was conducted at IIT Kharagpur for a period of 3 years with fish stocking densities of 2 (SD-2.0), 3.5 (SD-3.5) and 5 (SD-5.0) per m^2. Treatments included culture under stagnant water conditions (MP-I), culture with water exchange (MP-II) and culture with water exchange and aeration (MP-III). MP-III was found to be the best management practice. The yield of fish ranged from 3.58 to 6.83 t/ha for different stocking densities without aeration. With the highest stocking density and the best management practices, it was 14.8 t/ha. The average yield of tomato obtained from the three treatments and control plots varied between 63.8 to 66.7 t/ha, whereas the average yield of okra varied form 8.76 to 11.38 t/ha. This technology, if properly propagated, may be very useful for Chhattisgarh Fish Farmers as large numbers of underutilized water bodies are available in the state.

The annual recurring and non-recurring expenses for culture in one ha of pond with MP-III can be about Rs.7.50 lakh. With a production of 14.8 t/ha and selling price of Rs.100/kg, net profit can be about Rs.7.30 lakh. The production of fish for different stocking densities (SD) and management practices are presented in Table-3 and the net profit is presented in Table-4.

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Table-3. Species-wise Fish Production in Different Treatments

Management practices	species	Gross production kg/ha		
		Stocking density		
		SD-2.0	SD-3.5	SD-5.0
MP-I	Catla	1368	1250	1596
	Rohu	1142	1435	1859
	Mrigal	1071	1417	1923
	Total	3583	4103	5379
MP-II	Catla	1485	1888	2576
	Rohu	1173	1636	2140
	Mrigal	1103	1538	2109
	Total	3762	5062	6826
MP-III	Catla	2860	4304	5836
	Rohu	1985	3321	4538
	Mrigal	1938	3244	4438
	Total	6784	10870	14813

Table-4. Profit for Different Treatments and Management Practices

Parameter	Management practice	Treatment		
		SD-2.0	SD-3.5	SD-5.0
Profit, Rupees	MP-I	1,45,147	1,06,944	1.38,694
	MP-II	1,29,360	1,27,292	1,58,269
	MP-III	3,66,247	5,56,322	7,35,303

Rice-cum fish culture

Fish that enter the flooded rice fields from irrigation canals and streams are trapped in the fields, and allowed to grow along with the rice. Chosen fish species can also deliberately be stocked and raised either together with the rice or in rotation with it. Based on the experimental findings, designs have been made in the configuration of the rice fields to make them suitable.

Recirculating Aquaculture System (RAS)

Nowadays, it is desirable to get the maximum possible production with the use of minimum resources. In RAS, in a limited area, huge quantity of fish can be raised by recirculating the water after proper purification so that pollution does not occur. Economy in terms of both water and space is obtained.

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Components of RAS: (i) Culture Tanks, (ii) Mechanical Filters (screen filter, rapid sand filter/ Inclined plate filter/ sedimentation tank), (iii) Aeration System, (iv) Biological Filter and (v) UV sterilizer/ Ozonators.

Also for intensive culture of fish, the followings are the essential requirements.

- Low-cost fish feed processing,
- Surface aerator for pond aquaculture,
- Fish health management and
- Environment friendly aquaculture.
    - Fish Feed and Automatic Feeders
- Formulation of Fish Feed
- Production of Feed
- Testing
- Research and development
- Installation and operation of fish feed manufacturing unit
- Design and construction of automatic feeders

Land and Water Management for Horticulture Production in Upland for Employment Generation and Introduction of Agri-Horticulture System in Upland

In upland areas of Chhattisgarh, horticulture can be taken up in a large scale for employment and income generation. Horticulture crops also need irrigation for desirable results. However, to minimize the water requirement, drip irrigation along with mulching should be used. Drip irrigation not only economizes the water use, but the fruit quality is improved and several other benefits occur. The following steps may be followed.

✓ Fruit trees and crops are grown together in various ways.

✓ Depending upon the pattern and configuration, these companion crops are known as intercrops, under planting, hedge row planting.

✓ In intercropping, agricultural crops are normally grown between rows of fruit trees planted at a spacing of 5 to 7 meters apart.

✓ The agricultural crops provide seasonal revenue, while fruit trees are managed for 30-35 years giving regular returns of fruit.

✓ However, shade is not always desirable for agricultural crops such as maize, sorghum, groundnut, etc.

Drip Irrigation System/ Low Cost Poly Green Houses

Drip irrigation system helps to reduce water requirement substantially, liquid and soluble fertilizers can be applied along with the irrigation system for high efficiency application and the fruit quality can be enhanced. Along with it, low cost polythene green houses can be used for raising of saplings throughout the year. Also vegetables can be grown in polyhouses throughout the year under control weather conditions to fetch remunerative prices to the farmers. Plastic mulching can be used to prevent the evaporation loss from the base of the tree and stop weed growth. Some experimental results on this aspect are presented in Tables 5 and 6.

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Table-5

Yield and Water Requirement of Horticultural Crops under Micro Irrigation and Plastic Mulching

Crop	Water requirement ($L\ P^{-1}\ d^{-1}$)	Yield increment through drip	Yield increment through plastic mulch
Mango	16.6 - 47.39	128 %	9.9%
Guava	11.93 - 34.53	164%	67.13%
Banana	4.0-18.6	39.08%	23.8%
Pineapple	1.56 - 5.48	22.81%	15.71%
Cabbage	1.17-1.66	62.44%	1.0 %
Cauliflower	0.74-1.35	22.30%	1.2 %
Tomato	0.89-2.31	44.10%	14.82%
Okra	0.60-1.90	54.92%	14.92%
Brinjal	0.77-3.39	25.58%	31.05%

Table-6

Naturally ventilated greenhouse

Greenhouse for Cultivation of high value crops

Some Potential Crops	Yield (t/ha)	
	Green house	Open field
Tomato	150	50
Capsicum	95	10
Cucumber	180	8
Summer squash	35	25
Green Coriander	275	210
Rose	15-20	1.2
Chrysanthemum	25-40	2.8
Gerbera	35-40 fl/p/year	15-20 fl/p/year
Carnation	20-25	7.5
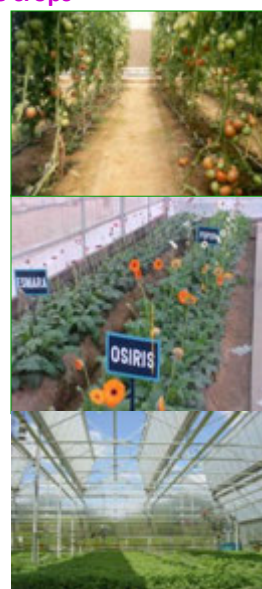
Medicinal Plant Cultivation and Processing

Chemically, depending on their active principles, plants may have alkaloids, glycosides, steroids or other groups of compounds which may have marked pharmaceutical actions as anticancerous, antimalarial, antidysentric, etc. Many of the essential oils, dyes, lattices and even tannins and vegetable oils are also used as medicine.

The uplands of Chhattisgarh are suitable for cultivation of medicinal plants. Once they establish roots in the rainy season, they may grow without irrigation. Processing plants need to be established in the locality to get remunerative prices.

Some Common Medicinal Plants

Aloe Vera: Ghritkumari or *Gheekvar*

Neem: (Hindi, Urdu and Bengali), Nimm (Punjabi), Arya Veppu (Malayalam)

Malabar Nut Common name: {Arusa, Vasala} (Hindi), Adatodai (Tamil), Basak (Bengali), Botanical Name: Adhotada vasica

Jasmine:Common name: Snake Jasmine, Yoodhikaparni

Sarpagandha:Common name: Indian Snakeroot, Insanity herb

Arjun: Sita's favourite tree

Tulsi (Ocimum sanctum) widely grown, sacred and religious plant

Brahmi has antioxidant properties, memory capacity

Ashwagandha contain alkaloids used to treat nervous disorders

Uses of Some Medicinal Plants

Kuchla-----	Seeds for rheumatism

Hadjodi----	Stem for joining broken bone

Safed Musli--- Root is tonic

Kalihaldi------ For leprosy tuber

Bhringraj----	Roots & seeds for lever

Safed Madar– Root & black pepper for snake poison

Mayur Sikha– Seeds for diarrhea

Ishar Mool---- Roots used for snake bite

Rakta Rohida– Bark, root for lever, gland

Sarpa Ganaa-- Root for high blood pressure

Other Appropriate Technologies for Employment Generation

(i) Sal leaf plate making, (ii) Sabui grass products making, (iii) Sal seed, mohua seed oil extraction, (iv) Fodder cultivation and animal husbandry, (v) Sapling for horticulture plantation, (vi) Poultry and dairy farming, (vii) Dairy processing plant, (viii) Honey bee rearing (Apiculture), (ix) Mushroom cultivation, (x) Vermi-composting, (xi) Art & Craft, (x) Value Addition in Natural Produt.

Infrastructure to be developed

(i) Road connectivity, (ii) Internet connectivity, (iii) Agricultural marketing network, (iv) Krishi Vigyan Kendras/Training facilities, (v) Seed production and processing plants, (vi) Vegetable cold storage, (vii) Information Kiosks, (viii) Horticulture processing centres, (ix) Medicinal plant processing facilities, (x) Dairy processing plants, (xi) Health care and education facilities.

Chapter 24

Skill Transfer into Classroom Processes- The Neglected Priority in In-Service Training of Teachers

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There is little argument that teachers hold the key for success of educational reforms. Investigations show that teacher effectiveness is a strong predictor of student academic achievement (Wright, Horn, & Sanders, 1997). The realization that teachers are at the heart of educational reforms led policy makers and national standards to demand high-quality professional development opportunities for teachers. A significant part of the education fund in government as well as non-governmental sectors is allocated to teacher trainings. Training can be defined as the systematic acquisition of knowledge, skills and attitudes that together lead to improved performance in a specific environment (Salas et al., 2006). Training has long been a fundamental concern in educational systems. Teacher training typically involves learning new knowledge, skills, attitudes or other characteristics in one environment (the training situation) that can be applied or used in another environment (*the school-classroom situation*) (Goldstein and Ford, 2002). Presumably, what was learned in training should be applied to performance on the job. However, a common experience is that learning from a formal training program is not carried back completely for application on the job. As the nature of teaching learning processes changes, teachers are increasingly required to develop a wide, mutable set of skills that are essential to their success in leading every child to learn successfully. This encompasses what teachers need to know, what they need to do and what they need to feel in order to successfully perform their assigned tasks. Teacher training is focused on producing permanent cognitive and behavioral changes, and on developing critical competencies for school and classroom performance.

Does Training ensure Transfer?

While teacher training is an investment and is expected to be effective, it is the most frequently criticized investment due to its low effectiveness and poor results. The issue of carry-over from training to the performance situation is referred to as the problem of the "transfer of training." What counts in every training program is whether the participants are able to transfer and apply the skills they learn to their work. A number of studies carried out in different sectors show that transfer of training to the workplace is not high and that many of the skills learned in training are never applied; therefore, training loses efficacy (Saks and Belcourt, 2006). Studies have also shown that 40 percent of the skills acquired during the training process are immediately transferred at work, 25 percent remain for a time period of six months and only 15 percent for a year (Burke and Baldwin, 1999; Facteau et al., 1995). Once a teaching skill is obtained, it needs to be transferred. Since the conditions of the school and classrooms are different from the training situations, a teacher cannot walk simply from the training situation to classroom situation with the skill completely ready for use. The skills developed or modified during training has to be adapted to fit into our classrooms. Although teachers may gain new knowledge and skills through training programs, learning alone is not sufficient for training to be considered effective. In addition to application, the transfer of training involves the generalization and maintenance of the trained knowledge and skills (Ford & Weissbein, 1997). In the present situation, it becomes very important to understand the dynamics of transfer in order to look for ways to minimize transfer losses while improving the yield from any training program.

Basis of Transfer Model

With high investments and allocation of resources to teacher trainings, the need for justifying training effectiveness and documenting that teachers can transfer and use the skills learnt to their work environment has accelerated. This requires creation of transfer models that make it possible not only to evaluate transfer but also, especially, to increase it, thus improving the efficacy of training. Several authors have developed models for the evaluation of training. The contributions of Baldwin and Ford (1988), Noe (1996), Holton (2005), Lim and Johnson (2002), Nijman et al. (2006), and Burke and Hutchins (2008), Geilen, (1996), Huczynski and Lewis (1980), Kontoghiorghes (2004) are of special interest. All these contributions allow us to understand the mechanisms that facilitate or hinder the transfer of training enabling us to develop strategies for promoting it and also instruments for its diagnosis.

These studies distinguish three categories of factors affecting training transfer at work situations:

(1) Trainee characteristics-factors related to trainee;
(2) Training design- factors concerning the training and the planning of the training program
(3) Work environment-organizational factors affecting the transfer as well as the training and the trainee.

Trainee characteristics

It is widely accepted that trainee characteristics play a powerful role in the transfer of training (Burke & Hutchins, 2007). Researches have shown that characteristics of the trainee's personality directly affect the training process and training transfer (Ford et al., 1992; Warr et al., 1999). Traits that have been reported (Grossman & Salas, 2011) to show the strongest, most consistent relationships with transfer include cognitive ability, self-efficacy, motivation and perceived utility of training.

Trainees higher in cognitive ability have more success in processing, retaining, and generalizing trained skills (Baldwin & Ford, 1988; Blume *et al*., 2010; Burke & Hutchins, 2007; Colquitt *et al*., 2000; Grossman & Salas, 2011, Kanfer & Ackerman, 1989; Velada *et al*., 2007).

Self-efficacy is defined as a trainee's judgment about her/his ability to meet training requirements and master the program content (Gist et.al. 1991; Tziner et.al, 2007). The higher the trainee's self-efficacy, the more likely it is that she/he would successfully acquire the target knowledge and skills and apply the learned skills. The influence of self-efficacy on motivation to learn has been strongly supported (Al-Esia et.al, 2009; Chiaburu and Marinova, 2005; Colquitt et.al, 2000; Tracey et.al, 2001). Moreover, a number of studies indicate that trainees who lack sufficient self-efficacy will put in less effort to learn and for transfer of training, since it plays a motivational role and affects the amount of effort applied to task performance (Tziner et.al, 2007). Trainees higher in self-efficacy have greater confidence in their ability to learn and apply trained competencies, and are more likely to persist when performing difficult tasks (Blume *et al*., 2010; Burke & Hutchins, 2007; Chiaburu & Lindsay, 2008; Chiaburu & Marinova, 2005; Grossman & Salas, 2011, Velada *et al*., 2007). Motivation to learn refers to the trainees' specific desire to learn the content of a training program (Al-Esia et.al, 2009; Burke and Hutchins, 2007). Motivation to learn has been found to be affected by individual characteristics (Mathieu, et. al 1993; Grossman and Salas, 2011) and work environmental factors (Chiaburu and Tekleab, 2005). Transfer is facilitated when trainees are motivated to learn and transfer throughout the training process (Baldwin *et al*., 2009; Blume *et al*., 2010; Burke & Hutchins, 2007; Chiaburu & Lindsay, 2008; Chiaburu & Marinova, 2005; Facteau *et al*., 1995; Lim & Johnson, 2002; Naquin & Holton, 2002; Tziner *et al*., 2007). Trainees who perceive training as useful and valuable are far more likely to apply new competencies in the workplace (Burke & Hutchins, 2007; Chiaburu & Lindsay, 2008; Gilpin-Jackson & Bushe, 2007; Velada *et al*., 2007)

Training Design

In order to achieve successful training transfer to the workplace, the training program must be relevant to the work place and job (Axtell et al., 1997; Kontoghiorghes, 2002; Rouiller and Goldstein, 1993). However, it is not just enough for the training content to be relevant. The trainee (teacher) must also understand the relationship between training and work practice in schools to be able to make the transfer (Bates et al., 1997). Planning of the teacher training program is very important for its total success and therefore for training transfer at school. The goals and the extent of training, the training methods, means, as well as the training place and environment, are important factors related to the planning process of training program. In addition to this the trainer or teacher educator must be reliable and effective. Also, the content of the training must emphasize both theoretical and practical aspects, as well as the acquisition of knowledge and skills (Gauld and Miller, 2004). Behavioral modeling is found to facilitate transfer when both positive and negative models are used, and when opportunities to practice are provided (Taylor *et al.*, 2005).

Error management allows trainees to anticipate potential issues, providing them with knowledge of how to handle such problems, and highlighting the negative outcomes that can occur if training is not transferred (Burke & Hutchins, 2007; Heimbeck *et al.*, 2003). Conducting training and practice in environments that resemble the workplace increases the likelihood that trained competencies will transfer (Burke & Hutchins, 2007; Kraiger, 2003; Salas *et al.*,2006). A good combination of all these is important and leads to increased training transfer.

School and work environment

The prevailing organizational climate concerning new knowledge and skills greatly influences whether the transfer will be made or not (Rouiller and Goldstein, 1993; Tracey et al., 1995). A supportive climate increases the adoption of transfer strategies by the teachers as well as the transfer in general (Burke and Baldwin, 1999). Superiors and colleagues are another important factor mentioned in the literature as affecting training transfer (Baldwin and Ford, 1988; Goldstein and Musicante, 1986; Noe and Schmitt, 1986). It happens many times that superiors or head masters of schools do not provide sufficient motivation to teachers and space for application of skills they develop during training. There are also situations where senior staff members are seen to discourage novelty and quality innovative interventions of junior teachers in schools and classrooms. Transfer climate, Situational cues and consequences largely determine whether or not learned competencies are applied in the workplace (Blume *et al.*, 2010; Burke *et al.*, 2008; Colquitt *et al.*, 2000; Gilpin-Jackson & Bushe, 2007; Kontoghiorghes, 2001; Rouiller & Goldstein, 1993; Salas *et al.*, 2006). The existence of a good or bad school climate will affect the training transfer. Culture will or will not allow the teacher to experiment on new skills in classrooms. An organizational culture emphasizing performance orientation values training and learning and taking initiatives (Javidan, 2004). Moreover, in a highly humane-oriented culture like school, one should expect teacher practices to reflect individualized consideration and informal relationships that provide space for successful teaching learning situations where students learn joyfully. Internal and/or external rewards are related to training transfer at work (Rouiller and Goldstein, 1993; Kontoghiorghes, 2001; Tracey et al., 1995). For training to successfully transfer, trainees need the resources and opportunities to apply their new skills and abilities to the workplace (Burke & Hutchins, 2007; Clarke, 2002; Gilpin-Jackson & Bushe, 2007; Lim & Johnson, 2002; Salas *et al.*, 2006). Some studies have argued that to facilitate transfer, the formal training period should be followed by additional learning opportunities (e.g. after action reviews, feedback, job aids) (Baldwin *et al.*, 2009; Salas & Stagl, 2009; Salas *et al.*, 2006; Velada *et al.*, 2007). A recent model developed by Kontoghiorghes (2004) proposes the investigation of learning transfer in a systemic approach. This model examines the impact of organizational factors unrelated to training but affecting working performance.

Present Status- inputs for model development

A significant part of the education fund in government as well as non-governmental sectors is allocated to teacher trainings. New theories and findings in the area of curriculum and pedagogy have paved ways for innovation and experiments in schooling processes, thereby necessitating training. Most of the teacher training programmes involve teachers attending the required sessions and providing feedbacks which is usually very motivated. Teachers, during the training and after the training in training situations, are found positive when talked about the outcomes of the training programme. Observing what a teacher is able to accomplish after any training is interesting. It happens that many teachers struggle to fit materials and pedagogy related activities developed during the training program into classroom processes. My observations during the past few years have evolved four inferences. The first one is that teachers are good learners. They learn almost anything that is classroom and subject content related. They have also been seen, many times to comprehend more than that which the resource team thought of. The second one is regarding transfer of training in classroom situations. It is experienced that any new input into classroom in terms of teacher's skill requires certain conditions for transfer that are not common in most school settings. The third one demands necessity of a feedback and support system for teachers in their schools. This one would encompass monitoring and mentoring simultaneously. The fourth inference is a discovery of conditions which help teachers to learn.

Conclusion

With the existing models of transfer and accompanied factors discussed above, it is important to develop a model that would encompass factors influencing the transfer of training in our classrooms. At the output level, one important factor that motivates any teacher to deliver as expected from training is accountability. Accountability refers to the degree to which the department, society, and management expects teachers to use knowledge and skills and attitudes gained through in-service training and hold them responsible for doing so. Burke and Saks (2009) argue that research and practice on training transfer have much to gain by focusing more on accountability of training as a key factor for improving training transfer. Further, they recommend that organizations conduct training transfer accountability audits and communicate expected behaviors to each of the stake holders and then relate outcomes to the performance reviews, rewards and sanctions. If a teacher is viewed as accountable for certain behaviors or performance, it would connect to actions as a psychological adhesive (Schlenker, 1997) and enhance the feeling of obligation to fulfill it.

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Chapter 25

Skill Development Approaches for Generating Rural Employability

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Abstract
Skills and knowledge are key drivers of macro economic growth and socioeconomic stability. Appropriate policies for the skill development occupy a dominant place in the development of economy. According to five year plan, India has set aggressive goals for faster and sustainable economic growth of nation. With the demographic dividend, India needs to impart adequate skills to its workforce. Skill development has emerged as national priority for which a number of measures have been taken and in process for future. In this context, present paper studies and analyses the present status of skill development and the challenges India faces while implementation of different initiatives and strategies. India is one of the youngest nations in the world with more than 54% of the total population below 25 years of age.

India's workforce is the second largest in the world after China's. While China's demographic dividend is expected to start tapering off by 2015, India will continue to enjoy it till 2040. However, India's formally skilled workforce is approximately 2% - which is dismally low compared to China (47%), Japan (80%) or South Korea (96%).To leverage our demographic dividend more substantially and meaningfully, the Government launched the "*Skill India*" campaign along with "*Make in India*". In this brief, we look at the Skill Development ecosystem in India - the *need* for Skill Development, *initiatives* taken by the Government and *schemes* introduced for skill government by the present government.
Key words: Skill, employment, demographic dividend, training.

1. Introduction

India is uniquely positioned in world due to demographic dividend as compared to developed countries whose population is aging. China, US, Western Europe, Japan and many countries in the world are grappling with an aging population. On the other hand, India with an average age of around 29 years and with a median age much below China and OECD countries. India's 65% of the population is below 35 years of age and 70% of the population will be of working age by 2025. High population if employed, trained and productive can easily capitalize the advantage of demographic dividend and lead to sustainable development but same high unemployed, untrained and unproductive population can even turn demographic dividend into demographic liability.

Need for Skill Development
Livelihood opportunities are affected by supply and demand side issues. On the supply side, India is failing to create enoughjob opportunities;and on the demand side, professionals entering the job market are lacking in skill sets.This is resulting in a scenario of rising unemployment rates along with low employability.

Job Creation: Between 1999-2000 and 2004-05, the number of jobs increased by 59.9 million persons (assessment by usual status) against an increase in labour force of 62 million.Though, the increase in employment kept pace with increase in labour force for the next 5 years, the total increase in jobs was only 1.1 million. Employment generation picked up from 2009-10, with 13.9 million people finding jobs in 3

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years. However, 14.9 million people entered the job market during this period. Currently about 26 million people enter the working age group every year with about 65% of them looking for jobs.

Youth Skilling: While keeping pace with employment generation is one issue, employability and productivity of those entering the labour market is another issue. As per the India Skills report 2015, only *37.22%* of surveyed people were found employable - 34.26% among male and 37.88% among female. NSSO (2010) showed that only 10.1% of the labour force had received vocational training, with only 25.6% among them receiving a formal vocational training. India ranked *last* among 60 countries on labour productivity (World Competitiveness Yearbook, 2012).

Demand for Skilled Workforce:CII (2009) had projected Incremental Human Resource Requirement till 2022 at 201million, making the total requirement of skilled work force by 2022 at 300 million. A major share of these jobs was to be added in the manufacturing sector, with the National Manufacturing Policy (2011) targeting 100million new jobs in manufacturing by 2022. The National Skill Development Policy (2009) had set a target of skilling 500 million people by 2022. *More recently, study reports commissioned and released by Ministry of Skill Development assessed an incremental human resource requirement across 24 sectors as 109.73 million by 2022.*

Government Policies on Skill Development

The Government has recognized the need for Skill Development with the 11th Five Year Plan providing a framework to address the situation. The first National Skill Development Policy was framed in 2009 and subsequently a National Skill Development Mission was launched in 2010. The Policy was to be reviewed every five years to evaluate the progress.The12th Five Year Plan observes that Skill development programmes in the past have been run mainly by the government, with insufficient connection with market demand. It has called for an enabling framework that would attract private investment in Vocational Training through Public–Private Partnership (PPP).The NDA Government created a Ministry of Skill Development & Entrepreneurship to address the Skill Development needs.

2. Objective of the study

The study has been conducted mainly to:
1. Understand the present status of skill development in India
2. To understand the challenges in skill development in India
3. Skill development initiatives and strategies in India and its impact on India

3. Research methodology

The research paper is an attempt of exploratory research, based on the secondary data sourced from journals, magazines, articles and media reports. Looking into requirements of the objectives of the study the research design employed for the study is of descriptive type. Keeping in view of the set objectives, this research design was adopted to have greater accuracy and in depth analysis of the research study. Available secondary data was extensively used for the study. The investigator procures the required data through secondary survey method. Different news articles, Books and Web were used which were enumerated and recorded.

Challenges with respect to skill development initiatives

The current capacity of Government/private training institutes are quiet low in number. It is only million per annum. The eligibility criteria under the current vocational training structure requires secondary education-class 8th as mandatory which restricts a significant number of less educated or illiterate workers to enter the formal training system. The course pattern is not as per industry requirement and latest developments of market are not covered in the curriculum which effects employability as Companies have to re-train the

apprentices at the time of hiring. The under quality of training program is also one of the issues. Apprenticeship training where students are trained at the company premises is also a failure in India because of inadequate private sector participation and administrative challenges arising from the distribution of power across various levels of governments (Government of India 2009:23). The number of entrants in the non-farm sector is only increasing every year because of movement of labor from farm to non-farm sector. There has been no change in farm based jobs. The growth in skill training provided in sectors such as retail, customer services etc have been uneven. Meeting the training requirement of such large workforce has remained a challenge. The under quality of training program offered and lack of interest by the private partners is a major disadvantage.

Ministry of Skill Development & Entrepreneurship

A Department of Skill Development and Entrepreneurship was created under the Ministry of Youth Affairs and Sports in July, 2014 and was subsequently upgraded to full-fledged ministry in November 2014.The role of the Ministry involves coordinating and evolving skill development frameworks, mapping of existing skills and certification, industry-institute linkages among others.Human Resource and Skill Requirement reports across 24 sectors were prepared which serve as a baseline for all skill developm ent initiatives.The Ministry works primarily through the National Skill Development Corporation (NSDC), National Skill Development Agency (NSDA), and the Directorate of Training (DT). The roles and functions of these entities are mentioned below.

NSDC	• Public Private Partnership entity set up to promote and fund private training providers and set up Skill Development Centres. Funds to NSDC are received through NSDF • Facilitate setup of Sector Skill Councils (SSCs)which are autonomous industry-led bodies. SSCs design Qualification Packs (QPs) and National Operation Standards. • Implement STAR (Standard, Training, Assessment and Reward) and UDAAN Schemes
NSDA	• Autonomous Body registered under Societies Act. Rationalize Skill Development Schemes of Government of India • Anchor and implement the National Skills Qualifications Framework (NSQF) • Create integrated Labour Market Information System (LMIS), engage with states to plan their skill development and facilitate Skills Innovation
DT	• Training and Apprentice Divisions have been transferred from Labour department from April 2015 • Comprises government and private ITIs, PPP skill schools and other institutions • 25 new Advanced Training Institutes to be setup.

Of the 500 million targeted to be skilled under the National Skill Development Policy 2009, the National Skill Development Corporation (NSDC) was mandated to skill 150 million, while the Directorate General of Employment and Training (DGET), under the Ministry of Labour and Employment was to skill 100 million. Currently, over 70 skill development schemes across various sectors are being implemented by over 20 Central Ministries/Departments.

Schemes Implemented by various Ministries			
Year	Target (in lakhs)	Persons skilled (in lakhs)	Achievement
2011-12	46.53	45.58	98%
2012-13	72.51	51.88	72%
2013-14	73.42	76.37	104%
2014-15	105.07	51.50*	49%

Source: Lok Sabha Questions, *up to February, 2015

Draft National Policy for Skill Development and Entrepreneurship 2015

The objective of the Policy is to meet the challenge of skilling at scale with speed, standard (quality) and sustainability. It aims to provide an umbrella framework to all skilling activities being carried out within the country, to align them to common standards and link skilling with demand centres.

The Policy lists out ten major directions for the Skill Development Framework, including increasing the capacity, synergy among existing schemes, global partnerships and inclusivity. It seeks to address the lacunae in Entrepreneurship by steps like streamlining entrepreneurship in education system, inventing business through mentorship, fostering social entrepreneurship, promoting inclusivity, improving the ease of doing business and providing access to finance. It also mentions the possibility of the launch of the National Mission for Skill Development &Entrepreneurship in next six months.

The policy encourages companies to spend at least 25% of Corporate Social Responsibility (CSR) funds on skill development, seeks to introduce fee paying model along with Skill Vouchers, and set up a Credit Guarantee fund for Skill Development. A 'Project Implementation Unit' (PIU) is also proposed to be set up to review the implementation and progress of the various initiatives under this policy.

Select Schemes and Funding

The Government has introduced new schemes along with a revamp of few existing schemes. Some of the more important ones are listed below, along with information on implementing agencies and budgetary outlay for this financial year.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY): This is aflagship outcome-based skill training scheme aimed at benefiting 24 lakh youth. A monetary reward is provided to trainees on assessment and certification. The steering Committee for PMKVY is responsible for providing directions for implementation.

> **Implementing Agency:** The scheme will be run through the National Skill Development Corporation (NSDC), by the Ministry of Skill Development and Entrepreneurship
>
> **Scheme Outlay (2015-16):** Budgetary Allocation ofRs 1,500 crore (including awareness, mobilization and administrative expenses). NSDC supports vocational training institutes by providing funding upto 75% of the total project cost in case of for profit entities and upto 85% of the total project cost in case of not for profit entities.

Deen Dayal Upadhyaya Gramin Kaushal Yojana (DDU-GKY): The Skillcomponent ofNRLM,Aajeevika Skills, has been revamped as the Deen DayalUpadhyaya- Grameen Kaushalya Yojana. The minimum entry age for the scheme has been reduced to 15 years (from the earlier 18). Training will be imparted through 1500-2000 centres to be set up for the purpose over the next two years. The Government is also exploring a Project for providing Livelihoods in Full Employment (LIFE) for skilling the unskilled workers in NREGA. This project is likely to start from mid-July.

Implementing Agency: The DDU-GKY National Unit in the Ministry of Rural Development functions as the policymaking, technical support and facilitation agency. DDU-GKY State Missions provide implementation support and the Project Implementing Agencies (PIAs) implement the programme through skilling and placement projects.

Scheme Outlay(2015-16): Budgetary Allocation of Rs. 1200 crores.Thisschemewill run with a changed sharing pattern, with states bearing the revenue expenditure.

Other Schemes: Under theDeen Dayal Upadhyaya AntyodayaYojana (DAY)scheme, Ministry of Housing and Urban Poverty Alleviation will undertake skill development of 5 lakh urban poor per year.The first phase of DAY in urban areas isto be implemented from 2016-17. The Ministry has signed a Memorandum of Undertaking (MoU) with NSDC to assist in training.

Other new programmes include **NaiManzil** for education and skill development of dropouts; USTTAD(Upgrading Skills and Training in Traditional Arts/Crafts for Development) to conserve traditional arts/crafts and build capacity of traditional artisans and craftsmen belonging to minority communities; **NaiRoshni**, a leadership training programme for minority women; and **MANAS** for upgrading entrepreneurial skills of minority youth.

