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DEMONETIZATION AND ITS IMPACT ON THE INDIAN ECONOMY

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INTRODUCTION

We knew terrorism is a frightening threat, but who funds these terrorists? Our enemies they use the fake currency to sponsor terror—this was proven many a times. Corruption and black money are the major obstacles in our country. It is weakening the efforts to remove poverty. Our country is rapidly increasing in terms of growth and we are in No.1 position in terms of growth but we are ranked 76 in Global Corruption Perception ranking. It clearly shows how corruption and black money have spread their tentacles.

DEMONETIZATION WILL HIT THE ECONOMY

The demonetization of the 500 rupee note and the 1,000 rupee note—the two highest currency denominations available in India—will likely hit the economy hard in the short term. The surprise move is expected to grind the consumption activity in the Indian economy to a virtual halt. The service sector, which dominates economic activity and involves a sizable chunk of cash transactions, will likely be hit the hardest.

INDIA'S ECONOMIC GROWTH

Growth in the Indian economy remained solid in the quarter from April to June 2016 (the latest available). In India, a financial year begins in April and ends in March of the following year. The previously mentioned quarter is the first quarter of fiscal 2016–2017. During that period, the GDP (gross domestic product) rose 7.1%, while the GVA (gross value added) rose 7.3%. The relationship between the GDP and GVA is:

$$\text{GDP} = \text{GVA} + \text{taxes on products} - \text{subsidies on products}$$

The base year for calculating the GVA is 2011–2012.

The fall in economic activity due to demonetization could last from two to three quarters. As a result, GDP and GVA growth in the quarters from September to December 2016 and January to March 2017 could be significantly lower than previous years. Some bounce back should be seen in the first quarter of fiscal 2017–2018. In the medium term, the Indian economy can grow considerably after curbing the debilitation caused by counterfeit money and an increase in economic activity.

IMPACTS OF DEMONETIZATION

Inflation : It will cause deflation in the market as people who have earned money through illegal ways would be afraid to declare the money as they may be prosecuted by the Income tax department on the legitimacy of their income. Reduction in Monetary Circulation: This will lead to reduction of money circulation in the economy leading to deflation. Value of money will be increasing which we have because the total money supply will be going down but the commodities and things available in the market have not gone down. It will lead to inflation slowly but not overnight. **Cash Deposits in Banks:** A lot of cash which are legally earned will be deposited in the banks and now the banks with more deposits will be able to do more lending.



Business Excellence

Dr.A.D.Jadhav
Mr.A.D.Ekal



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Chapter 1 Software Engineering

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There are many definitions available for software engineering but more complete and correct definition would be "use and establishment of sound engineering principles to obtain the software which is economic and reliable and works efficiently on all machines."

If we want to understand this definition it could be divided in to three parts

1. Use and establishment of sound engineering principles – the software engineering is full of methods, procedures, rules and tools use them but sometimes existing methods, procedures, rules and tools are not sufficient to develop new software in this we use our own methods, procedures, rules and tools. Why? The answer to this is provided in next two parts.

2. In order to obtain software which is economic and reliable – the objective of software engineering is to develop software at minimum cost and which will always give correct results.

3. Works efficiently on all real machines – software must consume minimum resources and maximize use of processor and should execute itself on computers that are available in market.

Another definition provided is "It is a systematic approach to analyze, design, develop, test, implement and retire a program."

Once we understand the definition of

software engineering next step is to understand the method used for software development. This method is called as software development life cycle (SDLC). There are many books written by various authors, the method given in these books contain different number of steps but essence of all these is same. We shall see the phases in software development life cycle one by one.

Analysis : In this phase we try to find out what are the real requirements of user? or what user expects from new system? To find out this we must understand how the current system is working?

For this we use fact finding techniques which include

1. Interviews
2. Questionnaire
3. Observations
4. Historical documents

The interview is face to face interaction between two persons but it is different from job interview. Here software developer need to select persons from organization for which software has to be developed, prior appointment is taken, date, time and venue is fixed and then interview is conducted. During interview the developer asks questions regarding working of existing system. These questions may be

- What do you do?
- When do you do it?
- How do you do it?
- Why do you do it the way you do?
- Who else does what you do?
- Do you have any suggestion?
- What are the problems in current system?

After interview the developer writes summary and gives it to user to verify and validate.

The second technique is questionnaire where some questions are printed on a paper and this is given to user, sufficient time is given



Poornima Naik

Design & Development of Human Resource Management System using J2EE

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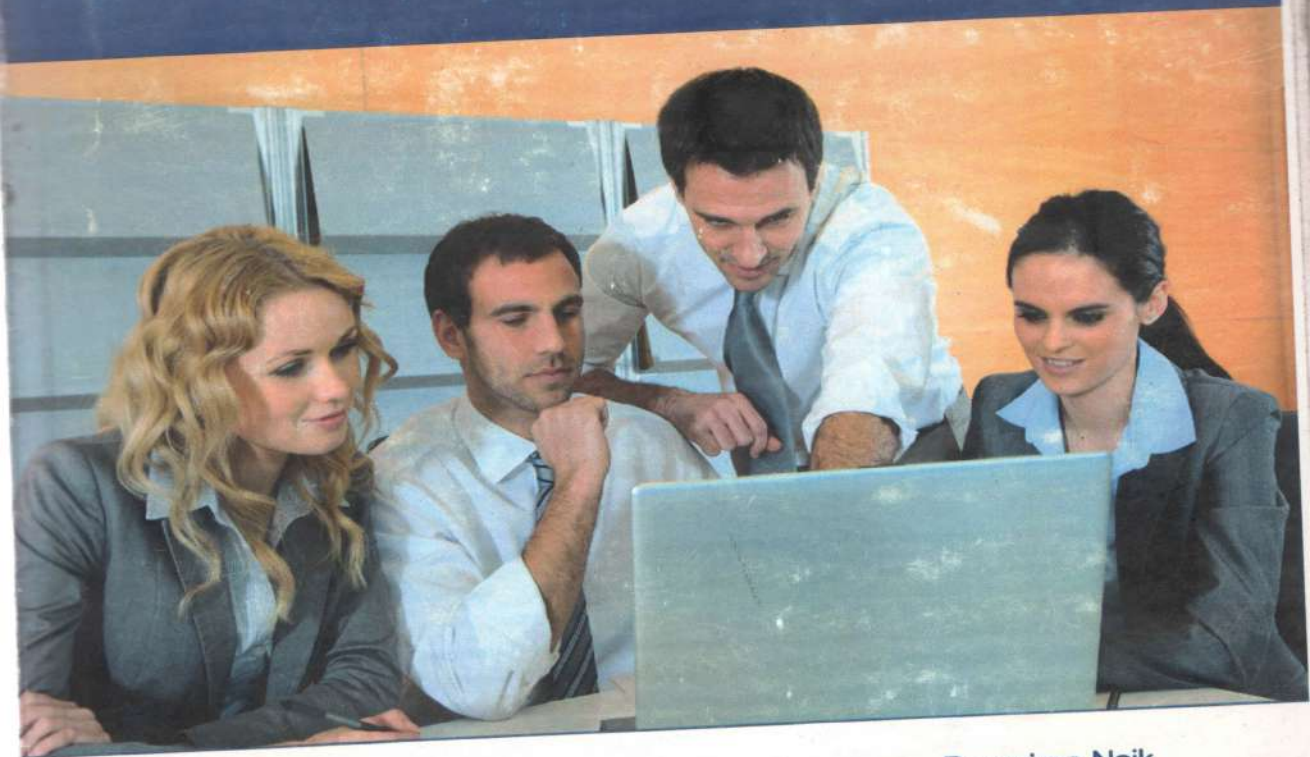
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Design & Development of Human Resource Management System using J2EE-II



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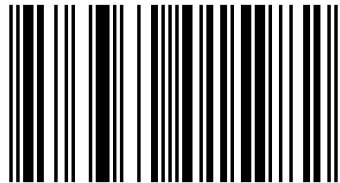
Chapter 1 focuses on Multi threading in Java. Application's efficiency can be increased drastically by carefully following the multi threading application design guidelines. In order to cater the needs in this direction our first chapter focuses on all ins and outs of multi threading concepts supported by relevant examples in each case. Chapter 2 covers FAQs on 'Networking in Java' which focuses primarily on two architectures, connection-oriented and connection-less. The highlights of the chapter including blending multi threading concepts with networking concepts for creating multi threaded servers, multi functional servers, proxy servers and loading balancing servers. Chapter 3 focuses on introduction to Java Applets which are usually used to add small, interactive components or enhancements to a webpage. The salient features of the chapter are passing parameters to the applet, applet restrictions and applet security. Chapter 4 is completely devoted to Java collection Framework, which play a key role in developing applications incorporating business components in middle tier of N-Tier scalable applications in Java.



Poornima Naik
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Dr. P.G.Naik is currently working as a Professor in a Department of Computer Studies at Chh.Shahu Institute of Business Education and Research, Kolhapur. She has over 50 research papers in various international and national journals and symposia to her credit. She bears a varied and rich experience in the field of computer programming.

Learning Java - An Experiential Approach Vol - II



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Dr.P.G.Naik

Dr. K.S.Oza

Preface

Owing to the immense support received for our Vol-I of the book on '**Learning Java - An Experiential Approach**' we were greatly compelled to bring out Vol II of the book at its earliest. This book is intended to serve those who have just started their tour of Core Java. In this book, we have tried to stick to how, why and what of Java rather than what a typical book of Java offers. It serves as a reference material for those who have just started learning Java and want to learn more of Java internals. This book will help you to fill in the "gaps" by answering several 'why' and 'how to' questions in Java. To understand the contents of this book a working knowledge of Java and some basic concepts of Java are required. This is not a complete reference to Java, so some familiarity with Java is essential.

The books on core java currently existing in market are conventional in their approach in putting the core concepts and the reader has hard time in absorbing the core concepts from the conventional approach employed in the book. Further, in most of the occasions reader looks for quick solutions to the frequent questions that arise in his mind on core concepts. The proposed book uses experiential learning approach where reader plays an active role. The book is thought provoking and stimulates the reader to think beyond basics. Authors through their experience of teaching java for more than 15 years found that there is no book in market which has a pin point focus only on practical concepts with needed theory. There is a need for book which can give hands on approach to students for their core java concepts and handy reference to the candidates to prepare for their technical aptitudes as well as interview. The book will play a key role for the students during their academics and even during their job hunting. Authors have focused on two distinct approaches while writing the book, first one is to suspect and provide answers to the questions which arise in students mind while studying java and second one is what an expert might expect from a new comer in the IT industry through their interactions with students and alumni working in IT industries. . It's a collection of simple and tricky questions with practically tested answers.

Every program is associated with the output produced by it. Language used is very simple with necessary comments wherever required.

Java is evolving like anything beyond leaps and bounds and all these advanced Java technologies demand the thorough understanding of core Java concepts. In short Java is become heart of computer science curricula and basic need for employability. In view of this, the book aims at providing the ins and outs of java programming language. Java has already seen as era of computing but still remains as one of the key language in spite of C,C++, python, C# etc. Its popularity is due to its wide applicability. Most of the Employers check student's logic for employability using core concepts of Java. The book aims at providing the same.

Java package hierarchy is vast and the Java language is very broad. Both teaching Java and writing a book on Java programming is a daunting task. The amount of information necessary to understand Java is extensive and incredible. No other language has appealed to us and impressed us as Java programming due to its robustness and simplicity. When we started learning Java we were fascinated by the Java package hierarchy due to its ability to handle complexity of core computer concepts and its ability to give a professional touch to an application with a very little effort. As you move deeper into the internals of Java you come out as a more skilled programmer. A little acquaintance with Java turns you into a professional programmer. We have observed most of the students develop a fear against Java due to their lack of understanding in core concepts. To rectify for this we decided to come up with a sort of 'How To' kind of book which clarifies these basics and creates interest in the subject which is at the same time thought provoking and compels the reader to think beyond basics. Hence this book is intended to lay foundation on 'Core Java Concepts' and is by no means a complete coverage of Core Java. It is difficult to cover all aspects of Java programming and Java classes in a small volume like this. Nevertheless, we have tried our level best to include most of the beginner's queries in this book, especially those which troubled us during our tenure as Java programmers. The examples covered contain our own experience with Java programming over a period of 15+ years and reflect our

perception of Java. Through this book we have made a sincere effort to share our vast experience in teaching and learning with the potential reader.

Moving from C++ to Java requires learning about the new development environment rich in API and application scope which is a challenging task from the programmer's perspective. When you move away from the familiar tools and a familiar environment to the new one, the new tools often seem awkward as compared to the old favourites and you soon become frustrated losing your way. To put you on the right track at the beginning what is needed is either a proper guidance or a good book clarifying the basic concepts and creating interest in the subject. From the end user's point of view learning the new environment is a matter of a day or two. But from the programmer's point of view developing application for the new environment is a new ball game.

Java is one big complex world and it demands a systematic effort to reach to its roots. In this volume we have started with the most basic concepts of Java and have adopted a simple one-idea-at-a-time approach to the Java package hierarchy. Instead of mixing several concepts and ideas in a single program and making it complex and difficult to comprehend we have started with the most fundamental concept that the beginners need to know and showed him/her how to master that concept only and then we have introduced the next concept. We have observed that when exposed to a steady programming of clear ideas and exercises many students have been able to truly master the fundamental concepts of Java.