Measures taken by government of India

The Government and industry are well aware of this reality and trying to figure out solutions for the challenges. National Skills Policy was formulated in 2009 by Government of India and special budget was also allocated in the FY 2011-12, 2012-13 with an ambitious target of imparting skills training to 500 million by 2022. A National Skill Development Corporation Board (NSDCB) and Prime Minister's National Skill Development Council was established. NSDCB is based on Public Private Partnership (PPP) under the chairmanship of the Deputy Chairman of the Planning Commission. It formulates strategies based on the decisions of Prime Minister's Council on National Skill Development. The setting up of autonomous body National Skill Development Agency (NSDA) was approved on 9th May 2013. The NSDA is mandated to work towards coordination and harmonization of skill development efforts of the central and state governments as well as the public and privatesector industries. It looks after policy changes, scheme reviews, new scheme strategies and engagement with PSUs and NGOs. The Government is constantly working to bring the required machinery and infrastructure for training. Initiatives needs a considerable amount of innovative delivery approaches such as decentralized delivery, mobile training, distance learning/e-learning and web-based learning and capacity expansion. Special courses offering multiple skills have been initiated at ITIs under the Modular Employability Scheme. People who had informally-acquired skills can get certification by taking examinations at ITIs. Public Private Partnership is also used quiet extensively where training programs are sponsored by private funding. Apprenticeship Act has also been implemented by the Government under which every company has to compulsorily hire a fix number of apprentices from ITI's every year to work and train at the company. The apprentice learns theory at the college and gets hand on experience at the company. This approach helps in alignment of industry's requirement for skilled talent as company's hire the candidate and then train him as per industry's requirement. Public training institutes are trying to promote expansion of public training institutes in difficult areas where private sector is not accessible. NSDC has set a target of at least 70% placement among students on completion of training program so that the relevance of training imparted by its partners can be understood by the students. To improve the dignity of labor, media campaigns have also been initiated by NSDC at the national level.

Government taking one step ahead has made some international collaboration with developed and industrialized countries like U.K, Germany, and Australia etc to exchange the ideas for delivery of skills training. UK Collaborations are: The UK Skills Forum (UKISF) India, an initiative by the UK India Joint Economic and Trade Committee (JETCO), The UK India Business Council acts as Secretariat for the

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UKISF. It is also the first point contact for UK skill providers, for India, it is FICCI. Since 1958, Germany has already been providing technical and financial assistance to develop institutes like Foreman Training Institute (FTI), National Instructional Media Institute, Chennai, or Central Staff Training and Research Institute (CSTARI). A MOU has been signed between Singapore's Institute of Technical Education and the state government of the National Capital Territory of Delhi's Department of Training and Technical Education on the establishment of a world-class Skills Centre in Delhi. Measures taken by private companies Ground reality is known by the Industry and is working to find out solutions to these challenges. Non-profit organizations in large numbers are being engaged in providing skill training to enhance employability among the weaker sections of society.

Conclusions and suggestions

Presently 80% of the workforce in India (rural and urban) doesn't possess any identifiable and marketable skills. Therefore, bridging this gap through various skill development initiatives could make India the global hub for skilled manpower, and also result in a surplus of skilled manpower of approximately 47 million 2020 (FICCI). Despite various efforts and investments in shaping the skills of a huge labor force there are grave drawbacks in the system. Even after the government investing a lot in training costs and infrastructure, creation of robust workforce for the industry is still a fantasy. As a fast growing developing economy, besides white and blue collar, India also needs Grey collar- knowledge workers which include ICT skills, problem solving, analytical ad effective communication skills and rust collar-skilled workers at the grass root level in currently unorganized sector and un-benchmarked sectors like construction, agriculture and related trade. Government, industry leaders are constantly from time to time launching new skill development initiatives but somehow it is not reaching the casual workers who dominate the Indian work-force. Stakeholders (Industry leaders, Government etc) have realized that none of them can work in isolation. They will need to collaborate as the stake involved is huge. Mandatory Monitoring and Quality Certifications should be in place which will ensure high standards training programs with prime focus on enhancing the employability. Sector specific Labor Market Information System (LMIS) at national and state level is to be established for reducing the skill mismatch which can help in the reliable and realistic assessment of economic trends and labor market. Labour market analysis to be undertaken by Area specific LMIS at local levels with the help of Sector Skill Councils (under National Skill Development Corporation). Supply and demand of skilled manpower can be mapped with the help of Human Resource Planning (HRP) which is also one of the important component. These exercises can help to anticipate skill gap over a period of time at different levels, sectors and geographical areas. A designated agency should work on generating information from the LMIS and HRP exercises. Government employers, national, state and local level training providers, trainees and prospective trainees should be disseminated with information so collated so that they can use it in their skill development plans. The information at National level can be disseminated by NCVT by receiving inputs from state and local levels. Counseling, placement and guidance can be provided by strengthening and upgrading the Employment Exchanges. In a male dominated society, there has always been a limited scope to develop their skills for women and girls in rural areas due to social, economic and cultural constraints. The payment of wages is also on lower side. Socio-economic empowerment of rural women can be attained by investing in their skill development. They can be provided with basic education, technical training and other women extension services. Support by self help groups and NGOs can help in improving their conditions by making them understand the importance of basic education and also by making the change in attitude of society towards women. A designated agency should design the courses and introduce them at various levels on the basis of emerging opportunities for skill development and employment generation. The change should be brought from education system which needs to be renovated and restructured. Young population even after having degree is not able to fit in the industry due to lack of expertise to compete. The vocational training should start from High School. Students should be made industry ready by making the curriculum for professional courses such as Engineering and MBA in a way that provides complete on the job training. The standard and quality of training needs to be upgraded. Soft skills training along with technical skills will bring desired results. International players find a great

opportunity in the Indian skill sector to enter a growing market whilst ensuring service to the society. Also considering the demand of 500 million skilled laborers by 2022 these issues need to be addressed. Moreover, with the passage of the Companies Act 2013, the mandate for Corporate Social Responsibility has been formally introduced and it is likely that the total CSR spends will increase for employability linked programs to promote skill development. Prime Minister in his maiden speech said, "Skill development should be accompanied by a spirit of '*Shram-ev Jayate*' – giving dignity to labour." Skill development and entrepreneurship is one of the topmost priorities of the new Government due to which first time an independent ministry has been created to take the mandate forward. Finally, it is important that the intended beneficiaries of the skill development program join training programs with an inspiration to learn and make them self-reliant to live a better life.

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Chapter 26

Role of Digital India in Skill Development

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Abstract

Technology advancement in India in the current decade is very impressive. Digital India is a large umbrella program which will structure and re-focus several existing scheme to in a transformative impact. The Digital India vision aims to transform our country into a digital economy with participation from citizens and businesses. This initiative will ensure that all government services and information are available anywhere, anytime, on any device that is easy-to-use, seamless, highly-available and secured.

Introduction

Digital India Launched by Prime Minister Narendra Modi on July 1, 2015, the Digital India initiative was started with a view to empower the people of the country digitally. The initiative also aims to bridge India's digital segment and bring big investments in the technology sector.

What is Digital India?

Digital India is an initiative by the Government of India to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity.

The Digital India initiative seeks to lay emphasis on e-governance and transform India into a digitally empowered society.

The program is projected at Rs 1, 13,000 crore which will prepare the country for knowledge-based transformation. The Department of Electronics and Information Technology (deitY) anticipates that this program will have a huge impact on the Ministry of Communication and IT. It is to ensure that government services are available to citizens electronically. It will focus on providing high speed internet services to its citizens and make services available in real time for both online and mobile platform.

Digital India also aims to transform ease of doing business in the country.Modi's government is focusing on providing broadband services in all villages of the country, tele-medicine and mobile healthcare services and making the governance more participative.

Vision of Digital India initiative:

Here is what the government of India aims to achieve through Digital India initiative.

1. Infrastructure: The Digital India initiative has a vision to provide high speed internet services to its citizens in all gram panchayats. Bank accounts will be given priority at individual level. People will be provided with safe and secure cyber space in the country.

2. Governance and services: Government services will be available online where citizens will be ensured easy access to it. Transactions will be made easy through electronic medium.

3. Digital empowerment of citizens: This is one of the most important factors of the Digital India initiative to provide universal digital literacy and make digital sources easily accessible. The services are also provided in Indian languages for active participation.

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Nine major projects under the initiative:

1. Manufacturing of electronics: The government is focusing on zero imports of electronics. In order to achieve this, the government aims to put up smart energy meters, micro ATMs, mobile, consumer and medical electronics.

2. Provide public access to internet: The government aims to provide internet services to 2.5 lakh villages which comprises of one in every panchayat by March 2017 and 1.5 lakh post offices in the next two years. These post offices will become Multi-Service centers for the people.

3. Highways to have broadband services: Government aims to lay national optical fibre network in all 2.5 lakh gram panchayats. Broadband for the rural will be laid by December 2016 and broadband for all urban will mandate communication infrastructure in new urban development and buildings. By March 2017, the government aims to provide nationwide information infrastructure.

4. Easy access to mobile connectivity: The government is taking steps to ensure that by 2018 all villages are covered through mobile connectivity. The aim is to increase network penetration and cover gaps in all 44,000 villages.

5. e-Governance: The government aims to improve processes and delivery of services through e-Governance with UIDAI, payment gateway, EDI and mobile platforms. School certificates, voter ID cards will be provided online. This aims for a faster examination of data.

6. IT Training for Jobs: The government aims to train around 1 crore students from small towns and villages for IT sector by 2020. Setting up of BPO sectors in North eastern states is also part of the agenda.

7. e-Kranti: This service aims to deliver electronic services to people which deals with health, education, farmers, justice, security and financial inclusion.

8. Global Information: Hosting data online and engaging social media platforms for governance is the aim of the government. Information is also easily available for the citizens. MyGov.in is a website launched by the government for a 2-way communication between citizens and the government. People can send in their suggestions and comment on various issues raised by the government, like net neutrality.

9. Early harvest programs: Government plans to set up Wi-Fi facilities in all universities across the country. Email will be made the primary mode of communication. Aadhar Enabled Biometric Attendance System will be deployed in all central government offices where recording of attendance will be made online.

Response to the Digital India initiative from global investors:

Global investors like Sundar Pichai, Satya Nadella, and Elon Musk have supported Modi's Digital India initiative.

Microsoft CEO, Satya Nadella intends to become India's partner in the Digital India program. He said that his company will set up low cost broadband technology services to 5 lakh villages across the country.

Apps for Digital India

Digital India Portal, MyGov Mobile App, Swachh Bharat Mission App and Aadhaar Mobile Update App

Impact of Digital India by 2019

- Broadband in 2.5 lakh villages, universal phone connectivity
- Net Zero Imports by 2020

- 400,000 Public Internet Access Points Wi-Fi in 2.5 lakh schools, all universities; Public Wi-Fi hotspots for citizens.
- Digital Inclusion: 1.7 Cr trained for IT, Telecom and Electronics Jobs
- Job creation: Direct 1.7 Cr. and Indirect at least 8.5 Cr.
- e-Governance & eServices: Across government
- India to be leader in IT use in services - health, education, banking.
- Digitally empowered citizens - public cloud, internet access.

Benefits of Digital Locker Digital

- Locker facility will help citizens to digitally store their important documents like PAN card, passport, mark sheets and degree certificates.
- Digital Locker will provide secure access to Government issued documents. It uses authenticity services provided by Aadhaar.
- It is aimed at eliminating the use of physical documents and enables sharing of verified electronic documents across government agencies.
- Digital Locker provides a dedicated personal storage space in the cloud to citizens, linked to citizens Aadhaar number.
- Digital Locker will reduce the administrative overhead of government departments and agencies created due to paper work.
- It will also make it easy for the residents to receive services by saving time and effort as their documents will now be available anytime, anywhere and can be shared electronically.
- To sign-up for your Digital Locker, one needs an Aadhaar card and a Mobile number that is linked to that Aadhaar card Number.

Conclusion

Digital India is a programme to transform India into a digitally empowered society and knowledge economy by leveraging IT as a growth engine. The ultimate objective is to deliver all possible government services to citizens electronically.

The focus of the new Government to build Digital India by connecting every household, village, panchayat, universities, and government departments will go a long way in providing solution to the never ending problems of particular rural India and to create smart governance. As part of the digital agenda, the Government wants to make every household and every individual digitally empowered.

For the Digital India to be successful, the way ahead is the synergy and collaboration between private and public sector in terms of resources from monetary to technology support, human resources and infrastructure.

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Chapter 27

Spousal Relationships as Misalliance: A Study on Anita Desai's Select Novels

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Anita Desai's chief concern is human relationship. Her central theme is the existential predicament of the individuals projected through the problems of the self in an emotionally disturbed *milieu*. Delicately conscious of the reality around them, her protagonists carry with them a sense of loneliness, alienation, and pessimism. Desai adds a new dimension to the genre of Indian fiction in English by probing the unquestionable existentialist concerns of her protagonist…. Anita Desai is obsessively occupied with the individual's quest for meaning and value, freedom and truth that provide spiritual nourishment to the estranged self in a seemingly chaotic and meaningless world….

(Swain 164-5)

The Radical Feminists allege that marriage is at the very root of woman's subjection to the man because through it man controls both her reproduction and her person.   *Face of Feminism, 230*

In India where women have redesigned role, which does not allow any room for individualism, identity and assertion, Anita Desai talks of women who question the age old traditions and want to seek individual growth. The relation between a man and a woman is never taken to be a relation between two equals. A woman has no identity and she is also not supposed to have her identity. Whatever identity she is supposed to have is conferred on her by males. She is like a slave and a male is like a master. Ancient Indian law speaks of women and children as the property of the male. Anita Desai's prime concern is the projection of the existential predicament of woman as an individual. The uniqueness of Anita Desai's fiction lies in her treatment of feminine sensibility. The tension between husband and wife, because of incompatibility in their temperament is present in many of her novels. D.H. Lawrence points out: The great relationship for humanity will always be the relationship between man and woman. The relation between man and man, woman and woman, parent and child will always be subsidiary.(D.H. Lawrence 130) Desai expresses a desire for a way of life, which would respond to the innermost yearning of women for self-emancipation and self-dignity. She has portrayed remarkable women characters who live, act and develop while they react and respond to the changing times. Desai sincerely broods over the fate of modern woman more particularly in the male dominated society and her annihilation at the altar of marriage. In Desai's novels most marriages are proved to be unions of incompatibility. Most of her protagonists are alienated from the world, from societies, from families, from parents and even from their own selves because of their individuality. When these characters have to face alienation, they become rebels. They often differ in their opinion from others and embark on a long voyage of contemplation in order to find the meaning of their existence. That is why that they suffer of their relationships more than others do.

The novel *Cry, the Peacock* is mainly concerned with the theme of disharmony between husband and wife relationship. The play is about Maya's Cry for love and relationship in her loveless wedding with Gautama. The peacock's cry is an implication of Maya's anguish cry for love and life of involvement. Unable to establish a rapport with her husband and to find a meaning in her 'arid existence', Maya remains throughout an utterly lonely creature in this helpless and indifferent word. The novel shows her despair, anxiety, dread, anguish and her choice in the given situation, which ultimately leads her to insanity. No wonder that Maya's childhood world of fantasies and adult world of realities clash producing more imbalance in life. Inner demands and outer realities also create a conflicting situation. Maya wants to escape from realities whereas Gautama desires to live in it.

Sarah of *Bye-Bye Blackbird* suffers because of cultural alienation whereas Maya suffers because of psychological alienation. The novel *Bye-Bye Blackbird* centres around three characters *viz*., Adit, Dev and Sarah. Among these three characters, Sarah plays a vital role in the novel. Sarah is an English lady married to Adit Sen, an Indian immigrant. By marrying an Indian immigrant Sarah faces cultural crisis. Anita Desai presents Sarah as a woman and reveals her dilemma and split personality which are the result of her marriage with Adit. Sarah married Adit in the hope of filling the hollowness of her life with the exotic but romantic world of her husband. But, she is deceived in her hopes as Adit stays in England living the unreal life of an immigrant. After her marriage, she has sacrificed man thing to buy peace in her family life. Now she has to say good-bye to England itself where she has lived for twenty four years. The cause of disharmony between Sarah and Adit is not to be found in the difference of their culture; it emanates from their different temperaments rooted in the individualities. Adit's indifference towards Sarah's emotional sufferings is reflected in his half-hearted attempt to know the cause of her anguish. In a man-woman relationship there would always be a need for sacrifice and surrender. But the paradox is in reality, it is always the woman who does so.

Fire on the Mountain is pervaded by an overpowering sense of loneliness and isolation in the deserted life of the protagonist, Nanda Kaul and her great-grand daughter Rekha. Anita Desai probes the feminine sensibility and a woman's inherent desire to know herself in terms of not only her relationship with her family but also in terms of her individual identity and its relationship with the world at large. Fire on the Mountain creates the problems of man-woman relationship as a basic component part of uninteresting family life. Like Sita, Nanda Kaul lives alone in her villa. As the Vice – Chancellor's wife she had to fulfil her social role, she had to cater to the needs of her children, born out of a loveless marriage and fruits of estranged relationships. Her husband is responsible for this. Outwardly the Kauls are an ideal couple for university community but from inside their relationship is all-barren.

To conclude, Anita Desai presents to reader her opinion about complexity of human relationships as a big contemporary problem and human condition. So, she analyses this problem due to shows changing human relationships in her novels. Her women characters make a reader look at them with awe with their relationship to their surroundings, their society, their men, their children, their families, their psychological make-ups and themselves. Though not admittedly a feminist, Anita Desai is well aware of the predicament of the Indian women and their relationship with men. Desai deals with complexity of human relationships as one of her major theme, which is a universal issue, as it attracts worldwide readers to her novels have their judgment about her characters and their actions.

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Chapter 28

Clinical Data Mining:An Approach to Enhance the Quality of Clinical Trials

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Introduction

Data mining has been defined as "the nontrivial extraction of implicit, previously unknown, and potentially useful information from data". In areas other than the life sciences and healthcare, data mining is a huge industry, with more than a hundred companies providing a vast array of software products and services to clients that obtain, generate, and rely on large quantities of data. But now a days it should come as no surprise that the biopharmaceutical industry is increasingly employing a variety of data-mining methodologies to help it deal with the enormous amounts of biological information of various forms that the industry collects. Ranging from annotated databases of disease profiles and molecular pathways to sequences, structure–activity relationships (SAR), chemical structures of combinatorial libraries of compounds, individual and population clinical trial results, the biopharmaceutical industry is inundated with information, and data mining is the centerpiece of advanced methodologies to help the industry deal with this information overload. Clinical data mining is the application of data mining techniques using clinical data. Mining clinical data is a fast-evolving field, ranging from mining patient data of a particular type (e.g., images, genomics) to mining the increased amount of mixed-format information (databases, free text, images, labs, etc) in electronic health records (EHR), to selecting, extracting and synthesizing relevant knowledge from large medical corpuses,to the promise of personalized medicine where therapy and prevention are tailored to smaller and smaller patient subpopulations, down to the individual patient. Clinical data mining can be a key asset in driving vast systemic improvements in healthcare, leading to improved patient outcomes and reduced healthcare costs.

Definition

Clinical Data-Mining (CDM) involves the conceptualization, extraction, analysis, and interpretation of available clinical data for practice knowledge-building, clinical decision-making and practitioner reflection. Clinical data can be obtained from various sources like Medical Transcript Files and Electronic Medical Records (EMR). We can create a new clinical database which accumulates large quantities of information about patients and their medical conditions using these two sources. Relationships and patterns within this data could provide new medical knowledge. Clinical data mining has three objectives: understanding the clinical data, assist healthcare professionals, and develop a data analysis methodology suitable for medical data. Classification is the most frequently used data mining function with a predominance of the implementation of Bayesian classifiers, neural networks, and SVMs (Support Vector Machines). A myriad of quantitative performance measures were proposed with a predominance of accuracy, sensitivity, specificity, and ROC(Reciever operating Characteristic)curves.

Importance of Clinical Data Mining

1. In recent years more than 30 million people were treated for life threatening diseases like Cancer and Heart Disease. Identification of early signs of cancer and heart disease is possible and can save thousands of lives. Analyzing a database of thousands of patients which can provide valuable

information about the probable causes, nature of progression, etc., can help in developing systems that could identify disease at the earliest signs of occurrence leading to timely treatment and preventive techniques.

2. Every year, new guidelines come out regarding the usage and the dose of different drugs.Sometimes guidelines show some drugs taken in combination can produce adverse effects. Using this knowledge database we can find the patients taking those contradicting drugs.

Approach of Clinical Data Mining

Data mining process is divided into four phases: : i) Data Collection ii) Pre-Processing iii) Data Parsing iv) Application of Knowledge

1. Data Collection: Clinical Data of any patient is stored in two different formats.   i) Medical Transcript File (contains 25 to 30% of information) ii) EMR (contains 75-80% of information).In this phase, each patient information of transcript file and EMR is mapped.

2. Pre-Processing: To get accurate output from the parser, the input document needs to be in Clinical Document Architecture (CDA). So in pre-processing phase given input document is converted into CDA format.

3. Data Parsing: Pre-Processed Data is parsed into a single structured format. Here negation, Snomed Codes, Rx-Norm Codes, ICD-9 Codes, Body Measurements, Drug Dosages, Smoking Status and Allergies are detected.

4. Application of Knowledge: Using this knowledge we can create a new Database, and querying the database can be useful in medical research and in improvement of patient healthcare.

Methodologies and Applications in Clinical Data Mining

Data-mining applications are being developed using essentially six major approaches, which lend themselves to different types of biological data analysis. The first approach is generically known as influence-based mining. Here, complex and granular (as opposed to linear) data in large databases are scanned for influences between specific data sets, and this is done along many dimensions and in multi-table formats. These systems find applications wherever there are significant cause-and-effect relationships between data sets—as occurs, for example, in large and multivariant gene expression studies, which are behind areas such as pharmacogenomics.

A variant of influence-based mining is the method generically referred to as affinity-based mining. Again, large and complex data sets are analyzed across multiple dimensions, and the data-mining system identifies data points or sets that tend to be grouped together. These systems differentiate themselves by providing hierarchies of associations and showing any underlying logical conditions or rules that account for the specific groupings of data. This approach is particularly useful in biological motif analysis, whereby it is important to distinguish "accidental" or incidental motifs from ones with biological significance.

Yet another approach is generically referred to as time-delay data mining. Here, the data set is not available immediately and in complete form, but is collected over time. The systems designed to handle such data look for patterns that are confirmed or rejected as the data set increases and become more robust. This approach is geared toward long-term clinical trial analysis and multicomponent mode of action studies..

In the fourth approach, trends-based data mining, the software analyzes large and complex data sets in terms of any changes that occur in specific data sets over time. The data sets can be user-defined, or the system can uncover them itself. Essentially, the system reports on anything that is changing over time. This is especially

important in cause-and-effect biological experiments. Screening is a good example, where responses over time to particular drugs or other stimuli are being collected for analysis. The software is designed specifically for this purpose, and can identify multiple trends very efficiently.

The fifth approach is generically known as comparative data mining, and it focuses on overlaying large and complex data sets that are similar to each other and comparing them. This is particularly useful in all forms of clinical trial meta analyses, where data collected at different sites over different time periods, and perhaps under similar but not always identical conditions, need to be compared. Here, the emphasis is on finding dissimilarities, not similarities.

Finally, data mining alone is lacking somewhat if it is unable to also offer a framework for making simulations, predictions, and forecasts, based on the data sets it has analyzed. So-called predictive data mining combines pattern matching, influence relationships, time set correlations, and dissimilarity analysis to offer simulations of future data sets. One advantage here is that these systems are capable of incorporating entire data sets into their working, and not just samples, which make their accuracy significantly higher. Predictive data mining is used often in clinical trial analysis and in structure–function correlations.

Conclusion

Improving the quality and efficiency of clinical trials will leverage improvements in many other aspects of the healthcare system. The only way we can get there is to use integrated information.Clinical data mining respects its commitment to extracting new and previously unknown knowledge from clinical databases. More efforts are still needed to obtain a wider acceptance from the healthcare professionals and for generalization of the knowledge and reproducibility of its extraction process: better description of variables, systematic report of algorithm parameters including the method to obtain them, use of easy-to-understand models and comparisons of the efficiency of clinical data mining with traditional statistical analyses. More and more data will be available for data miners and they have to develop new methodologies and infrastructures to analyze the increasingly complex medical data.

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Chapter 29

Effectiveness of Marital Counselling

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The idea of encouraging couples to be better participated for counselling has attracted increasing interest in recent years. The main reason for this is the widespread alarm caused by soaring divorce rates and the common consequence of marital failure for adults and their children. Concerned agencies and individuals have felt impelled to seek ways to trying to make marriages less fragile, and one of the ways that seemed to have much to offer was some form of marriage counselling. At its most general, the main argument in favour of this approach is that a common reason for marital failure is simply that couples living without the knowledge or skills or both necessary to keep their relationship in good repair .On this view the remedy is obvious offer, to couples is some form of marriage counselling that equips them with the necessary knowledge or skills. Marriage counselling is based on research and it shows that individuals and their problems are best handled witithin the context of their relationships. It is the process of counselling the parties of a familial relationship in an effort to recognize and to better manage or reconcile troublesome differences and repeating patterns of stress upon the relationship. It focuses primarily on the process of communicating. The most commonly used method is active listening, which helps couples to learn a method of communication which designed to create a safe environment for each partner to express and hear feelings. A viable solution to the problem and setting these marital relationships back on track may be the reorient the individual's perceptions and emotions-how one looks at or responds to situations and feels about them. Emotionally focused therapy for couples is based on attachment theory and uses emotion as the target and agent of change. Emotions bring the past alive in rigid interaction patterns, which create and reflect absorbing emotional states. The most researched approach in marriage counselling is behavioural couple's therapy. It is well established treatment for marital discord. Integrative behavioural couples therapy appears to be effective for sixty nine percentage of couples in treatment. Recently, the effectiveness of marriage counselling has been called into question by a few Post contributors. Understanding the factors is important in determining whether or not seeking therapy for problems in a marriage is the best decision. Findings from a recent study in the Journal of Marital and Family Therapy, report that marriage counselling helps seven out of ten couples find great satisfaction in their marriage. One of the main factors that can determine the effectiveness of marriage counselling is the motivation level of both partners. Marriage counselling helps couples to explore their problems from a new perspective and they can learn new ways to recognize and resolve conflicts as a result of the tools provided by the counsellor. Partners can improve communication that may have eroded the quality of their interactions. It's common for couples to reach an impasse and lose the ability to be vulnerable and trusting of one another. Through counselling the couples can decide to rebuild their marriage and make a renewed commitment, or clarify the reasons why they need to separate or end the marriage. It can help them to work through tough issues or to put aside the baggage that prevents the couple from moving on. In sum, for marriage counselling to be effective, both partners need to be willing to take responsibility for their part in the problems, to accept each other's faults, and to be motivated to repair the relationship. It's important for couples to have realistic expectations because it takes more than a few sessions to shed light on the dynamics and to begin the process of change. The belief behind marital

counselling is that it helps the couples to find solution to the challenges and conflicts that spoils their married life. The social aspect behind it is that when the community shows support for marital counselling couples feel that others want their marriage to succeed. Research evaluating changes in marital satisfaction after counselling indicated that approximately 48% of couples demonstrated improvement or full recovery in relationship satisfaction at five-year follow-up. Relationship deterioration resulted for 38% of couples and 14% remained unchanged. In the process of marriage counselling, some couples may discover it is healthier for them to be apart. However, for those relationships that can be salvaged, and for those couples willing to commit to the process, marriage counselling may be able to remind them why they fell in love and keep them that way.

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Chapter 30

Existence of R.K. Narayan without Malgudi

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R. K. Narayan was a twentieth century Indian author.He was considered as one of leading figures of early Indian literature in English. Narayan was born on October 10, 1906 in Madras. His father was a provincial head master. He spent his early childhood with his maternal grandmother, Parvathi in Madras. For eight he studied years at Lutheran Mission School close to his grandmother's house in Madras, also for a short time at the CRC High School. When his father was appointed headmaster of the Maharaja's High School in Mysore, R.K. Narayan moved back in with his parents. He obtained his bachelor's degree from the University of Mysore. He came from a humble south Indian background where he was consistently encouraged to involve himself into literature.

R. K. Narayan is the one who made India open to the people in foreign countries. He gave unacquainted people a gap to glance into Indian philosophy and sensibilities. His simple and modest writing style is often compared to that of the great American author William Faulkner. Narayan was not interested in the social changes to his conventional Indian town. His writing was never aimed to fulfill that purpose. His grandmother taught him Tamil alphabets as well as classical songs. This early education of Indian classical myths and tradition helped him to store everything in his mind and later helped him to add meaning to his life and work. He started writing from his childhood. He observed the life of the people around with complete care. Later, he made use of those characters in his literature. Thus, his characters have an Indian flavor and they are often drawn from middle class and lower middle class society.

Most of his works are set in Malgudi, a fictional South Indian town. It was a town created from his own experiences, his childhood and upbringing. The people in it were people he met every day. He thus created a place which every Indian could relate to. A place, where, one could see scruffy streets,a visitor approaching past the bank, the cinema, the haircutting saloon and many more.He first pictured the railway station, which was a small platform with a banyan tree, a station master, and two trains a day, one coming and one going.

The fictitious town Malgudi created by R.K. Narayan can be seen in his novels and short stories. It forms the setting for most of Narayan's works. Starting with his first novel, Swami and Friendsand most of his short stories take place here. Narayan has successfully portrayed Malgudi as a microcosm of India.

The foremost question arises here is; whether the existence of Narayan is by Malgudi? It is a complete fact that to detach Narayan from Malgudi is inevitable. But does his identification is only Malgudi? Though the heart beats of his stories are village bound of South India, but he should not be restricted to Malgudi. The effect of his writing wills not diminishing if the word 'Malgudi' is removed from his stories. His stories are enormous. The theme of content reaches to whole India as well as abroad. The sketches are diverse in different countries but the thought, passion, likes and action of every human being are found everywhere in the world.

It is also true that Narayan could not be credible without the word 'Malgudi'. There have been some proportions taken from him without it. The readers are so engrossed with Malgudi that can't think anything outside it. Malgudi has grown in full fledge with the artistic literature work of Narayan. It is completely undisturbed by the outside world. There is no outside interfering in the peace and harmony of this place. The people of the Malgudi have strong faith on the society and traditions of the place. The setting of the Malgudi is quite distinguishing and the most part of the place is colorful.

The places of Malgudi are not outshined by the people who dwell in it and they have nothing of special quality of their own. The portrayal of life is the main objective of Narayan and it is sufficient for the setting of Malgudi. There are characters that give meaning to the places of Malgudi and make them real and lively. It helps the readers to be friendly.The argument is logical when Malgudi has come in existence. Narayan's grade will fall down to a simple author without Malgudi. Even Narayan can't think himself without Malgudi. The plot of most of his works is based on it.

Narayan's style of writing has been compared to that of many literary stalwarts such as Anton Chekov, Guy de Maupassant and O. Henry. The greatest possessions of Narayan as a expressive artist is his elegant and simple style. There are very few Indian writers who are able to handle English with so much clarity and stylishness as he does.The very distinct quality of Narayan's work style is its clearness and simplicity. It is straight forward and free from dimness and exaggeration. It is neither dull nor showy, rather distinct with exactness.

Narayan's style and his use of the English language and idiom have been world-wide recognized as the greatest accomplishment of his method. Commenting on Narayan's handling of English language P.S.Sundaram says: "The notion that there is some virtue in an Indian's using of an Indian Language -- even though it may not be his mother tongue--- and it is a fraud and a sin for an Indian to write in English or French or Russian has nothing to do either with one's natural inclination, or reason or common sense --- and one may be thankful that Narayan at any rate is free from it" (Sundaram PS, Narayan RK. (New Delhi: Arnold Heineman, 1973, 131.).

It is always on the opinion that the foundation of Narayan's work is more expressive and less logical. His approach attached with his insight of life provides an extraordinary skill to unite characters and events and capability to use every day incidents to generate a relationship in the reader's mind. R.K. Narayan would be no less popular without Malgudi. May be that the ingredient 'Malgudi' would have reduced his few 'awards' but not his popularity, ruling the hearts of people as an unsung hero.

Chapter 31

Green Computing : New Era of Computing

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I. introduction

Green computing, the study and practice of efficient and eco-friendly computing resources, is now under the attention of not only environmental organizations, but also businesses from other industries.. The Green Computing Initiative, stewards of the industry standards EFGCD – Eco – Friendly Green Computing Definition defines Eco- Friendly Green Computing as the study and practice of the design, development, implementation, utilization and disposal of IT infrastructure efficiently and effectively with low or zero impact on the environment whilst reducing operating costs. Currently. Organizations use the Green Computing Lifecycle when designing and implementing green computing technologies. The stages in the Life Cycle include Strategy, Design, Implementation, Operations and Continual Improvements. The 5 core green computing technologies advocated by GCI are Green Data Center, Virtualization, Cloud Computing, Power Optimization and Grid Computing. Company like Via Technology offer green PC's that are affordable, non- toxic and ultra low wattage. It take responsibility for their outdated products by offering a PC recycling service. [1]Cutting back on these two energy uses - the computers themselves and the energy used to cool them - makes a direct impact on company costs. Cutting back on energy use by making things more efficient can bring secondary savings too, which may not be immediately obvious. If you can increase the energy efficiency of front and back-office computing, you may not need to increase hardware resources as quickly as you thought, which can save capital expenditure on the kit, cooling equipment and even the buildings necessary to house them.[2]It provides managers, academicians, scientists, and researchers in various government, public, and private sectors coverage of topical issues like green strategy, green transformation, green technology, green revolution, ecology system, sustainability supply chain, green and sustainable innovation, global warming, energy efficient system, recycling and reuse systems, product usability, reverse supply chain, closed loop supply chain, environmental issues, carbon footprints, renewable energy, applied ergonomics, and climate change.

II. Literature Review

When it comes to PC disposal you need to know everything there is to know in order to be involved in green computing. Basically, the whole green aspect came about quite a few years back when the news that the environment was not a renewable resource really hit home and people started realizing that they had to do their part to protect the environment. [3] Many governments worldwide have initiated energy-management programs, such as Energy Star, an international standard for energy-efficient electronic equipment that was created by the United States Environmental Protection Agency in 1992 and has now been adopted by several other countries. Energy Star reduces the amount of energy consumed by a product by automatically switching it into ―sleep mode when not in use or reducing the amount of power used by a product when in ―standby mode. Surprisingly, standby ―leaking, the electricity consumed by appliances when they are switched off, can represent as much as 12 percent of a typical household's electricity consumption. Basically, the efficient use of computers and computing is what green computing is all about. The triple bottom line is what is important when it comes to anything green and the same goes for green computing. This considers social responsibility, economic viability and the impact on the environment. Many business simply focus on a bottom line, rather than a green triple bottom line, of economic viability when it comes to computers. The idea is to make the whole process surrounding computers more friendly to the environment,

economy, and society. This means manufacturers create computers in a way that reflects the triple bottom line positively. Once computers are sold businesses or people use them in a green way by reducing power usage and disposing of them properly or recycling them. The idea is to make computers from beginning to end a green product. The solution to green computing is to create an efficient system that implements these factors in an environmentally friendly way. A good example would be IT managers purchasing hardware that has been approved meaning that maintenance is reduced, the hardware's life is extended, and makes recycling the computer easy once it is no longer necessary. Mobile phones are better than computers – green computing. What do you use your computer for? Surfing Internet, chat, gaming, social networking, downloading, desktop computing including documents, spreadsheets or presentation making or just watching your photos and videos? Today mobile phones are capable of doing it all, rather sometimes more than the traditional phones. They have faster processors, more ram, faster wireless Internet connectivity and larger memories. Mobile Phones consume very low power. VIA Technologies, a Taiwanese company that manufactures motherboard chipsets, CPUs, and other computer hardware, introduced its initiative for "green computing If everyone takes into account green computing then our world of computers will have as little a negative impact on our physical world as possible and that is what green computing is all about.

III. Technologies Green Computing

VIA Technologies, a Taiwanese company that manufactures motherboard chipsets, CPUs, and other computer hardware, introduced its initiative for "green computing" in 2001. With this green vision, the company has been focusing on power efficiency throughout the design and manufacturing process of its products. Its environmentally friendly products are manufactured using a range of clean-computing strategies, and the company is striving to educate markets on the benefits of green computing for the sake of the environment, as well as productivity and overall user experience.

A. Carbon-free computing

One of the VIA Technologies 'ideas is to reduce the "carbon footprint" of users — the amount of greenhouse gases produced, measured in units of carbon dioxide ($CO2$). Greenhouse gases naturally blanket the Earth and are responsible for its more or less stable temperature. An increase in the concentration of the main greenhouse gases — carbon dioxide, methane, nitrous oxide, and fluorocarbons — is believed to be responsible for Earth's increasing temperature, which could lead to severe floods and droughts, rising sea levels, and other environmental effects, affecting both life and the world's economy.

B. Solar Computing

A mid the international race toward alternative-energy sources, VIA is setting its eyes on the sun, and the company's Solar Computing initiative is a significant part of its green-computing projects. For that purpose, VIA partnered with Motech Industries, one of the largest producers of solar cells worldwide. Solar cells fit VIA are power-efficient silicon, platform, and system technologies and enable the company to develop fully solar-powered devices that are nonpolluting, silent, and highly reliable. Solar cells require very little maintenance throughout their lifetime, and once initial installation costs are covered, they provide energy at virtually no cost. Worldwide production of solar cells has increased rapidly over the last few years; and as more governments begin to recognize the benefits of solar power, and the development of photovoltaic technologies goes on, costs are expected to continue to decline. As part of VIAs pc initiative, the company established the first-ever solar-powered cyber community center in the South Pacific, powered entirely by solar technology.

C. Energy-efficient computing

VIA isn't the only company to address environmental concerns: Intel, the world's largest semiconductor maker, revealed eco-friendly products at a recent conference in London. The company uses virtualization software, a technique that enables Intel to combine several physical systems into a virtual machine that runs on a single, powerful base system, thus significantly reducing power consumption. Earlier this year, Intel joined Google, Microsoft, and other companies in the launch of the Climate Savers Computing Initiative that

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commits businesses to meet the Environmental Protection Agency's Energy Star guidelines for energy-efficient devices.

IV. Why Green Computing?

In a world where business is transacted 24/7 across every possible channel available, companies need to collect, store, track and analyze enormous volumes of data—everything from click stream data and event logs to mobile call records and more. But this all comes with a cost to both businesses and the environment. Data warehouses and the sprawling data centers that house them use up a huge amount of power, both to run legions of servers and to cool them. Just how much? A whopping 61 billion kilowatt-hours of electricity, at an estimated cost of $4.5B annually. The IT industry has begun to address energy consumption in the data center through a variety of approaches including the use of more efficient cooling systems, virtualization, blade servers and storage area networks (SANs). But a fundamental challenge remains. As data volumes explode, traditional, appliance-centric data warehousing approaches can only continue to throw more hardware at the problem. This can quickly negate any green gains seen through better cooling or more tightly packed servers. To minimize their hardware footprint, organizations also need to shrink their "data footprint" by addressing how much server space and resources their information analysis requires in the first place. A combination of new database technologies expressly designed for analysis of massive quantities of data and affordable, resource-efficient, open-source software can help organizations save money and become greener. Organizations can do so in the following three key areas: reduced data footprint, reduced deployment resources, and reduced ongoing management and maintenance. This technology is beneficial as it:-

- ❖ Reduce energy consumption of computing resources during peak operation
- ❖ Save energy during idle operation
- ❖ Use eco-friendly sources of energy
- ❖ Reduce harmful effects of computing resources
- ❖ Reduce computing wastes

Global warming and the problem of minimising environmental impact from fossil-fuel emissions have raised to the top of global public policy agenda. As a result, businesses and consumers alike have started to embrace environmentally sustainable products that offer low-carbon solutions that can not only reduce their global greenhouse gas (GHG) emissions, but can do so by more efficient energy consumption and lower costs.

V. Conclusion

The field of "green technology " encompasses a broad range of subjects — from new energy-generation techniques to the study of advanced materials to be used in our daily life. As part of the VIA Green Computing Initiative, VIA Carbon Free Computing is a natural extension of VIA's leadership in developing the most power efficient computing products on the market. As individuals and organizations around the world look to reduce their impact on the environment, a growing concern is the reduction of one's Carbon Footprint which is a measure of the impact human activities have on the environment in terms of the amount of green house gases produced, measured in units of carbon dioxide ($CO2$). It has taken upon itself the goal to provide society's needs in ways that do not damage or deplete natural resources. Mainly this means creating fully recyclable products, reducing pollution, proposing alternative technologies in various fields, and creating a center of economic activity around technologies that benefit the environment. Green IT programs are demonstrating fundamental economic as well as environmental sense, it is understandable why organizations are exploring green computing options with such intense interest across the IT industry. As more and more companies include some form of reporting on their goals and achievements in the area of CSR, there is a growing awareness among business leaders that greening their IT practices offers the

―double-win‖ of reducing costs while demonstrating a positive environmental commitment. Use mobile phones for your computing needs whenever and wherever possible.

VI. Findings

1. If we think computers are non polluting and consume very little energy we need to think again. It is estimated that out of $250 billion per year spent on powering computers worldwide only about 15% of that power is spent computing- the rest is wasted idling. Thus, energy saved on computer hardware and computing will equate tonnes of carbon emissions saved per year.

2. The plan towards green IT should include new electronic products and services with optimum efficiency and all possible options towards energy savings.

3. power supplies are notoriously bad, generally as little as 7% efficient. And since everything in a computer runs off the power supply, nothing can be efficient without a good power supply. Recent inventions of power supply are helping fix this by running at 80% efficiency or better

4. Mobile phones are better than computers – green computing. They have faster processors, more ram, faster wireless Internet connectivity and larger memories. Mobile Phones consume very low power

5. Purchase LED‗s monitors which consume less energy than CRT‗s screen and LED‗s is also not harmful for the eyes.

Chapter 32

Treasure Hidden in Bastar Livelihood

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Abstract

Bastar is home to several culturally rich tribal societies and unique communities. Their long and close association has terminated in a craft heritage that is inspiring in all its elements. Tribal artist use different types of wood like teak wood, rose wood, shivna wood, and mango wood for carving. Kosa silk is a type of silk produced from a thread from a worm similar to silk worm. These is used in many ways like for sarees, waist coats, and base material for art pieces or paintings. Tribal artists use dark raw or recycled form of iron (wrought iron) for sculpturing artifacts, their conception depicts their own people; their own unique art form. Dhokra is among the finest art works of Bastar and nearby regions. Sisal fiber is a kind of natural fiber popularly known as the golden fiber. It is derived from the sisal leaves and processed to make white lustrous fiber smooth. Tumba used for doing creative carving on big sized gourd like pumpkins are used on which the artists do fine and unique carving. "godna" traditionally is a tattoo art but nowadays it is out of trend so it I now practiced as paintings. For this artist use natural colures derived from forest. Stone carving is also done in Bastar. The tribes do not just use bamboo for art pieces but also for useful things like fishing tools, vases, tumblers, baskets, supa, furniture etc.Terracotta (Italian: "baked earth", from the Latin terra cotta) is a kind of sculpture or vessel making using red soil, Bastar forst soil (red soil) is used for making terra Cota articles.

Introduction

Bastar is a district of state Chhattisgarh, India; surrounded by Kondagoan, Sukma, Dantewada, and Bijapur. From the view point of tourist and tourism Bastar is called the "Kashmir of Chhattisgarh", blessed with profusely lush forests, gurgling springs and waterfalls, mysterious caves and unusual rock formations, it is home to several culturally rich tribal societies and unique communities. Their long and close association has terminated in a craft heritage that is inspiring in all its elements. Bastar is famous for its colorful tribes, major tribes of this region are the Gond, Bhatra, Muria, Abhuj Maria, Bison horn Maria, Halba and Dhurvaa. In Bastar, being a district full of forests containing finest quality of woods which they use artistically for furnitures and handicrafts. These tribes are known for their passion for art: dance, music. Painting, carving, sculpture, molding senses and as their daily grind.

Art and Craft of Bastar

1. **WOODEN ART**:
   Tribal artist use different types of wood for carving. They carve their life in form of art, depicting tribal people, their vessels, their idols etc. Woods are bought through auctions. In the range teak woods are highest in price, than the rose woods, followed by mango wood, cheapest is the shivna wood which are used for handicraft. Carving done on woods reflect culture, traditions and the whole lifestyle of tribes of Bastar. Human figures carved on these art pieces portray their 9-5.

(i) **Teak wood**: The teak tree or Tectona comes under the family Verbenaceace. It is among the finest quality of woods. Among the finest wood, with a unique texture, shades varying from golden brown to brown. It is a type of hard wood, not so easy to carve. Art forms in this wood is most popular in Bastar. For carving first desired piece of wood is cut after which design is drawn and then with the help of their tool they carve for detailing. Teak is especially noted for its capacity to withstand changes in the weather and season and is durable.

(ii) **Shivna wood:** It is among the soft wood, bit easy to carve on. It is of off white shade in raw or non polished form. Art pieces are either polished or just detailed by darken shades on the carvings. The art sculpture of shivna wood costs cheaper among all, but it isn't an unskilled art. Simple unpolished art works includes swards, fishes etc tradition of the tribes. Polished art wood includes sculptures of God, goddesses, idols, tribes, tribal life etc.

(iii) **Rose wood**: Rose wood belongs to genus Dalbergia. It is the hardest and strongest wood performed carving on. It is brown to dark reddish brown in colour. Due its hardness, it is not an easy material to carve on but detailing in this wood look adorable. Stones, brass metal are also used for adding details in them, for this desired piece (size and shape) of stone or metal are cut and placed for reference, and then the wood under it is carved out and that piece is placed on the cavity, beated with wooden hammer to fix the piece. The wooden article is then polished for a better finish. Furniture like corner table, vase stand, flower vases, trays etc. are made from rose wood

(iv) **Mango wood**: The wood of the mango trees. These trees belong to the Magnifera genus. Mango wood is a tropical hard wood from an evergreen tree. Its strongest feature it is highly water resistant. It often ranges from light   to dark brown and may have tints of pinks, light green and so it look good in its natural form and does not require much finishing.

2. FABRIC:

Kosa: Kosa also known as tussar silk is a type of silk produced from a thread from a worm similar to silk worm belongs to the moth genus Antheraea. First to get the thread kosa worms are cultivated on food plants like Asan, Arjun, and Jamun etc. In order to kill the worms their cocoons are dried in the sun. After that worms are being removed from the cocoons followed by boiling of empty cocoons in water to get softer silk and then cocoons are collected to extract yarn from it. Boiling is very

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necessary before extraction as it makes cocoons softer and easy to extract. Kosa silk is more textured than "mulberry" silk i.e. silk from the worms cultivated on mulberry plant. The pure kosa extracted is dull gold in colour. Kosa silk need high maintenance as it is made up of delicate fibers, Kosa must not be kept in plastics as silk need to breath. Kosa silk is used in many ways like for sarees, waist coats, and base material for art pieces or paintings. Among all these, kosa sarees are most popular; and are designed in different forms like dyed, tribal embroidered and printed.

3. **METAL ART:**

   (i) **Wrought Iron (Loha Shilp):** Art attached to lives here in another way. Tribal artists use dark raw or recycled form of iron for sculpturing artifacts, their conception depicts their own people; their own unique art form. These art forms are usually two dimensional like the Godna and human figures with simple geometric shapes, and curves. Segmentes or separation by iron strips, evenly thick. In this art work they depict the tribal dance zeal for living life as purva or festival. After welding of the segment of the segments and the figures, they paint it black to prevent corrosion. These art pieces can be used as a wall hanging or standing by the simple kind of bases made.

   (ii) **Brass:** The artist engrave linage of their unique culture, through Dhokra art i.e., sculptures sculpt by brass and bronze. Dhokra is among the finest art works of Bastar and nearby regions. In these kind of metal sculptures, artist dress the whole sculpture or a part by fine lines curves as detailing. The sculptures are moulded using a technique called lost wax in which they use cow dung, paddy husk, and red soil and most importantly bees wax; sometimes use wax wires for giving a finishing touch.

4. **MORE CATEGORIES:**

   (i) **Sisal:** Sisal fiber is a kind of natural fiber popularly known as the golden fiber. It is derived from the sisal leaves and processed to make white lustrous fiber smooth to touch at the same time very strong. It is one of the cheapest and the strongest of all natural fibers and considered as fiber of the furniture. Sisal is being used for making robes, traditional home décor articles, bags, baskets, vases etc. Jute fibers bought from the mills are first orderly kept and cleaned and then knitted into plaids etc. and wind again to form secondary structures.

   (ii) **Tumba (gourd):** Tumba (gourd in English) used for doing creative carving on big sized gourd like pumpkins are used on which the artists do fine and unique carving. They firstly dry tumbas and remove interior of it and the bottom, than they carve on it using needles for holes. They make design by holes of different sizes. Carved tumba is than kept on clay oven for sometimes, and when it's set it is polished. Tumba art is used as lamps art pieces, bottles etc.

   (iii) **Godna print:** "godna" traditionally is a tattoo art but nowadays it is out of trend so it I now practiced as paintings. For this artist use natural colures derived from forest. The women paint godna print with fine brushes. To make the paints for godna print, tans of the

medicinal plants like Harra, Behra etc. are boiled in water for long, a very little amount of residue is left which is then filtered and dried under the sun. The dried powder is than mixed with fabric color to make it stronger. The color is now so strong that after many washes also it does not fade. Colors of godna comes in limited and traditional shades like burnt sienna, ivory etc. Base material for the prints can be cotton, silk etc. It is mostly painted on Sarees, mates, stiched material, curtains etc.

(iv) **Stone carving:** Stone carving is also done in Bastar. Sculptures use white stone for carving and do lots of finishing works, they make monuments, idols, gods and goddesses in their art work. Stone carving of Bastar is not so popular but constitute art of Bastar.

(v) **Kaudi art:** Kaudi art is done using kaudi, is a kind of sea shell. Kaudi is being used as a holy thing and also used for art and craft. In Bastar kaudis are used to decorate baskets, hats, trays, etc. and are used to make art pieces. Kaudis are knitted in threads and are then tied or used in different ways.

(vi) **Terracotta:** Terracotta (Italian: "baked earth", from the Latin terra cotta) is a kind of sculpture or vessel making using red soil, Bastar forst soil (red soil) is used for making terra Cota articles. For making articles, an appropriate amount of refines red soil is moulded to a desired shape. After drying it is on a pit of combustible material and then fired to temperature up to 1273K. The iron content, reacting with oxygen during firing, gives the fired body a reddish color. Fired terracotta is not watertight, but firing decreases its porousness and layer of glaze can make it watertight.

(vii) **Bamboo Craft:** The tribes do not just use bamboo for art pieces but also for useful things like fishing tools, vases, tumblers, baskets, supa, furniture etc. The Narayanpur Bamboo Project by which India use craftsmanship, of these tribes for making such useful things. Finest ever bamboo work in Chhattisgarh can be seen in the form of wall hangings, table lamps and table mats.

Conclusion

Art of Bastar is confined in small territory which should get exposure and publicity. Although artifacts like wood craft, dhokra metal art, sisal, kosa etc. are created here and exported to various states and countries but, is cocooned. If you build a cocoon around yourself it gives you safety but it also impression you. If these tribes get better exposure, their standard of living may step up. However the artisans are unable to make money from their products as the middle man or traders who supply the markets purchase the finished items from them at low cost and sell it in the market at a price twenty times higher. Artists do not get the worth price, the worth respect and the worth manifestations for the creativity they possess.

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Chapter 33

Effect of Inorganic Subtituents present in "Gutkha" on Salivary Protein

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Abstract

Saliva is 99% water and remaining 1% comprises ions (calcium, sodium, potassium phosphate), organic compounds(such as uric acid, glucose, fatty acids, amino acids) and proteins like mucin, amylase, glycoproteins, histatins and statherins. Immunoglobulins, lysozymes, lactoferrins, defensins and hormones are found. Any changes in its quality or quantity may alter oral health status and may cause Oral Sub Mucosal Fibrosis (OSMF) common among habitual "gutkha"eaters. The amount of saliva secreted is high in habitual chewers in compare to that of normal individuals who doesnot consume "gutkha". The inorganic constituents and other elements in gutkha is thought to increase the concentration of protein in saliva and it is also responsible to affect the regulation of protein contents, enzyme concentration, as well as pH activity in saliva.The increase in concentration of protein is due to effect misregulatory effect and majorly the effect of inorganic substituents present in "gutkha".

Introduction

Saliva - One of the most important fluid which shows defense mechanism and initiator of digestion in oral cavity, the major role played by saliva .Homeostasis of the saliva in the oral cavity, is maintained by continuous secretion of major and minor salivary glands. Saliva as a complex fluid consisting of each subsituents is critically important in the maintenance of oral health. It plays a significant role in digestion, taste sensation, protection against micro-organism, phonation .Saliva is 99% water and remaining 1% comprises ions(calcium, sodium, potassium phosphate), organic compounds(such as uric acid, glucose, fatty acids, amino acids) and proteins like mucin, amylase, glycoproteins, histatins and statherins. Immunoglobulins, lysozymes, lactoferrins, defensins and hormones like cortisol, aldosterone, testosterone, progesterone and estradiol are also found. Any changes in its quality or quantity may alter oral health status. Here Oral Sub Mucosal Fibrosis (OSMF) is localized condition. Saliva may play an important role in its pathogenesis.

Gutkha - It is a combination of arecanut, slaked lime, paraffin and katechu along with tobacco, is virtually harmful chemical complex. It is basically a pan masala with tobacco (PMT). Arecanut consist of Inorganic constituent such as copper, zinc,thiocyanides, arsenic, Magnesium carbonate, sulphur dioxide, carbon monoxide, hydrocarbons, irons, nitrosamines, benzopyrines. The pharmacologically active ingredients of the arecanut is an alkaloid, arecoline, which increases salivation and is a mild central nervous system stimulants. Other popular content found in "gutkha is Catechu, Reddish powder of the heartwood, of the tree Acacia Catechu. Its astringent and disinfecting principles are catecchin and catechu tannin.

Other stimulants also present in gutkha as a refreshner ie, tobacco which consist of nicotine acts as a 99% tumour causing substituents.

Approximately 600 million people use arecanut worldwide in some form and is the fourth most commonly used psychoactive substance. "Gutkha" is consumed by placing a pinch of it between the gums and cheek by

gently sucking and chewing. It normally increase the salivation among individual using it. The amount of saliva secreted is high in habitual chewers in compare to that of normal individuals who doesnot consume "gutkha". The inorganic constituents and other elements in gutkha is thought to increase the concentration of protein in saliva and it is also responsible to affect the regulation of protein contents, enzyme concentration, as well as pH activity in saliva. The increase in the concentration of protein indicates the abnormal behavior and misregulation of protein content in saliva, which is thought to stimulate or lead oral cancer such as Oral Sub Mucosal Fibroses (OSMF) commonly.

Parallerly it also affect the physiological activity, breathing problems, narrow opening of mouth, adverse effects on soft tissues, gums and canal root, decreased level of oxygen binding capacity in haemoglobulin in blood.

Materials and Methods

Subjects – Subjects included in the study were the individuals of age from 18-40 years, studying and working in private institutions. Total 9 people were chosen as a subject (1Control + 8 Samples).

Saliva collection – Among the 9 subjects the saliva is collected as 1:8 individuals on which comparative study done between 1 Control and 8 Sample. Saliva is collected from the respective subjects by providing them cotton swap and instructed them to locate in the oral cavity between side walls of the mouth and teeth for 15-30 minutes. Subject is neither allowed to drink water nor allowed to consume anything. During these interval the saliva from the mouth is absorbed by cotton swap. After 30 minutes the cotton cum saliva has been collected from the respective subjects and allowed to percolate in a sterile test tube respectively.

Estimation of protein in saliva – Protein can be estimated by developing a blue colour in the sample by Lowry's method. It represents a reaction of the peptide bond of the salivary protein with cupric copper under alkaline conditions and reduction of phosphomolybdic acid by tyrosine and tryptophan residues of the salivary protein(or even enzymes).

Preparation of Reagent

Here Control is taken as a Reference Standard Protein in which comparison of 8 sample is to be done. Protein Reference Standard (1 ml) has been prepared without dilution. Parallely 250ml Sodium carbonate(2% w/v) Sodium hydroxide mixture solution is prepared (Reagent A), 50 ml of Copper sulphate solution (Reagent B) and 50 ml of Sodium potassium tartarate (Reagent C) . Reagent D is prepared freshly by the proper and equivalent mixing of Reagent A (50 ml), Reagent B(1ml)&Reagent C(1 ml). This Reagent D is known to called as Alkaline copper reagent. Lastly Folin's Reagent (1N strength) is prepared later to be diluted if needed.

Now to 1ml of Standard Protein solution (control-BSA) 10-100 μg of protein, 0.5ml of salivary protein sample solution diluted with distilled water shown in Table A and to 0.5ml of concentrated salivary protein sample solution shown in Table B, 4 ml of Reagent D is added to these solutions and are mixed. The mixture is kept for 10 min incubation at room temperature. After incubation 0.4 ml of Folin's reagent is added and content is vortexed immediately. Reagent is then run as blank with 1 ml of distilled water along with standard and sample. After 30 min of incubation sample is to be read under photometer along with control. Following readings are taken which helped to plot a graph between concentration of protein (10-100μg) on X-axis and absorbance at 720nm on Y-axis.

FigureA:- Standard Protein Solution (Control BSA)

FigureB:- Diluted Salivary Sample Solution along with control.
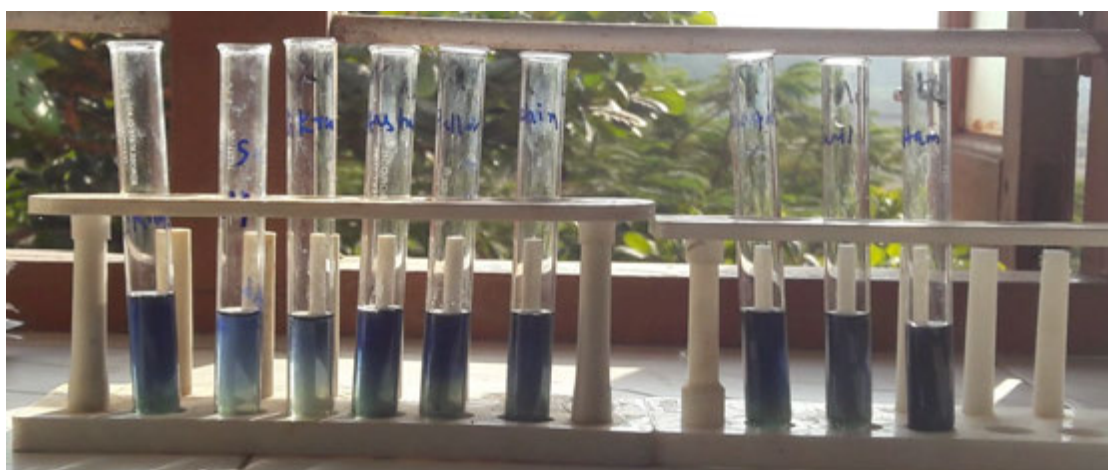
FigureC:- Concentrated Salivary Sample Solution along with control.

Figures:- Representing change in colour occurs after adding Folin's reagent, in Standard Protein Sample Solution, Diluted Salivary Sample Solution and Concentrated Salivary Sample Solution.

Note- Samples are chosen randomly and are arranged on the basis of their colour formation from Figure A , B and C .

TABLE- A

S No	Standard Protein BSA (1ml each)	Distilled Water (ml)	Conc . of protein(μg)	Reagent D (ml)	Folin's Reagent (ml)	Absorbance at 720 nm
1	Blank	1	0	4	0.4	0.15
2	0.1	0.9	10	4	0.4	0.21
3	0.2	0.8	20	4	0.4	0.37
4	0.3	0.7	30	4	0.4	0.51
5	0.4	0.6	40	4	0.4	0.52
6	0.5	0.5	50	4	0.4	0.39
7	0.6	0.4	60	4	0.4	0.61
8	0.7	0.3	70	4	0.4	0.58
9	0.8	0.2	80	4	0.4	0.73
10	0.9	0.1	90	4	0.4	0.93
11	Control	0.1	10	4	0.4	0.62
12	S1	0.2	20	4	0.4	1.02
13	S2	0.3	30	4	0.4	1.13
14	S3	0.4	40	4	0.4	1.04
15	S4	0.5	50	4	0.4	1.32
16	S5	0.6	60	4	0.4	1.25
17	S6	0.7	70	4	0.4	1.13
18	S7	0.8	80	4	0.4	0.96
19	S8	0.9	90	4	0.4	1.66

Table A- Representing the concentration of protein along with absorbance of BSA and Diluted Salivary Sample Solution.

TABLE- B

S N O	Standard Protein BSA (1ml each)	Distilled Water (ml)	Conc . of protein(μg)	Reagent D (ml)	Folin's Reagent (ml)	Absorbance at 720 nm
1	Blank	1	0	4	0.4	0.15
2	0.1	0.9	10	4	0.4	0.21
3	0.2	0.8	20	4	0.4	0.37
4	0.3	0.7	30	4	0.4	0.51

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5	0.4	0.6	40	4	0.4	0.52
6	0.5	0.5	50	4	0.4	0.39
7	0.6	0.4	60	4	0.4	0.61
8	0.7	0.3	70	4	0.4	0.58
9	0.8	0.2	80	4	0.4	0.73
10	0.9	0.1	90	4	0.4	0.93
11	Control			4	0.4	0.71
12	S1			4	0.4	0.82
13	S2			4	0.4	1.63
14	S3			4	0.4	1.53
15	S4			4	0.4	1.26
16	S5			4	0.4	1.29
17	S6			4	0.4	1.52
18	S7			4	0.4	1.25
19	S8			4	0.4	1.98

Table B Representing concentration of protein along with absorbance of BSA and Concentrated Salivary Sample Solution

The blue colour developed could be recorded at 720 nm, in a photometer and absorbance is recorded from the Table A and Table B . After that a calibration curve is presented below , plotting the protein concentration (10-100 **μ**g of protein) on X axis and absorbance at 720 nm on Y-axis.
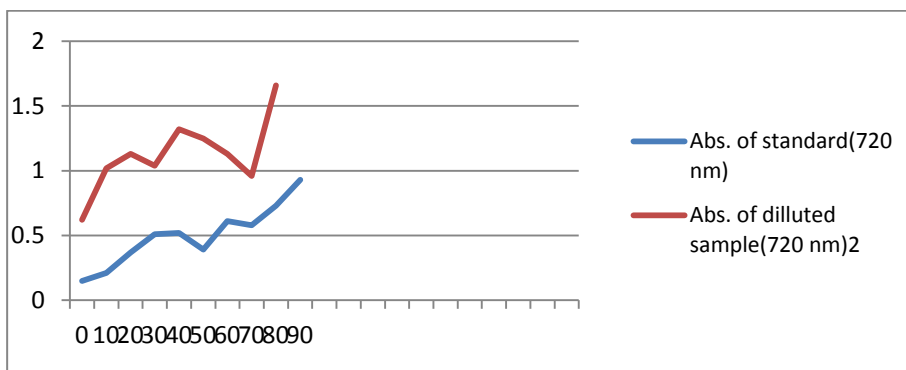
Graph Representing the increase in protein concentration (10-100 mg of protein) on X axis and absorbance at 720 nm on Y-axis.