This book covers Multithreading in Java, Networking in Java, Java Applets and Java Collection Framework. Eclipse and NetBeans are popular Java IDEs with highest market share. Eclipse provides you with the ability to manage your code as it grows and saves time and improve accuracy but the programmer must understand the code that the IDE generates in order to be able to amend it as per his/her requirements. The IDE should be used as a time saving tool and not as a problem solving tool. Do not be paralyzed and become victims to wizards. To support this all the applications are hand coded and we intend to rewrite the same applications using Eclipse IDE in the forth coming volumes, which gives familiarity with the

Java IDEs. What is important from the programmer's point of view is the understanding of the internal working of Java. we have made a sincere effort in disclosing most of the Java internals to the best of our abilities.

Note to a Reader

Few concepts described in the book are borrowed from one of the references included at the end of this book which are supplemented with suitable working examples in order to make the concepts easy to comprehend.

How this book is organized

The series is designed in a manner that tries to manage a logical progression through Core Java Concepts – starting with the most fundamental one with this volume. This book is organized into Multi threading in Java, Networking in Java, Java Applets and Java Collection Framework which are spread across four chapters. The progression of topics covered in this book starts from the **Chapter 1** focusing on Multi threading in Java. Multi threading offers a best way to solve the asynchrony problem. The technical environment in which the code developers are now writing software differs drastically from the historical software development environment. Most of the modern operating systems are multi tasking. Application's efficiency can be increased drastically by carefully following the multi threading application design guidelines. In order to cater the needs in this direction our first chapter focuses on all ins and outs of multi threading concepts supported by relevant examples in each case. Inter-thread communication, synchronization and dead locks play a crucial role in designing multi threaded application in Java and are hard to understand topics for new learners. A book provides a greater emphasis on these topics in particular.

Stand-alone applications are slowing receiving decreased attention and the development trend is towards small networked and Internet applications. Hence **Chapter 2** covers FAQs on 'Networking in Java' which focuses primarily on two architectures, connection-oriented and connection-less. Sincere efforts have been made in unleashing working of standard servers such as telnet server, FTP server, echo server etc. to name a few.

The highlights of the chapter including blending multi threading concepts with networking concepts for creating multi threaded servers, multi functional servers, proxy servers and loading balancing servers. The pre-requisite for Chapter 1 and Chapter 2 is data streams and data persistence depicted in Chapter 3 of the Vol I of the book on ‘**Learning Java - An Experiential Approach**’ is significant to understanding communication mechanism involved in networking and servlets.

Chapter 3 focuses on introduction to Java Applets which are usually used to add small, interactive components or enhancements to a webpage. The salient features of the chapter are passing parameters to the applet, applet restrictions and applet security. Intricacies involved in loading multiple images on Internet environment and basics of image processing using PixelGrabber and MemoryImageSource class are also discussed.

Chapter 4 is completely devoted to Java collection Framework, which play a key role in developing applications incorporating business components in middle tier of N-Tier scalable applications in Java. The main substance of this topic is thread safe collection classes. Relative comparison between different types of collection classes is provided.

Dr.P.G.Naik

Dr. K.S.Oza

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Educational Data Mining with R and Rattle

R. S. Kamath and R. K. Kamat

Educational Data Mining (EDM) is one of the emerging fields in the pedagogy and andragogy paradigm, it concerns the techniques which research data coming from the educational domain. EDM is a promising discipline which has an imperative impact on predicting students' academic performance. It includes the transformation of existing, and the innovation of new approaches derived from multidisciplinary spheres of influence such as statistics, machine learning, psychometrics, scientific computing etc.

An archetype that is covered in this book is that of learning by example. The intention is that reader will easily be able to replicate the given examples and then adapt them to suit their own needs of teaching-learning. The content of the book is based on the research work undertaken by the authors on the theme "Mining of Educational Data for the Analysis and Prediction of Students' Academic Performance". The basic know-how presented in this book can be treated as guide for educational data mining implementation using R and Rattle open source data mining tools.

Technical topics discussed in the book include:

- ◀ Emerging Research Directions in Educational Data Mining
- ◀ Design Aspects and Developmental Framework of the System
- ◀ Model Development - Building Classifiers
- ◀ Educational Data Analysis: Clustering Approach

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Chapter 3

Computer Networking: Featuring the Internet

Prepared By
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Preamble

Computer Networking is an essential omnipresent technology with explosive growth for the end goal of resource sharing. The most widely recognized resource shared today is the association with the web. The Internet is a massive open spiderweb of computer connections. It has turned into a most usually utilizing communicate medium. Subsequently Internet, a particular computer network system is considered as principle vehicle for discussing computer networking architecture with layered technology. This chapter highlights on key concepts of network technologies such as TCP/IP service model, layered protocol architecture, insights into internet applications, switching and routing in networks, transport layer services and protocols, internet protocol and routing and data link layer services.

Internet: A Nuts and Bolts Description

Rather than giving a one-sentence definition, we should attempt a more illustrative approach. The essential equipment and programming parts that make up the Internet are:

- Internet is an overall world-wide computer network that interconnects a large number of processing gadgets all through the world. A large portion of these registering gadgets are customary desktop PCs, Workstations, Servers, Mobile gadgets and so

on. In the Internet language, these gadgets are called as hosts or end systems.

- Protocols that control the sending and receiving of data inside the Internet. TCP (the Transmission Control Protocol) and IP (the Internet Protocol) are two of the most critical protocols in the Internet. The Internet's principle protocols are collectively known as TCP/IP protocols.

- End systems are connected together by communication links. Connections are comprised of various sorts of physical media: coaxial link, twisted pair copper wire, fiber optics, and radio spectrum. Diverse connections can transmit information at various rates. The connection transmission rate is regularly called bandwidth, and is typically measured in bits/second.

- End systems indirectly connected with each other through middle of the switching devices known as routers. A router takes information arriving on one of its incoming communication links and then forwards that information on one of its outgoing communication links.

- Rather than give a committed way between communicating end systems, the Internet utilizes a method known as packet switching that permits different imparting end systems to share a way, or parts of a way, in the sametime.

- The Internet is truly a network of networks. That is, the Internet is an interconnected arrangement of privately and publicly claimed and oversight systems.

- The structure of the interconnection among the different bits of the Internet, is loosely hierarchical. The chain of command comprises of end systems connected to local Internet Service Providers (ISPs) though access networks.

- The Internet is made conceivable through creation, testing and usage of Internet Standards. These guidelines are created by the

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Chapter 4

Operating System: Memory Management Strategies

Prepared by-
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An operating system is an essential component of a computer system. The primary objectives of an operating system are to make computer system convenient to use and utilizes computer hardware in an efficient manner. Just as processor scheduling, memory management is also one of the crucial task in the operation of any modern operating system that takes care smooth multiprocessing.

Most of the computers have a **memory hierarchy** as follows:-

At the top most is the small amount of volatile cache memory which is very fast but expensive, next is volatile main memory (RAM) that is usually in capacity of gigabytes, has medium – speed and also medium price. Then is nonvolatile disk storage with Hundreds of Gigabytes or Terabytes storage capacity, though slow in performance but cost wise cheap.

And it is the job of the **operating system** to **coordinatethese memories**and keep track the utilization of **thesememory**.The part of the operating system that handles this is called the **memory manager**. The Job of the memory manager is to

- Dividing memory to accommodate multiple processors
- Allocation of memory blocks to the processes when needed and Deallocation of memory when they are done
- Keeping track of allocated and free memory space

- To manage swapping between main memory and disk when main memory is too small to hold all the processes.

The Need for Memory Management

Main memory is the most critical resource in a computer system in regards of it memory accesses because when a process is executing its instruction has to be fetched from memory and most instructions requires data retrieval data from memory or writing data to memory or sometimes both. Thus memory has to managed efficiently. Also the advent of multi-tasking and multiprogramming,has made the OSes Memory managers task even more complex, because as the processes are swapped in and out of the processor, their respective code and data must also be swapped in and out of the memory, at very high speed without interfering with any other processes execution. Hence this makes memory management a very crucial task of the operating system.

Before proceeding with Memory Management techniques we need to know the basic requirements and the prerequisite knowledge of it, which are as such

- How CPU accesses the memory
- What is Relocation?
- What is meant by Protection?
- What does Sharing means?
- Logical and physical organization of

memory

How CPU Accesses Memory

CPU Can directly access only Main memory and registers .Registers are accessed in one CPU clock whereas main memory access are comparatively slow and may require many clock cycles. In multiprogramming environment, user processes must be restricted to access memory locations that belong to that particular process. To impose restrictions on access a base register and a limit register for each process is maintained. Base register stores the legal physical memory address and Limit register

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Chapter 2

Introduction to Java

Prepared by-
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Java is a fully object oriented programming language and computing platform first released by Sun Microsystems in 1995. Java is a programming language of choice for lots of applications and websites that will not work unless you have Java installed on a target machine, and more are created every day. Java is fast, secure, and reliable.

1.1 Different Types of Java Applications

There are mainly 7 type of applications that can be created using java programming:

1) Console Application

Console based applications are Java programs that run from a command prompt and do not display any GUI. Such programs have console based outputs.

2) Standalone Windows Application

It is also known as desktop application or window-based application which needs to be installed on every machine. AWT and Swing are used in java for creating standalone applications.

3) Web Application

A web application runs on the server side and creates a dynamic page for every user request. Currently, applet, servlet, jsp, struts, jsf etc. technologies are used for creating web applications in java.

4) Enterprise Application

An Enterprise application is distributed

in nature and offers an advantage of high level security, load balancing and clustering. In java, EJB is used for creating enterprise applications.

5) Mobile Application

An Mobile application is created for thin client or mobile devices with memory and space constraints. Currently Android and Java ME (Java Mobile Edition) are used for creating mobile applications.

6) Distributed Applications.

Distributed applications are applications that run on multiple computers within a network at the same time and can be stored on multiple servers. RMI (Remote Method Invocation) and CORBA (Common Object Request Broker Architecture) are the technologies which enable the designing of distributed applications in Java.

7) Database Applications.

JDBC (Java Database Connectivity) enables interfacing Java application with desperate database management systems. It allows connection to variety of back ends for which compatible JDBC driver is available.

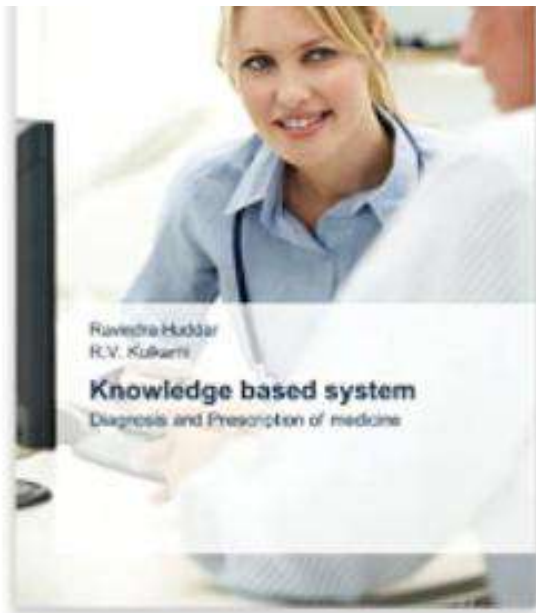
1.2 Difference Between C++ and Java

- Program Structure
- Memory Management
- No support for pointers
- No support for multiple inheritance
 - Diamond Problem
- No global variables and functions
- No support for operator overloading
- Multi threaded
- Distributed
- Architecturally Neutral

Program Structure

The structure of a typical C++ program is shown below:

```
class<class_name>
{
    // data members
    // member functions
};
```