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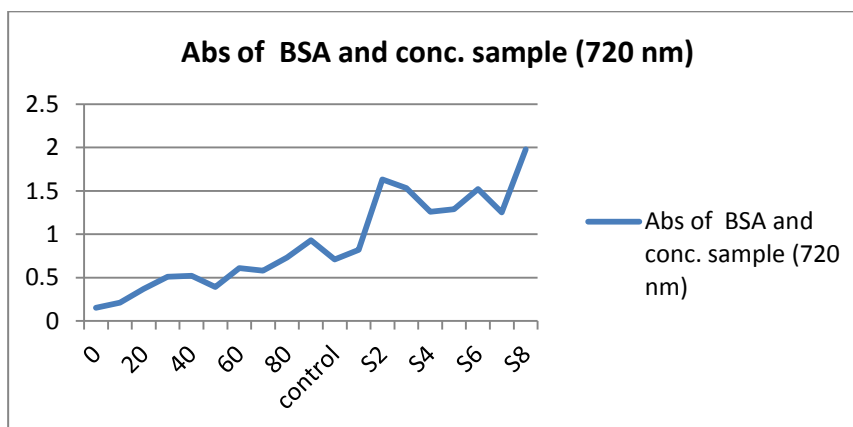
Graph Representing the protein concentration (10-100 mg of protein) on X axis and absorbance at 720 nm on Y-axis. **Here both Sandard and Sample along wth control are arranged in one line.**

Result

The graph shown above proves the amount of concentration of protein increased with the absorbance at 720 nm (O.D.),taken both in diluted as well as in concentrated form comparing with standard and with control stating that higher the Concentration of protein, higher will be the Absorbance. It shows that the inorganic constituents present in "gutkha" are responsible for increasing the concentration of protein along with the substituents and so the control escaped such condition.

Discussion

Increased level of salivary protein in comparision to Control indicate the abnormal level of protein synthesis in saliva. It may be a Psychological issue as well as the enzyme such as α-amylase is responsible for irregular function if secreted in huge amount. The oxidoreductase activity created by chemical constituent in "gutkha", majorly the increased elements of thiocyanides(SCN), is also responsible for the irregular functioning and misregulation of protein synthesis and enzyme activity of α-amylase. It basically affects the pH by altering the effect of ions, which are very prone to certain micro-organism responsible to cause oral cancer. Therefore chewing 'gutkha"or other "tobacco" products create serious health problems that subsequently originates from oral cavity leading to indigestion, physiological issues, abnormal phsychological efflux problem and mostly cancer.

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Chapter 34

Managerial Skills Related to Skill Development in Management

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Introduction

Management is the most challenging task in present business world. It needs certain skills to beat such challenge. Therefore every manager must possess essential skills for doing better management. These managing abilities are termed as managerial Skills. Managerial skills enable managers to maintain efficiency in the way how employers performing working tasks. Managers must have a skill to manage people and technology with the purpose of effective and efficient fulfilment of their tasks. To perform management functions and assume multiple roles, managers must be skilled. Skills management enables managers to know the skill strengths and weaknesses of employees reporting to them.

Types of Managerial Skills

There are three types of skills that are necessary for a successful management process such as :

Technical Skills:

Technical skills must be possessed by managers to accomplish organizational tasks. These are not meant for working on machines, but can be used for sales and marketing. Basically, a technical skill is the capability to do assigned job. Technical skills assist the senior and middle level managers to use different machines and tools. It also helps them to use various procedures and techniques. The low-level managers must be proficient with such technical skills to give high performance because they must have to perform task in field. A technical skill is the aptitude in the performance of particular tasks, in particular skills involving methods, specialised techniques and equipment involved in specific functions, for example manufacturing and engineering. Technical skills also include specific knowledge, logical ability and the proficient use of tools and techniques to crack business issues.

Conceptual Skills:

Conceptual skills are talent or understanding of managers for abstract thinking to assess whole situation and identify different states and to foresee the future state of the business. Conceptual skills is the ability of a manager to envisage the organisation as whole, distinguish interrelationships and be aware of how the organisation fits into the civilization, community and the world. Conceptual skills exploit the ability of a human to form concepts. Such skills include thinking creatively; formulating abstractions, analysing complex situations, and solving problems. Such skills assist management team to understand the major causes of the problems and not the symptoms. Mangers that have mastery over these skills are in a position to solve the problems and enhance productivity of organisation. It also helps the manager to establish goals for organisation and devise plan for every situation. conceptual skills are needed by the senior management because they are involved in planning, organising and problem solving tasks. In the business filed, these skills are necessary for managements to operate business successfully. Conceptual skills are used in planning and dealing with ideas and abstractions. Such abilities enable manager to make good decision which is a characteristic of all managers

Human relation Skills:

Understanding about human skills for managers to extract work from employees. The most significant role for managers is to effectively manage people in organization and to give best output. Human relations skills are also called Interpersonal skills. It is a capability to work with individuals. It assists the managers to comprehend, converse and work with others. It also helps the managers to lead, encourage and develop team strength. Human relations skills are necessary by all managers at all levels of management. All managers have to work together. These skills will allow managers to become leaders, to inspire employees to do best and complete task successfully. Some of human relation skills include Sensitivity to others, treating people fairly, Listening intently, Communicating warmth, Establishing rapport, Understanding human behaviour, Empathy, Tactfulness, Cooperative team member, Avoiding stereotyping people, Feeling comfortable with different kinds of people, Fun person to work with, Treating others as equals, Dealing effectively with conflict, Helping clarify misunderstandings, Creating an environment of social interaction.

Figure:
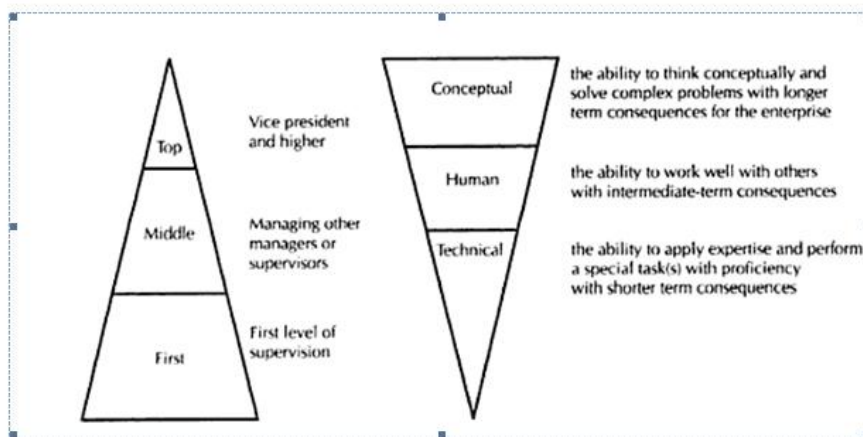
Besides above skills, managers must develop other skills for smooth management in organization.

Communication Skills:

Communication is an important process, which involves organising, selecting and transmitting symbols in correct way to ensure that listener perceives and recreates in his own mind the intended meaning of the communicator. Communication involves the initiation of meaning in the listener, the transmission of information and thousands of probable stimuli. Communication skills are congruently necessary at all levels of management. Managers must have capability to communicate the plans and policies to the workforce. Correspondingly, they must listen and solve the problems of the workers. They must promote a free-flow of communication in the organisation.

Administrative Skills:

Senior level executives must possess administrative skills. The top-level managers should recognize how to make plans and policies. They should also know how to complete work with in timeframe. They should be able to organize different activities of the organisation. They should also be able to control the all organisational functions.

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Leadership Skills:

Leadership skill is the capability to influence human behaviour. A manager must develop leadership skills to stimulate the workers. These skills assist the Manager to guide workers and encourage them to do work in timely manner. Leadership is the ability to empower others to create new management or human systems to efficiently accomplish change through organizational goals and decision making. Max DePree stated that "leadership combines the unpredictability of the future with the gifts of individuals" (1992). The path for managers to embark upon to grow and develop leadership skills begins with the discussion and operationalization of these essential skills. Managers have the power to get things done within organizations, but this is not enough. DePree (1992) suggests that "good leadership includes teaching and learning, building relationships and influencing people, as opposed to exercising one's power".

Problem Solving Skills:

Problem solving skills are also known as Design skills. A manager must be proficient to identify a problem. He should also acquire an ability to explore the best solution for solving any particular problem. This requires intelligence, experience and up-to-date knowledge of the advanced technological developments. Six steps make up the problem solving process: Defining, Identifying, Understanding, Generating Solutions, Analysing, and Choosing.

Decision Making Skills:

Decision making skills are essential for business success. The quality of decisions determines project manager's capability and leader. Managers have to take many decisions frequently in organizational set up. Most of these decisions are unimportant and can be made using "common sense". However, some of these decisions have major impacts on the project, team members, or the business in general. For these cases, making a perceptive, gut feel decision can result in a poor choice with significant harmful consequences. To minimize negative consequences, decisions that are complex or have a high impact should be made using a systematic decision making model. Decision-making skills are also needed at all levels of management. Though the top-level of management take major decisions but middle and lower level executives must possess to take decision in critical business situations. A manager must have an ability to take quick and right decisions. He must also be able to execute his decision intelligently. The success or failure of a manager depends upon the precision of his decisions. Some of the factors that make a decision complex are several alternatives, significant uncertainties, multiple stakeholders, factors that make a decision high impact are financial Consequences, life-or-Death Consequences, Business Perception or Reputation. Improving skills in decision making will help managers to determine whether an intuitive or analytical approach should be used.

Conclusion

To summarize, basically successful management is dependent upon three basic skills. Technical skills must be possessed by manager to accomplish the mechanics of a particular job. Human skills; which are vital for working with others in order to be an effective group member and develop strong relationships among employees and to be able to build cooperative efforts among the team he/she leads. Conceptual skills, which are basic characteristics and enables managers to perceive the organisation as a whole and be able to make abstract decisions which in turn will result in the best outcome for the organisation and its employees.

The relative importance of these skills seems to vary with different levels of managerial responsibility, nonetheless conceptual skills, coupled with technical skills, human skills and a sound knowledge base, are all crucial elements in organisational performance.

Chapter 35

Public-Private Partnerships for Sustainable Development

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1. INTRODUCTION

The term 'public-private partnership' (PPP) describes a relationship in which public and private resources are blended to achieve a goal or set of goals judged to be mutually beneficial both to the private entity and to the public. The term has gained prominence as its importance has become more significant over time.

A successful PPP Unit is defined as "a PPP Unit that contributed to the implementation of a successful PPP program." The definition of a successful PPP Unit therefore requires a definition of success for a PPP program. A successful public-private partnership is one that: • Provides the services the government needs

• Offers value for money (VfM) as measured against public service provision (where VfM is measured by the net present value of lifetime costs, including the cost of risk-bearing)

• Complies with general standards of good governance and specific government policy such as:

– Transparent and competitive procurement

– Being fiscally prudent

– Complying with a government's legal and regulatory regimes that apply to the industry in which the PPP will exist.

A successful PPP program is a program that fosters successive PPP transactions that meet the criteria above. These definitions are important for interpreting the lessons from the case studies. For example, while the South African PPP program is generally regarded as successful, it has so far fallen short of the government's expectations for the development of infrastructure PPPs. A broad definition of PPPs draws out the positive lessons from the South African experience, which might have been missed if PPPs were more narrowly defined.

2. Why Governments Pursue PPPs

Any understanding of the role of PPP Units must be grounded in an understanding of the role that PPPs play in achieving governments' policy objectives. Many of the governments studied initially used PPPs to attract private finance when they found their own budgets constrained. In such cases, the preference for the use of private finance may have more to do with a government agency's desire to disguise public expenditure and to push it off off budget than with any real risk-transfer, innovation, or efficiency gain. This is the wrong reason for pursuing PPPs. Governments that have a long history of experience in PPPs are increasingly coming to realize that PPPs are useful in more limited circumstances, namely, to achieve net present value for money as measured against services the government could provide on its own, or to achieve optimal risk allocation between the public and private sector partners (rather than maximum risk transfer to the private sector).

3. Why Governments Create PPP Units

Specialized PPP Units are generally created in response to weaknesses in the existing machinery of government's ability to manage a PPP program effectively. It refers to these weaknesses as "government failures". Governments in different countries will suffer from different institutional failures in PPP procurement. PPP Units therefore need different designs in different countries, so they can address the specific government weaknesses concerned. In other words, PPP units must deliver the right medicine for the disease.

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PPP describes a government service or private business venture, which is funded and operated through a partnership of government and one or more private sector companies. According to Canadian Council for Public- Private Partnership (CCPPP), PPP is "a cooperative venture between public and private sectors, built on the expertise of each partner, that best meets clearly define public needs through the appropriate allocation of resources, risk and rewards." Governments traditionally use the standard models of public procurement strategy to deliver public services. This involves the use of public, rather than private sector resources. Development of Public Private Partnership (PPP) is an alternative method of implementing public sector infrastructure projects as part of government's role of promoting sustainable economic development where government allows the participation of private sector in developing and implementing an infrastructure business through carefully integrating environmental, economic, and social needs to achieve both an increased standard of living in the short term, and net gain among future generations. However, PPP also promotes sustainable economic develop- ment in the non-infrastructure sectors as well like health, education, agriculture, forestry and fisheries through innovative partnership schemes, which is economically viable, environmentally non-degrading, technically appropriate, and socially acceptable. The PPP method rose to prominence in different counties in the early 80's as governments accumulated large public debts spurred by the recessions of the 70's and the 80's. Governments sought to encourage private investment in national infrastructure in order to reduce public debt and to increase efficiency while minimizing costs. Over the past three decades, governments in both developed and developing countries have embraced PPP as an alternative to the standard models of public procurement strategy to deliver public services. This is especially true for governments lacking in public sector resources to deliver important public services such as healthcare, transportation, energy etc. PPPs were introduced in Britain in the mid 1990s to overcome a shortage in infrastructure investment. This was the beginning of a significant policy based procurement reform in developed countries. Since then, PPPs have been widely adapted by both developed and developing countries. PPP broadly aims to ensure sustainable economic development of the economy through:

- Balancing economic, environment and social needs
- Reliving poverty through employment generation
- Meeting the basic needs of humans that requires both economic growth and social equity
- Minimizing environment impacts for development projects
- Optimizing use of available resources including natural resources

There are three main reasons for adopting the PPP approach (Walker). Firstly, the private sector possesses better mobility than the public sector and therefore the private sector is not only able to save the costs of project in planning, design, construction and operation, but also avoid the bureaucracy and to relieve the administrative burden. Secondly, there is a wide spread belief that the private sector can provide better service to the public sector and establish a good public private partnership so that balance risk-return structure can be maintained. And lastly, governments' inability to raise massive funds for large-scale infrastructure projects can be mitigated by private participation [2]. PPP also seeks to capitalize on the comparative advantage of the public and the private sectors in order to optimize the delivery of public services [3]. Apart from generating employment and hence acting as catalyst for minimizing the poverty level, in recent days PPP schemes have been used by many governments in promoting non- traditional development projects like environment, housing and even forestry or preserving natural resources considering the fact that the private sector possesses better mobility than does the public sector. However, there are significant variations in different PPP models with their own limitations and best practices. As risk and responsibilities of the project are distributed amongst the partners there are several factors that need to consider carefully. This study focuses on these factors that will help the involved parties to ensure the sustainability of the PPP projects and a fruitful win-win contract.

4. Strength and Weakness of PPP Project

Both public sector and PPP projects are monitored and evaluated by the government and in both cases,

the project usually originates from the government (though there are mechanisms to allow unsolicited proposals from the private sector for PPP projects). The government plays a significant role in either scenario. However, there are noteworthy differences. The bureaucratic process in the government with regards to public sector projects typically is long and complicated. With PPP project, this process becomes streamlined. Nevertheless, this apparent lack of bureaucracy can be misleading, since it is being transferred to the private sector where it is not readily visible. Coinciding with this apparent lack of bureaucracy is the shift in the role of the government to more of a monitoring and regulatory function. This change in role is a consequence of the private sector's involve- ment and a response to the complexities that arise because of it. In spite of its focus for economic and social sustainability through poverty alleviation, the PPP method is not always superior to the public sector project. The advantages and disadvantages of PPP projects are specific to the particular project and the context in which it operates. However, the PPP model generally possesses certain strengths and weaknesses over public sector projects. A PPP project can benefit from lower costs and a shorter construction period. A transparent bidding process for a PPP project typically attracts large firms which are more able and efficient. The involvement of the private sector could also be a means of introducing and transferring new technology which is especially important in developing countries. Moreover a partnership can draw on the strengths of cooperation and synergy. Most importantly, the public sector can draw on the resources of the private sector to finance infrastructure projects. This is especially important in developing countries, where public sector budget constraints are an obstacle to growth and development. The partnership would also allow some risk to be transferred to the private sector and hence to the party best able to manage them. This will result in gains in performance and productivity. In practice, achieving this is difficult, but if managed properly, the outcome can be more effective risk management. Additionally, contracts can be streamlined and procurement processes simplified in PPP projects, to achieve better results. In addition to this, the inefficient bureaucratic process can largely be avoided, together with politics in procurement.At the same time, PPP models possess weaknesses of their own. PPP projects are often long term (i.e. 30 years) and involve multiple parties. Because of this, they are much more complicated than normal public sector projects. However, the allocation of risks and responsibilities between the government and private sector generally follows the fundamental that risks are to be borne by parties best able to manage it . These complications result in longer negotiation periods and higher costs prior to implementation . These are legitimate barriers to the implementation of PPP projects. Other complications arise due to the difference of interest of the different parties involved. The private sector is more interested in generating a profit while the public sector is interested in serving the public interest. Opportunistic behavior by different parties can lead to higher costs and even failure. Major infrastructure projects involve extensive asset specificity and sunk costs, which can provide either public sector or private sector participants with opportunities for hold-up . The private sector is less concerned in equity and transparency than is the public sector. Issues can arise with regards to access to services by vulnerable populations . Moreover, an imbalance in the skills and expertise of the different parties involved can lead to the undermining of one party's interest and result in the failure to achieve equitable outcomes. Moreover, having its major concern on project cash flow by the project sponsor, PPP also gives less emphasis on issues like climate change, environmental safeguards as part of sustainability concern.

5. Conclusion

As part promoting sustainable economic development though implementing PPPs in an economy, a common sense approach is crucial. PPPs exist because it benefits all the partners. As such, they must be designed to serve the interest of the partners. In doing so, the benefits of the partnership have to be distributed accordingly, together with the risks. Accountability is necessary to ensure that the partnership functions as it should to promote economic, social and environmental sustainability. The specific details of "PPP considerations" with regards to a particular project will depend upon the details of that project and its environment. Moreover, such considerations needs to be assimilated and adapted as lessons are incorporated from new experiences.

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Chapter 36

Plant Product

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Abstract

Plant products are these products made from plant material .plant products are classified on the basis of primary metabolite pathway and secondary metabolite pathway. Plant products of biotechnology have been available in the market for some time now. This modified crops like their traditional counter parts, but they possess special characteristics that make them better. These modified soybeans contain high level of oleic acid, a monounsaturated fats. According to health nutritionalist monounsaturated fats are considered "good" fats found in beef, pork, cheese, and other dairy products. More frequently, over time, natural selection has resulted in animal developing biochemical mechanism or behavioural traits that lead to avoidance of alkaloids containing plants.

INTRODUCTION

Plant product has been a full service supplier of fertilizer, pest control   product, seeds etc. Plant products are these products made from plant material .plant products are classified on the basis of primary metabolite pathway and secondary metabolite pathway.

A plant cell produces two types of metabolites: primary metabolites involved directly in growth and metabolism e.g. *carbohydrate*   where as secondary metabolites derived by unique   biosynthetic pathways from primary metabolic and intermediates .e.g. *Alkaloids, Antibiotics , naphthalene, nucleoside ,phenazines, uinolines, terpenoids, peptides, and growth factors etc.*

Secondary metabolites are substances which are produced by plants as defence chemicals. Their absence does not cause bad effect to the plants .They include alkaloids, phenolics, steroids, essential oil, tannins etc.

Secondary metabolites are compounds biosynthetically derived from primary metabolites.

Secondary metabolites or secondary compounds are compound that are not required for normal growth and development and are not made through metabolic pathways common to all plants. Secondary metabolites are accumulated by plant cells in smaller quantities than primary metabolites. These secondary metabolite are synthesized in specialize cells at particular development stages making extraction and purification difficult. And / or industrial traits.

In the developed world's it is evident that the use of genetically modified crops has resulted in significant benefits. These "first generation" crops have proven their ability to increased crop yield, reduce farm costs, increase farm profit and help protect the environment. Current research is focused on "2nd generation genetically modified crops that will feature increased nutritional, pharmaceutical

REVIEW OF LITERATURE

Kazmi et al. (112) , Nasimento et. al. – 200, WHO 1977, Duke 1985, UNESCO 1998, Lucy and Edgar 1999, cowman 1999; Adesokan et al. 2008, kala 2005 , okibo et. al. 2008, owalabi et al. 2007.

 SPECIFIC PRODUCT

PLAN PRODUCT OF BIOTECHNOLOGY

Plant products of biotechnology have been available in the market for some time now.

This modified crops like their traditional counter parts, but they possess special characteristics that make them better.

BIOTECH SOYABEAN

Soya bean is the oil crop of greatest economic relevance in the world.

Its beans contain proportionally more essential amino acids then meat, thus making it one of the most important food crops today.

Herbicides Tolerant Soyabean

Herbicides tolerant soybean varieties contain a gene that provides resistance to one of two broad spectrum herbicides.

This modified soybean provides better weed control and reduces crop injury.

It also improves farm efficiency by optimizing yield, using arable land more efficiently, saving time for the former and increasing the flexibility of crop rotation. It also encourages the adoption no till farming- an important part of soil.

Conservation Practise

These verities are the same as other soybeans in nutrition composition and in the way they are processed into food and feed.

Oleic Acid Soybean-

These modified contain high level of oleic acid, a monounsaturated fats. According to health nutritionalist monounsaturated fats are considered "good" fats found in beef, pork, cheese, and other dairy products.

Conventional soybeans have an oleic acid content of 24%. These new varieties have an oleic acid content that exceeds 80%.

*Australia, Canada, China, Colombia, Mexico, South Africa and USA are the planting countries while Japan, Newzealand, Philippines, Singapore, and South Korea and Taiwan are the importing countries.

Biotech Tomato

Delayed –ripening tomato

The Delayed - ripening tomato became the first genetically modified food crop to be produce in a developed country.

These tomatoes spend more days on the vine then other tomatoes, thus resulting in better flavour, furthermore, the longer shelf life has commercial advantages in harvesting and shipping that can reduce the cost of production.

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Medicinal Alkaloids

Many potentially toxic plant derived alkaloids have medicinal properties, as long as they are administered in carefully regulated doses. Alkaloids with important medicinal uses include morphine and codeine from the opium poppy.

For example, groundsel contains the alkaloid senecionine, which has resulted in many recorded cases of livestock fatalities due to liver failure stock.

More frequently, over time, natural selection has resulted in animal developing biochemical mechanism or behavioural traits that lead to avoidance of alkaloids containing plants.

Vincristine and vinblastine from the periwinkle plant are inhibitors of cell division and are used treat cancers of the blood and lymphatic system. Quinine from the bark of cinchona tree is toxic to the plasmodium parasite, which causes malaria and has long been used in tropical and subtropical regions of the world.

Other alkaloids are used as stimulants, including caffeine, present in coffee, tea, and cola plants (and the drinks derived from these plant) and nicotine which is present in tobacco. Nicotine preparations are paradoxically, also used as an aid in smoking cessation. Nicotine is a also a very potent insecticide.

Conclusion

Primary metabolites comprise many different types of organic compound, including, but not limited to, carbohydrates, lipids, proteins, and nucleic acid. In the developed world's it is evident that the use of genetically modified crops has resulted in significant benefits. These "first generation" crops have proven their ability to increased crop yield, reduce farm costs, increase farm profit and help protect the environment. Current research is focused on "2nd generation genetically modified crops that will feature increased nutritional, pharmaceutical and / or industrial traits. These verities should prove valuable in countries where millions of people suffer from dietary deficiencies and have difficulties in accessing vaccines and medicines'. These plant products are beneficial but also harmful mankind.

Chapter 37

Digital divide in Teaching-Learning process of Higher Education: An Analytical Study between Various Groups of Students

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Abstract: *Recently digital divide has attracted the researchers to analyze the condition in various groups. Digital divide is not only existing due to geographical distance or region but may exist due to other factors. In the knowledge economy society, Information Communication Technology (ICT) is playing crucial role for overall development. Higher education system is an example of this, in which Teaching-Learning is based on ICT. The impact of utilization of ICT in Teaching-Learning may be reflected in terms of academic performance of students. On the other hand Digital divide may exist due to various factors among the students involved in learning. This paper analyzes the situation of digital divide in ICT based learning process based on three groups namely: Male Vs Female students, University Vs College students and PG Vs UG students.*

Keywords: Digital Divide, Information communication Technology (ICT).

Introduction

Digital divide is defined as the gap between those group who have access to digital technology or Information communication Technology (ICT) and those who do not to fulfill their objective. The digital divide (Panda I. and et al.) may also be defined as the gap between individuals, business and geographical areas at different socio-economic levels with regards both to their opportunities to access ICTs and to their use of the internet for a wide variety of activities. The objective considered in this piece of research work to analyze digital divide is utilization of ICT as a tool in learning process to improve academic performance of students. Countries around the words are investing in Information Communication Technology (ICT) to improve quality education, but due to many reasons digital divide are occurring in various groups of students and teachers engaged in Teaching-Learning in higher education system. Researchers have worked lot about utilization of ICT in Teaching-Learning and its impact on academic performance of students. Purpose of present research work is to analyze condition of digital divide in higher education system specially in context of students perception on utilization of ICT in learning process to improve their academic performance. Various groups of students where digital divide may occur are identified. From the analysis (Singh S. Et.al, 2010) it is clear that there are millions of peoples in the world or country like India who do not have internet access, telephones, mobile etc. due to various reasons. Their inability to access ICTs deprives them to reap the benefits of ICTs. This has let to serious issue " Digital Divide". Government of India (www.mhrd.gov.in) and is also taking lots of initiative to bridge the digital gap among the various stakeholders engaged in higher education system, these are national Knowledge Network (NKN), Spoken tutorial program, NEPTEL etc.

Digital Divide in Higher education: In Teaching-Learning in higher education system, ICT is being utilized both by students as well as by teachers. The various groups of students where digital divide may occur may be as follows:

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    i.   **Male student and Female student**: These two groups may also have similar situation of their perception to utilize ICT in learning process due to many socio-economic condition, one group will be utilizing ICT more than other group in learning process although they are having equal opportunity to access the ICT resources., which may be considered as digital gap

    ii.   **University student and College student:** These two groups may have different opportunity and facility of ICT infrastructure as well as level of knowledge to access ICT, so in terms of utilization of ICT in learning, their behavior may be different, which may cause digital divide in between these groups.

    iii.   **PG student and UG student:** Digital divide condition may also be analyzed based on level of class of student. Most of the time it has been seen that student of PG are serious about utilization of ICT tools for learning then UG students.

    iv.   **Students studying in rural area and students studying in urban area:** Availability of digital infrastructure in rural and urban areas may be different. Digital access in urban areas are better than rural areas, hence it is obvious that utilization of ICT by students, studying in rural areas for learning may be different than those who are studying in urban areas and will be the reason of digital divide.

Analytical Study on Digital Divide: In order to analyze the situation of digital divide in higher education institutions, a previously developed questionnaire (Hota G. and Naik P,,2015) were used, which consists five parts, namely: Demographic detail, Availability of ICT related infrastructure, utilization of ICT tools, teachers' perception on utilization of ICT and opinion about ICT ..Three groups of students namely: Male student Vs Female student, University Vs College students and PG Vs UG students were considered for the study. The questionnaire was administered on 150 students out of which 76 students were Male while 74 students were Female, 74 students were from university while 74 students were from college and 77 students were of PG classes while of 73 students were of UG classes. The analysis for digital divide for the above groups for only third parts of questionnaire are considered in this study. Questions (15 questions) related to this part of questionnaire are shown in Table 1.Collected data with three different parameters: Always/Full confidence, Often/Less confidence and Never/No confidence based on questions shown in Table 1 for three groups are tabulated in Table 2 . This table along with Figure 1 reflects that digital divide in the various groups are existing but is very less, say for example (Figure 1 (a)) 57.20% Male always utilizes ICT for learning while 54.32% Female utilizes ICT for learning so the digital gape under this parameter in between Male and Female students is only 3.12% which comes under considerable range and may be accepted, similar trends may be observed for other parameters of other groups, this means on utilization of ICT as learning tools, behavior of all the groups are almost similar, and hence either there is no digital gap or it is very less.

Table 1: Part of questionnaire related to Utilization of ICT tools in Teaching-learning process

S. No.	Statement	Always	Often	Never
	How often do you do the following activities for teaching and learning			
1	Browse / search the internet to collect information to prepare lesson			
2	Browse or search the internet to collect learning material or resources to be used by students during lessons			
3	Create your own digital learning materials for students			
4	Use applications to prepare presentations for lessons			
5	Post home work for students as Learning materials and others in official /your Own website.			
6	Communicate online with parents /Students			

S No	Statement	Full Confidence	Less Confidence	No confidence
	To what extent are you confident in the following			
7	Produce a text using a word processing program			
8	Use emails to communicate with students/others			
9	Email a file to someone, another student or teacher			
10	Organize computer files in folders and subfolders			
11	Use a spreadsheet			
12	Participate in social networks site like facebook			
13	Download and install software on a computer			
14	Prepare power point presentation for teaching			
15	Exploring and searching web site to get teaching materials			

Table 2 : Group wise detail data on Utilization of ICT in Teaching-learning (in %)

Group	Male Vs Female		University Vs College		PG Vs UG	
	Male	Female	University	College	PG	UG
Always	57.20	54.32	71.50	66.50	63.80	61.70
Often	24.65	30.18	19.30	21.70	20.80	26.30
Never	18.15	15.50	9.20	11.80	15.40	12.00
Overall percentage	100	100	100	100	100	100
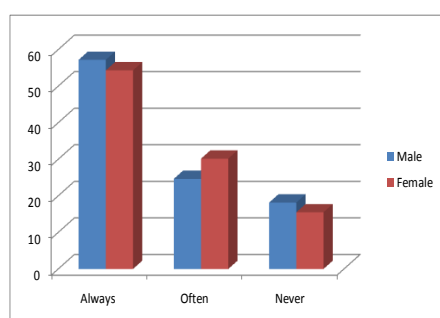
(a)
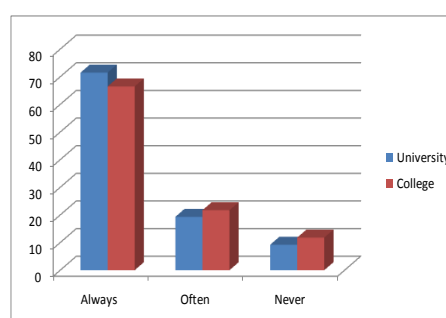
(b)
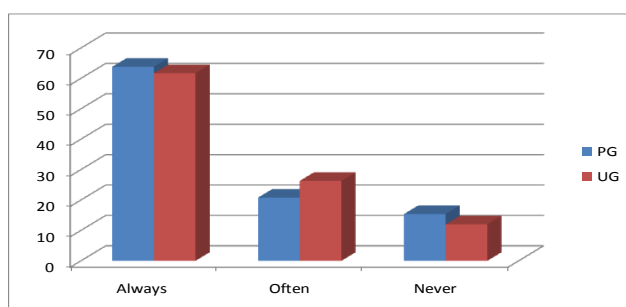
(c)

Figure 1: Graphical view of digital divide in between (a) Male Student Vs Female Student (b) University student Vs College Student (c) PG student Vs UG student.

Conclusion: Digital divide in higher education system in Teaching-Learning is a thrust research area to overcome the problem and will help the government to make the policy for bridging the digital gap. The current study emphasized on utilization of ICT as a tool in learning process in higher education institutions. Data collected from various higher educational institutions through developed questionnaire are analyzed based on three groups. The study reveals that digital gap among the groups considered in this study is in considerable range, which is a good indication for the future digital access, specially for learning through ICT.