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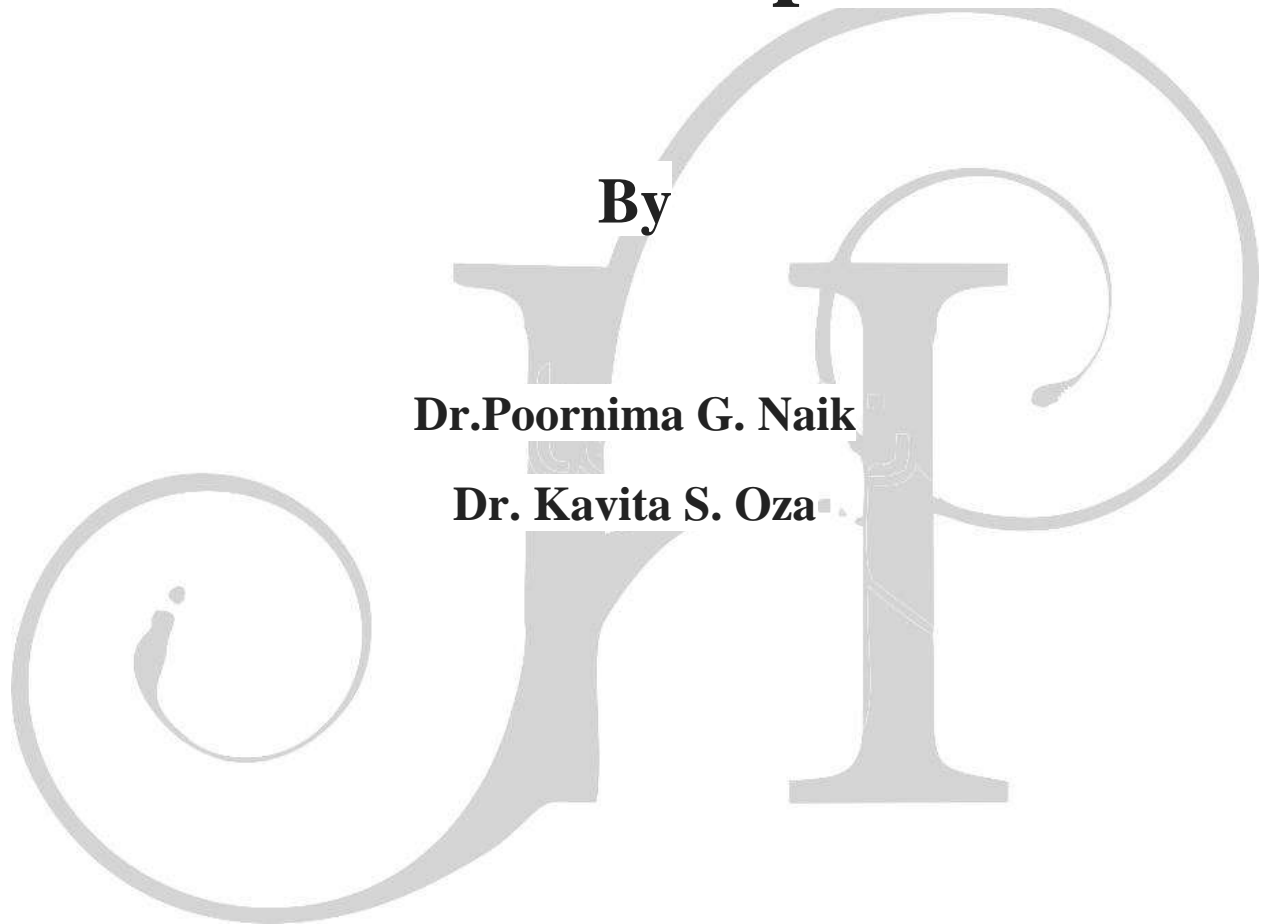
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A Comprehensive Guide to Crack Java Aptitude

By

Dr. Poornima G. Naik

Dr. Kavita S. Oza



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Dr.Poornima.G.NaikDr. Kavita.S.Oza

Preface

It gives us an immense pleasure to bring out a book on Java concepts entitled ‘**A Comprehensive Guide to Crack Java Aptitude**’. This book is intended to serve those who have just started their tour of Core Java. In this book, we have tried to stick to how, why and what of Java rather than what a typical book of Java offers. It serves as a reference material for those who have just started learning Java and want to learn more of Java internals. This book will help you to fill in the “gaps” by answering several ‘why’ and ‘how to’ questions in Java. To understand the contents of this book a working knowledge of Java and some basic concepts of Java are required. This is not a complete reference to Java, so some familiarity with Java is essential.

The books on core java currently existing in market are conventional in their approach in putting the core concepts and the reader has hard time in absorbing the core concepts from the conventional approach employed in the book. Further, in most of the occasions reader looks for quick solutions to the frequent questions that arise in his mind on core concepts. The current book uses experiential learning approach where reader plays an active role. The book is thought provoking and stimulates the reader to think beyond basics. Authors through their experience of teaching java for more than 15 years found that there is no book in market which has a pin point focus only on practical concepts with needed theory. There is a need for book which can give hands on approach to students for their core java concepts and handy reference to the candidates to prepare for their technical aptitudes as well as interview. The book will play a key role for the students during their academics and even during their job hunting. Authors have focused on two distinct approaches while writing the book, first one is to suspect and provide answers to the questions which arise in students mind while studying java and second one is what an expert might expect from a new comer in the IT industry through their interactions with students and alumni working in IT industries. . It’s a collection of simple and tricky questions with practically tested answers. Every program is associated with the output produced by it. Language used is very simple with necessary comments wherever required.

Java is evolving like anything beyond leaps and bounds and all these advanced Java technologies demand the thorough understanding of core Java concepts. In short Java is become heart of computer science curricula and basic need for employability. In view of this, the book

A Comprehensive Guide to Crack C Aptitude

By

Dr.Poornima G. Naik

Dr. Kavita S. Oza

Acknowledgements

Many individuals share credit for this book's preparation. We extend our sincere thanks to Late Prof. A.D.Shinde, the Founder Director and Managing Trustee who has been a constant source of inspiration for us throughout our career. His support is really a driving force for us. Also, we would like to thank Dr.R.A.Shinde, Hon'ble Secretary, CSIBER for his whole hearted support and continuous encouragement. We are grateful to Dr. M.M.Ali, Director CSIBER for his invaluable guidance. We take this opportunity to thank Dr.V.M.Hilage, Trustee Member, CSIBER, Dr. R.V.Kulkarni, H.O.D., Department of Computer Studies, Dr. R.R.Mudholkar, H.O.D., Department of Computer Science, Shivaji University for showing a keen interest in the matter of this book and extending all support facilities for the in-timely completion of this book. The material covered in this book is a systematic effort taken towards solving the various queries which we received from our students time to time, during our 15+ years tenure of teaching C at PG level. Last but not the least we thank all faculty members and non-teaching staff of department of computer studies, CSIBER, Kolhapur and department of Computer Science, Shivaji University, Kolhapur who have made contribution to this book either directly or indirectly.

Dr. Poornima.G.Naik

Dr. Kavita.S.Oza

Preface

It gives us an immense pleasure to bring out a book on C concepts entitled ‘**A Comprehensive Guide to Crack C Aptitude**’. This book is intended to serve those who have just started their tour of C. In this book, we have tried to stick to how, why and what of C rather than what a typical book of C offers. It serves as a reference material for those who have just started learning C and want to learn more of C internals. This book will help you to fill in the “gaps” by answering several ‘why’ and ‘how to’ questions in C. To understand the contents of this book a working knowledge of C and some basic concepts of C are required. This is not a complete reference to C, so some familiarity with C is essential.

C is one of the oldest languages still having its prominent position in IT industry as it forms the basis for employment. It is learnt at School level to Postgraduate Level. In the boom of new languages emerging everyday still there are system level projects which are developed using C. In short C is become heart of computer science curricula and basic need for employability. In view of this, the proposed book aims at providing understanding of C language in a very simple way in the form of short aptitude questions and answers. C is one of the most popular language due to its versatile nature. C forms the basis for developing other programming languages like Java, it is also main source for developing Operating Systems like Unix/Linux. Every Company while recruiting the students first check their C language compatibility in the form of technical aptitude. So ‘C’ becomes one of the stepping stone for the career of any student. The proposed book aims at providing the essentials of C language needed for employability.

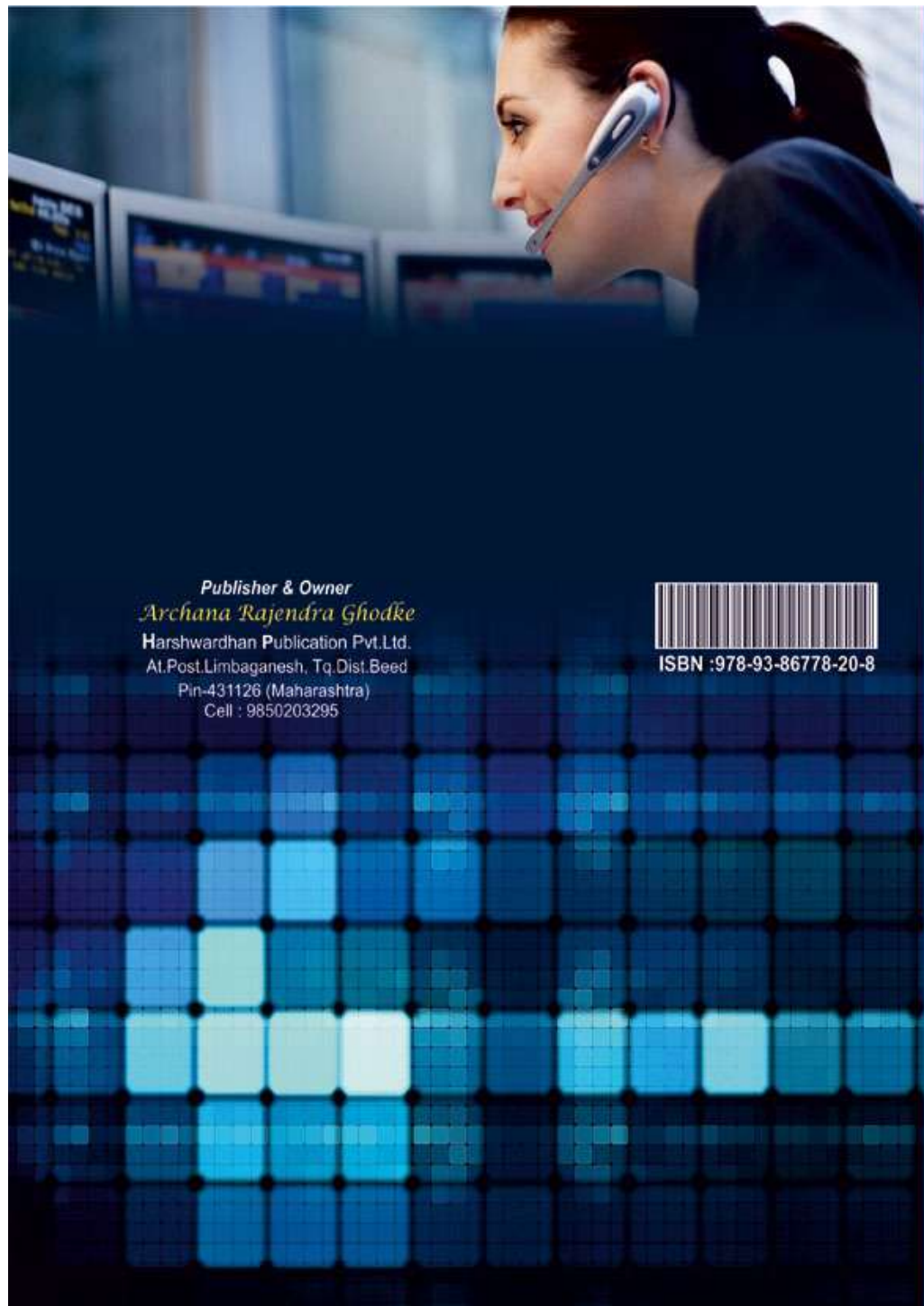
There are plenty of books available in the market on C language. These books are conservative in their approach in putting the core concepts. The proposed book is collection of technical questions collected from various IT companies used by them for recruitment. Authors through their experience of teaching C for more than 20 years found that there is no book in market which has a pin point focus only on technical concepts with needed theory for employability. There is a need for book which can give core C concepts in simple and interesting way with compact number of lines. Proposed book is handy reference to the candidates to

prepare for their technical aptitudes as well as interview. It will help students during their academics and even during their job hunting. Authors have used two approaches while writing the proposed book one is the questions which arises in students mind while studying C and second one is what an expert might expect from a new comer in the IT industry through their interactions with students and alumni working in IT industries. It's a collection of simple and trick questions with practically tested answers. Here 251 questions covering all core concepts of C language are discussed along with output and explanation for output. Language used is very simple with necessary comments wherever required. The book is the result of the questions collected from the various resources available on the internet whose references are provided at the end of the book. The authors have tried to provide more conceptual insight in to the c constructs unleashing the C internals both textually and visually on many occasions. The most threatening concepts of C such as pointers, unions can be easily comprehended from their memory representations. The same methodology is adopted whereas needed.

As per authors knowledge there is no book in which C aptitude questions are made interesting and simple to motivate student learning. The current book is fully dedicated to hands on approach which will instill and create interest among students. As students are not much interested in long theory and find it uninteresting. Proposed book will make students active user as they have to execute the programs given and check the output. Book provides required pin point knowledge without any unnecessary theory associated to it so it helps in quick learning. Complex topics like pointers , abstract data types, variable declaration issues have been explained in very simple language in the form of questions and answers which makes it more interesting. C is interdisciplinary in the sense it is not only part of Computer science but is also part of other faculty curricula like MBA, Electronics, Mathematics, Bioinformatics, Biotechnology, Nano- science, Physics etc. so proposed book will prove to be a good reference book. It stimulates interactive learning due coverage of all concepts in the form of questions and answers.

Dr. Poornima.G.Naik

Dr. Kavita.S.Oza

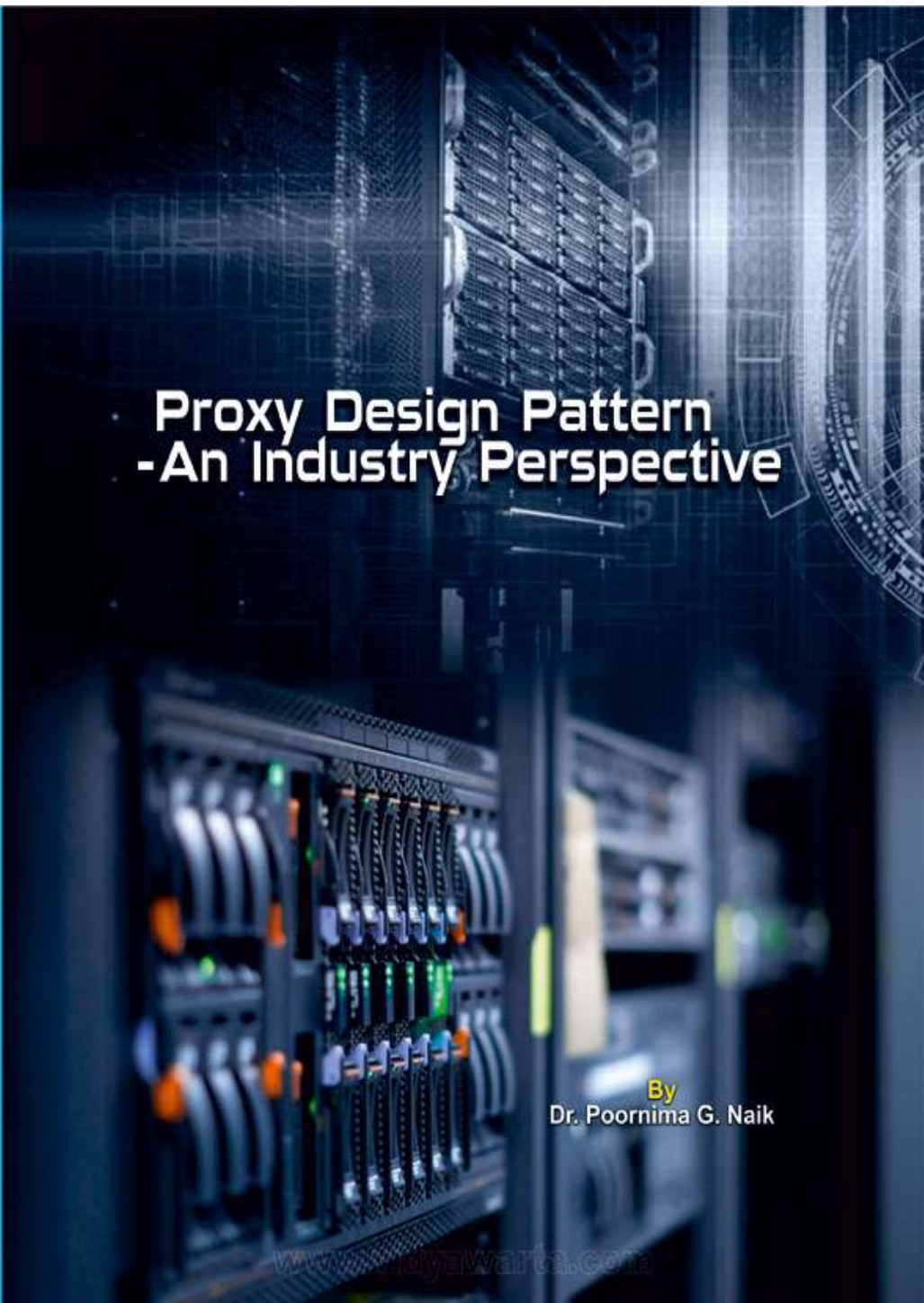


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Proxy Design Pattern - An Industry Perspective



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By
Dr. Poornima G. Naik

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Dr. Poornima G. Naik

Preface

It gives us an immense pleasure to bring out a book entitled '**Proxy Design Pattern - An Industry Perspective**'. The book is intended to serve those who have just started their long journey in software development. The book deals with some of the best practices in software design and development.

Design patterns are based on some of the best practices adapted by experienced object-oriented software developers. Design Patterns are very popular among software developers. Design patterns are formalized best practices that the programmer can use to solve common problems when designing an application or system. A design pattern systematically names, motivates, and explains a general design that addresses a recurring design problem in object-oriented systems in a language independent manner. It describes the problem, the solution, when to apply the solution, and its consequences. This book is intended to serve those who have just stepped in to software development by providing them issues related to design and solutions for the same. Design Patterns offer best practices for solving commonly occurring problems in software development and are proven solution approaches to problems belonging to a specific category. They provide a guideline for an inexperienced developer on issues related to software development in real world application development and facilitate in robust software development. Some such design patterns are singleton, observer, façade, adapter to name a few. Design patterns are independent of languages and platforms and offer developers a common language for software development independent of technology and language and are based on basic principles of object oriented analysis and design techniques conforming to abstraction, inheritance, polymorphism, delegation, composition, aggregation. Design patterns have their origin in the book entitled "**Design Patterns - Elements of Reusable Object-Oriented Software**" by Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides, commonly referred to as Gang of

Four (GoF). The 23 Gang of Four (GoF) patterns are generally considered the foundation for all other patterns. They are categorized in three groups: Creational, Structural, and Behavioral.

There are many issues to be meticulously observed and followed in the case of large software designs. Overlooking any of these aspects results into problematic a software. Programming by contract assumes both sides in a transaction understand what actions generate what behavior and will abide by that contract. The second principle in object-oriented programming is that, it is beneficial to assign responsibilities to classes in a way that keeps cohesion high. Further the principle of least knowledge communication with only immediate neighbours which address software maintainability issues. Open Closed principle dictates that software entities like classes, modules and functions should be open for extension but closed for modifications.

The book is thought provoking and stimulates the reader to think beyond basics. Author through her academic experience of more than 15 years found that there is no book in market which has a pin point focus only on practical concepts with needed theory. There is a need for book which can give hands on approach to students for brushing up their software design basics and handy reference to the candidates to prepare for their internship projects in industry. The book will play a key role for the students during their academics and even during their job hunting. Language used is very simple with necessary comments wherever required.

How this book is organized

The series is designed in a manner that tries to manage a logical progression through implementation of Proxy Design Pattern – starting with the most fundamental model 1 to the most Generic Model 7. Each chapter deals with the refinement of the model presented in the previous chapter addressing its drawbacks one at a time. **Chapter 1** gives a formal introduction to Software Design Pattern, their categorization. The purpose of each design pattern is briefly mentioned. **Chapter 2** provides implementation details of Model 1 which offers a console

based interface to an end user and simulates user interaction. The purpose of the module, module requirement specification, system requirements, application architecture is provided along with a complete source code in each case. **Chapter 3** is the refinement of the model described in Chapter 2 which provides a GUI to an end user for displaying a single proxy object. On clicking the proxy, the real object is instantiated which displays a detailed information about the product. **Chapter 4** through **Chapter 7** successively refine the model to instantiate multiple proxy objects, storing the configuration information pertaining to proxy and real image dimensions, no of proxy products to be accommodated in a single row persistently in an XML and JSON file. Retrieving the persistent product information stored in back end database management system. Finally, I have ended with the most generic version of the model where the end user can select between two different options available for storing configuration information in XML file format or JSON file format and retrieve the product information from either MS-Access, MySQL or Oracle database. In the subsequent books I intend to explore few more software design patterns.

Dr. Poornima G. Naik

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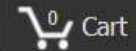
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Cost-Effective 3D Stereo Visualization for Creative Learning

R. S. Kamath (Chatrapati Shahu Institute of Business Education and Research, India) and R. K. Kamat (Shivaji University, India)

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Abstract

Using a pedagogic case study of development of three dimensional (3D) stereo visualization suite, in this chapter, the authors exemplify the emerging paradigm shift of educational technology progressively from simulation to virtual reality (VR). We present in this chapter transformation of higher education archetype using VR which is poised to create a whole new meaning for the young learners. It mainly personifies the computer generated three-dimensional environments that put forward the viewer an intense feeling of being immersed in an artificial world. We clearly demonstrate exploiting a 3D stereo visualization system in learning environment for bringing in an experiential learning experience of real industrial scenario in the classroom itself. We present the design and development of 3D visualization tool that embodies complex datasets in virtual environment. Thus the present chapter epitomizes as regards to the significance of VR in edification that impacts creative learning without using real tools on a less sophisticated technological platform.

Chapter Preview

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Cost-Effective 3D Stereo Visualization for Creative Learning

E

R. S. Kamath*Chatrapati Shahu Institute of Business Education and Research, India***R. K. Kamat***Shivaji University, India*

INTRODUCTION

Technology-enhanced learning which has become a reality with the pervasive penetration of Information and Communication Technology (ICT) in almost all the walks of higher learning is by now not a new concept, but is still quite new in many educational institutions and settings. The pragmatic view by many researchers, first hand entails, that the chalk-and-talk environment is being both less and less relevant and effective to 21st Century digital age students, and does little or no justice to the learning of academically underprepared students (Dongale, Patil & Kamat, 2015). Especially in the domain of 'Engineering Education' it is clearly evident that Progress in computers and various technologies have changed traditional methods for teaching. Previously dominated by simulation and animation, now the educators are realizing that both the above said tools and techniques alone cannot substantiate true real-sense learning for users. This explores need for more advanced technologies in order to improve learning. In this context, the VR technology has found numerous applications in the field of education. The growth dynamics VR area reveals it's market size to \$407.51 million which will encompass more than 25 million users by 2018 (Marketsandmarkets.com, 2015). The main challenge of VR technology, however is the exorbitant cost due to the inherent sophisticated hardware and software which inhibits its inculcation in the education paradigm. In the backdrop

of above, we present a cost effective 3D stereo visualization system conceived, designed and developed by us for creative learning in the most cost effective manner.

The chapter is structured as follows: We open up with a brief overview of technology inculcation in education, which showcases the gradual progression from simple simulation and animation techniques to more sophisticated ones like VR. We also present the very notion of VR for the benefit of the broad audience of the chapter. The focus then shifts to the VR tool we developed, its system architecture, technical features and cost effectiveness. The manuscript then actually portrays setting the experimental environment for VR based pedagogy and thereby highlights its potential role in presenting the insight in realization of experiential learning in different domains.

BACKGROUND: PROGRESSION OF EDUCATION TECHNOLOGY FROM SIMULATION, ANIMATION TO VIRTUAL REALITY

With the embryonic digital age, there has been intense discussion all over the globe, particularly in the last decade about the use of technology for personalizing the learning environment. VR is the fascinating area in computer application research (Vafadar, 2013). In recent years, 3D technologies in modeling, printing and stereoscopic have symbolized the true cutting edge in educational

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07. IMPACT OF PERSISTENT & NON-PERSISTENT PESTICIDES ON AGRI-ECOSYSTEM

Dr. Vitthal B. Patil,

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Human interference in the natural processes has created many irreversible changes in both terrestrial & natural ecosystems. Managing numbers & distribution of certain plants & animals in Agri-ecosystem has resulted in upset of many ecological processes & principles. Food chains are very seriously damaged & resulted in outbreak of many diseases. Cultivation of high yielding, short duration as well as improved & genetically modified (GM) varieties of plants & animals posed vulnerability towards pest attack. Change in weather conditions & Climate busted them. To overcome this problem Pesticides, a category of toxic & hazardous chemicals entered agriculture. They efficiently controlled pests but raised many environmental issues. They are like a double edged sword. They should be wisely used. Pesticide is an umbrella term covers large number of hazardous chemicals specially designed to kill/control a target organism called as pest. Pest may be insect, animal, plant or microbes. Use of both persistent & non-persistent Pesticides is responsible for upset of ecological processes. It has adverse effects on both natural ecosystems & managed agri-ecosystems. Pesticide use has adverse impacts on all biotic & a-biotic components of ecosystem. They have detrimental effects on properties of these precious natural resources like soil, air & water. Sustainability of these resources & ultimately health of human beings is at risk. Persistent Pesticides residues remain in ecosystem for many years depending on its half-life. It enters food chain & then get transferred from one organism to other organism in higher trophic levels. This transfer results in accumulation of higher quantities of it in trophic levels, called as bio-accumulation & consequently results in bio-magnification. Non persistent Pesticides affect beneficial organisms, being more toxic affect human beings also & repeated use results in development of resistance in target organism. Thus both persistent & non-persistent pesticide use has serious environmental consequences on sustenance of agri-ecosystem.

Key words- Persistence Pesticides, Agri-ecosystem

Introduction

Modern agriculture employ's Scientific & Technological tools. The factors & conditions which affect the growth & development of useful plants &

animals are controlled by these means.

Today's tropical agriculture is traditional, transitional & modern farming systems. Crop production system vary with crop, time, location & the level of technology of

that area. Protection of crop is becoming one of the essential features of agriculture. Any organism, which is harmful or potentially harmful to plants, live-stocks or human can be called Pest. Disease is the product of the interaction between the causal organism, host & certain factors within the environment. Pest have arisen in two major ways

1. Natural selection
2. Alteration of ecosystems(Human Activity) which includes selective Breeding, introduction of new plants or animals into environment, monoculture, changes in social habits, & use of toxic chemicals like pesticides.

In the present era pests are managed by use of chemical pesticides. Each pesticide or pesticide class comes with a specific set of environmental concern. Such undesirable effects have led many pesticide to be banned, while regulations have limited or reduced the use of others. Over time pesticides have generally become less persistent & more species specific, reducing their environmental footprint.