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अध्याय—38

कौशल विकास प्रयासों से ग्रामीण रोजगार सृजन की संभावना

सुश्री रंजना नीलिमा कच्छप

डॉ० भूप नारायण सिंह

प्रस्तावना

शिक्षा विकास का मूलमंत्र है । मानव जीवन के विकास के लिए शिक्षा ही प्रमुख आभूषण है। शिक्षा के साथ संस्कार एवं कौशल विकास भी आज के बदलते औद्योगिक परिवेश में आवश्यक है। कौशल विकास से ही विश्व की सर्वाधिक युवा आबादी वाला यह देश विश्व स्तर की प्रतिस्पर्धा में अपने को स्थापित करते हुए देश–दुनिया की मुख्य धारा से जुड़ा रह सकता है।

भारत का दिल गांवों में बसता है। 2011 की जनगणना के अनुसार भारत की कुल जनसंख्या 1,210,726932 पायी गयी जिसमें पुरुष जनसंख्या 6,23724248 तथा महिला जनसंख्या 586469174 पायी गयी। कुल जनसंख्या की लगभग 70 प्रतिशत जनता आज भी गांवों में निवास करती है। कृषि प्रधान देश होने के कारण लगभग 53 प्रतिशत लोग कृषि क्षेत्र में रोजगार प्राप्त करते हैं जबकि कृषि क्षेत्र से देश को मात्र 18 प्रतिशत आय की प्राप्ति होती है। ग्रामीण जनसंख्या की बहुलता होने के कारण यहां ग्रामीण बेरोजगारी तथा छिपी बेरोजगारी पायी जाती है। जिसमें लोग कार्य करते हुए तो नज़र आते हैं पर वास्तव में उनकी उत्पादकता पर कोई असर नहीं पड़ता है जो बड़ी संख्या में मज़दूरी, दुकानों पर, कंपनियो में, कृषि पर तथा अन्य क्षेत्रों में पायी जाती है।

वर्तमान में तेजी से बढ़ते आर्थिक एवं औद्योगिक परिदृश्य में प्रौद्योगिकी पहले से भी ज्यादा अनिवार्य हो गयी है। भारत जैसे विकासशील देशों के लिए आवश्यक है कि जहां प्रौद्योगिकीय विकास एवं रोजगार सृजन एक साथ करना है कौशल विकास को बढ़ावा दिया जाय। भारत को युवाओं का देश कहा जा रहा है यहां लगभग 62 प्रतिशत से अधिक जनसंख्या कार्यशील आयु समूह 15–59 वर्ष की तथा 54 प्रतिशत से अधिक जनसंख्या 25 वर्ष से कम आयु की है। ऐसे क़यास लगाए जा रहे हैं कि वर्ष 2020 तक भारत की जनसंख्या की औसत आयु 29 वर्ष होगी जबकि इस दौरान अमेरिका की जनसंख्या की औसत आयु 40 वर्ष, यूरोप की 46 वर्ष तथा जापान की औसत आयु 47 वर्ष होगी। आने वाले औद्योगीकृत विश्व में 4 प्रतिशत की दर से बाल श्रम घटने की संभावना है जबकि भारत में 32 प्रतिशत की दर से बढ़ने की संभावना जतायी जा रही है। आज भारत में उच्च प्रशिक्षितों की कमी है। NSSO के 68वें दौर के आंकडों के अनुसार भारत की कुल श्रमशक्ति के केवल 4.69 प्रतिशत को ही औपचारिक व्यावसायिक प्रशिक्षण प्राप्त है, जबकि अमेरिका में यह आंकड़ा 52 प्रतिशत, यू0के0

में 68 प्रतिशत, जर्मनी में 75 प्रतिशत तथा जापान में 80 प्रतिशत एवं दक्षिण कोरिया में 96 प्रतिशत है। इतनी बड़ी जनसंख्या को रोजगार देना संभव नहीं है। प्रत्येक युवा के अंदर कोई न कोई कला होती है कुछ उसे पहचान लेते हैं तथा कुछ को पता नहीं होता है। युवाओं को नई दिशा देने के लिए आवश्यकता है विद्यालयों में शिक्षा, संस्कार के साथ पर्यावरण जागरूकता एवं कौशल उन्नयन के प्रयासों पर ध्यान दिया जाय। ताकि वे देश के आर्थिक विकास में अपना योगदान दे सकें।

15 जुलाई 2015 को प्रथम "विश्व युवा कौशल दिवस" के अवसर पर केन्द्रीय कौशल विकास एवं उद्यमिता मंत्रालय द्वारा **स्किल इंडिया** अभियान की शुरूआत की गयी। इस अभियान का मुख्य उद्देश्य वर्ष 2022 तक 40.02 करोड़ लोगों को कौशल प्रशिक्षण प्रदान करना है। प्रधानमंत्री ने इस अवसर पर **स्किल इंडिया लोगो** का भी विमोचन किया जिसका प्रचार वाक्य "कौशल भारत कुशल भारत" है। इसी दौरान कौशल ऋण पहल भी लांच की गयी जिसके तहत कौशल विकास कार्यक्रमों में शामिल होने के इच्छुक देश के 34 लाख से अधिक युवाओं को अगले पांच वर्षों तक पांच हजार से 1.5 लाख रूपये तक का ऋण उपलब्ध कराया जायेगा।

अध्ययन का उद्देश्य – कौशल विकास से ग्रामीण रोजगार के अवसरों की पहचान करना।

अध्ययन पद्धति – प्रस्तुत शोध पत्र द्वितीयक स्त्रोतों एवं अवलोकन पद्धति पर आधारित है।

कौशल विकास से सृजन होने वाले रोजगारों की संभावना

1. **पर्यटन बहुलता वाले क्षेत्रों में पर्यटन संबंधी कौशल प्रशिक्षण** के माध्यम से कई युवाओं बोलने बात करने की कला विकसित होगी, कुछ गाइड की भूमिका निभा सकते हैं तथा कुछ अन्य कार्यों के माध्यम से रोजगार प्राप्त कर सकते हैं।

2. **कृषि वाले क्षेत्रों में कृषि संबंधी उद्योगों का प्रशिक्षण** में राइस मिल, भूसे से बनने वाली चीजों की जानकारी दी जा सकती है। इसके अतिरिक्त अनाज, दाल, मसाला, चटपटे मसाले एवं पैकिंग व विपणन, ताड़ उत्पाद उद्योग, गन्ना गुड़, मधुमक्खी पालन, अचार, दलिया निर्माण, पशु चारा निर्माण आदि।

3. **वन बहुलता क्षेत्रों में वन आधारित उद्योग धंधों की जानकारी** के द्वारा वनों से प्राप्त होने वाले संसाधनों से संबंधित उद्योग धंधों के बारे में जानकारी प्रदान किया जा सकता है जिससे कत्था निर्माण, गोंद निर्माण, लाख निर्माण, कुटीर दिया सलाई उद्योग, पटाखा उद्योग, अगरबत्ती उद्योग, बांस एवं बेंत उद्योग, कागज की तश्तरी, लिफाफा, झाड़ू, चटाई, जूट उत्पाद आदि उद्योग धंधों में कई ग्रामीणों के लिए रोजगार के अवसर खुल सकते हैं।

4. **लघु एवं कुटीर उद्योगों से संबंधित कौशल विकास** –ग्रामीण क्षेत्रों में लोगों के हाथों में कला होती है तथा विभिन्न वस्तुओं का निर्माण भी करते हैं –जैसे– चित्रकारी है, मिट्टी की चीजें बनाना, बांस के खिलौने तथा फर्नीचर, टोकरी आदि, टेराकोटा की चीजें बनाना आदि। प्रशिक्षण के अभाव में कार्यों में निखार नहीं आ पाता है यदि उनको प्रशिक्षित कर प्रोत्साहित किया जाय तो इस क्षेत्र में कई ग्रामीणों को रोजगार की प्राप्ति हो सकती है।

5. **फलों पर आधारित कौशल विकास** –ग्रामीण क्षेत्रों में लोगों के पास थोड़ी न थोड़ी जमीन अवश्य होती है। इन भूमि का उपयोग सही तरीके से नहीं हो पाता है। कुछ फल ऐसे होते हैं जिनको बिना मेहनत के उगाया जा सकता है। जैसे आम, अमरूद, पपीता, नीबू, कटहल, बेर, लीची, सहतूत आदि। जिनका उत्पादन करके ग्रामीण अपने दैनिक आहार में शामिल कर सकते हैं तथा अतिरिक्त मात्रा का विक्रय कर आय प्राप्त कर सकते हैं। ऐसे क्षेत्रों में फलोत्पादन से संबंधित अन्य उद्योग धंधों के क्षेत्र में भी कौशल विकास किया जा सकता है जैसे – फलों से जैम, अचार, मुरब्बा का निर्माण कर रोजगार की प्राप्ति की जा सकती है।

6. टी0व्ही0, मोबाइल रिपेयरिंग एवं मैकेनिक संबंधी जानकारी।

निष्कर्ष

समय के साथ क्षेत्रानुसार उपलब्ध संसाधनों, उद्योगों एवं अन्य उत्पादनों को ध्यान में रखते हुए कौशल विकास किया जाय तो ग्रामीण क्षेत्रों में रोजगार सृजन के कई अवसर उपलब्ध हो सकते हैं तथा लाखो युवा रोजगार प्राप्त कर स्वयं को आत्मनिर्भर एवं हर परिस्थिति में खड़ा करने योग्य बना सकता है। एवं बेरोजगारी दूर होने के साथ साथ देश का आर्थिक विकास संभव हो सकेगा।

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NAAC Accredited : Education with 'B' & General Education with 'C' Grade

अध्याय — 39

कॉरपोरेट गवरनेस : अंकेक्षण के महत्वपूर्ण मूल्यांक के रूप में

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सारांश

कॉरपोरेट गवरनेस महत्वपूर्ण एवं आधुनिक कार्य प्रणाली है जिसमें पारदर्शिता का विशेष महत्व है। कॉरपोरेट गवरनेस से अवधारणा या आशय व्यवसाय के संचालन से संबंधित नियमन से है । कॉरपोरेट गवरनेस ऐसी प्रक्रिया है जिसके माध्यम से कॉरपोरेट जगत निर्देशित तथा नियंत्रित होता है। यह एक कम्पनी के सम्पूर्ण कार्य प्रणाली को नियंत्रित करता है जिसके लिए कारपोरेट गवरनेस के माध्यम से ऐसी संचालन प्रक्रिया को निर्माण किया जाता है जो कम्पनी के संपूर्ण कार्यप्रणाली का निरीक्षण करता है तथा कम्पनी प्रबंधन, प्रबंध संचालक, अंशधारकों तथा अंकेक्षकों की भूमिका को निश्चित करता है। उपरोक्त कार्यों या क्रियाओं के सम्पादन के लिए वित्तीय विवरणों में पारदर्शिता अनिवार्य है ऐसी स्थिति में अंकेक्षण की भूमिका अत्यंत महत्वपूर्ण हो जाती है। कॉरपोरेट गवरनेस अंकेक्षण के योग्यता के मूल्यॉकन का महत्वपूर्ण प्रमाप है जो कॉरपोरेट गवरनेस के सामान्य अर्थ को प्रदर्शित करता है । अंकेक्षण द्वारा अपने कार्यों का सम्पादन कम्पनी के विभिन्न कार्यक्षेत्रों के मूल्यांकन के आधार पर किया जाता है जो अंकेक्षक के योग्यता पर निर्भर करता है तथा अंकेक्षक की योग्यता के प्रमाप का निर्धारण कॉरपोरेट गवरनेस द्वारा किया जाता है।

परिचय

कॉरपोरेट गवरनेस शब्द की अवधारणा का उपयोग भारत के आधुनिक व्यवसायिक जगत में किया जाता है। यूनाईटेड किंग्डम की केबिनेट ने कॉरपोरेट गवरनेस को एक ऐसी प्रक्रिया के रूप में परिभाषित किया है जो कम्पनियों को निर्देशित तथा नियंत्रित करती है। यह कम्पनी के सम्पूर्ण संचालन प्रक्रिया को नियोजित करती है तथा इस प्रकार की संचालन प्रक्रिया का निर्माण करती है। जिसमें नियंत्रण प्रक्रिया, प्रबंध संचालकों, अंकक्षकों तथा प्रबंधको के मध्य संतुलन स्थापित हो सके। श्री शेखर दत्त, प्रबंध संचालक सी.आई.आई. ने कॉरपोरेट गवरनेस के संदर्भ में राहुल बजाज कमेटी को दिये गए रिपोर्ट में कारपोरेट गवरनेस के संबंध में स्पष्ट किया कि कारपोरेट गवरनेस एक ऐसी प्रक्रिया है जो प्रबंधन में पारदर्शिता लाती है । चाहे वह व्यापार हो या उद्योग जो वित्तीय

संस्थाओं के लिए महत्वपूर्ण है, चाहे वे निजी क्षेत्र के हो या सार्वजानिक क्षेत्र के इन सभी का निगमीय अस्तित्व है। अतः स्पष्ट है कि कॉरपोरेट गवरनेस निगमीय नैतिकता निगमीय पारदर्शिता तथा निगमीय मूल्याँकन का संयोजन है। अर्थात् यह एक ऐसी प्रक्रिया है जो निगमीय क्रियाओं की परिचालन गतिविधियों को प्रदर्शित करती है। कारपोरेट गर्वनेस निगमीय गतिविधियों को प्रदर्शित करने के लिए आवश्यक दिशा निर्देश निश्चित करती है। अतः भारत में कारपोरेट गर्वनेस का विकास एक ऐसे मात्रक के रूप में किया गया है जो अंकेक्षकों की योग्यता का मूल्याँकन करता है। अंकेक्षको के योग्यता के मूल्याँकन तथा निगमीय क्षेत्रों में उन्हे कार्य करने के लिए अनुमति प्रदान करने के लिए नरेश चन्द्र कमेटी तथा नारायन मूर्ति कमेटी के सुझावों के आधार पर मूल्याँकन प्रक्रिया एवं प्रावधानों का निर्धारण किया गया है।

निगमीय श्रेष्ठता की अवधारणा – भारत के निगमीय क्षेत्र में गर्वनेस के नये प्रावधानों को लागू किये जाने के पूर्व 15 मई 2000 में डॉ. पी.एल. संजीव रेड्डी की अध्यक्षता में निगमीय विकास संस्थान द्वारा शैक्षणिक संघ का गठन किया गया जिसके द्वारा निगमीय नियंत्रण हेतु निम्नलिखित सुझाव दिये गये–

1. निगमीय श्रेष्ठता निश्चित करने के लिए स्वतंत्र स्वशासी संस्थान का गठन किया जाए। यह संस्था शोध शैक्षणिक कार्यक्रमों तथा प्रशिक्षण के माध्यम से निगमीय क्षेत्रों की कार्यकुशलता में वृद्धि के लिए प्रावधान किया जाए तथा निगमीय क्षेत्रों को प्रोत्साहित करने के लिए पुरस्कार के भी प्रावधान किया जाए। निगमीय क्षेत्र में श्रेष्ठता स्थापित करने के लिए उचित निगमीय नियमन किया जाना चाहिए।

2. निगमीय कार्यो में अंशधारकों की भागीदारी बढ़ाने के लिए संयुक्त बैठक नियोजन का प्रावधान जिसमें इलेक्ट्रानिक मीडिया का उपयोग किया जाना।

3. निगमीय क्षेत्र के लिए विशिष्ट सामाजिक उत्तरदायित्व का निर्धारण उचित मूल्याँकन एवं प्रस्तुतिकरण प्रक्रिया का निर्धारण।

4. प्रबंधन एवं निर्देशन के मध्य कार्य तथा दायित्वों का स्पष्ट विभाजन जो निश्चित करे कि प्रबंधकीय निदेशकों के स्पष्ट दायित्व एवं वैधानिक दायित्व क्या है तथा अप्रबंधकीय निदेशकों के व्यूरचनात्मक एवं अन्य दायित्वों को स्पष्ट करें।

5. संगठनात्मक संघर्ष को नियंत्रित करने के लिए संगठनात्मक सदस्यों के कार्य के मूल्याँकन तथा समीक्षा का उचित नियोजन किया जाना चाहिए जिसके माध्यम से अधिकारों दायित्वों तथा व्यक्तिगत हितों को नियंत्रित किया जा सके तथा स्वस्थ संगठनात्मक वातावरण का निर्माण किया जा सके।

6. सार्वजनिक क्षेत्र की सूचीकृत तथा असूचीकृत कम्पनियों तथा वे कम्पनियाँ जो विभिन्न वित्तीय एजेन्सियों के माध्यम से सुरक्षित हो ऐसी संस्थाओं के संचालक मण्डलों तथा स्वतंत्र निदेशकों के संबंधित कारपोरेट गवरनेस के लिए आवश्यक सुझाव।

उपरोक्त सभी प्रावधान निगमीय श्रेष्ठता को निश्चित करने तथा कार्य में पारदर्शिता निश्चित करने से संबंधित है। उक्त प्रावधानों के अन्तर्गत निगमीय सामाजिक उत्तरदायित्वों के निर्धारण मूल्यॉकन तथा प्रस्तुतिकरण को भी महत्व दिया जो अंकेक्षक के प्रस्तुतिकरण योग्यता से संबंधित है उपरोक्त अवधारणा निगमीय क्षेत्र में कार्यों के मूल्यॉकन के संदर्भ में अंकेक्षक के श्रेष्ठता को निश्चित करती है।

अंकेक्षक की महत्ता – अंकेक्षक ऐसा अधिकारी है जो अपने ग्राहक द्वारा प्रस्तुत लेखांकन विवरण का अंकेक्षण कर सत्यता प्रमाणपत्र जारी करने के लिए उत्तरदायी होता है अर्थात् अंकेक्षक एक निरीक्षक की तरह है न कि उसका व्यवहार शिकारी की तरह होता है । उक्त कथन अंकेक्षक के महत्व को और अधिक बढ़ा देता है तथा स्पष्ट करता है कि अंकेक्षक को अपने दायित्वों को पूरा करने के समय सर्तक रहना आवश्यक है। पूर्व में नरेश चन्द्र कमेटी तथा नारायन मूर्ति कमेटी द्वारा दिये गये प्रावधान अंकेक्षक के कार्यों की श्रेष्ठता को निश्चित करने का प्रमाण है तथा अंकेक्षक का यह दायित्व है वह अंकेक्षण के समय उक्त सभी प्रावधानों या प्रमापों का पालन ईमानदारी से करे।

प्रत्यक्ष वित्तीय संबंध – अंकेक्षक एवं ग्राहक के मध्य प्रत्यक्ष वित्तीय संबंध नहीं होना चाहिए अथवा किसी परियोजना में प्रत्यक्ष साझेदार नहीं होना चाहिए इस दशा में अंकेक्षक स्वतंत्र निर्णय होने में सक्षम होगा तथा उस पर किसी प्रकार का दबाव नही होगा।

अग्रिम सुविधा– अंकेक्षक अपने ग्राहक से किसी भी प्रकार की अतिरिक्त सुविधा प्राप्त नहीं करेगा जो अग्रिम के रूप में हो जिसका माध्यम या गारेन्टर ग्राहक हो।

व्यावसायिक संबंध – अंकेक्षण ग्राहक के साथ अंकेक्षक का कोई भी या किसी भी प्रकार का व्यावयायिक संबंध नहीं होना चाहिए क्योंकि अंकेक्षक और ग्राहक के बीच किसी भी प्रकार का व्यावसायिक संबंध अंकेक्षण कार्य को प्रभावित करता है।

व्यक्तिगत संबंध – अंकेक्षक का ग्राहक या ग्राहक के किसी अधिकारी के साथ व्यक्तिगत संबंध अंकेक्षण क्रियाओं को प्रभावित करेगा । अतः अंकेक्षक का ग्राहक या उसके किसी भी पक्षकार के साथ व्यक्तिगत संबंध नहीं होना चाहिए।

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महत्वपूर्ण पद पर नियुक्ति – अंकेक्षक फर्म का कोई सदस्य या अंकेक्षक समूह का कोई सदस्य ग्राहक कम्पनी के किसी महत्वपूर्ण पर कार्यरत नये या उसकी नियुक्ति ग्राहक कम्पनी या संबंधित कम्पनी के महत्वपूर्ण पद पर न किया गया हो उक्त स्थिति दो ाूपूर्ण अंकेक्षण की स्थिति को प्रदर्शित करती है।

वित्तीय प्राप्तियों संबंधित प्रावधान– इस प्रावधान के अन्तर्गत स्पष्ट किया गया है कि अंकेक्षक अपने अंकेक्षण ग्राहक से किसी प्रकार से अतिरिक्त वित्तीय लाभ प्राप्त नहीं कर सकता। वह अपने अंकेक्षण ग्राहक अंकेक्षण शुल्क के अतिरिक्त अन्य वित्तीय आगम प्राप्त नहीं कर सकता जो किसी भी दशा में अंकेक्षक फर्म के कुल आगम के 25 प्रतिशत से अधिक नहीं हो सकता।

अंकेक्षक अपने ग्राहक का किसी भी प्रकार की अतिरिक्त सेवाएँ प्रदान नहीं कर सकता जो उसके पेशवर व्यवहार से संबंधित है। अंकेक्षक एक स्वतंत्र व्यक्ति होता है तथा वह किसी भी व्यक्ति से किसी भी प्रकार के समझौता करने के लिए स्वतंत्र रहता है किन्तु वह अपने अंकेक्षण ग्राहक से किसी भी प्रकार के व्यावसायिक सेवाओं से संबंधित समझौता नही कर सकता जिसके अन्तर्गत निम्नलिखित सेवाओं को शामिल किया गया है।

1. अंकेक्षक अपने ग्राहक को किसी भी प्रकार के पुस्तपालन तथा लेखांकन से संबंधित सेवाएँ प्रदान नहीं कर सकता।

2. अंकेक्षक अपने ग्राहक को अंतरिम अंकेक्षण संबंधित सेवाएँ नहीं प्रदान कर सकता।

3. अंकेक्षक अपने ग्राहक को ऐसी किसी भी प्रकार की सुविधा प्रदान नही कर सकता जिसका संबंध वित्तीय सूचनाओं से हो न ही ऐसी कोई नेटवर्क बना सकता है या उसका हिस्सा बन सकता है जिसके माध्यम से ग्राहक संस्था को वित्तीय सूचनाएँ प्राप्त होती है।

4. अंकेक्षक अपने ग्राहक को विनियोग सलाहकार, दलाल, एजेन्ट, मर्चेन्ट बैंकर अथवा वित्तीय सेवाओं से संबंधित सुविधाएँ आदि उपलब्ध नहीं करा सकता।

5. अंकेक्षण ग्राहक के प्रबंधन या संगठन में अंकेक्षक स्थायी या अस्थायी कर्मचारी के रूप में सेवाएँ प्रदान नहीं कर सकता ।

6. अंकेक्षण अपने ग्राहक को अन्य व्यावयायिक सेवाएँ जैसे कार्य मूल्याँकन विशिष्टीकरण मूल्याँकन आदि नहीं प्रदान कर सकता।

समिति के अनुसार उपरोक्त दशाओं को ग्राहक एवं अंकेक्षक के मध्य लागू करने के बाद ही अंकेक्षक पूर्ण कार्यकुशलता से अपने ग्राहक के लिए अंकेक्षण कार्य कर सकेगा तथा श्रेष्ठ परिणाम देगा।

उपरोक्त उठाए गए कदमो के द्वारा ही अंकेक्षक को पूर्ण स्वतंत्रता प्राप्त होगी तथा वह संस्था के वित्तीय स्थिति प्रबंधकीय दृष्टिकोण वास्तविक दायित्व तथा संस्था के जोखिम एवं सुधारों के संबंध में स्वतंत्र विचार दे सकेगा। निगमीय परिचालन के माध्यम से इस प्रकार व्यावयायिक संस्थाओं को अंकेक्षक के माध्यम से व्यावसायिक समस्याओं के लिए उचित एवं निष्पक्ष सुझाव प्राप्त हो सकेगा। अतः अंकेक्षक का यह दायित्व है कि वह उपरोक्त प्रावधानों को ध्यान में रखते हुए ही अंकेक्षण कार्यो का सम्पादन करे। उपरोक्त प्रावधानों के आधार पर ही अंकेक्षक त्रुटियों की खोज मूल्याँकन तथा उचित व्याख्या कर सकता है।

उपरोक्त प्रावधानों का दूसरा महत्वपूर्ण पहलू यह है कि उक्त प्रावधानों का पालन किये जाने के परिणाम स्वरूप अंकेक्षक स्वतंत्र रूप से निष्पक्ष निष्कर्ष अंकेक्षण समिति या ग्राहक कम्पनी के संचालक मण्डल के समक्ष प्रस्तुत कर सकता है। उपरोक्त तथ्य स्वतंत्र निष्पक्ष अंकेक्षण द्वारा सत्यता को सामने लाने एवं प्रमाणित करने में सहायक है जो अंकेक्षक की योग्यता का मूल्याँकन करने में सहायक है। समिति के अन्य महत्वपूर्ण प्रावधनों में पंजीकृत या सार्वजनिक कम्पनियाँ जिनकी दत्त पूँजी एवं स्वतंत्र संचय 10 करोड़ रूपये से अधिक हो या जिनका वार्षिक टर्नओवर 50 करोड़ रूपये वार्षिक से अधिक हो के लेखों को मुख्य प्रशासनिक अधिकारी या मुख्य वित्तीय अधिकारी से सत्यापित किया जाना अनिवार्य किया गया है। अंकेक्षक की कार्य कुशलता के मूल्याँकन के लिए किये गये अन्य प्रावधानों में अंकेक्षक द्वारा प्रस्तुत अंकेक्षण कार्य एवं अंकेक्षण सुझावों का पुर्ननिरीक्षण विशिष्ट कुशलता मूल्याँकन समिति के द्वारा पूर्नमूल्याँकन का प्रावधान कारपोरेट गवरनेस के अन्तर्गत किया गया हैं उपरोक्त सभी प्रावधान अंकेक्षण एवं अंकेक्षक के विशिष्ट संबंधो की व्याख्या करता है।

उपरोक्त अध्ययन से स्पष्ट है कि उदारीकरण के दौर में जहाँ पूरा राष्ट्र नई दिशा की ओर बढ़ रहा है तथा नयी व्यावसायिक उचाईयॉ छू रहा है अतः हर स्तर पर विशेषतः लेखांकन मूल्याँकन तथा अंकेक्षण कार्यो के लिए उच्च स्तर आवश्यक है विशिष्ट दशाओं में अंकेक्षण कार्य में स्पष्टता, स्वच्छता एवं पारदर्शिता आवश्यक है। उपरोक्त दिये गये प्रावधानों का पालन किये जाने पर निगमीय स्तर में उच्च स्तर का कुशल अंकेक्षण किया जाना संभव होगा तथा अंकेक्षण कार्य में पारदर्शिता भी होगी।

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अध्याय – 40

शिक्षा : जीवन के लिए-मूल्यों पर आधारित

संध्या श्रीवास्तव

सारांश

शिक्षा का अर्थ समान्यतः यह माना जाता है जो विद्यालयों तथा महाविद्यालयों में दी जाती है लेकिन यदि व्यापक अर्थ लें तो यह माना जाता है कि व्यक्ति जीवन पर्यन्त शिक्षा ग्रहण करता है और हर समय सीखता ही रहता है । शिक्षा तभी उपयोगी है जब वह जीवन की समस्याओं का समाधान कर सके । समाज के काम आ सके । भारतीय शिक्षाशास्त्री हो या पाश्चात्य शिक्षाशास्त्री, सभी का मानना है कि शिक्षा कुछ जीवन मूल्यो पर आधारित होनी चाहिये । केवल डिग्री प्राप्त करने को शिक्षा ग्रहण करना कहना गलत होगा । आज का युवा बड़ी–बड़ी डिग्रियाँ ग्रहण कर रहा है । लेकिन उन डिग्रियों ने उसे यह नहीं सिखाया है कि उसके परिवार के प्रति क्या कर्तव्य होने चाहिये। दिन–प्रतिदिन वृध्दाश्रमों की संख्या बढती जा रही है । समाज में भ्रष्टाचार का राज है। नैतिक मूल्य ना जाने कहाँ खो गये हैं आज की शिक्षा संस्कारी नही अहंकारी बना रही है । अभिभावकों का प्रयास भी यही है कि उनकी संतान डॉक्टर या इंजीनियर बन जाये और केवल धन कमाये । आज शिक्षा का अर्थ केवल धन कमाना ही रह गया है।

शिक्षा आयोग (1964–1966) द्वारा निर्धारित उद्देश्य में एक ओर तो आधुनिकीकरण को प्रोत्साहन देना रखा था और दूसरी ओर सामाजिक, नैतिक, आध्यामिक मूल्यों का विकास करना। आज की शिक्षा ने आधुनिकीकरण को तो महत्व दिया पंरतु सामाजिक नैतिक और आध्यामिक मूल्य ना जाने कहाँ खो गये । अतः मूल्यों के विकास में एक परिवार और समाज की मुख्य भूमिका होती है । परिवार मे ंबड़ों को सम्मान देना, प्रेम और सहयोग की विकास करना सीखता है परंतु आज परिवार से यह भावनाएँ लुप्त होती चली जा रही हैं । प्रतिस्पर्धा के इस युग में बालक केवल प्रतियोगी बन कर रह गया है और प्रतियोगिता में जीतने के लिए वह नैतिक मूल्यों का त्याग करने में वह सबसे आगे है । इसलिए आये दिन मुन्ना भाई प्रतियागिताओं में बैठते है। इसलिए आज शिक्षा जीविकोपार्जन का केवल साधन मात्र रह गई है और जीवन मूल्य केवल धन प्राप्ति हो गया है और विद्यालयो में जीवन मूल्यों की रक्षा के लिए विभिन्न पाठ्यसहगामी क्रियायें करायी जाती हैं । जैसे महापुरुषों की जयंतियाँ, राष्ट्रीय पर्व, एन.सी.सी ,एन.एस.एस., स्काउट/गाइड , परंतु ये केवल औपचारिकता मात्र रह गये हैं। इनका जीवन मूल्यों से कोई संबंध नही है । आधुनिक युग में मूल्य आधारित शिक्षा देने के लिए नई प्रवृत्तियों और युक्तियों का प्रयोग करना शुरु कर दिया है लेकिन धर्म निरपेक्ष देश में सब धर्मों के नैतिक मूल्य तो एक ही है लेकिन अपने धर्म ,अपने संप्रदाय को श्रेष्ठ बताने की होड़ में विद्यालय दिशाहीन होते जा रहे हैं

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कि उन्हें किन जीवन मूल्यो की शिक्षा दी जाये। माध्यमिक स्कूलों मे विषयों की पढाई के लिए ही समय सारणी में कालखण्ड बनाये जाते हैं। अन्य सहगामी कियाओं के लिए कालखण्ड रखे जाते हैं परंतु इनका सही उपयोग नहीं हो पाता। आज हमें बालको को ऐसी शिक्षा देनी है जो जीवनोपयोगी तो हो साथ ही जीवन मूल्यों का संरक्षण भी हो और वह आने वाली पीढियो को हस्तांतरित भी हो ।