Soils cover large part of the land surface of the earth. They are three Dimensional, often contains distinct horizons(Layers) & vary with climate, parent material & topography. They also change over time. Soil is a mixture of minerals, organic material, living organisms, air & water that together

support the plant life , which are primary producers in all ecosystem. Soils largely determine the effective functioning of both natural & agricultural ecosystems. Together with the climate, the properties of soils determine the potential biological production of land. Soil properties affect the qualities of surface water & the atmosphere. Farmers are particularly concern with the soil. Urban dwellers should also be concerned about soil because soil health determines the quality & quantity of food they will eat. Food or nutrition is a prime factor which determine health of human beings.

Pesticide use has reduced quality & quantity of biomass & reduced capacity of soil to support biomass production in both natural & agri-ecosystem, resulting in serious environmental consequences.

To overcome impacts of pesticides on environment & to maintain good soil health new strategies of pest management are invited. Present paper give emphasis on study of pesticide impact on soil & other related natural resources and their control for sustainable agriculture.

Material & Methods

The present research work was undertaken to study the environmental consequences of pesticide use. Objectives of the research was to study the reason behind the selection of chemical method of

pest management by farmers & the environmental impacts of pesticide use. Emphasis was given on the Influence of pesticide use on ecological systems. As dimensions of ecosystem can not be precisely defined, survey was done in intensively cultivated eastern area of Sangli District. Grape is the major fruit crop of this area. Many farmers cultivate Grapes to sell it as a fresh fruit in market and others cultivate it for processing at farm level. They process grapes to resins. Survey was done for use of agrochemicals. While surveying it was found that these farmers use number of agrochemicals. This kind of cultivation is referred as intensive agriculture. Soil samples were collected by using appropriate sampling technique from cultivated area. These samples were analyzed for fertility/nutrient status. Conventional methods of analysis were used. Organic matter was estimated by Walkely & Black Rapid Titration Method. Available potassium was estimated by ammonium acetate extraction & subsequent flame Photometric. Available Phosphorus was determined by using colorimetric method & available Nitrogen was measured by Alkaline $KMnO_4$ method. DTPA extract of soil was used for micronutrient analysis by Atomic Absorption Spectrophotometer. Soil was also tested for microbial count.

Growth pattern were seen in the field for deficiency symptoms as well as for malformation. Emphasis was given on the outbreak of particular organism in relation to pesticide use.

Results & Discussion

Sustainability is a complex concept. The property of Biological Systems or natural resources to remain diverse & productive indefinitely is called as sustainability. Agriculture is a purposeful work through which elements in the nature eq. natural resources are harnessed for the production of useful plants & animals for human welfare. Mismanagement in the agricultural practices has led to the irreversible changes in the ecological processes which will not support productivity in future.

Soil flora & fauna has a great importance in nutrient recycling in ecosystem. They play crucial role in maintenance of soil health & nutrient availability. Pesticide use has found dramatic changes in number & distribution of both flora & fauna. It was found that microbial flora & fauna in the pesticide used area was dramatically affected. That was also reflected on growth patterns of crop grown in that area.

Persistent pesticides

Pesticide use has direct and indirect effects on ecosystems. Persistent pesticides

like Chlorinated Biphenyls eq. DDT kill not only the unwanted target pest but also destroy non target organisms. These non target organisms are helpful for sustainable ecosystems. These organisms play a critical role in food chain. Many of them are pollinating agents. This results in decreased productivity of crop plants & also in the upset of ecological food chains. This phenomenon may result in increased population of certain organisms whose predator has eliminated. This way many organisms number will explode & result in emergence of new diseases. Being persistent they are accumulated in soils, enters plants & then enter the food chain. As human being is at the end of food chain enters human body & gets accumulated in the body. It is reported that many are responsible for nervous disorders, liver & stomach cancer. Many of them are suspected carcinogen & may affect the delicate organs like liver, kidney as well as reproductive system of animals.

Pesticides may enter water bodies & has adverse effects on aquatic life & biodiversity.

Workers in the pesticide industries & workers in the field are exposed to many hazardous chemicals during process. Accidents during industrial processes pose threat to workers & common people.

Non-persistent or low Persistent pesticides

Many non-persistent or low Persistent pesticides, remain in the atmosphere for short period of time but because of high toxicity are harmful for non target organisms , human & wildlife eq. Organo-phosphate pesticides are responsible for causing muscular weakness, tremors & dizziness in animals.

Being non persistent they are repeatedly used, which develops resistance in target Insect/pest after a certain period of time. Thus effectiveness of these insecticides decreases considerably. This also results in use of higher concentrations of these chemicals for next time which may adversely affect human & wildlife.

Soil health Study

It is reported that fungicide use results in increase in bacterial population. Certain fungicides are toxic to soil arthropods. Captan like chemicals reduces the population of the useful soil invertebrates like springtails, earthworms & millipeds. It also affect useful algae at very low concentrations.

It was found that residues of herbicides decreases bacterial count & increases fungi count. This may result in outbreak of new fungal disease.

Pesticide use has adversely affected number & distribution of earthworms. The effect was reflected in decreased yield & quality of product. Soil flora & fauna plays

a key role in soil health management. It was observed that flora & fauna of study area was drastically changed. Food chains were seriously altered. This may also result in outbreak of new insect disease. Increased number of Thrips in study area was the suspected reason behind this. Thrip attack was a result of misuse of insecticides in the study area.

It was found that the available nutrient content of soil samples collected were High with respect to Nitrogen, K₂O & P₂O₅. Micronutrient content was also categorized as High. Thus all soil samples collected were rich in nutrient content. But still malformation found in the foliage of plants. That was due to complex interaction between plant & attack of thrips with response to pesticide misuse.

Integrated Pest Management (IPM)

It was found that Pesticide use in agri-ecosystem has created several problems in the agricultural sustainability. Requirement of our generation is to manage sustainability of soil & related resources. It is fact that without pesticides agriculture will not have sustainability. So this impact of pesticide on environment can be managed by applying Integrated Pest Management (IPM). It is a strategy of pest management whose goal is not eradication, rather to keep pest population below that which can

cause economic loss to crop production. This can be accomplished by an interdisciplinary approach. All strategies & methods of pest management are appropriately used in IPM. Pesticide use is reduced to minimum level. In brief, IPM is a pest management strategy that combines the principles of other pest management systems, but with reduced emphasis on the use of chemicals to reduce pest population below levels that can cause economic loss. Mechanical(Physical), Agronomical, legislative & biological methods are used sequentially. Use of Bio-pesticides is recommended as ecological principles like predation, parasitism & antagonism are explored.

Safe Pesticides

Safe pesticide use is allowed in IPM. Now goal of pesticide industries & regulatory bodies is to design & recommend safe pesticides. A safe pesticide used in IPM should be able to destroy the target pest within a short period (one or two weeks) & dissipate rapidly. This will reduce chance of entry of these chemicals in food chain.

Absence of synthetic pesticides means encouragement of wildlife. Consequently reduced risk of polluting nearby water system. Low level pesticide application ..more soil Organisms survival ..better soil structure & increased inherent soil fertility. More insects above ground, more food for spiders, birds & predators..Biodiversity maintenance

BOOK OF ABSTRACTS

2017



CHHATRAPATI SHAHU INSTITUTE OF BUSINESS EDUCATION AND RESEARCH, KOLHAPUR.

An Autonomous Institute Under UGC & Shivaji University
College with Potential for Excellence (CPE) - Phase III,
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International Conference on:

Demonetisation and Remonetisation: Issues and Challenges for Global Business

4th & 5th August 2017



55. Impact of Demonetization on Indian Economy: Challenges and Perspectives

Dr. J. P. Bhosale

Head, Research Centre, Arts, Commerce & Science College, Narayangaon, Pune.

The present research paper is focuses on concept of demonetization challenges and perspectives of demonetization and positive impacts of demonetization. The government has implemented a major change in the economic environment by demonetizing the high value currency notes = of Rs 500 and Rs 1000 denomination. These ceased to be legal tender from the midnight of 8th of November 2016. The proposal by the government involves the elimination of these existing notes from circulation and a gradual replacement with a new set of notes. The reasons offered for demonetisation are two-fold; one, to control counterfeit notes that could be contributing to terrorism, in other words a national security concern and second, to undermine or eliminate the "black economy" from the country. The present research paper is based on secondary data. It is conceptual in nature.

Keywords: Demonetisation, Black money, Cashless economy, Hawala transactions, Challenges and Perspectives.

56. A Study on Demonetization & It's Impact on Indian Tax System

Mr. Krishnat Chougale¹, Dr. B.S. Sawant²

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The demonetization had a great significant and immediate impact on the state of the Indian economy. In this paper, an attempt has been made to find impact of demonetization on the Indian Tax System. Demonetization is the act of a currency unit of its status as legal tender. The November 8 announcement by Government to Demonetize high value notes has in one stroke junked 86% of the currency in circulation and holders of the discontinued notes can deposit them in banks before the end of the year and withdraw money in new currency. The money has to be accounted for and taxes paid 50% on voluntary disclosures of unaccounted money and 85% for any failures.

Keywords: Demonetization, Types & Changes in Direct and Indirect tax

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On

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New Paradigms in Banking and Financial Services

Dr. Amardeep D. Jadhav

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(An Autonomous Institute) Kolhapur, Maharashtra

ABSTRACT

Banks across the world are deploying this kind of technology as a prelude to a future that is increasingly driven by technology — a future characterized by instant payments, anytime-anywhere services, individualized products, and virtual currencies, and perhaps run by invisible banks. Until recently, much of the industry's attention has been on improving Return on Equity (RoE) as many financial institutions deal with economic uncertainties, restrictive regulatory environment, intense competition, technology-driven disruptions, and overhauling legacy processes to meet changing customer requirements. However, more and more banks are putting a new focus on innovation as many financial institutions re-deploy savings from efficiency initiatives and strategic cost programs into investments — including in technology. Additionally, buoyed by a positive revenue momentum, improved performance and better RoEs, the industry is shifting its attention to sustainable growth measures. BFS companies are considering alternative operating models and evaluating emerging technologies to achieve a wide range of benefits. A look at some of the key trends re-shaping the BFS industry makes it easier to understand the transformations being undertaken by financial institutions to stay relevant in the future. These trends include the ongoing digital transformation, the emergence of FinTech companies, the increasing role of Artificial Intelligence (AI) and robotics, and re-thinking the concept of money.

Key Words: Banking, Financial Services, New Trends, Technology etc.

Key Points

- The banking and financial services industry is turning its focus toward innovation to prepare for a future that will be increasingly driven by technology
- Key trends driving these innovations include ongoing digital transformation, collaboration with FinTech, and the increasing role of artificial intelligence and robotics
- Banks and financial institutions should re-define themselves as agile technology companies as customer preferences, demographics and lifestyles change

Trend 1: Accelerating Focus on Digital Transformation

The industry is witnessing a continued and aggressive focus on digitization and the adoption of new and emerging technologies to bring in operational efficiencies, enhance speed-to-market and deliver superior customer experiences.

Banks are cutting down spends on branches to invest in self-service digital channels as mobile and online banking become more popular among customers. Digital wearable devices, which pack the power of smartphones, are making it increasingly feasible for banks to offer targeted services to customers.

Trend 2: Emergence of FinTech Companies

Many banks are seeking to exploit the opportunities presented by digital, either by leveraging the technologies in-house or by partnering with FinTech companies. Initially, these companies were seen as competitors taking advantage of the void that was created by the BFS industry's inability to keep up with technological breakthroughs.

However, today, bank-FinTech partnerships are increasingly the norm, with the latter providing marketing, administration, loan servicing or other services enabling banks to offer tech-enabled banking products. Banks are

A Step By Step Beginner's Guide for Installing Softwares on Ubuntu 16.04 LTS



Mr. Mahantesh B. Patil
Dr. Poornima G. Naik

**A Step By Step Beginner's Guide
for Installing Softwares on Ubuntu
16.04 LTS**

By

Mr. Mahantesh B. Patil

Dr. Poornima G. Naik



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Mr. Mahantesh B. Patil

Dr. Poornima. G. Naik

Preface

It gives us an immense pleasure to bring out a book entitled '**A Step By Step Beginner's Guide for Installing Softwares on Ubuntu 16.04 LTS**'. The book is intended to serve those who have just started their journey of learning Ubuntu by unleashing some of the core concepts of Ubuntu and providing insight into how different commands work under the hood. The book is intended to place the novice learners on the right track who have just started their tour of learning Ubuntu.

The book is intended to serve multitude of learners from students looking for better placement opportunities in industries to academic staff by providing valuable guidance on teaching pedagogy to software professionals aiding in better system administration. The reason for selecting the topic is due to its wide application, wide range of audience spread out in various undergraduate and postgraduate institutions and software industries.

How the book benefits the student learners

- ✓ Prepares the students for campus recruitments.
- ✓ Clears the Ubuntu concepts and trains for undertaking internship projects.
- ✓ Provides a learning methodology.