प्रस्तावना

साधारणतः शिक्षा का अर्थ ज्ञान ग्रहण करना समझा जाता है और यह माना जाता है कि शिक्षा ग्रहण करते समय शिक्षार्थी को जीवन और संसार की व्यवहारिक समस्याओ में नही पड़ना चाहिए। इन दोनो बातो के परिणामस्वरूप शिक्षा केवल किताबी ज्ञान रह गई है और उसका जीवन से संपर्क टूट गया है। इससे शिक्षा का जो लाभ व्यक्ति और समाज को मिलना चाहिए था नही मिल रहा। आधा जीवन पढ़ने में बीत जाता है और पढ़ना समाप्त होते ही जीवाकोपार्जन की समस्या सामने आ जाती है। शिक्षार्थी जो कुछ भी शिक्षा ग्रहण करता है उसका जीवन में विनियोग नही हो पाता है और न ही उसके लिए अवसर मिलता है। शिक्षा स्वयं कोई ध्येय नही है न ही जीवन के ध्येय की पूर्ति का साधन मात्र है इसलिए जीवन और जीवन की समस्याओं से उसका घनिष्ठ संबंध है। पुस्तक में केवल अक्षर और भाषा व विचार मिलते है किंतु उनका अर्थ जीवन में खोजना पड़ता है । जैसे गज का अर्थ–"हाथी" । यह शब्द कोष में लिखा है परंतु सच्चाई यह है कि गज शब्द का सही अर्थ उसे हाथी देखने पर ही समझ में आएगा । शब्द कोष में केवल पयार्यशब्द दिया जाता है, पुस्तक में अर्थ नही रहता, अर्थ सृष्टि में रहता है।

जब यह बात बालक को समझ में आएगी तभी उसे सच्चा ज्ञान प्राप्त होगा। इसलिए शिक्षा शास्त्रियों ने शिक्षा का अर्थ दिया है यह जानना आवश्यक है।

शिक्षा का अर्थ –

शिक्षा शब्द की उत्पत्ति संस्कृत भाषा वो शिक्ष् धातु में अ, आ प्रत्यय लगाने से हुई है। संस्कृत में शिक्ष् शब्द का अर्थ सीखना और सिखाना है, अतएव सीखने और सीखाने की किया ही शिक्षा के लिए एजुकेशन शब्द का प्रयोग किया जाता है।इसकी उत्पत्ति लैटिन भाषा के एजुकेशन शब्द से हुई है।

एजुकेशन शब्द की उत्पत्ति भी लेटिन भाषा के E तथा DUKO शब्दों के संयोग से हुई है। इन शब्दों में E का अर्थ अंदर से तथा DUKO शब्द का अर्थ आगे बढ़ना या अग्रसर करना अर्थात् अंदर विराजमान शक्तियों को बाहर की ओर या आगे बढ़ना ही एजुकेशन शब्द का शाब्दिक अर्थ है।

शिक्षा के लिए एक अन्य शब्द विद्या का भी प्रयोग किया जाता है। विद्या शब्द की उत्पत्ति संस्कृत के विद धातु से हुई है। इसका अर्थ जानना या ज्ञान की प्राप्ति करना हैं।

शिक्षा को यदि व्यापक अर्थ में लिया जाए तो यह माना जाता है कि शिक्षा का संबंध व्यक्ति के जन्म से प्रारंभ होकर मृत्यु होने तक किसी न किसी प्रकार बना रहता है। इसके लिए विद्वानो ने अपना मत इस प्रकार से दिया है–

स्वामी विवेकानंद के अनुसार–

"यदि कोई व्यक्ति केवल परीक्षाऐं पास कर सकता है और अच्छे परिणाम दे सकता है तो आप उसे शिक्षित समझते है क्या वह शिक्षा, शिक्षा कहलाने योग्य है ? जो जन समूह को जीवन के संघर्ष के लिए अपने आप को तैयार करने में सहायता नही देती और उनमें भोर का साहस उत्पन्न नही करती है।"

लाज का मत है –

"बच्चा अपने माता–पिता को और छात्र अपने शिक्षको को शिक्षित करता है। प्रत्येक बात जो हम सोचते और करते हैं हमें किसी भी प्रकार दूसरे व्यक्तियो के द्वारा कही सोची या की गई बात से कम शिक्षित नही करती है। इस व्यापक अर्थ में शिक्षा ही जीवन है।"

उपरोक्त पक्ष के मत में यह कहा जा सकता है कि व्यापक अर्थ में शिक्षा से आशय उस प्रकिया से लगाया जाता है जिसमें व्यक्ति अपने जन्म से मृत्यु तक विभिन्न शंकाओ और समस्याओं का समाधान करने में समर्थ होता है।

शिक्षा का संकुचित अर्थ लिया जाए तो शिक्षा वह है जो विद्यालयों में दी जाती है। जो एक निश्चित कक्षा से प्रारंभ होकर एक निश्चित कक्षा तक समाप्त हो जाती है।

अब शिक्षा का अर्थ जानने के बाद यह जानना आवश्यक है कि शिक्षा के क्या उदेश्य और क्या वह जीवन के लिए उपयोगी है। इस संबंध में माध्यमिक शिक्षा आयोग (1952–53) ने कहा है कि शिक्षा–व्यवस्था को आदतों अभिरूचियों चारित्रिक गुणों के विकास में आवश्यक रूप से योगदान देना चाहिए। जिससे नागरिक प्रजातांत्रिक नागरिकता के उत्तरदायित्वो का निर्वहन कर सके तथा उन सभी विनाशात्मक प्रवृत्तियों का का विरोध कर सके जो राष्ट्रीय तथा धर्म निरपेक्ष दृष्टिकोण के विकास में बाधक होते है।

राष्ट्रीय शिक्षण नीति के अनुसार (1986) में वर्णित है कि शिक्षा व्यक्ति को संस्कृतनिष्ठ बनाने का साधन है। यह हमारी संवेदनशीलता और दृष्टि को प्रखर बनाती है जिससे राष्ट्रीय एकता पनपती

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हैं। वैज्ञानिक सोच की संभावना बढ़ती है तथा अर्न्तदृष्टि एवं चिन्तन में स्वतंत्रता आती है। इसके साथ ही साथ संविधान में निहित समाजवाद, धर्मनिरपेक्षता और लोकतंत्र के लक्ष्यो की प्राप्ति होती है अतः स्पष्ट है कि शिक्षा के उद्देश्य देशकाल परिस्थिति और आवश्यकता के अनुसार परिवर्तित होते रहने चाहिए।

अब प्रश्न यह उठता है कि क्या हमारे शिक्षाविदो ने जो शिक्षा के उददेश्य निर्धारित किये है क्या वे जीवन के लिए है?

शिक्षा आयोग के अनुसार उद्देश्य (1964–66)

19 जुलाई1964 को प्रो.दौलत सिंह कोठारी की अध्यक्षता में गठित आयोग ने 20 जून 1966 को अपनी रिपोर्ट सरकार को सौंपते हुए देश की तात्कालिक आवश्यकताओ और जनतंत्र के सबलीकरण के लिए आयोग ने शिक्षा के निम्नलिखित उद्देश्यो को उपादेय बताया ;

1. उत्पादन में वृध्दि
2. सामाजिक एवं राष्ट्रीय एकता
3. आधुनिकीकरण को प्रोत्साहन
4. सामाजिक, नैतिक, आध्यात्मिक मूल्यों का विकास
5. शिक्षा के द्वारा शासन की सुदृढ़ता

उपरोक्त उद्देश्य शिक्षा आयोग ने देश की वर्तमान स्थिति को देखते हुए निर्धारित किए थे,जिसमें उन्होंने आधुनिक आधुनिकीकरण को प्रोत्साहन देने की बात कही थी किंतु उसमें स्पष्ट कहा गया कि आधुनिकीकरण का यह आशय नही है कि हम सामाजिक, नैतिक, मूल्यो को उपेक्षित कर दे, क्योंकि शिक्षा अयोग को इस बात की आंशका थी कि आधुनिकीकरण की बात करते–करते हम अपने नैतिक मूल्यों को भूल न जाए। अब यह जानना आवश्यक है कि मूल्य क्या है ?

मूल्य का अर्थ

प्रत्येक व्यक्ति के जीवन में कुछ कल्याणकारी इच्छाएँ होती है जो आगे चलकर मूल्य के रूप में संज्ञापित की जाती है कुछ विद्वानो द्वारा मूल्य की परिभाषा दी गई है;

जार्ज गीजर के अनुसार

"मूल्य मनुष्य की बलवती इच्छाओ के मध्य चुनाव का परिणाम है"।

किंलिक के अनुसार "मूल्य व मानक कसौटी है जिसके आधार पर मनुष्य अपने समक्ष उपस्थित किया कलापों में से चुनाव कर प्रभावित होते है।"
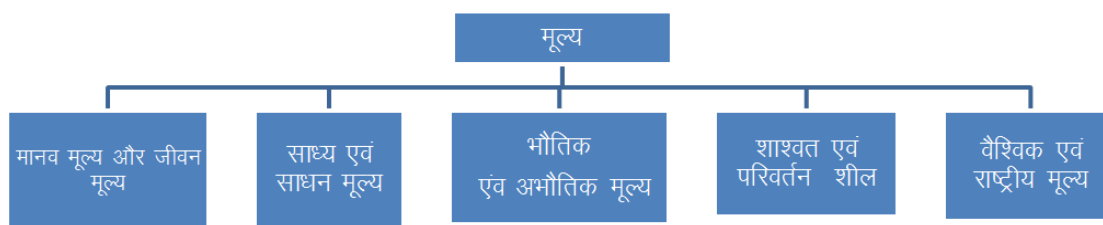
हाफडिंग के अनुसार "मूल्य, वस्तु या विचार में निहित गुण है, जिससे हमें संतुष्टि मिलती है या उस संतुष्टि के लिए साधन मिलता है।"

मूल्य का शाब्दिक अर्थ

"मूल्य के लिए अंग्रेजी का 'वेल्यू' शब्द प्रयोग किया जाता है। इस शब्द की उत्पत्ति लेटिन भाषा के 'वोलेट' या 'वेलियर' से हुई है; जिसका शाब्दिक अर्थ होता है कीमत, गुण,विशेषता । इस प्रकार स्पष्ट है कि मूल्य किसी वस्तु की क्षमता या उपयोगिताओ व इच्छाओ को संतुष्टि प्रदान करता है।

मूल्य हमेशा निश्चयात्मक या घनात्मक होते है। इसी कारण लोग उसे अच्छाई का समानार्थक उपयोग करते हैं।

वर्तमान परिप्रेक्ष्य में मूल्य का वर्गीकरण

उपरोक्त वर्गीकरण से हम निष्कर्ष निकालते है कि मूल्यो से व्यक्यिों में नैतिकता, चारित्रिकता, प्रेम, सहयोग इत्यादि प्रवृत्तियो का उदय होता है, मूल्य व्यक्ति के जीवन को प्रभावित करते है इससे समाज प्रभावित होता है और शिक्षा में परिवर्तन की माँग उठने लगती है। मूल्यों की संतति के आधार पर शिक्षा के उद्देश्य तथा पाठयक्रम में बदलाव लाया जा सकता है, इससे विद्यार्थी को मूल्यवादी बानने में विशेष सहायता मिलती है। अतएव मूल्य शैक्षिक दृष्टि से भी लाभकारी होते है। मूल्य एव शिक्षा में घनिष्ठ संबध होता है ये मूल्य भौतिक अमूर्तगुण या आदर्श से संबधित हो सकते हैं। जबकि शिक्षा एक प्रकिया है जिसके माध्यम से बच्चों में ऐसे विशेष गुणेा ,दृष्टिकोणेां मूल्यों तथा व्यवहार का विकास होता है जो सार्वभौमिक दृष्टि से हितकारी है ।

अतएव मूल्य एवं शिक्षा में साध्य एवं साधन का सिध्दांत एवं व्यवहार का संबंध होता है । मूल्य आत्मा के समान होता है, तो शिक्षा प्राण के समान । मूल्यों का विकास करना शिक्षा अपना उद्देश्य एवं कर्तव्य मानती है । उद्देश्य के आधार पर शिक्षा अपना संपूर्ण स्वरूप तैयार करती है मूल्यों के प्रचार प्रसार हेतु आधार तैयार करती है, मूल्यों केा व्यावहारिक रूप शिक्षा ही देती है । सबसे महत्वपूर्ण तथ्य यह है कि शिक्षा के माध्यम से मानव समाज अपनें मूल्यो केा संरक्षित करता है ,उन्हे आगे बढाता है । वर्तमान समय में शिक्षा के विभिन्न उद्देशयों के अंतर्गत मानव संसाधनो का विकास

मानवीय मूल्यों के प्रति निष्ठा सामाजिक न्याय, राष्ट्रीय एकता, वैज्ञानिक स्वभाव, मानसिक एवं आध्यात्मिक स्वतंत्रता, समाजवाद, धर्मनिरपेक्षता, लोकतंत्रीय समाज एवं हमारे जीवन के लिए उत्कृष्ट गुणकारी मूल्यों को रखा गया है । इसी को ध्यान में रख कर शिक्षा का पाठ्यक्रम शिक्षण विधि का योजना इस दृष्टि से बनाई जा रही है कि इससे हमारी सांस्कृतिक परंपरा विकसित होगी बच्चों में मूल्यवादी दृष्टिकोण का विकास होगा जिससे राष्ट्र में उत्पन्न होने वाले विध्वंसक गतिविधियों का अंत होगा । अतः जब मूल्यों का आधार बना कर शिक्षा की प्रक्रिया को संगठित एवं सुव्यवस्थित किया जाता है तो उसे मूल्य शिक्षा (Value Eucation) के नाम से संबोधित किया जाता है ।

मूल्य आधारित शिक्षा के लिए NCERT ने (1988) में एक विचार पत्रक में मूल्य शिक्षा के निम्न उद्देश्य बतायें है :—

1 छात्रों मे नैतिक सौन्दर्यगत सांस्कृतिक आध्यात्मिक भावनाएँ विकसित करना ।

2 छात्रो में लोकतंत्र, धर्मनिरपेक्षता, समानता व वैज्ञानिक दृष्टिकोण की क्षमता विकसित करना ।

3 छात्रो को ऐसे अवसर प्रदान करना जिससे वे इन मूल्यों को जीवन में उतार सके ।

4 छात्रो का सभी धर्मो एवं संस्कृति के प्रति निष्ठा रखने का भाव जागृत करना ।

5 छात्रों मे विश्वबंधुता, अंतराष्ट्रीय सद्भावना का बीजारोपण करना ।

6 पर्यावरण एंव जनसंख्या वृद्धि जैसी राष्ट्रीय समस्याओं के परिपेक्ष्य में अपने दायित्वों का निर्वाह करना सीखना ।

मूल्यों के विकास में सहगामी क्रियाओं की भूमिका

मूल्यों का विकास करना एक अत्यंत कठिन कार्य है । छात्रों के मन मस्तिष्क में एकाएक मूल्य आधारित शिक्षा का बीजारोपण नही किया जा सकता है । इसके लिए समय बध्द एवं व्यापक दृष्टि के अनुसार शिक्षण की रूपरेखा बनाना आवश्यक है शिक्षण का मुख्य लक्ष्य अधिगमकर्ता के व्यवहार में परिवर्तन लाना एवं ज्ञानात्मक, भावनात्मक एवं क्रियात्मक ज्ञान कराना है। इसी शिक्षण क्रिया के साथ सहगामी क्रियाओं के द्वारा ही छात्रों में मूल्यों के प्रति आकर्षण व्याख्यान विधि के द्वारा नही किया जा सकता है । इसके लिए सहगामी क्रियाओं की भूमिका को सशक्त बनाना होगा ।

वर्तमान में पाठ्यसहगामी क्रियाओं के लिए अनेक गतिविधियाँ हैं । पाठ्यसहगामी क्रियाओं के माध्यम से मूल्यों का विकास आसानी से किया जा सकता है ।

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पाठ्यसहगामी की कियाएँ

प्रार्थनासभा   विविधमेले   एन.सी.सी   महापुरूषों   कार्यानुभव   खेलकूद
की जयतियाँ

एन.एस.एस.   स्काउट / गाइड   राष्ट्रीय पर्व   छात्र संघ   अन्य
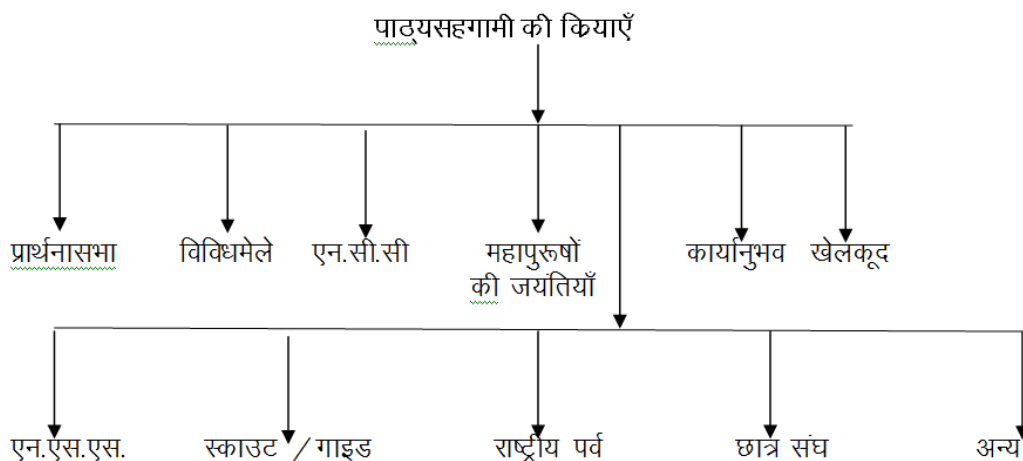
मूल्यों के विकास में परिवार की भूमिका

मूल्यों के विकास में परिवार की भूमिका सबसे सशक्त अभिकरण एंव साधन है । बच्चों के मानसिक, चारित्रिक और नैतिक विचार का मुख्य आधार माता पिता के संस्कार आदत और घर का वातावरण ही होता है इसलिए जहाँ तक संभव हो सके परिवार का वातावरण और कार्य व्यवहार सामांजस्यपूर्ण, मित्रता, प्रेम सदाचार, वात्सल्य से परिचित होना चाहिए । परिवार का सहयोग और संस्कार मिलने पर बालक मूल्यों का महत्व जान सकता है ।

मूल्यों के विकास मे समाज की भूमिका

समाज वह संस्था है जिसके संपर्क में आकर बालक सामाजिक प्राणी बनता है । समाज बालक की समस्त पाशविक प्रवृत्तियों में सुधार लाता है और उसे एक सभ्य सुशिक्षित प्राणी बनाता है । समाज में रहकर ही बालक नैतिकता , चारित्रिकता, व्यवहार , आचरण की विधियों को सीखता है । समाज ही बालकों को मूल्यों का सही अर्थ में बोध कराता है और उसका मूल्यांकन करता है और उसके आचरण, व्यवहार के बारे में भविष्यवाणी करता है ।

हमारें प्रजातांत्रिक समाज में तो ऐसे मूल्यवादी व्यक्तियों की आवश्यकता है जो अपने उत्तम आदर्शों को, मूल्यों मे स्वतंत्रता समानता, मातृत्व, न्याय, समाजवाद और धर्मनिरपेक्षता की रक्षा कर राष्ट्र एंव समाज को आदर्शवादी एवं विकसित बनाने में योगदान दें।

स्वयं मूल्यों को अपनाये और आने वाली पीढियों तक भी मूल्यों का हस्तांरण करें । अतएव स्पष्ट है कि समाज, शिक्षा और शिक्षण तीनों मिलकर मूल्य विकास के लिए एक महत्व पूर्ण भूमिका निभा सकतें हैं।

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मूल्य आधारित शिक्षा देने के लिए हमें कुछ नई प्रवृत्तियां और युक्तियों का प्रयोग करना पडेगा । जैसे सिम्पोजियम, पेनल डिस्कशन, ब्रेन स्टोर्मिंग, बजर सेशन, क्विज सेशन, केस स्टडी आदि के द्वारा ।

अब प्रश्न यह उठता है कि छात्रों को किन मूल्यों की शिक्षा दी जाए ? क्योंकि प्रत्येक राष्ट्र, जाति, धर्म, संप्रदाय में बँटा हुआ है । प्रत्येक मतावलम्बियों के आदर्श, विश्वास, परंपराएँ होती है जिनको ठेस नही पहुँचनी चाहिए । इसलिए जहाँ तक हो सके विभिन्न धर्मो के विद्वानो के द्वारा नैतिक, चारित्रिक, मानवीय और आध्यामिक मूल्यो को निकाल कर उसका समन्यवय करके सार्वभौमिक मूल्यों की शिक्षा बालकों को दी जाए । छात्रों को किन मूल्यों की शिक्षा दी जायें । इस पर शिक्षाविद् लगे हुए हैं इस संबंध में अनेक संगोष्ठियाँ, सेमिनार, कार्यशाला का आयोजन हो चुका है NCERT का मानना है कि मूल्य आधारित शिक्षा देने के लिए अलग से कोई विषय बनाने की आवश्यता नही है। इससे बालकों के उपर अतिरिक्त बोझ पडेगा । इसलिए अच्छा तो यह रहेगा कि इस प्रकार घर समाज विद्यालय की परिवेश बनाये की बालक मूल्यवादी व्यवहार आचरण करने के लिए प्रेरित हो। इसके साथ ही साथ विद्यालय और शिक्षक का भी यह दायित्व है कि पाठ्यसहगामी क्रियाओं की व्यवस्था कर मूल्य शिक्षा हेतु व्यावहारिक परिवेश एंव पृष्ठभूमि बनाकर छात्रों में जिज्ञासा, कौतुहल उत्पन्नकर, मूल्यों के आत्मसातीकरण में योगदान दें ।

आज के समय की माँग के अनुसार चाहे शिक्षाविद् हो चाहे नेता हो, चाहे साधरण व्यक्ति हो, सभी का मत है कि छात्र को जो भी शिक्षा दी जाये वह उसके लिए जीवन उपयोगी हो । जीवन उपयोगी शिक्षा का संबध प्रायः व्यावसायिक शिक्षा से जोड़ा जाता है कि वह शिक्षा प्राप्ति के बाद डॉक्टर, इंजीनियर या शिक्षक,या व्यवसायी बन सके परंतु हम ये भूल जाते हैं कि जीवन की शिक्षा का उद्देश्य उसके जीवन का निर्माण करना होना चाहिये । माध्यमिक शिक्षा आयोग के प्रतिवेदन में भी यह बात इस प्रकार कही गई है – " शिक्षा में सुधार का आरंभ विद्यालय को जीवन से पुनः जोडने एवं उनमें घनिष्ठ संबंध स्थापित करने से होगा जो कि आज की परंपरागत औपचारिक शिक्षा के टूट चुका है ।हमें विद्यालय को वास्तविक सामाजिक जीवन एंव सामाजिक गतिविधियों का केन्द्र बनाना है ,जहाँ आदर्श मनुष्य समुदाय के समान सुंदर और सहज जीवन की प्रेरणा और प्रणाली दिखाई दे ।"

विद्यार्थी को जो भी शिक्षा विद्यालयों में मिल रही है उनका पूर्ण उपयोग समाज को नही मिल रहा । उसका कारण है कि स्कूलों की संख्या तो अधिक है पर ऐसे स्कूलो की संख्या कम है जो विद्यार्थी को ऐसी शिक्षा दे जो समाज के लिए हितकारी हो।

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वर्गीकृत समूह

समूह–1 : मानव विज्ञान

1 एक शास्त्रीय भाषा
2. इतिहास
3. भूगोल
4. प्रारंभिक अर्थशास्त्र . और नागरिक शास्त्र
5 मनोविज्ञान और अर्थशास्त्र
6 गणित
7 संगीत
8 गृहविज्ञान

समूह–2 : विज्ञान

1 भौतिक शास्त्र
2 रसायन शास्त्र
3 जीव–शास्त्र
4 भूगोल
5 गणित
6 शरीर विज्ञान और स्वास्थ्य विज्ञान

समूह–3 : प्राविधिक

1 व्यावहारिक गणित और रेखकीय डॉईग
2 व्यावहारिक विज्ञान
3 मेकेनिकल इजीनियरिंग
4 विद्युत इजीनियरिंग

समूह–4
वाणिज्य

1 वाणिज्य प्रयोग
2. बहीखाता
3. वाणिज्य भूगोल या अर्थशास्त्र और नागरिक शास्त्र.
4 शार्टहैण्ड और टाईईपरटिंग

समूह–5
कृषि

1 समान्य कृषि
2 पशुपालन
3 औद्योगिक
4 कृषि रसायन
5 वनस्पति विज्ञान

समूह–6
ललित कलाएँ

1 कला का इतिहास
2 डॉईग और डिजाइनिग बनाना
3 चित्रकला और बागवानी
4 मॉडल बनाना
5 संगीत
6 नृत्य

समूह–7

गृहविज्ञान

1 गृह–अर्थशास्त्र
2. पोषण और पाककला
3. मातृकला और शिशुपालन
4 गृहप्रबंध और गृहउपचारण

परंतु उपरोक्त प्रस्तावित पाठ्यक्रम में से कृषि ,ललित कलाएँ गृहविज्ञान का आज विद्यालय में नामों –निशान नहीं है क्योंकि आजकल छात्र भी उनके पालक भी केवल अपने बच्चों को डॉक्टर, इंजीनियर बनाना चाहते हैं । जबकि जीवन के लिए कृषि, ललित कलाएँ ,गृहविज्ञान जैसे विषय बहुत महत्वपूर्ण हैं। ये सारे विषय अब उच्च शिक्षा अर्थात् महाविद्याालयों मे पढाये जाते हैं जबकि उन्हे स्कूलों में इसका प्रारंभिक ज्ञान देना चाहिए ।

अब जब हम जीवन उपयोगी शिक्षा की बात करते हैं तो छात्रो को सामाजिक समस्याओं की जानकारी संबधित विषयों के अध्ययन से ज्ञात होती है। अतः छात्रों के अतःकरण में समाज की समस्याओं की अनुभूति होना आवश्यक होता है । आज समाज में अस्पृश्यता, जातिभेद, निर्धनता, निरक्षरता, दहेज आदि समस्याएँ व्याप्त हैं ये समस्याएं गाँव में या शहर की पिछड़ी बस्तियों में भंयकर रूप से दिखाई देती हैं । छात्रों का इन समस्याओं का ज्ञान एवं प्रत्यक्ष अनुभूति हो, तभी इन समस्याओं और बुराईयों के निवारण के लिए छात्र जागरूक होंगें । अतः समय–समय पर ग्रामीण शिविर के द्वारा शहर के विद्यार्थियों को गाँव की इन समस्याओं को प्रत्यक्ष रूप से देखने के अवसर देना चाहिये ।

निर्धन छात्रो को पढाने की जिम्मेदारी विद्यालय में होनी चाहिये और इसका प्रत्यक्ष उदाहरण है कि सभी पब्लिक स्कूलों में बी.पी.एल. के छात्र/छात्राओं के लिए बीस सीटें आरक्षित रखी जाती है । लेकिन यह समस्या वहीं की वहीं रह जाती है क्योकि ऐसे बच्चे विद्यालयों मे अपने आप को समायोजित नही कर पाते । विद्यालय ईंट और गारे का बना हुआ भवन ही नही है । विद्यालय एक आध्यात्मिक संगठन है जिसका स्वयं का विशिष्ट व्यक्तित्व होता है । इसलिए विद्यालय के भवन निर्माण में भी यह ध्यान देना चाहिये कि स्वस्थ एवं हरे–भरे वातवरण में छात्र को अधिकतम खुला प्रकाश एवं स्वच्छ वायु कैसे मिले ? परंतु आज प्रतिस्पर्धा की इस दौड में पब्लिक स्कूल पाँच सितारा होटलों की सुविधा दे कर अपने आप को श्रेष्ठ साबित करना चाह रहे हैं। वे छात्र को छात्र न समझ कर अपना ग्राहक समझते हैं । अतः विद्यालय ऐसे होने चाहिये जिसमें ज्यादा तड़क–भड़क ना हो सरलता, पवित्रता, स्वच्छता, सुंदरता से युक्त भवन चाहियें।

निष्कर्ष

अंत में यह निष्कर्ष निकाला जा सकता है कि शिक्षा व्यवस्था की बात की जाये तो यह दुर्भाग्य ही है कि हम अपने बच्चों को जैसी ये दुनिया अभी है उसी के लिए तैयार करना चाहते है न कि जो दुनिया हम चाहते है उसके लिए । यही सबसे बडी बाधा है कि शिक्षा का वास्तविक कार्य आज के लिए नही कल के लिए तैयार करना है एक नूतन सृष्टि ही शिक्षा का लक्ष्य है और यह तब तक संभव नही है जब तक शिक्षक जीवन के विकास में अपने वास्तविक उत्तरदायित्व का अनुभव ना करें । जब तक उसमें   सदाचरण का प्रकाश ना हो जब तक उसमें सच्चे ज्ञान की प्यास ना हो, जब तक वह शुध्द और स्वंतत्र वातावरण में अपने तथा शिष्यों के जीवन का संस्कार करने की क्षमता नही रखता । शिक्षक का कर्तव्य है कि वह मानवता के विकास कार्य में अपने चरित्र और जीवन के

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आदर्श से छात्रो में प्राण एवं शक्ति की प्रतिष्ठा करें और अपने उत्तरदायित्वो को पूरी निष्ठा से पूर्ण कर जीवन के लिए उपयोगी शिक्षा के मूल्यों को नये मूल्य प्रदान करें ।

संदर्भ ग्रंथ

1 मानस रहस्य, जयराम दास "दीन", गीता प्रेस गोरखपुर

2 जीवन एक सुंदर उत्सव, श्री श्री रविशंकर, Elegant Printing works Banglore

3 उदीयमान भारत में शिक्षक की भूमिका, रमण बिहारी लाल, रस्तोगी पब्लिकेशन मेरठ

4 हिन्दी शिक्षण, रमण बिहारी लाल, रस्तोगी पब्लिकेशन मेरठ

संस्कार जीवन को मधुर बनाते हैं

श्रीमती डॉली अहीर यादव

शोध छात्रा, मैट्स् यूनिवर्सिटी, रायपुर (छ.ग.)

सहायक प्राध्यापक, कृति इंस्टीट्यूट ऑफ टीचर एजुकेशन

संस्कार वह सुगन्ध है जिससे जीवन रूपी गुलदस्ते को सुवासित बनाया जा सकता है। संस्कार वे पुष्प हैं जिनसे जीवन रूपी बगीचे को महकाया जा सकता है। संस्कार वे छोटे–छोटे मील के पत्थर हैं जिनके द्वारा हम अपने गन्तव्य स्थान को प्राप्त कर सकते है। दरअसल संस्कार शब्द को विभिन्न शब्दों से परिभाषित नहीं किया जा सकता है।

संस्कार का शाब्दिक अर्थ

संस्कार शब्द का मूल संस्कृत भाषा से आया है संस्कार शब्द का समकक्ष शब्द मिलना अत्यन्त कठिन है । इसका किसी एक या दो शब्दों में अनुवाद करना भी कठिन है। वास्तव में मानव जीवन के संदर्भ में संस्कार का अर्थ व्यक्ति की अन्तश्चेतना को शुद्ध, परिष्कृत, सुसंस्कृत व अलंकृत करना है, इस शब्द का इतना सा ही अर्थ नहीं है। इस शब्द का अर्थ अत्यन्त विशाल और व्यापक है।

संस्कार एक प्रक्रिया है जो व्यक्ति में विद्यमान नकारात्मक प्रवृत्तियों का शोधन व उन्मूलन करके और उसमें मानव मूल्यों को आत्मसात् कराकर उसे एक ऐसे आदर्श और विशिष्ट व्यक्तित्व में परिवर्तित कर देती है जो अपने लिये तथा समाज के लिए अधिक विवेकशील, उत्तरदायी, कर्तव्यपरायण तथा गतिशील बन जाता है।

संस्कार से ही भावशुद्धि, विचारशुद्धि एवं कर्मशुद्धि होती है और जीवन में गतिशीलता आती है। जीवन सार्थक होता है। संस्कार के अभाव में मनुष्य की प्रवृत्ति पशु के समान होती है संस्कार से अंतःकरण शुद्ध होता है। संस्कार से संस्कृति बनती है और सामाजिक मूल्य विकसित होते हैं। संस्कार व संस्कृति में गहरा संबंध है।

संस्कार वह मुहर है जिससे जीवन रूपी सिक्के को बहुमूल्य बनाया जा सकता है बच्चों का जीवन सुसंस्कारों से बहुमूल्य बनता है न कि मंहगी–मंहगी ड्रेसों से खिलौनो से, गाड़ियों में घुमाने से बच्चों को अच्छे संस्कार देने हैं तो पहले माँ–बाप को संस्कारित करना होगा।

मनुष्य संसार का सर्वश्रेष्ठ प्राणी है और संस्कारों से ही उसके जीवन में पशु के जीवन से भिन्नता पाई जाती है, अतः यदि बच्चों को हम अच्छे संस्कार नहीं दे सकते तो हमें उन्हें कुसंस्कार देने से भी बचना चाहिए। वैसे बच्चे की शिक्षा जन्म से नहीं गर्भ से ही शुरू हो जाती है बच्चों के जीवन में पहला स्थान माँ का, दूसरा स्थान पिता का और तीसर स्थान गुरू का होता है, अतः माँ ही बच्चे की प्रथम गुरू होती है।

आज हम भारी सांस्कृतिक हलचल और मूल्यों के अकाल व अभाव के दौर से गुजर रहे है। आधुनिक युग में लोग भौतिक सुख सुविधाओं के आगोश में इतने अधिक लिप्त हो गये है कि ऐसा लगता है कि सामाजिक जीवन से सत्यनिष्ठा, नैतिकता समाज के प्रति कर्तव्य भावना इत्यादि का लोप होता जा रहा है। इस चारित्रिक पतन का कारण बचपन से ही मूल्यों का आत्मसात् न होना है। यदि बचपन से ही समता, प्रेम, सत्यवादिता, सदाचार आदि गुणों का आरोपण व्यक्ति में हो जाये और संपूर्ण जीवनपर्यन्त इन मुल्यों और संस्कार का परिपालन उसके स्वभाव का अंग बन जाये तो वह व्यक्ति को एक आदर्श रूप प्रदान कर सकता है।

शिक्षा में संस्कारों का समावेश हो

आज की शिक्षा पद्धति में ऐसा कोई प्रावधान नहीं है कि बालक को सुसंस्कारित बनाया जाये अपितु आज तो शिक्षा का मतलब ही उपाधि ग्रहण करना हो रहा है। शिक्षा का उद्देश्य केवल आजीविका का साधन रह गया है जबकि शिक्षा का उद्देश्य जीवन को सुसंस्कारित बनाना है। आज की शिक्षा व्यवसायपरक और पुस्तकों का अध्याय मात्र बन कर रह गई है। मनुष्य जब इस सृष्टि में जन्म लेता है तो पूर्ण रूप से मनुष्य नहीं होता। वह हड्डियों और मांस का पिण्ड मात्र होता है। जब तक मानव चेतना में सत्संस्कारों का रोपण नहीं होगा, तब तक वह पूर्ण मनुष्यता नहीं पा सकता। अच्छी शिक्षा व अच्छे संस्कारों से ही आदमी पूर्ण होता है। शिक्षा वही परिपूर्ण होती है जो जीवन में उदात्त विचार, सुसंस्कार तथा जीवन जीने की कला सिखाती हो।

आज समाज में हर माँ–बाप चाहते है, कि उनका बच्चा अच्छी से अच्छी, उच्च से उच्च शिक्षा प्राप्त करें लेकिन प्रायः कोई माँ–बाप अच्छे संस्कारों के लिए चिन्तित नहीं है। अच्छी शिक्षा, अच्छा वकील, अच्छा डॉक्टर, अच्छा इंजीनियर आदि तो बना सकती है, लेकिन एक अच्छा और सुसंस्कारी व्यक्ति नहीं बना सकती।

आज समाज व राष्ट्र में अच्छे इंसानों का जो सहृदय हो, सेवाभाव हो, स्वार्थ से परे हो, शनैः–शनैः अभाव होता जा रहा है। यह चिन्ता का विषय है । आज समाज को अच्छी शिक्षा, उच्च संस्कारों की बहुत जरूरत है। शिक्षा जीवन निर्वाह की कला सिखाती है, जबकि संस्कार जीवन निर्माण की कला

सीखते है। जीवन का निर्वाह सरल है। जीवन तो पशु–पक्षी भी जिस किसी तरह से व्यतीत कर लेते है, पेट भर लेते है, और जिन्दगी जी लेते है, लेकिन पृथ्वी पर एक मानव ही ऐसा प्राणी है जो जीवन–निर्वाह के साथ–साथ जीवन निर्माण की भी योग्यता रखता है। संस्कार ही एक ऐसी चीज है जो अगले जन्म में भी हमारे साथ जाती है।

संस्कारदाता स्वयं संस्कारी हों

संस्कार जीवन में वही दे सकता है जिसने जीवन में आचरण किया हो। संतान को आचरण या सुसंस्कार देना है तो माँ–बाप को, अभिभावकों को आचरणवान और संस्कारवान होना अति आवश्यक है। संत संस्कारों की जीवंत पाठशाला होते है। बच्चे पान के कोमल पत्ते के समान है। पान सूखने के बाद मुड़ता नहीं है उसी प्रकार एक निश्चित उम्र के गुजरने के बाद बच्चों को संस्कार दे पाना कठिन हो जाता है। बच्चे तो कुम्हार की गीली मिट्टी होते हैं जिसको चाहे जिस रूप में ढाल लो वह उसी रूप में ढल जायेंगे । अतः अभिभावकों को चाहिए कि अपने बच्चों में बड़ों का सम्मान करना, आदर करना, उनका अभिवादन करना सिखाये।

राष्ट्रपिता महात्मा गाँधी ने भी कहा था कि ''संस्कारों की सीढ़ी से चढ़कर ही उन्नति के शिखर पर पहुँचा जा सकता है।'' संस्कारों द्वारा ही चरित्र का निर्माण होता है। चरित्रता मानवता का आधार है। जीवन में धन–सम्पदा विद्या, रूप से भी कहीं अधिक महत्तव चरित्र का है। चरित्र जीवन की असली संपत्ति है। चरित्र स्वयं को अर्जित करना पड़ता है। जब हम किसी को पूजते है, तो चित्र की नहीं, चरित्र की पूजा करते है। जिसकी पूजा करते हैं उसके सिर पर स्पर्श न करके उसके चरणों को स्पर्श करते है, क्योंकि चरण आचरण के प्रतीक है। चरण यथार्थ के प्रतीक है, क्योंकि व धरा से जुड़कर चलते है, जबकि मस्तिष्क कल्पना लोक में ही विचरण करता है। जिन चरणों के साथ आचरण जुड़ जाता है वे चरण पूज्य हो जाते है, उन चरणों की पूजा होने लगती है और जो चरण दुराचरण होते है। उन चरणों की पूजा नहीं होती है।

उपर्युक्त संपूर्ण विवरण से यह स्पष्ट होता है, कि सुसंस्कृत मन से ही संस्कृति की सुरक्षा संभव है। विकृत मन विकृतियों का कारण है। विपदाओं का मूल उद्गम स्थल है मन की पवित्रता ही जीवन की सार्थकता है।

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अध्याय—42

डिजिटल साक्षरता का महत्व

सनत कुमार साहू
सहायक प्राध्यापक, शासकीय काकतीय स्नातकोत्तर महाविद्यालय, जगदलपुर

वर्तमान युग में डिजिटल साक्षरता का मानव समाज में एक महत्वपूर्ण स्थान है। जो कि आधुनिक सूचना और संचार प्रौद्योगिकी का एक भाग है। जिसके माध्यम से हम विभिन्न प्रकार की सूचनाओं का आदान प्रदान बहुत ही सरल और सहज तरीके से बिना भौगोलिक बाध्यता के करने में सक्षम हैं। साथ ही यह कागज रहित कार्य को बढ़ावा देता हैं। यह विभिन्न प्रकार की सुरक्षा सुविधा (जैसे—यूजरनेम/पासवर्ड) के साथ डिजिटल सूचनाओं (ई—मेल, डिजिटल लॉकर) का उपयोग करने की क्षमता प्रदान करता है। हम सोशल मीडिया का उपयोग करके अपने सूचना का भी आदान प्रदान करने में सक्षम हैं।

डिजिटल साक्षरता

डिजिटल साक्षरता ज्ञान की एक ऐसी शाखा है जहाँ पर हम विभिन्न प्रकार के डिजिटल उपकरण (स्मार्टफोन, टेबलेट, लेपटाप एवं डेस्कटॉप) इत्यादि का उपयोग हम सूचना और संचार प्रौद्योगिकी में करते हैं। डिजिटल— से तात्पर्य है कि हम कम्प्यूटर एवं संचार माध्यम का उपयोग करें। यहाँ डिजिटल साक्षरता और कम्प्यूटर साक्षरता एक दूसरे से भिन्न हैं। कम्प्यूटर साक्षरता डिजिटल साक्षरता का पूर्व रूप है। जिसके अंतर्गत हम कम्प्यूटर के पारंपरिक ज्ञान और कौशल को प्रायोगिक सॉफ्टवेयर पैकेज के रूप में सीखते हैं (लेपटाप एवं डेस्कटॉप)। डिजिटल साक्षरता और भी आधुनिक है परंतु सीमित और प्रायोगिक क्षमता के साथ उपयोग होने वाले डिजिटल उपकरण (स्मार्टफोन एवं लेपटाप) हैं।

डिजिटल साक्षर व्यक्ति के पास एक डिजिटल स्किल (कौशल) जैसे कम्प्यूटर की बेसिक जानकारी, कम्प्यूटर नेटवर्क उपयोग की क्षमता और ऑनलाइन कम्युनिटिस और सोशल नेटवर्क्स इत्यादि का उपयोग एवं नियम का पालन करने के साथ ही नई सूचनाओं का मूल्यांकन एवं सीखने की क्षमता और साथ ही नई आने वाली टेक्नोलॉजी (जैसे कि बिग डाटा) को समझना और समीक्षात्मक सोच होनी चाहिए।

डिजिटल साक्षरता दो शब्द से मिलकर बना है।

डिजिटल – डाटा का सिम्बोलिक प्रदर्शन को डिजिटल सूचना कहते हैं।

साक्षरता – विभिन्न प्रकार की डिजिटल जानकारी को समझने में सक्षमता होनी चाहिए।

डिजिटल साक्षरता एक नई साक्षरता तकनीक है जिसे हम विभिन्न प्रकार के उपसमूह में बांट सकते हैं।

1. कम्प्यूटर साक्षरता
2. नेटवर्क साक्षरता
3. सूचना साक्षरता
4. सोशल मीडिया साक्षरता

कम्प्यूटर साक्षरता – हम विभिन्न प्रकार के कम्प्यूटर सॉफ्टवेयर और डिवाइसेस का उपयोग करने में सक्षमता को कम्प्यूटर साक्षरता कहेंगे। साथ ही साथ विभिन्न प्रकार के प्रोग्रामिंग एवं एडवांस प्राब्लम सॉल्विंग टेक्नीक्स का उपयोग करेंगे।

○ ऑफिस पैकेज – ऑफिस पैकेज एक एप्लीकेशन सॉफ्टवेयर है तथा यहाँ पर हम इसके कुछ विभिन्न उपभाग जैसे :– वर्ड प्रोसेसर(एम.एस. वर्ड, लिब्रे ऑफिस राइटर), स्प्रेडशीट (एम.एस. एक्सेल, ऑफिस कैल्सी) एवं पावर प्वाइंट (एम. एस. पावर प्वाइंट, लिब्रे ऑफिस इंप्रेस) इत्यादि का ज्ञान होना चाहिए।

○ वर्ड प्रोसेसर – इसका उपयोग प्रत्येक ऑफिस, विद्यालय, महाविद्यालय, व्यवसाय, स्थान, व्यक्ति, विद्यार्थी एवं शिक्षक के द्वारा किया जा सकता है। इसकी सहायता से हम हिन्दी एवं अंग्रेजी माध्यम में डॉक्यूमेंट की ड्रॉफिटंग कर सकते हैं।

○ स्प्रेडशीट – यह भी प्रायः सभी क्षेत्रों में उपयोग होने वाला पैकेज है। जिसका उपयोग हम दैनिक जीवन में डाटा को प्रोसेस करने एवं विभिन्न प्रकार के चार्ट बनाने के लिए करते हैं।

○ पावर प्वाइंट – इस पैकेज का उपयोग हम विभिन्न प्रकार के प्रस्तुतिकरण के लिए करते हैं।

नेटवर्क साक्षरता – डिजिटल साक्षरता का यह भाग तत्काल उभर कर सामने आया हुआ है, जिसमें कम्प्यूटर नेटवर्क की जानकारी और कौशल सीखते हैं। जो कि कम्प्यूटर साक्षरता और सूचना साक्षरता को आपस में जोड़ता है।

○ इंटरनेट – आपस में जुड़े हुए विभिन्न डिजिटल डिवाइसेस जो आपस में डाटा और सूचना का आदान प्रदान कर सकता है, नेटवर्क कहलाता है। जो कि आपस में संचार माध्यम (वायर, या वायरलेस) द्वारा जुड़े होते हैं तथा इसके विस्तृत रूप को इंटरनेट कहते हैं। इसके माध्यम से हम

पूरे विश्व की जानकारी बहुत ही सरल तरीके से प्राप्त कर सकते हैं तथा अपने दैनिक क्षेत्र (ऑफिस, घर) इत्यादि की जानकारी भी प्राप्त कर सकते हैं।

o ई–मेल – इसका पूरा नाम इलेक्ट्रॉनिक मेल है। इसके माध्यम से हम अपने विभिन्न प्रकार के संदेश, फाइल, फोटो इत्यादि को कुछ ही मिनटों में विश्व के किसी भी स्थान में तथा किसी भी समय भेज तथा प्राप्त कर सकते हैं।

o स्मार्टफोन – स्मार्टफोन उन मोबाइल डिवाईस को कहते हैं जिनकी कम्प्यूटिंग क्षमता तथा कनेक्टिविटी सामान्य फोन की तुलना में अधिक उन्नत होती है। आरम्भ मे जो स्मार्टफोन आये उनमें प्रायः मोबाइल फोन की विशेषता के अतिरिक्त अन्य सुविधायें जैसे पीडीए, मीडिया प्लेयर, डिजिटल कैमेरा, जीपीएस, नेविगेशन उपबल्ध थे तथा वर्तमान में स्मार्टफोनों में इन सभी विशेषताओं के साथ साथ टच स्क्रीन वेब ब्राउजिंग, वाई फाई, हॉट स्पॉट, इंटरनेट तथा अन्य मोबाइल एप्स उपलब्ध हैं। यह आधुनिक जीवन शैली का हिस्सा है जिसके माध्यम से हम इंटरनेट, ई–मेल, इलेक्ट्रॉनिक सोशल मीडिया और जनसमूह से जुड़े रहते हैं।

सूचना साक्षरता – सूचना साक्षरता किसी व्यक्ति की वह योग्यता है जिसके द्वारा वह जान जाता है कि उसे किसी सूचना की जरूरत है तथा वह सूचना कहां मिलेगी। इसके अतिरिक्त सूचना साक्षर व्यक्ति में सूचना का मूल्यांकन करने तथा उस सूचना का प्रभावी ढंग से उपयोग करने की क्षमता भी होती है।

सोशल मीडिया साक्षरता

इससे तात्पर्य है – विभिन्न प्रकार के सोशल मीडिया (फेसबुक, ट्विटर, हाइक, व्हाट्सएप इत्यादि) का उपयोग करना। सोशल मीडिया साक्षरता को हम कम्प्यूटर/स्मार्ट फोन और डिजिटल डिवाइसेस के माध्यम से विभिन्न प्रकार की फाईल, सूचना, फोटो, ऑडियो, विडियो इत्यादि को हम जनसमूह एवं समाज से साझा कर सकते हैं। साथ ही साथ इसमें विभिन्न प्रकार के संप्रेषण (वॉइस–कॉल, चैटिंग आदि) की सुविधा का उपयोग कर सकते हैं।

डिजिटल साक्षरता एवं उसके उपयोगिता एवं उपभाग पर प्रकाश डालते हुए यह बताने का प्रयास किया गया है कि इसका मानव जीवन में क्या महत्व है। उपभाग जैसे कम्प्यूटर साक्षरता , नेटवर्क साक्षरता, सूचना साक्षरता तथा सोशल मीडिया साक्षरता के विश्य पर यह लेख प्रस्तुत है तथा हम कैसे इन सब की सहायता से सूचना और संचार प्रौद्योगिकी का अपने दैनिक जीवन में उपयोग कर सकते है।

CHRIST COLLEGE
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अध्याय –43

समाज में स्त्रियों की शिक्षा की स्थिति में व्यापक बदलाव

दिनेश कुमार

शिक्षा अध्ययन शाला, बस्तर विश्व विद्यालय, जगदलपुर (छ.ग.)

शोध सारांश

समाज के साथ समाज में स्त्रियों की स्थिति में व्यापक बदलाव आया हैं । स्थितियों में बदलाव से भूमिका में परिवर्तन भी आया है और यह सवाल तेजी से उभरा है कि भूमिकाओं के पैटर्न आधार के रुप में पुराने प्रतिमानों को पूरी तरह छोड़ दिया जाए और नए प्रतिमानों को अपनाया जाए या दोनों के सम्मिश्रित रुप स्वीकार्य हों। आमतौर पर यह मत है कि अपनाए गए प्रतिमानों को छोड़ना आसान नहीं होता है– ऐसे ही कई अंतर्विरोधों का सामना आज महिला को करना पड़ रहा है । स्वमी विवेकानंद ने इन्ही सवालों को ध्यान में रखकर महिलाओं की भूमिका को परिभाषित किया एवं उनके उन्नयन हेतु दी जा रही शिक्षा के स्वरुप को भी स्पष्ट किया है। उनका मानना था कि महिलाओं की कोई भी ऐसी समस्या नही है जो शिक्षा से हल न की जा सके। महिलाओं की गरिमा समाज में उनकी भूमिका आदि अनेक विषयों पर विवेकानन्द ने अपनी स्पष्ट की है। उनके इन विचारो को लेखक ने अपने लेख के माध्यम से प्रस्तुत किया है।

महिलाऍ शिक्षित हो ज्ञान विज्ञान के क्षेत्र में पुरुषों के साथ कंधे से कंधा मिलाकर चलें आज इस विषय में कोई रफ्तार के साथ भारत की महिलाओं की जीवन शैली में अभूतपूर्व परिवर्तन आया है। ढेरों नवीन आधुनिक प्रतिमान उन्होंने स्वीकृत किए हैं और कुछ सदियों से स्थापित प्रतिमानों को बहिष्कृत । मुद्दा भी यही है कि आधुनिकता की दिशा हमारे लिए क्या हो?[1] स्मरण रहे कि जन साधारण और स्त्रियों में शिक्षा का प्रसार हुए बिना उन्नति का कोई उपाय नही है। विभिन्न कालों में कई असभ्य जातियों ने भारत पर आक्रमण किया था, प्रधानतः इसी कारण भारतीय महिलाऍ इतनी पिछड़ी है। फिर इसमें कुछ दोष तो हमारे अपने भी है।[2] युगो के जिस मानसिक, नैतिक और शारीरिक अत्याचार ने इश्वर के प्रतिमा रुपी मनुष्य को भारवाही पशु, भगवती की प्रतिमा रुपिणी नारी को सन्तान पैदा करने वाली दासी और उनके जीवन को अभिशाप बना दिया है, उसकी वे कल्पना भी नही कर पाते । स्त्रियों को शिक्षा देने का हमारे धर्म में निषेध ही नही है। बालिकाओं को पढ़ाना होगा, उन्हें गढ़ लेना होगा। पुराने ग्रन्थों में लिखा है कि विद्यापीठों में बालक बालिकाऍ दोनों ही जाते थे पर बाद में पूरे राष्ट्र में शिक्षा उपेक्षित हो गयी।[3]

अमेरिका एक अद्भुत देश है। निर्धनों तथा नारियों के लिए यह नन्दनवन स्वरुप है। इस देश में निर्धन तो नही के बराबर है और संसार में कहीं भी स्त्रियॉ इतन स्वतंत्र, इतनी शिक्षित और इतनी सुसंस्कृत नही है। वे समाज में सब कुछ है।[4] इनकी नारियॉ संसार में सर्वाधिक उन्नत है। सामान्यतः अमेरिकी पुरुषों की अपेक्षा अमेरिकी महिलाऍ बहुत अधिक सुसंस्कृत है।[5] सत्पुरुष तो हमारे देश में भी है, पर अस देश की नारियॉ जैसी नारियॉ बहुत कम है यह सच है कि सुकृती पुरुषों के घर में भगवती स्वयं श्री रुप में निवास करती है– या श्रीः स्वयं सुकृतिनां भवनेषु लक्ष्मी ।

मैने यहॉ हजारों महिलाऍ देखी, जिनके हृदय हिमवत् पवित्र और निर्मल है यह कैसी स्वतंत्र होती है। सामाजिक और नागरिक कार्यो का ये ही नियंत्रण करती है। स्कूल और विद्यालय महिलाओं से भरे है और हमारे देश में महिलाओं के लिए राह चलना तक निरापद नही है[6] और इनकी नारियॉ कैसी पवित्र है। 25–30 वर्ष आयु के पहले यहॉ बहुत कम विवाह होता है। ये गगनचारी पक्षियों की भॉति स्वतंत्र है। हाट बाजार रोजगार दुकान कॉलेज प्रोफेसर सर्वत्र सब कार्य करती है, फिर भी कितनी पवित्र है। जिनके पास पैसे है, वे गरीबों की भलाई में तत्पर रहती है।[7] मनु ने भी कहा है– यत्र नार्यस्तु पूजयन्ते रमन्ते तत्र देवताः। – जिन परिवारें में स्त्रियों से अच्छा व्यवहार किया जाता है और वे सुखी है उन पर देवताओं का आशीर्वाद रहता है।[8] और हम क्या कर हि हैं? 11 वर्ष की आयु में विवाह नहीं होने पर मेरी पुत्री बिगड़ जाएगी।[9]

वैदिक और वर्तमान युग में नारी शिक्षा– समझ में नही आता कि हमारे देश में पुरुष और स्त्रियों में इतना भेद क्यों किया जाता है। वेदान्त में तो कहा है कि एक ही चेतन सत्तासर्वभूतों में विद्यमान है। तुम लोग स्त्रियों की निन्दा करते हों पर उनकी उन्नति के लिए तुमने क्या किया? स्मृति आदि लिखकर, नियमों मे आबद्ध करके इस देश के पुरुषों ने स्त्रियों को केवल बच्चे पैदा करने की मशीन बना डाला है। महामाया की साक्षात् मूर्ति इन स्त्रियों का उत्थान हुए बिना क्या तुम लोगों की उन्नति सम्भव है? भारत का पतन तभी से शुरु हो गया, जब ब्राह्मण पण्डितों ने अन्य जातियों को वेद पाठ का अनधिकारी घोषित किया और साथ ही स्त्रियों के भी सभी अधिकार छीन लिए। नही तो देखे, वेदों तथा उपनिषदों के युग में मैत्रेयी, गार्गी आदि प्रातः स्मरणीय स्त्रियॉ ब्रह्म विचार मे ऋषितुल्य हो गयी है। हजार वेदज्ञ बाह्मणों की सभा मे गार्गी ने गर्व के साथ याज्ञवल्क को ब्राह्मज्ञान पर शास्त्रार्थ के लिए चुनौती दी थी। इन आदर्श विदुषी स्त्रियों को जब उन दिनों अध्यात्म में अधिकार था तो फिर आज भी स्त्रियों को वह अधिकार क्यों न रहेगा? एक बार जो हो चुका है वह फिर अवश्य हो सकता है। इतिहास की पुनरावृत्ति हुआ करती है।[10]

यह सीता सावित्री का देश है। पुण्यक्षेत्र भारत में अभी तक स्त्रियों में चरित्र, सेवाभाव, स्नेह, दया, तुष्टि और भक्ति पायी जाती है, पृथ्वी पर अन्यत्र कहीं ऐसा नही है। पाश्चात्य देशों में स्त्रियों को देखकर कुछ देर तक यही नहीं समझ में आता था कि वे स्त्रियाॅं है, देखने में ठीक पुरुषों के समान है, ट्रामगाड़ी चलाती है, दफ्तर जाती है, स्कूल जाती है, प्रोफेसरी करती हैं। एकमात्र भारत की ही स्त्रियों में लज्जा, विनय आदि देखकर नेत्र शीतल होते हैं। ऐसे योग्य आधार के होने पर भी तुम उनकी उन्नति न कर सके । इनको ज्ञानरुपी ज्योति दिखाने का कोई प्रबन्ध नहीं किया। रीति से शिक्षा पाने पर ये संसार की आदर्श स्त्रियाॅं बन सकती है।[11]

वास्तविक शिक्षा ही सभी समस्याओं का समाधान करने वाली होगी और धर्म उसका केन्द्र होगा

हमारे यहाॅ नारियों की समस्याऍं अनेक और गम्भीर भी हैं परन्तु उनमे एक भी ऐसी नहीं है, जो जादू भरे शब्द शिक्षा से हल न की जा सकती हो पर वास्तविक शिक्षा की तो अभी हम लोगों में कल्पना भी नहीं की गयी है।[12] शिक्षा केवल शब्दों का रटना मात्र नहीं है, हम इसे मानसिक शक्तियों का वकास अथवा व्यक्यिों को ठीक तरह से अेर दक्षतापूर्वक इच्छा करने का प्रशिक्षण देना कह सकते हैं। इस प्रकार हम भारत की आवश्यकता के लिए महान् निर्भीक नारियाॅं तैयार करेंगे नारियाॅं जो संघमित्रा, लीला, अहिल्या बाई तथा मीराबाई की परम्पराओं को चालू रख सके नारियाॅं जो वीरों की माताऍं होने के योग्य हों , इसलिए किवे पवित्र तथा आत्मत्यागी हैं और उस शक्ति से शक्तिशाली है, जो भगवान के चरण छूने से आती है।[13] परन्तु नारियो के मामले में हमारा हस्तक्षेप करने का अधिकार केवल उनमें शिक्षा का प्रचार करने तक ही सीमित है। हमें नारियों को ऐसी स्थिति में पहुॅचा देना होगा, जहाॅ वे अपनी समस्याओं को स्वयं अपने ढंग से सुलझाा सके उनके लिग यह काम न कोई कर सकता है और न किसी को काना चाहिए। और हमारी भारतीय नारियाॅं संसार की अन्य किन्हीं भी नारियों की भॅति इसे करने में पूर्ण सक्षम है।[14]

धर्म धिल्प, विज्ञान, गृहकार्य, भेजन बनाना, सीना, शरीर पालन आदि सब विषयों की मोटी मोटी बातें सिखाना उचित है। नाटक और उपन्यास तो उनके पास तक पहुॅचने ही नही चाहिए। महाकाली पाठशाला अनेक विषयों में ठीक पथ पर चल रही है किन्तु केवल पूजा—पद्धति सिखलाने से ही काम न बनेगा। सब विषयों में उनकी ऑखें खोल देना उचित होगा। आदर्श नारी चरित्र सर्वदा छात्राओं के सामने रखकर त्याग रुप व्रत में उनका अनुराग उत्पन्न कराना चाहिए। सीता, सावित्री, दमयन्ती, लीलावती, खनाबाई, मीराबाई आदि के जीवन चरित्र कुमारियों को समझाकर उनको अपना जीवन वैसा बनाने का उपादेश देना होगा।[15]

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शिक्षा से उनका तात्पर्य आधुनिक प्रणाली की शिक्षा से नही वरन् ऐसी शिक्षा से है जो सकारात्मक हो तथा जिससे स्वाभिमान और श्रद्धा के भव जागें । केवल किताबें पढ़ा देने से कोई लाभ नहीं हमें ऐसी शिक्षा की जरूरत है, जिससे चरित्र निर्माण हो, मानसिक शक्ति बढ़े, बुद्धि विकसित हो और देश का युवा वर्ग अपने पैरों पर खड़े होना सीखे। इस प्रकार की शिक्षा प्राम्त होने पर स्त्रियॉ अपनी समस्याऍ स्वयं ही हल कर लेंगी अब तक तो उन्होंने केवल असहाय के रुप में दूसरों पर आश्रित होकर जीवन बिताना और जरा सी भी आशंका होने पर ऑसू बहाना ही सीखा है। दूसरी बातों के साथसाथ उन्हें वीरता का भाव भी सीखना चाहिए। आज के ज़माने में उनके लिए आत्मरक्षा सीखना भी बहुत जरुरी हो गया है। देखो, झॉसी की रानी कैसी थी।[16]

शिक्षा और संस्कृति की बात पुरुषों पर अवलम्बित है। अर्थात् जहॉ के पुरुष शिक्षित और सुसंस्कृत हैं, वहॉ की स्त्रियॉ भी वैसी ही है बाहर के प्रयास से सामाजिक व्याधियॉ दूर नही होंगी, इसके लिए मन पर कार्य करने का प्रयास करना होगा। उन्नति की पहली शर्त है स्वाधीनता जैसे व्यक्ति को सोचने विचारने और उसे व्यक्त करने की स्वधीनता मिलनी चाहिए, वैसे ही उसे खान–पान, वेशभूषा, विवाह–शादी हर बात में स्वाधीनता मिलनी चाहिए जब तक कि उससे दूसरों को हानि न पहुँचे । बलपूर्वक सुधार की चेष्टा का फल यही होता है हक उससे सुधार की गति रुक जाती है। स्त्री एक शक्ति है, परन्तु अब तक इस शक्ति का प्रयोग केवल बुरे विषयों में ही हो रहा है। इसका कारण यह है हक पुरुष स्त्रियों के ऊपर अत्याचार कर रहे है आज स्त्रियॉ लोमड़ी के समान है, परन्तु जब उनके उपर अत्याचार बन्द हो जाएगा तब वे सिंहिनी जैसी खड़ी हो जाऍगी।[17]

आदर्श महिला मठ की योजना महिलाओ की शिक्षा के लिए स्वामी जी की कल्पना देखे गंगा जी के उस पार एक विशाल जमीन लिया जायेगा उसमें अविवाहित लड़कियाँ रहेंगी तथा विधवा ब्रह्मचारिणी भी रहेंगी । साथ ही गृहस्थ घर की भक्तिमयी स्त्रिया भी बीच–बीच में आकर ठहर सकेंगी। स्त्री मठ में लड़कियों के लिए एक स्कूल होगा उसमें धर्म शास्त्र, साहित्य, संस्कृत , व्याकरण, सिलाई का काम, रसोई बनाना, साथ ही थोड़ी बहुत अंग्रेजी भी सिखाई जायेंगी । जो स्त्रियाँ ब्रह्मचर्य की अवलम्बन करेंगी, वे ही समय पर समय पर इस मठ की शिक्षिकायें तथा प्रचारिका बन जायेंगी और गॉव–गॉव, नगर–नगर में शिक्षा केन्द खोलकर स्त्रियों के शिक्षा विस्तार की चेष्टा करेंगी। चरित्र, शील, धार्मिक भाव संपन्न इस प्रकार की प्रचाकाओं के द्वारा देश में यथार्थ स्त्री शिक्षा का प्रसार होगा। धर्मपरायणता, त्याग और संयम यह की छात्राओं के अलंकार होंगे और सेवा धर्म उनके जीवन का व्रत होगा। इस प्रकार का आदर्श जीवन देखने पर कौन उनका सम्मान न करेगा और कौन उक्त पर अविश्वास करेगा ?