How the book benefits the Academic Staff

- ✓ Each chapter incorporates chapter objectives and associated chapter outcomes.
- ✓ Enables demonstration of concepts with suitable examples.
- ✓ Contains repository of in-built commands in Ubuntu

Salient Features of the Book

The book has been written in the way which makes it a unique of the kind in the following aspects.

1. Topic selected for book is the booming technology in the market.
2. It is an open source technology popular among developers as well as academicians.
3. Covers the theoretical concepts at depth supplemented with numerous hands-on exercises supporting the concepts.

4. At the beginning of each chapter the chapter objectives are clearly stated which are validated against the chapter outcomes at the end.
5. It can be used as an excellent reference material as well as text book by both software professionals as well as students.
6. The book has concepts explained in a very simple language for learners of all levels varying from novice to advanced.

The book is written in-line with the industry requirements and consists of 6 chapters from chapter 1 through 6.

Chapter 1 focuses on Free and Open Source softwares, Open Source Restrictions and Licensing Issues. Free and open source terminologies are most confusing among the readers which are cleared in this chapter. The chapter concludes with listing of various benefits and drawbacks of Free and Open Source Systems and a formal introduction to Ubuntu.

Chapter 2 offers installation guidelines of Ubuntu. Ubuntu is available in different flavours of which prominent ones are , Ubuntu desktop and Ubuntu server. This chapter gives step-by-step approach to installing both Ubuntu desktop and server. The highlight of the chapter is dual Booting Windows 7 and Ubuntu employing Ubuntu bootable USB prepared using Rufus tool. Also, the tips for recovering Ubuntu from System Crash are dealt with. User management is an integral part of system security which plays a key role in maintaining a secure system. Any compromise in user and privilege management will lead to a security hole and system being compromised. Hence user management is discussed at length along with other prominent concepts such as run levels and firewall configuration which one cannot afford to ignore.

Chapter 3 deals with linux file system and basic linux commands. The highlight of the chapter is introduction to Personal Package Archives (PPA) and Ubuntu package management software – apt. Also, installing software from Ubuntu software center is discussed at length.

Chapter 4 focuses on setting up different servers, web servers, file servers etc. on Ubuntu 16.04 LTS. In recent years, Linux distributions have increasingly transitioned from

other init systems to systemd. The systemd suite of tools provides a fast and flexible init model for managing an entire machine from boot onwards. Step-by-step guidelines for installing apache server, telnet server, FTP server, NFS server, DHCP server, DNS server, and SSH server are given.

Chapter 5 covers at depth installing peripheral devices on Ubuntu which includes installing printer driver, configuring local printer and network printer using Samba. The chapter concludes with installation of scanner on Ubuntu.

Chapter 6 is completely devoted to installation of different softwares on Ubuntu required primarily for educational institutions. This incorporates installing DosBox an emulator program which emulates an IBM PC compatible computer running a DOS operating system, exploring GCC compiler, installing JDK, Prolog, Python, PHP, Oracle 10g, and webmin. Installation of Java IDEs, Eclipse and NetBeans and Android Studio is also dealt with. Installation of MySQL and popular MySQL editor MySQL Workbench, installation of XAMPP stack are also discussed. The chapter concludes with installation of MS-Office using wine.

Mr. Mahantesh B. Patil

Dr.Poornima G. Naik

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CREATING AND MANAGING INSTITUTIONAL REPOSITORY USING DSPACE A CASE STUDY APPROACH

About Author:

Dr. Poornima G. Naik is currently working as a Professor in a Department of Computer Studies at Chh. Shahu Institute of Business Education and Research, Kolhapur. Her academic credentials are distinctly different. She has over 50 research papers in various international and national journals and symposia to her credit. She bears a varied and rich experience in the field of computer programming. Since last 20 years she has been associated with various graduation, Post Graduate Diploma and Post Graduate programs in Computer Science as a teaching faculty. Currently, she is working in thrust areas of computer science such as Web Technologies, Soft Computing and Internet security. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solutions. She has conducted and organized seminars and workshops on various cutting-edge technologies in computer science at university level. She is a prolific technical writer with excellent communication, analytical and technical skills.

About Book:

Chapter 1 focuses on introduction to Institutional Repository in general and DSpace. DSpace application architecture and data model have been discussed at length. Different technologies participating in DSpace GUI design have been highlighted. Workflow and authentication play a key role in creation of a repository. Hence greater emphasis has been given in covering these aspects of DSpace. Finally, the chapter concludes with listing of some major DSpace websites in the world. Windows is an operating system of choice of many academic institutions. Hence Chapter 2 deals with installation of DSpace in 64-bit Windows system. All the pre-requisite softwares required for the smooth operation of DSpace are discussed. Installation of PostgreSQL, Tomcat and DSpace on target machine are presented. Chapter 3 An exercise similar to Chapter 3 is presented on Ubuntu operating system. The major difference between the two is command-line interface of Ubuntu and user management. A greater emphasis has been laid on these two aspects. Starting Tomcat service at boot time using run level configuration is also highlighted. Chapter 4 presents DSpace user module which encapsulates the common tasks performed by an end user of DSpace such as logging into DSpace, changing DSpace password, submitting item to a collection, deleting and updating item in a collection, receiving e-mail updates, searching and downloading e-Content etc. Chapter 5 presents DSpace admin module and common tasks performed by DSpace super user which includes DSpace customization, editing DSpace metadata, creating users and groups, managing DSpace communities and collections, specifying authorization rules and supervision orders, generating statistical reports etc. which are discussed at length. Performing the above tasks using both GUI and command-line interface are presented. Chapter 6 presents a case study which focuses on creation and management of institutional repository using DSpace at CSIBER, Kolhapur. The detailed structure of CSIBER community is shown along with relevant screen shots. Finally Chapter 7 focuses on backup and restore in DSpace is covered at length. At the outset, the distribution of data in file system and databases is presented emphasizing on the crucial data required to be backed up for restoring system in the case of a failure. Backup and restore mechanisms are discussed separately on both Windows and Ubuntu systems. pg_dump tool required for taking backup of PostgreSQL database is also discussed. The various references employed in generating the content of a book are presented at the end.

Also available as an eBook



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Creating and Managing Institutional Repository
Using DSpace – A Case Study Approach

Dr. Poornima G. Naik
Dr. Girish R. Naik



Creating and Managing Institutional Repository Using DSpace – A Case Study Approach

By
Dr. Poornima G. Naik
Dr. Girish R. Naik

ENHANCING PHP CODING WITH CODEIGNITER

About Author:

Dr. Poornima G. Naik is currently working as a Professor in a Department of Computer Studies at Chh. Shahu Institute of Business Education and Research, Kolhapur. Her academic credentials are distinctly different. She has over 50 research papers in various international and national journals and symposia to her credit. She bears a varied and rich experience in the field of computer programming. Since last 20 years she has been associated with various graduation, Post Graduate Diploma and Post Graduate programs in Computer Science as a teaching faculty. Currently, she is working in thrust areas of computer science such as Web Technologies, Soft Computing and Internet security. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solutions. She has conducted and organized seminars and workshops on various cutting-edge technologies in computer science at university level. She is a prolific technical writer with excellent communication, analytical and technical skills

About Book:

CodeIgniter is an extremely light weight, high performance, open source PHP framework for developing websites in Model-View-Controller architecture. Chapter 1 focuses on system requirements for installation of CodeIgniter. Two different methods of installing CodeIgniter are explored, first based on creating CodeIgniter folder structure by extracting zip file and the second one using the composer. Basic components of framework are highlighted.. Chapter 2 explores MVC architecture in the context of CodeIgniter. Creation and location of model, view and controller components in CodeIgniter is discussed at length. The salient features of the chapter are, relative comparison between pre-defined URL helper functions that come with CodeIgniter and CodeIgniter URL which renders it SEO friendly. Chapter 3 is devoted to helper Classes and custom libraries in CodeIgniter which are time savers in rapid application development using CodeIgniter. A working application however trivial should provide an interface for data persistence. Considering the importance of data persistence Chapter 4 focuses on designing CRUD (Create Read Update and Delete) applications using Active record supported by database library of CodeIgniter. Highlight of Chapter 5 is session management support through built-in CodeIgniter classes where main focus is on session management employing session and cookie. The role of flash messages in generating transient messages is discussed. Chapter 6 and 7 deal with role of internationalization in developing multi-lingual applications and security in handling common vulnerabilities in web applications such as cross-site posting and cross-site request forgery, respectively. The role of CodeIgniter security class in dealing with these vulnerabilities is discussed.



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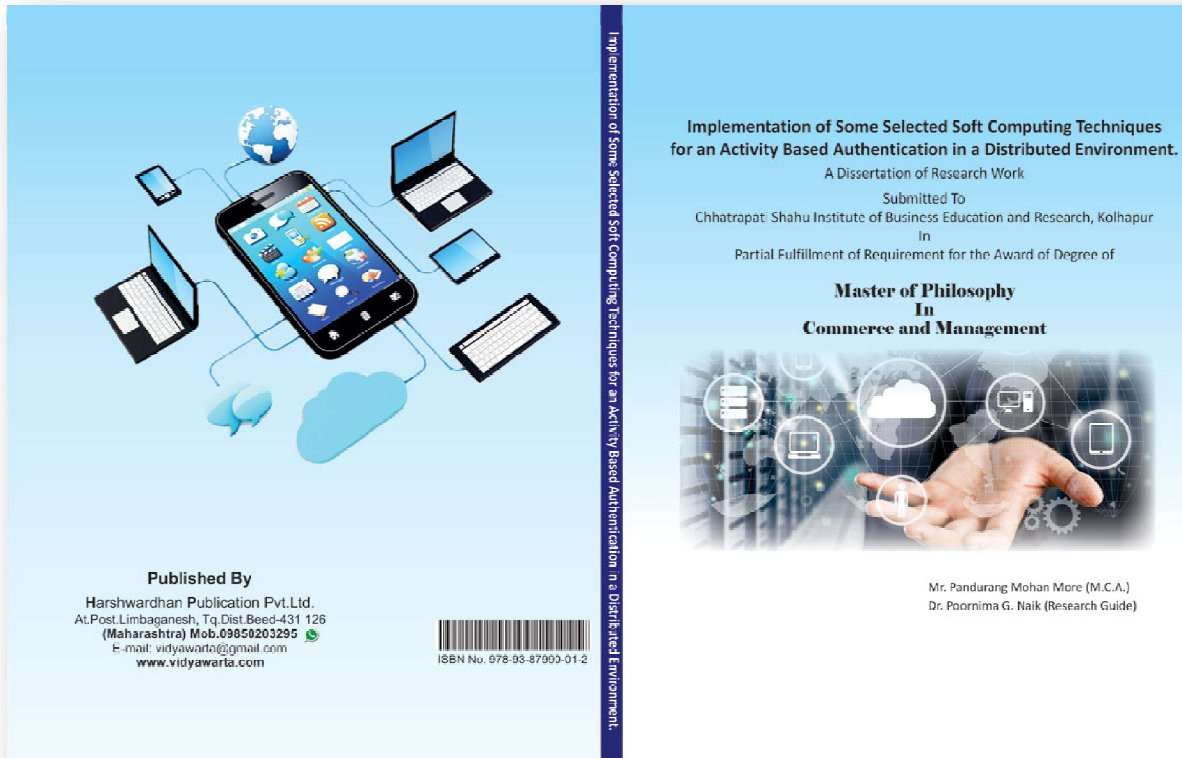
ENHANCING PHP CODING
WITH CODEIGNITER

DR. POORNIMA G. NAIK
DR. GIRISH R. NAIK

ENHANCING PHP CODING WITH CODEIGNITER

HANDS-ON EXPERIENCE WITH CODEIGNITER

DR. POORNIMA G. NAIK
DR. GIRISH R. NAIK



**IMPLEMENTATION OF SOME SELECTED SOFT COMPUTING TECHNIQUES FOR AN
ACTIVITY BASED AUTHENTICATION IN A DISTRIBUTED ENVIRONMENT**

**A DISSERATATION OF RESERCH WORK SUBMITTED TO
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RESEARCH, KOLHAPUR.**

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MASTER OF PHILOSOPHY**

**IN
COMMERCE AND MANAGEMENT**

SUBMITTED BY

Mr. MORE PANDURANG MOHAN (M.C.A.)

UNDER THE GUIDANCE OF

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**IMPLEMENTATION OF SOME SELECTED SOFT COMPUTING TECHNIQUES FOR AN
ACTIVITY BASED AUTHENTICATION IN A DISTRIBUTED ENVIRONMENT**

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CERTIFICATE

This is to certify that dissertation entitled “**Implementation of Some Selected Soft Computing Techniques for an Activity Based Authentication in a Distributed Environment**”, being submitted herewith for the award of degree of **Master of Philosophy in Commerce and Management** of Chhatrapati Shahu Institute of Business Education and Research, Kolhapur is the result of original research work completed by **Mr.Pandurang Mohan More** under my supervision and guidance.

To the best of my knowledge and belief, this work has not been submitted for the award of any Degree or Diploma of this university or any other University or Institute.

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DECLARATION

I, undersigned hereby declare that the dissertation titled “**Implementation of Some Selected Soft Computing Techniques for an Activity Based Authentication in a Distributed Environment**”, being submitted for the award of degree of Master of Philosophy in Commerce and Management by me to **Chhatrapati Shahu Institute of Business Education and Research, Kolhapur** is the result of independent research work carried out by me under the guidance of **Dr. Mrs. P. G. NAIK**, reveals my original work and conclusions drawn therein are based on the data collected by me.