संदर्भ–ग्रंथ सूची

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अध्याय —44

अधिगम में अभिप्रेरणा की भूमिका

डॉ. (श्रीमती) जरसी जोस

सहायक प्राध्यापक, क्राईस्ट महाविद्यालय, जगदलपुर

सारांश

मनोवैज्ञानिकों का विचार है कि व्यक्ति के कार्य एवं व्यवहार को परिचालित करने वाली कुछ प्रेरक शक्तियाँ हैं जो उसे विभिन्न परिस्थितियों में कार्य करने की अभिप्रेरणा प्रदान करती है। यह अभिप्रेरणा ही है जो व्यक्ति को किसी कार्य या व्यवहार को करने के लिए पूर्ण उत्तरदायी है। इस प्रकार अभिप्रेरणा विद्यार्थियों में अधिगम के प्रति रूचि उत्पन्न करने की कला है।

अधिगम का अर्थ

प्रत्येक व्यक्ति प्रतिदिन नये नये अनुभव एकत्रित करता है और इन नये अनुभवों से उसके व्यवहार में परिवर्तन आता है इस प्रकार नये अनुभव एकत्रित करना तथा इनसे व्यवहार में परिवर्तन आने की प्रकिया ही अधिगम है। अधिगम निरंतर चलने वाली और सार्वभैमिक प्रकिया है। इस प्रकार स्पष्ट है कि अनुभव द्वारा व्यक्ति के व्यवहार में परिवर्तन होता है। विद्यार्थियों में अधिगम सरलता से हो तथा सीखा गया ज्ञान स्थायी हो, इसके लिए शिक्षक एवं शिक्षार्थी दोनो की तरफ से प्रयास अपेक्षित है। अधिगम की प्रकिया में कुछ सरल सिद्धांतों एवं कारकों का अनुकरण करते हुए अधिगम को अधिक प्रभावी व स्थाई बनाया जा सकता है। जैसे स्वयं करके सीखना एवं विद्यार्थियों को प्रोत्साहित कर उनकी रूचियों को जागृत किया जा सकता है। एक सफल एवं अनुभवी शिक्षक ही विद्याार्थियों के स्तर तक जाकर उनके बालमन की जिज्ञासाओं को सरल तरीके से, एवं हर संभव रूप से शांत कर सकता है।विद्यार्थियों में आये सकारात्मक एवं सुधार द्वारा स्वयम शिक्षक भी आत्म संतुष्टि का अनुभव करता है।

स्किनर के अनुसार — अधिगम व्यवहार में उत्तरोत्तर सामंजस्य की प्रकिया है।

अधिगम को प्रभावित करने वाले कारक

1. अभिप्रेरणा (प्रोत्साहन)

2. सीखने की प्रति रूचि

3. सीखने की विधि

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4. पूर्व अधिगम

5. विषय के प्रति मनोवृत्ति

6. विषय वस्तु का स्वरूप

7. वातावरण

8. थकान

9. वंशानुक्रम

इन सभी कारकों में अभिप्रेरणा का सीखने अर्थात अधिगम में महत्वपूर्ण योगदान है। सीखने में प्रेरकों का होना अत्यंत आवश्यक है । ये बालकों को नई बातें सीखने के लिए प्रोत्साहन प्रदान करते है। प्रेरक एक आंतरिक शक्ति होती है जो व्यक्ति को किया करने के लिए बाध्य करती है, जो आंतरिक प्रेरणा से किया जाता है उसमें अधिक उत्साह एवं सक्रियता देखने को मिलती है । यदि शिक्षक चाहता है कि उसके विद्यार्थी नए पाठ को सीखे तो उसे विद्यार्थियों की आवश्यकताओं, रूचियों एवं प्रयोजनों का अच्छी तरह से ज्ञान प्राप्त कर लेना चाहिए। यह तीनों ही बालक को सीखने के लिए प्रेरित करते हैं, मनोवैज्ञानिकों ने प्रयोगों द्वारा सिद्ध कर दिया है कि जब बालकों में सीखने की प्रेरणा रहती है और इसके साथ ही उन्हें प्रोत्साहन भी दिया जाता है तो वे शीघ्र सीखते है।

मनुष्य सदैव किसी न किसी कार्य में लगा रहता है एवं कोई न कोई व्यवहार करता रहता है। अभी तक यह कहा जाता रहा है कि व्यक्ति की मूल प्रवृतियां उसके कार्य एवं व्यवहार को परिचालित करती है, वर्तमान समय में मनोवैज्ञानिकों का विचार है कि व्यक्ति के कार्य एवं व्यवहार को परिचालित करने वाली कुछ प्रेरक शक्तियाॅ हैं जो उसे विभिन्न परिस्थितियों में कार्य करने की अभिप्रेरणा प्रदान करती है। यह अभिप्रेरणा ही है जो व्यक्ति को किसी कार्य या व्यवहार को करने के लिए पूर्ण उत्तरदायी है। इस प्रकार अभिप्रेरणा विद्यार्थियों में अधिगम के प्रति रूचि उत्पन्न करने की कला है।

अभिप्रेरणा या प्रोत्साहन का अर्थ ः— अभिप्रेरणा का सामान्य अर्थ है किसी कार्य को करने के लिए प्रोत्साहित होना। अभिप्रेरणा अंग्रेजी के Motivation शब्द का हिन्दी रूपान्तरण है। Motivation शब्द की उत्पत्ती लैटिन भाषा कि Motum धातु से जुडी है जिसका अर्थ होता है More या Motion. इस अर्थ में किसी भी उत्तेजना को अभिप्रेरणा कहा जा सकता है, क्योंकि उत्तेजना के कारण ही व्यक्ति कोई प्रतिक्रिया या व्यवहार करता है । यह उत्तेजना आन्तरिक या बाह्य दोनों ही हो सकती है।

मनोवैज्ञानिक अभिप्रेरणा एक मानसिक प्रकिया या आन्तरिक शक्ति है, जो अन्दर से किसी व्यक्ति को कार्य करने के लिए प्रेरित करती है।

अभिप्रेरणा के प्रकार

1.सकारात्मक अभिप्रेरणा – इस प्रकार की अभिप्रेरणा में बालक किसी कार्य को अपनी स्वयम की इच्छा से करता हैं,इस कार्य को करने में उसे सुख एवं संतोष प्राप्त होता हैं। शिक्षक विभिन्न प्रकार के कार्यक्रमों का आयोजन एवं परिस्थितियों का निर्माण करके बालक को सकारात्मक अभिप्रेरणा प्रदान कर सकता है। इस प्रेरणा को आन्तरिक प्रेरणा भी कहते हैं।

2.नकारात्मक अभिप्रेरणा – इस प्रकार की अभिप्रेरणा में बालक किसी कार्य को अपनी स्वयम की इच्छा से न कर किसी दूसरे की इच्छा से करता है। इसलिए इसे बाह्य अभिप्रेरणा भी कहते है। शिक्षक प्रशंसा, निंदा आदि कृत्रिम प्रेरकों का प्रयोग करके छात्रों को नकारात्मक या बाह्य अभिप्रेरणा प्रदान करता है।

अभिप्रेरणा के स्रोत

1. आवश्यकतायें :– प्रत्येक प्राणी की कुछ मौलिक आवश्यकतायें होती है,जिनकी पूर्ती`पर ही उनका जीवन आधारित होता है।

उदाहरण:– जैसे किसी प्राणी को प्यास लगती हैं तो उसके शरीर में तनाव उत्पन्न हो जाता है,और वह पानी के लिए कियाशील हो उठता है, जब वह पानी पी लेता है तब उसकी प्यास बुझ जाती है तो तनाव के साथ ही कियाशीलता भी समाप्त हो जाती है।

2. चालक :– प्राणी की आवश्यकता के कारण उत्पन्न तनाव की स्थिति को चालक कहते हैं। अतः प्राणी की आवश्यकता उसे संबंधित चालक को जन्म देती है। जैसे–पानी की आवश्यकता से प्यास चालक, भोजन की आवश्यकता से भूख चालक की उत्पत्ती होती है। इस प्रकार चालक प्राणी को एक निश्चित प्रकार की किया या व्यवहार करने के लिए प्रेरित करता है।

3.उद्दीपन :– उद्दीपन बाह्य वातावरण की वह वस्तु है जो आवश्यकता की पूर्ती करके चालक की संतुष्टि करता है। जैसे – भूख एवं प्यास दोनो ही चालक है। भूख चालक को भोजन एवं प्यास चालक को पानी संतुष्ट करता है। इसलिए भोजन एवं पानी दोनों को ही उद्दीपन कहा जाता है।

4. अभिप्रेरक –मनुष्य जो भी कार्य या व्यवहार करता है उसके पीछे उसकी जन्मजात स्वाभाविक अर्जित प्रवृतियों का हाथ होता है। ये प्रवृतियां ही उसके व्यवहार को प्रेरित करती हैं। इसलिए मनोवैज्ञानिकों ने इन्हें अभिप्रेरक की संज्ञा दी है। अतः अभिप्रेरक वह अन्तः वृत्ति है जो प्राणी में किया को उत्पन्न करती है।यह इस किया को तब तक जारी रखता है जब तक कि उसके उद्देश्य की पूर्ति न हो जाती है।

अधिगम में अभिप्रेरणा का स्थान

अधिगम अर्थात सीखने की प्रकिया में प्रेरणा एक महत्वपूर्ण अंग हैं, प्रेरणाहीन किया को सीखने में बालक रूचि नही लेता है। सीखने के क्षेत्र में अभिप्रेरणा का महत्व इस प्रकार है :–

1.बाल व्यवहार में परिवर्तन– शिक्षक प्रशंसा ,निंदा, पुरस्कार , भर्त्सना आदि कृत्रिम प्रेरकों का बृद्धिमानी से प्रयोग करके बालकों के व्यवहार को परिवर्तित कर सकता है।

2.चरित्र निर्माण में सहायक – शिक्षक बालकों को उत्तम गुणों और आदर्शों को प्राप्त करने के लिए प्रेरित कर सकता है।

3.ध्यान केन्द्रित करने में सहायता – शिक्षक बालक को प्रेरित करके उनके ध्यान को पाठ्य विषय पर केन्द्रित करने में सहायता दे सकता है।

4. मानसिक विकास –शिक्षक प्रेरक का प्रयोग करके छात्रों को ज्ञान का अर्जन करने के लिए प्रोत्साहित कर उसका मानसिक विकास कर सकता है।

5.रूचि का विकास –शिक्षक प्रेरणा का प्रयोग करके बालकों में अध्ययन के प्रति रूचि का विकास कर सकता है।

6.अनुशासन की भावना का विकास– शिक्षक अभिप्रेरणा के द्वारा बालकों को अच्छे कार्य करने के लिए प्रेरित कर अनुशासन की भावना का विकास कर सकता है।

7. सामाजिक गुणों का विकास :– शिक्षक बालकों को सामुदायिक कार्यों में भाग लेने के लिए प्रेरित करके उनमें सामुदायिक भावना एवं सामाजिक गुणों का विकास कर सकता है।

8. अधिक ज्ञान का अर्जन :– शिक्षक बालकों में प्रतियोगिता की भावना का विकास करके उनमें अधिक ज्ञान का अर्जन करने के लिए प्रेरणा प्रदान कर सकता है।

9. तीव्र गति से ज्ञान का अर्जन :–शिक्षक उत्तम शिक्षण विधियों का प्रयोग करके बालकों को तीव्र गति से ज्ञान अर्जन करने को प्रेरित कर सकता है।

10. व्यक्तिगत विभिन्नताओं के अनुसार प्रगति :– शिक्षक उचित प्रेरक का प्रयोग करके बालकों को अपनी इच्छा अनुसार कार्य या विषय का चुनाव करने में अर्थात अपनी व्यक्तिगत विभिन्नताओं के अनुसार प्रगति करने में सहायता करता है ।

अभिप्रेरणा में शिक्षक की भूमिका

विद्यार्थी प्रेरणा प्राप्त करके ही अपने सीखने के कार्य में पूर्ण रूप से सफल हो सकते है, अत : उनको प्रेरणा प्रदान किया जाना आवश्यक है।शिक्षक विद्यार्थियों को निम्न विधियों द्वारा अभिप्रेरित कर सकता है:–

1.रूचि:– शिक्षक को सदैव यह प्रयास करना चाहिए कि वह बालकों में पाठ के प्रति रूचि उत्पन्न कर सके। अत : शिक्षक को पढ़ाये जाने वाले पाठ को बालक की रूचियों से संबंधित करना चाहिए।

2. सफलता:– शिक्षक को सदैव प्रयास करना चाहिए कि बालकों को सीखने वाले कार्य में सफलता प्राप्त हो ।

3.सामूहिक कार्य – बालकों को सामूहिक कार्यों में भाग लेने के लिए प्रेरित करना चाहिए, इसका विकास करने के लिए Project Method पर बल देना चाहिए।

4. प्रशंसा – प्रशंसा अभिप्रेरणा का महत्वपूर्ण कारक है अतः शिक्षकों को उचित अवसरों पर बालकों के अच्छे कार्यों की प्रशंसा करनी चाहिए।

5. आवश्यकता का ज्ञान – किसी कार्य को करवाने से पूर्व शिक्षक को बालकों को यह बता देना चाहिए यह कार्य उनकी किन आवश्यकताओं को पूर्ण करेगा।

6. परिणाम का ज्ञान – शिक्षण से पूर्व शिक्षक को बालकों को यह बता देना चाहिए उक्त पाठ्य विषय को पढ़ने से वे किस प्रकार से लाभान्चित होंगें।

7. खेल विधि का प्रयोग :–शिक्षक को खेल विधि का प्रयोग करक बालकों को शिक्षा देनी चाहिए यह विधि छोटे बच्चों के लिए विशेष रूप से उपयोगी है।

8. आत्मभाव – शिक्षक का विद्यार्थियों के प्रति आत्मभाव एक अचूक राम बाण होता है वह अपने प्रेम सहानुभूति एवम सहयोग पूर्ण व्यवहार से विद्यार्थियों की अभिप्रेरणा को सरलता से बढ़ा सकता है।

9.कक्षा का वातावरण :– सुन्दर कक्ष, शुद्ध हवा, पर्याप्त प्रकाश, शांत वातावरण , शिक्षक –विद्यार्थियों के बीच का संबंध इन सबसे कक्षा का वातावरण तैय्यार होता है जिस कक्षा में सीखने के लिए जितना अच्छा वातावरण होता है उस कक्षा के विद्यार्थी उतने अधिक अभिप्रेरित होते हैं।

CHRIST COLLEGE
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उपसंहार

इस प्रकार अभिप्रेरणा या प्रोत्साहन शिक्षा प्रक्रिया का मुख्य आधार और सीखने का ऐसा शक्तिशाली साधन है जिसका प्रयोग करके शिक्षक विद्यार्थियों को उनके साध्य तक पहुँचा सकता है, उनकी क्रियाओं को किसी भी दिशा में मोड़कर उनके व्यवहार में वांछनीय परिवर्तन कर सकता है। इस प्रकार अभिप्रेरणा का प्रयोग करना भी एक कला है इसलिए शिक्षक को इस कला में निपुण होना चाहिए ।

संदर्भ ग्रन्थ

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Chapter 45

मूल्यों पर आधारित जीवन के लिए शिक्षा

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सहायक प्राध्यापक (शिक्षा संकाय)
कल्याण स्नातकोत्तर महाविद्यालय, भिलाई नगर (छ.ग.)

प्रत्येक मानव को जीवन में कुछ न कुछ अनुभव अवश्य होते हैं, जो समय की गति के साथ बढ़ते जाते हैं, इन्हीं अनुभवों से कुछ सामान्य सिद्धांत जन्म लेते हैं सामान्य सिद्धांतों की जो कि समस्त जीवन को एक दर्शन के रूप में परिवर्तित कर देते हैं एवं उनके पथप्रदर्शक के रूप में कार्य करते हैं, मूल्यों के नाम से जाना जाता है। व्यक्ति के मूल्य इस बात का दर्पण होते हैं कि वे अपनी सीमित शक्ति तथा समय में क्या करना चाहते हैं। जीवन के पथप्रदर्शक के रूप में मूल्य अनुभवों के साथ-साथ अधिक परिपक्व होते जाते हैं। चिंतन से विचार बनते हैं, विचारों से धारणा का निर्माण होता है और धारणा से मूल्यों का निर्माण होता है। मूल्यों की सामाजिक-सांस्कृतिक पृष्ठभूमि होती है। इसलिए प्रत्येक समाज के आदर्श व मूल्य अलग-अलग होते हैं। मूल्य के अभाव में समाज की प्रगति और परिवर्तन की दिशा निर्धारित नहीं हो सकती। ये मूल्य समाज को स्थायित्व प्रदान करते हैं।

मूल्य के मुख्य तीन आधार होते हैं :-

1. क्या विश्वास किया जा सकता है?

2. क्या मैं चाहता हूँ?

3. क्या मुझे चाहना चाहिए?

इन तीनों का संबंध आवश्यकता, इच्छा तथा वांछित से होता है।

मूल्य व्यक्ति की रूचियों, प्रेरणाओं एवं अभिवृत्तियों की ओर इंगित करते हैं।

मूल्य ऐसे विश्वास है, जो कि एक व्यक्ति को प्रत्येक कार्य में प्रभावित करते है। मूल्य व्यक्ति के व्यवहार को निश्चित करते हैं। एक व्यक्ति की इच्छाएँ तथा आकांक्षाएँ मूल्यों के इर्द-गिर्द घूमती रहती है। मूल्य जीवन को महत्वपूर्ण बनाते है तथा प्रेरणा प्रदान करते है। साथ ही निर्णय-प्रक्रिया में भी सहायक होते है। कोई भी व्यक्ति अपने मूल्यों के द्वारा जाना जाता है। जीवन के सिद्धांत मूल्यों

एवं शिक्षा पर आधारित होते है, स्वयं का मूल्यांकन करने में भी मूल्य सहायक होते है। एक ऐसा शिक्षित व्यक्ति, जिसका कोई मूल्य नहीं है, अर्थहीन है।

मनुष्य की कोई भी विचार या धारणा प्रारंभ से मूल्य का स्वरूप धारण नहीं कर लेते हैं, बल्कि उन्हें विभिन्न स्तरों – लक्ष्य, आदर्श, मान्यता से गुजरने के पश्चात् जो मानव मस्तिष्क में स्थायी रूप से अपना स्थान बना लेते हैं, अन्तर्मन में प्रविष्ट कर जाते हैं, वे मूल्य का स्वरूप धारण कर लेते हैं। इन मूल्यों को व्यक्ति से व्यक्ति, व्यक्ति से समाज और समाज से समाज अर्जित कर लेते हैं। बालक नये मूल्यों का अर्जन कर उसमें संशोधन कर लेते हैं। कुछ अनुपयोगी मूल्यों में अनुकरण, अनुभव, समाजीकरण और मूल्य रूप से शिक्षा की प्रक्रिया द्वारा मूल्यों का अर्जन करता है।

मूल्य मुख्य रूप से दो प्रकार के होते है–

1. आंतरिक मूल्य – सच्चाई, सौन्दर्य, अच्छाई, नैतिक तथा आध्यात्मिक विकास।

2. बाह्य मूल्य – यह सामाजिक विकास के लिए आवश्यक है इन्हें अर्जित किया जा सकता है।

कुछ मूल्य शाश्वत होते है, जो बदलते नहीं है, जैसे सत्यम्, शिवम्, सुन्दरम्। ये अंतिम सत्य है। बुद्धिमान व्यक्ति द्वारा दिए गये विचार जो समाज के लिए हितकारी हो वे मूल्य बन जाते है। यही मूल्य व्यक्ति एक पीढ़ी से दूसरी पीढ़ी को हस्तांतरित करता जाता है और वे स्थायी मूल्य बन जाते है। जैसे भारत में विधवा विवाह को लोग पंसद नहीं करते थे, लेकिन जैसे–जैसे व्यक्तियों के विचारों में परिवर्तन आता गया, लोग इसका अनुभव करने लगे। समाज ने इसे स्वीकार किया तथा हिन्दू समाज में विधवा विवाह को स्वीकारा जाने लगा। इसके लिए कानून बने और स्त्रियों की दशा में सुधार एक सामाजिक मूल्य बन गया।

शिक्षा में मूल्यों की समस्या प्रत्येक पग पर हमें मिलती है। मूल्य शिक्षा के उद्देश्य पर निर्भर होते हैं। मूल्य वह जो मानव इच्छा की तृप्ति करे , जो व्यक्ति तथा उसी जाति के संरक्षण में सहायक हो। मूल्य परिवर्तनशील समाज की वह धुरी है,जिसके कारण समाज का अस्तित्व है। क्योंकि उपयोगिता या कल्याणकारिता की भावना ही समाज को स्थिर रखती है। मूल्य ऐसी आचरण संहिता या सद्गुण है, जिससे व्यक्ति अपने निश्चित लक्ष्यों की प्राप्ति हेतु अपनी जीवन – पद्धति का निर्माण करता हैं तथा अपने व्यक्तित्व का विकास करता है।

वर्तमान में मनुष्य अत्यधिक स्वार्थी हो गया हैं। इसी कारण मूल्यों का ह्रास हो रहा है। मूल्यों के ह्रास के लिए हमारा समाज और हमारी शिक्षा काफी हद तक जिम्मेदार हैं क्योंकि कोई भी मनुष्य जन्मजात खराब नही होता बल्कि उसे वातावरण खराब बनाता है। जब बालक पैदा होता है तो वह सबसे प्रेम करता है। उसका हृदय पवित्र होता है। उसमें जाति–पाँति का भेदभाव नहीं होता हैं

उसमें मानवीय मूल्य होते हैं। धीरे–धीरे जब वह बड़ा होता जाता है तो उसमें झूठ, स्वार्थ, लोभ, हिंसा, घृणा पनपने लगते हैं, वह इनके वशीभूत हो जाते हैं।

वर्तमान में छात्र ही भावी समाज के निर्माता हैं। अतः छात्रों को ऐसी शिक्षा देनी चाहिए जिससे उनमें मूल्यों का विकास हो तथा शाश्वत मूल्यों का संरक्षण हो छात्रों को इसके लिए मूल्यपरक शिक्षा देनी चाहिए। मूल्यों में गिरावट रोकने के लिए सर्वप्रथम छात्रों में गिरावट को रोकना होगा। छात्रों में गिरावट का मुख्य कारण है शिक्षा में गिरावट। अतः शिक्षा में गिरावट को रोकना होगा।

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Chapter 46

शिक्षा में भारत की विशेष नीतियाँ एवं इनका वर्तमान स्वरूप का अध्ययन

मोहन सोलंकी

सहायक प्राध्यापक(विधि)

शा. काक. स्नातकोत्तर महाविद्यालय जगदलपुर

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सामान्य परिचय– भारत वर्ष विश्व भर में शिक्षा के संबंध में गुरू माना जाता है। आज विश्व भर में अनेक अन्तर्राष्ट्रीय संस्थाओं में भारत से शिक्षा प्राप्त कर उन संस्थाओं के प्रमुख पदों पर आसीन हैं।

ऐतिहासिक शिक्षा प्रणाली– यह हम भली भांति जानते हैं कि भारत को विश्व गुरू के रूप में जाना जाता है। भारत में शिक्षा प्रणाली अत्यंत पुरानी है मनुष्य पहले आदिमानव हुआ करता था। धीरे धीरे उसमें चेतना जागी और उसने अपने विकास को प्रारंभ कर दिया। इसी सोच को उसने आगे आने वाली पीढ़ियों तक इसका लाभ पहुंचे। जो चेतना उसमें जागी थी, उसके दूसरे लोगों को सिखाया यह सिखाना खोज करना ही शिक्षा है। भारत सहित पूरा विश्व आज एक विकास की राह पर चल रहा है और एक दूसरे से जो सहयोग ले रहे हैं वह सब शिक्षा की ही देन है।

भारत में पहले गुरूकुल व्यवस्था थी जिसमें सम्पन्न घरों के बच्चों को ही शिक्षा प्रदान की जाती थी। जैसे– रामायण ग्रंथ में हमें शिक्षा गुरूकुल में दशरथ के पुत्रों को शिक्षा के बारे में बताया गया है। महाभारत में भी इसी का गुणगान किया गया है। साथ ही शिक्षा सिर्फ सामर्थ्य वान लोगों को ही शिक्षा प्राप्त करने का अधिकार था। एकलव्य तथा कर्ण इसके उदाहरण हैं।

भारत में सर्वप्रथम विश्वविद्यालय गुप्तकाल के कुमार गुप्त द्वारा पांचवी ईस्वी में नालन्दा विश्वविद्यालय की स्थापना की गई। जैसे–जैसे समय आगे बढ़ता चला गया वैसे–वैसे ही शिक्षा का प्रसार भी बढ़ता चला गया। इसका उदाहरण है–सम्राट अशोक द्वारा भारत सहित अन्य देशों में भी शांति की शिक्षा प्रदान करना

जीवन में शिक्षा का महत्व– शिक्षा के बिना एक सभ्य और विकासशील समाज की कल्पना भी नहीं कर सकते हैं शिक्षा एक ऐसा हथियार है जो दिखाई नहीं देता है किंतु अनुभव किया जाता है। शिक्षा के माध्यम से ही बड़े–बड़े संघर्षों को समाप्त किया गया है। विश्व यदि विकास की राह पर है तो उसमें शिक्षा का बहुत बड़ा योगदान है। जीवन के हर क्षेत्र में शिक्षा से ही उन्नति आयी है, फिर चाहे वह–खगोल शास्त्र, भू–विज्ञान, भौतिक शास्त्र, रसायन शास्त्र, जीव विज्ञान, गणित, विधि और अन्य सामाजिक विषय हैं, जिनके माध्यम से जीवन के हर पहलू को बहुत ही सरल और आसान बनाया गया है।

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वर्तमान में शिक्षा का स्वरूप– आज शिक्षा शब्द ज्ञान मात्र ही नहीं रह गया है बल्कि शिक्षा को आज कौशल के साथ जोड़कर देखा जा रहा है। बच्चों को शिक्षा इस प्रकार से प्रदान की जा रही है कि वह उनको एक सुनहरा भविष्य दिखाई दे रहा है। आज शिक्षा शिक्षार्थियों को सुदृढ़ बनाने के लिए शिक्षा नीतियों का निर्माण किया जा रहा है। आज वर्तमान में शिक्षा के माध्यम से बच्चों में सहभागिता, आत्मविश्वास, मनोवैज्ञानिक दबाव को दूर करने संबंधी प्रावधान, जीवन कौशल, सुशीलता, सहिष्णुता, शिल्प कौशल, तकनीकी कौशल, शारीरिक कौशल, धन प्रबंधन, उद्यमिता कौशल से अपनी जीवन शैली को एक कौशलमय जीवन प्रदान किया जा रहा है।

भारतीय शिक्षा नीतियाँ– भारत के स्वतंत्रता के बाद प्रथम शिक्षा मंत्री मौलाना अब्दुल कलाम आजाद थे जिन्होंने शिक्षा को लेकर कई नीतियाँ बनाई हैं।

1968 में भारत ने छब्म्ट्ज का गठन किया गया। जिसमें संघ तथा राज्यों में समान शिक्षा प्राप्त हो।

1986 में अनुसूचित जाति एवं अनुसूचित जनजातियों के लिए छात्रवृत्ति का प्रावधान किया गया, साथ ही इंदिरा गांधी राष्ट्रीय मुक्त विश्वविद्यालय का गठन किया गया।

1992 में अनिवार्य सामान्य शिक्षा का प्रावधान किया गया।

➢ सर्व शिक्षा अभियान
➢ राष्ट्रीय माध्यमिक शिक्षा अभियान
➢ साक्षर भारत अभियान
➢ शिक्षा का अधिकार अधिनियम 2009
➢ राष्ट्रीय उच्चतर शिक्षा अभियान

जैसी अनेक नीतियाँ बनाई गई है, जिससे शिक्षा के क्षेत्र में नये आयामों को प्राप्त किया जा सके।

भारतीय संविधान में शिक्षा संबंधी प्रावधान– भारत का संविधान एक विस्तृत संविधान है जिसके तहत शिक्षा के संबंध में अनेकों प्रावधान दिये गये हैं–

● निशुल्क एवं अनिवार्य शिक्षा संबंधी प्रावधान अनुच्छेद 45
● अल्प संख्यकों के लिए शिक्षा संबंधी प्रावधान अनुच्छेद 30
● अल्पसंख्यक वर्गों के हितों का संरक्षण भारत के राज्य क्षेत्र में किसी भाग में रहने वाले नागरिकों के लिए जिसकी विशेष भाषा, लिपि, संस्कृति को बनाये रखने का अधिकार प्रदान किया गया है। अनुच्छेद 29 (1)
● असहाय वर्गों के लिए प्राप्त प्रावधान जो कि संविधान द्वारा दिये गये हैं।
राज्य सामाजिक और शैक्षिक दृष्टि से पिछड़े हुए नागरिकों के किन्ही वर्गों की उन्नति अनुसूचित जाति, अनुसूचित जनजाति के लिए विशेष उपबंध किया गया है। अनुच्छेद 15(4)

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- अनुसूचित जाति, अनुसूचित जनजातियों के दुर्बल वर्गों के शिक्षा और अर्थ संबंधी संरक्षण। अनुच्छेद 46

- राज्य विधि में पूर्णतः पोषित किसी संस्था में कोई धार्मिक शिक्षा प्रदान नहीं की जायेगी। अनुच्छेद 28(1)

- शिक्षा का अधिकार अनुच्छेद 21(I) में जीवन के अधिकार में शामिल किया गया है।

भारतीय संविधान में मूल अधिकार, राज्य के नीति निर्देशक तत्व में जहाँ एक ओर व्यक्तियों को अधिकार प्रदान किया गया है। वहीं दूसरी तरफ स्वयं राज्य ने भी शिक्षा संबंधी उत्तरदायित्व को लिया गया है।

शिक्षा को जीवन में बहु उपयोगी बनाने के संबंध में उपाय– आज शिक्षा एक ऐसा माध्यम हो गया है जिसके माध्यम से हर क्षेत्र में शिक्षा से बहुत महत्वपूर्ण योगदान हो रहा है। विश्व में जितने भी सहयोग संबंध तथा आपसी समझौते हो रहे हैं। वह सब शिक्षा के माध्यम से ही संभव हुए हैं।

1. शिक्षा को एक सरल और आसान भाषा में प्रदान किया जाना चाहिए, जिससे कि बच्चों को वह आसानी से समझ में आ जाये।
2. शिक्षा से बच्चों में आपसी सहयोग की भावनाओं को जगाना।
3. शिक्षकों को बच्चों के साथ एक सौहार्द्रपूर्ण वातावरण का निर्माण करना, जिससे बच्चों एवं शिक्षक के बीच संसूचनाओं का आदान–प्रदान सरल हो सके।
4. प्रत्येक बच्चे को उसकी रूचि के अनुसार विषय का चयन करने की छूट प्रदान की जाये।
5. शिक्षा को एक डिग्री के रूप में ही नहीं बल्कि जीवन में आर्थिक रूप से संपन्न बनाने वाली शिक्षा प्रदान की जाये।
6. व्यवसायिक विषय पर अधिक ध्यान दिया जाये।
7. हर वर्ग के बच्चों को उनकी कार्य क्षमता एवं रूचि के अनुसार शिक्षा प्रदान की जाये।
8. शिक्षा से तकनीकी शिक्षा, उद्यमिता की शिक्षा तथा प्रशिक्षण संबंधी शिक्षा का प्रावधान किया जाये।

उपसंहार– भारत के इतिहास के अनुसार भारत एक शिक्षा गुरु है एवं भारत के संविधान में शिक्षा संबंधी अनेकों प्रावधान किये गये हैं। साथ ही कई सारी शिक्षा नीतियाँ बनायी गई हैं। शिक्षा से विकास के साथ साथ देश में कौशल प्रशिक्षण के अनेक शिक्षा संस्थाएँ प्रारंभ की गई हैं जिनमें कौशल संबंधी शिक्षाएँ प्रदान की जाती है।

इन सबके बाद भी शिक्षा के क्षेत्र में अनेकों सुधार की संभावनाएँ हैं। आज हम भले ही चाँद पर पहुँच गये हैं परंतु पृथ्वी पर कई ऐसे स्थान हैं जहाँ पर अभी भी शिक्षा रूपी प्रकाश वहाँ तक नहीं पहुँच पाया है। शिक्षा को इस स्तर का बनाया जाये, जिससे व्यक्ति का शारीरिक, मानसिक, आध्यात्मिक और आर्थिक विकास हो। संभवतः ये सब प्रयास आज भी बहुतायात मात्रा में किये जा रहे हैं और आगे भी किये जाते रहेंगे।

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