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My novice knowledge of practical world would have not got me for finalizing my report, had it not been under the direction of nonetheless than **Dr. P. G. Naik** who really consented to be my research guide. I also thank the faculty members and staff of CSIBER, Kolhapur for their encouragement support as well as affection.

I have been uniquely fortunate in receiving encouragement from various honorable, but I must mention our Secretary and Management Trustee, **Dr. R. A. Shinde** as well as our Director, **Dr. M. M. Ali** and M.Phil. Programme Chairman **Dr. U. M. Deshmukh**.

I would also like to thank the all **staff members of Chhatrapati Shahu Institute of Business Education and Research, Kolhapur**. Lastly, I convey my reverential salutation to almighty for enabling me to take up and complete this task.

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DATE: -

(**Mr.Pandurang Mohan More**)

ABSTRACT

In the current information age, security has achieved a tremendous importance in e-commerce applications involving financial transactions. Non-repudiation, data integrity, data confidentiality and authenticity, have become an integral part of information security. There is a tremendous risk involved in the communication of a plain text over Internet.

The Internet is invaluable resource provider which at the same time increases the vulnerability of information systems and networks so that they can be used to facilitate attacks by criminals, unauthorized users and hackers. So, in order to overcome that problem the current research focuses on providing a solution in the form of some activity based authentication in distributed environment of an organization by suggesting and implementing few soft computing techniques.

The activity based authentication in distributed environment of any organization definitely provides advanced solution by using few soft computing techniques. The author hypothesizes that frequently-changing secret questions will be hard for attackers to guess. Activity based authentication can be achieved by genetic algorithm, neural networks, fuzzy logic etc. This security tool authenticates users at the operating system level in multi-user operating systems. It supports system administrators in limiting the ability of unauthorized users to disrupt system operations using a Genetic Algorithm and set of rules to track usage patterns, color code change, time based activity and object transition activity on the system.

In the current research, the author has generated an activity based distributed 3D password incorporating various activities where the authentication information is distributed over geographically separated multiple authentication servers. The key pair is generated using RSA algorithm which is encrypted using single-point cross over and mutation of bits at the extreme position. This further adds another level of security and renders the key unbreakable by an unintended user. In order to render the solution generic, the configuration information pertaining to the distributed environment can be stored in XML file which can be parsed using Microsoft's XML Parser and the activity related information can be stored in different servers which can be

encrypted using RSA algorithm. The technique employed combines RSA algorithm with Genetic Algorithm to offer a robust hybrid security framework in a distributed environment which is difficult to guess for an unintended user.

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Analysis of Twitter Data on Demonetization in India: An Opinion Mining Approach

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Abstract

Demonetization, the most talked issue since eighth November 2016 and has evoked solid responses from the supporters and critics of this activity. We report opinion mining approach to deal with unstructured tweets on Twitter to extort the emotions classification and polarity towards public opinion on demonetization. Here we created a twitter app to ingest data by calling twitter APIs. We retrieved 772 tweets on demonetization posted during 2nd week of July 2017 for the analysis. R Tool is used for performing this analysis. It can be noted from the emotions classification result that the most prevailing emotion expressed in the tweets is trust, indicating the amount of trust Indians had in the prime minister in going up against the black money in nation. A significant percentage of people also showed emotions of disgust, sadness and anger in their tweets. Furthermore, the polarity classification reveals that the negative tweets are more in number than the positive tweets.

Keywords

R system; sentiment; Twitter

Introduction

Prime Minister Narendra Modi's demonetization move on November 8 was the most critical moment on Twitter in 2016. The social network recorded 650,000

tweets in 24 hours and numerous more tweets in the next weeks. The greatness of these discussions by specialists and additionally ordinary citizens put the focus on India and driving a worldwide discussion on Twitter. Twitter has had a great hand in articulation of public supposition. The challenge lies in giving this voice a definition by extracting particular outcomes so we can head towards a better future by considering the opinions of people in general.

Opinion Mining is one of the quickest developing areas which utilizes the natural language processing, text mining and computational linguistic to extricate valuable information to help in the decision making process. The outflow of anguish, and in addition joy, can go about as a measure of acknowledgment or dismissal of specific choices. Many organizations, business companies particularly, utilize web-based social networking so as to increase some profit for their business. These media serve as an important information hotspot for providing real-time information that has stirred companies in diverse domains [5-7]. When contrasted with other medium Twitter is more reliable, hence the sentiment analysis on tweets posted on Twitter has the capacity to catch the real-time emotions.

Literature survey indicates crystal-clear possibility to exploit opinion mining approach for the analysis of twitter data on demonetization. Chandrakar has proposed forecast scheme using Bayesian system to foresee the result of demonetization, considering some of the dependencies [1]. The work revealed that the effect of demonetization has largely affected below poverty line population, than the other groups. Gupta and Singal have proposed a novel approach focused on region wise sentiments to provide sentiment analysis a new platform [2]. Goel and Patil acquainted a dictionary based approach with group the tweets on #Demonetization regarding positive, negative and impartial extremity [3]. They used shiny dashboard web application to present result of data analysis. A survey paper by Aggarwal reports literature survey, characterization, applications and challenges of sentimental analysis [3]. Yet another paper by Gaur et al. presents text mining approach for dealing with unstructured data of twitter utilizing R [8]. Patel et al. have explained the Naive Bayes classifier to classify twitter feeds into positive and negative sets. Authors have used polarity feature and frequency feature for the analysis [9]. Hridoy et al. talked about a methodology which permits utilization and interpretation of twitter data to decide public opinions [10].

In the backdrop of the study endeavors portrayed above, the present paper exploits opinion mining approach for the analysis of common person's perspective on demonetization using Twitter data. The rest of the paper is structured as follows; after a brief introduction, the second section deals with the methods and materials for demonetization tweets' opinion mining. The third section portrays results and discussion on emotions and polarity classification. The conclusion at the end divulges aptness of the opinion mining for Twitter data analysis.

Fostering Innovation, Integration and Inclusion Through Interdisciplinary Practices in Management

Machine Learning Approach for Employee Attrition Analysis

Dr. R. S. Kamath¹, Dr. S. S. Jamsandekar², Dr. P. G. Naik³

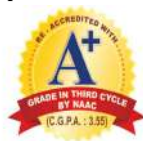
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ABSTRACT

Talent management involves a lot of managerial decisions to allocate right people with the right skills employed at appropriate location and time. Authors report machine learning solution for Human Resource (HR) attrition analysis and forecast. The data for this investigation is retrieved from Kaggle, a Data Science and Machine Learning platform [1]. Present study exhibits performance estimation of various classification algorithms and compares the classification accuracy. The performance of the model is evaluated in terms of Error Matrix and Pseudo R Square estimate of error rate. Performance accuracy revealed that Random Forest model can be effectively used for classification. This analysis concludes that employee attrition depends more on employees' satisfaction level as compared to other attributes.

INTRODUCTION

The process to identifying the existing talent in an organization is among the top talent management challenges and the important issue. For every organization, human resource plays a vital role in all strategic decisions. Satisfied, highly-motivated and loyal employees represent the basis of a company and which in turn have impacts on the productivity of an organization.

The prime objective of the present study is to analyze why some of the best and most experienced employees are leaving prematurely. This analysis also wishes to predict which valuable employees will leave next.

The rest of paper is designed as follows; Introduction followed by the materials and methods utilized in the present study. Then the third section summarizes the results and discussions of the HR attrition analysis. The conclusion at the end justifies the suitability of Random Forest model for this talent mining.

Materials and Methods

The dataset for the present analysis is taken from Kaggle, Machine Learning platform [1]. This is the simulated dataset comprising 15000 employee records classified into two categories (left or not left) based on satisfaction level, latest evaluation, number of project worked on, average monthly hours, time spend in the company, work accident, promotion within the past 5 years, department and salary. Table 1 gives description of employee dataset.

Table 1: Employee dataset description for talent mining

Attribute	Description	Data Type
satisfaction_level	Level of satisfaction (0-1)	Numeric
last_evaluation	Time since last performance evaluation (in Years)	Numeric
number_project	Number of projects completed while at work	Numeric
average_monthly_hours	Average monthly hours at workplace	Numeric
time_spent_company	Number of years spent in the company	Numeric
Work_accident	Whether the employee had a workplace accident	Numeric
Left	Whether the employee left the workplace or not (1 or 0)	Numeric
promotion_last_5years	Whether the employee was promoted in the last five years	Numeric
sales	Department in which they work for	String
salary	Relative level of salary (high)	String

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Demonetization - Impact on Manufacturing Industry

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Introduction

The demonization drive by the Centre has not only caught the average citizen unawares but has also thrown a spanner in immediate demand for automobiles, consumer durables, electronics industry in the country. This impact would obviously be more in the short term, but over long term India economy will revive stronger than ever.

8th November 2016 Prime Minister of India in a 40 minute long speech announced the demonetization of existing notes of Rs 500 and Rs 1000 during a televised address on Tuesday evening. PM announced that the notes of Rs 500 and Rs 1000 "will not be legal tender from midnight tonight" and these will be "just worthless pieces of paper."

It is not exactly a demonization exercise—as it does not dispense with the value of a note—but one that simply replaces the existing notes with new ones, thereby addressing the issues of counterfeit currency and black money. In countries where currency notes are demonetized, the denominations simply disappear from the system. But for simplicity I will continue with the word demonetization in this article.

Reasons for demonization

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Demonetization Of Currency: Impact On Indian Economy

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Abstract:

The government of India recently took a bold step to demonetize Rs 500 and Rs 1000 currency, which means that the legal tender of currency units is declared invalid from the specified date. Demonetization of currency means discontinuity of the said currency from circulation and replacing it with a new currency. Most of the people hailed the government strong decision, while poor were shocked by the move. The overnight decision changed the life of many as black money holders were worried about the pile of cash they were sitting on. Many poor daily wage workers were left with no job and income as owners were unable to pay their daily wage. It is no doubt a bold step taken by the government which will definitely help India to become corruption-free. In present article author is discussing the impact of demonetization on Indian economy in last six months.

Key Words: Currency, Demonetization, Effect of demonetization, Remonetization and Indian Economy.

Introduction

Before discussing on Demonetization let us try to understand the term Demonetization. Demonetization is the act of stripping a currency unit of its status as legal tender. (Investopedia n.d.). Demonetization is necessary whenever there is a change of national currency. The old unit of currency must be retired and replaced with a new currency unit.

Tax Payer's Awareness Towards E-Filing Of Income Tax Returns And Attitude Towards Income Tax In India, With Reference To Kolhapur City.

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Assistant Professor
Dept of Management,
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Samriddhi
MBA II Student
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Abstract:

A tax is a mandatory financial charge or some other type of levy imposed upon a taxpayer (an individual or a legal entity) by a state or the functional equivalent of a state in order to fund various public expenditures. Taxation in any economy is expected to perform multiple roles, it shall ensure availability of sufficient fund in the hands of government to finance its development activities and it shall redistribute the economic resources evenly or on priority basis to better the economic position of the weaker sections of the society. However India's performance in terms of Income tax payment is not very encouraging as about only 5.5 percent of the people who earn paying tax and only 15.5 percent of net national income is being reported to the tax authorities. Non reporting of income earn formulates parallel economy. The World Bank has estimated the size of shadow economy to be around 25 percent of India's total economy. With the intension of curb this black economy Indian Government demonetized its high denominated currencies although the demonetization has its own pros and cons. To restrain the expansion of black economy there is need of changing people attitude towards tax and imbibe the philosophy of paying tax as a moral and national responsibility. Besides tax payment and tax return filling procedure shall be up to an extent possible simple and citizens friendly. The Income Tax Department has initiated a service of e-filing income tax return. This research paper intends to assess tax payer's awareness e-filing of Income tax. Further an attempt is been made to study the attitude of payers towards Income tax payment.

Demonetization and Remonetization

Issues and Challenges for Global Business

Editors

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Chairman, M.Phil. Programme, CSIBER, Kolhapur

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Demonetisation – India's Leap into Economic Discipline

CA G. A. Samant
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The big notes of Rs.1000/- and Rs.500/- demonetization became illegal tender with effect from 9th November 2016 and thus hoarding and holding of the same became illegal. Any such notes deposited in the bank would be scrutinized for its legal and authentic source in the hands of the depositor and any heavy deposits not supported by authentic legal backup above particular limits would be considered fictitious and thus 'black'. The limits were Rs.250000/- for individuals and Rs.1250000/- for businesses, deposited in bank current accounts. Many misconcepts prevailed and many persons tried to utilize the scheme for laundering their black money into 'white' by adhering to very innovative modes of planning, that only Indians could think of! But they forgot that 'big brother was watching' in true earnest.

Many people tried to resort to weird methods of conversion of black money into white, thus trying to misuse the mechanism and modus operandi of the scheme,

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Demonetization - Impact On India's Foreign Trade

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Abstract

India has witnessed many macro economic reforms, which had influenced at a large scale functioning of its economy. Few of them were like opting import substitution, public sector production models, economic planning, and 1990's new economic reforms and in recent Demonetization. Demonetization is one of the bold step which is taken by newly formed and absolutely people mandated government. Having limitations of infrastructural deficiencies, government went ahead to withdraw Rs 1000 and R500 notes from the money circulation. This had great troubles faced by all the stakeholders of the economy including external sector.

Remonetising the economy is also been implemented on immediate basis by issuing new designed currency of Rs 500 and Rs 2000 to face the immediate obstacles in the process. In this paper the authors would like to study the impact of demonetization on external trade, how far this has impacted on both India's Exports and Imports of the economy. Though this policy was implemented last year, the impact is expected to be significant in the current year.

Key words

India, fiscal policies, demonetization, trade, exports, imports, exchange rate, foreign exchange reserves

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Demonetisation – India's Leap into Economic Discipline

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ABSTRACT

Demonetization is the act of stripping a currency unit of its status as legal tender. In the act of Demonetization, the old unit of currency is retired and replaced with a new currency unit. Demonetization is necessary for the need of change of national currency. The Government of India declared that the 500 and 1000 rupee notes will no longer be legal tender from 8th November 2016. It opened a gateway to the increased transactions with financial institutes which is the basic step of Financial Inclusion. Financial Inclusion is a systematic effort to provide essential financial services to all and particularly to poor people. Main goals of financial inclusion are to provide access to a range of financial services including savings, credit, insurance, remittance and other banking / payment services to all bankable households and enterprises at a reasonable cost. The availability of quality financial services in rural areas is extremely important for the growth of the economy. This concept has been pushed up by Government of India through Demonetization move. With the implementation of demonetization and considering the country's agenda to improve financial inclusion This paper attempts to focus on studying role of Demonetization and its effect on Financial Inclusion in Indian Economy. The paper also deals with the studying benefits and challenges for moving towards the Financial Inclusion in India.

Keywords: Demonetization, Financial Inclusion, Digital Payment System.

Impact of Demonetization on the Hotel Industry of Kolhapur

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Abstract:

Hospitality industry is one of the robust growing industries in the world and a major contributor to the nations GDP. In context to the hospitality industry in India, this sector has always ascended irrespective of the various challenges faced. However the Demonetization decision taken by the government of India is a challenge that could make or shake the entire economy. The paper exhibits the impact of demonetization on Hotel industry of Kolhapur, as it is one of the famous historic and pilgrim cities of Maharashtra growing as a tourist destination and has huge number of visitors every year.

Keywords: Demonetization, Cashless, Hospitality Industry, Hotel industry, Revenue.

Introduction:

The country surfaced a critical decision of demonetization which jolted the black money market when the value of the 500 and 1000 rupees notes was no longer valuable from 8th November, 2016. Organized and the unorganized sectors of the economy were clueless about the consequences that they would face in the near future and its impact in the long run as well. This paper is based on a survey conducted in Kolhapur city after the period of

Demonetization and Remonetization

Issues and Challenges for Global Business

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Impact Of Demonetization In India: A Review

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Abstract

If we see the subsequent decisions taken by the new government in past three years, demonetization is the essential steps along with the recent GST. Both the trends and analysis can be studied with the different approaches as they are different prospective but contests with some same objectives. This paper studies the effects of the demonetization aspect rather than GST. The demonetization of currency had badly impacted to all the sectors in India but some sector impacted heavily as per the result revealed by market studies. The reason of demonetization may be positive from the point of government but the actual result revealing many pros and consequences where exact effects not studied by government and other party yet. All the study has different opinion but following same outcomes as negative effects towards economy in the short time span with respect to GDP, currency circulation etc. Paper basically measures review of demonetization (note bandi) and its impact on Indian economy.

Keywords: Scrapping of currency, curbing black economy, unsettling and the aftermath.

Introduction

The first demonetization took place in 1946 and Rs 1000 and Rs 10,000 notes were demonetized. Later in 1978, Rs. 1000, Rs. 5000 and Rs. 10,000 were demonetized. This is the third time demonetization has taken place. The first and second

Demonetization - Impact On India's Foreign Trade

Mr. V. R. Kishore Kumar,
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Abstract

India has witnessed many macro economic reforms, which had influenced at a large scale functioning of its economy. Few of them were like opting import substitution, public sector production models, economic planning, and 1990's new economic reforms and in recent Demonetization. Demonetization is one of the bold step which is taken by newly formed and absolutely people mandated government. Having limitations of infrastructural deficiencies, government went ahead to withdraw Rs 1000 and R500 notes from the money circulation. This had great troubles faced by all the stakeholders of the economy including external sector.

Remonetising the economy is also been implemented on immediate basis by issuing new designed currency of Rs 500 and Rs 2000 to face the immediate obstacles in the process. In this paper the authors would like to study the impact of demonetization on external trade, how far this has impacted on both India's Exports and Imports of the economy. Though this policy was implemented last year, the impact is expected to be significant in the current year.

Key words

India, fiscal policies, demonetization, trade, exports, imports, exchange rate, foreign exchange reserves

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Demonetization: A Gateway To The Cashless Economy

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Abstract

Demonetization is the act of stripping a currency unit of its status as legal tender. Demonetization is necessary for the need of change of national currency. The old unit of currency is retired and replaced with a new currency unit. The Government of India declared that the five hundred and one thousand rupee notes will no longer be legal tender from 8th November 2016. Demonetization affects the economy through the liquidity plane. Demonetizing is a progressive shift to a cashless economy with more focus on electronic transactions.

Cashless economy means all the transactions between two individuals will occur through payment gateways or through the plastic money. It is done with the main aim of uncovering the non-registered transactions. As the market is being globalised and the banking sector is growing people will move from cash to cashless system. The cashless system is not only necessity but also a need of today's society.

This paper discusses role of demonetization in Indian Economy and its effect on Cashless Economy. It also deals with methods of Digital Payments, Benefits and Challenges of Cashless Economy.

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Impact Of Demonetization Leading To Surge In Usage Of Credit And Debit Cards.

Dr. Renuka Trumbekar,
Assistant Professor,
CSIBER Kolhapur

ABSTRACT:

The research paper mainly focusses on study of the Impact of demonetization on Credit and debit card usage. The intensive persuasion for cash- less transactions by the Central and State Governments seems to be yielding multiple benefits.

The significant increase in the usage of both credit and debit cards not only lowers transaction costs but some of these help the issuers earn some fee income as well.

- After demonetization, there is a significant rise in the use of plastic money in India. The concept of paying by cash has become almost a history and a majority of consumers finds it more convenient to carry a single card to make any payment instead of carrying hard cash.
- Plastic money includes credit cards, debit cards, prepaid /Charge cards and smart cards that can be used for any kind of payment.
- Demonetization considerably impacted on "online shopping" in India. The usage of COD decreased considerably and People started favoring online payments using credit/debit cards and wallets.
- Its impact is felt by every Indian citizen and it affects the economy through the liquidity management.

Keywords: Demonetization, Electronic Payment System.

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Demonetization and Remonetization

Issues and Challenges for Global Business

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Cashless Goa: Are Self Help Group
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Demonetisation – India's Leap into Economic Discipline

CA G.A. Samant
Dr. C.S. Dalavi

Demonetization, to Start with was considered to be a Pandora's Box by many and a bad dream for professionals, especially Chartered Accountants and bankers. CAs had dual duty to perform. One to advice, guide and assist their clients and the other, to co-operate with statutory authorities in proper culmination of the real intentions of the scheme. This responsibility of the professional advisors and accountants increased many fold with the declaration of Pradhan Mantri Garib Kalyan Yojana – 2016, a voluntary black money declaration scheme.

The big notes of Rs.1000/- and Rs.500/- demonetization became illegal tender with effect from 9th November 2016 and thus hoarding and holding of the same became illegal. Any such notes deposited in the bank would be scrutinized for its legal and authentic source in the hands of the depositor and any heavy deposits not supported by authentic legal backup above particular limits would be considered fictitious and thus 'black'. The limits were Rs.250000/- for individuals and Rs.1250000/- for businesses, deposited in bank current accounts. Many misconcepts prevailed and many persons tried to utilize the scheme for laundering their black money into 'white' by adhering to very innovative modes of planning, that only Indians could think of! But they forgot that 'big brother was watching' in true earnest.

Many people tried to resort to weird methods of conversion of black money into white, thus trying to misuse the mechanism and modus operandi of the scheme,

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A STUDY OF STUDENT'S PERCEPTION TOWARDS CSR WITH SPECIAL REFERENCE TO POST GRADUATE STUDENTS OF KOLHAPUR

Ms. Anuradha Gaikwad,

Faculty at CSIBER

Ms. Bhakti Bhadra,

TPO and Career Development Centre Head at CSIBER

Abstract:

It has become very imperative for the consumers and employees to understand the concept of CSR as sustainable products play an important role in growth and development of an organization in a country as a whole. Corporate Social Responsibility gives an opportunity to the employees and consumers to contribute towards the society. And to do so, it is essential that the students who are the future employees as well as consumers are well aware of the term CSR. In the youth is going to play an important role in the society, this paper aims to study the Post Graduate students awareness and their perception about CSR.

Keywords: Perception, CSR, Post Graduate Students, Consumer Behavior

Introduction:

Corporate social responsibility (CSR, also called corporate conscience, corporate citizenship, social performance, or sustainable responsible business/ Responsible Business) is a form of corporate self-regulation integrated into a business model. CSR policy functions as a built-in, self-regulating mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards, and international norms. CSR is a process with the aim to embrace responsibility for the company's actions and encourage a positive impact through its activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere who may also be considered stakeholders.

CSR as a Concept:

Definition

We define corporate social responsibility strategically. Corporate social responsibility encompasses not only what companies do with their profits, but also how they make them. It goes beyond philanthropy and compliance and addresses how companies manage their economic, social, and environmental impacts, as well as their relationships in all key spheres of influence: the workplace, the marketplace, the supply chain, the community, and the public policy realm. — the President and Fellows Harvard University.

A MULTIDIMENSIONAL IMPLICATIONS OF CSR PRACTICES IN INDIA: A LITERATURE REVIEW

Revati R. Patil

(Asst. Professor,
CSIBER, Kolhapur)

Abstract:

This paper presents a roadmap of corporate social responsibility (CSR). It discusses the scholar's views on CSR and highlights the practices that have adopted or are currently adopting in India. The results showed that CSR implications in India are progressively managing. There is no general definition of CSR; however, various concepts are connoted into it. An initial conceptual framework of CSR is drawn reflecting the current practices and prospects for disciplinary strategies. Such a framework can be used in organizing and streamlining CSR elements.

Keywords: corporate social responsibility, CSR practices and CSR initiatives.

Introduction:

With the passage of the Companies Act, 2013 the mandate for corporate social responsibility (CSR) has been formally introduced to the dashboard of the Boards of Indian companies. The industry has responded positively to the reform measure undertaken by the government with a wide interest across the public and private sector, Indian and multinational companies. The practice of CSR is not new to companies in India. However, what this Act does is bring more companies into the fold. So, it is likely that the total CSR spends will increase. What is clear to many companies is that if increased spending is to achieve results on the ground – which is the intent of the Act – then it needs to be done strategically, systematically and thoughtfully.

Akesh Bharti Mittal Chairman, CII's Development Initiative Council and Vice Chairman and Managing Director, Bharti Enterprises)

In this context, the Multidimensional Literature Review On CSR Practices in India has to be included in the present research article by the author. The roots of CSR lie in Philanthropic activities such as donations, charity, relief work, etc.) of corporations, globally, the concept of CSR has evolved and now encompasses all related concepts such as triple bottom line, corporate citizenship, philanthropy, strategic philanthropy, shared value, corporate sustainability and business responsibility. Philanthropy and CSR is not a novel concept for Indian companies, however a few organizations are likely to struggle.

BOOK OF ABSTRACTS

2017



CHHATRAPATI SHAHU INSTITUTE OF BUSINESS EDUCATION AND RESEARCH, KOLHAPUR.

An Autonomous Institute Under UGC & Shivaji University
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International Conference on:

Demonetisation and Remonetisation: Issues and Challenges for Global Business

4th & 5th August 2017



55. Impact of Demonetization on Indian Economy: Challenges and Perspectives

Dr. J. P. Bhosale

Head, Research Centre, Arts, Commerce & Science College, Narayangaon, Pune.

The present research paper is focuses on concept of demonetization challenges and perspectives of demonetization and positive impacts of demonetization. The government has implemented a major change in the economic environment by demonetizing the high value currency notes = of Rs 500 and Rs 1000 denomination. These ceased to be legal tender from the midnight of 8th of November 2016. The proposal by the government involves the elimination of these existing notes from circulation and a gradual replacement with a new set of notes. The reasons offered for demonetisation are two-fold: one, to control counterfeit notes that could be contributing to terrorism, in other words a national security concern and second, to undermine or eliminate the "black economy" from the country. The present research paper is based on secondary data. It is conceptual in nature.

Keywords: Demonetisation, Black money, Cashless economy, Hawala transactions, Challenges and Perspectives.

56. A Study on Demonetization & It's Impact on Indian Tax System

Mr. Krishnat Chougale¹, Dr. B.S. Sawant²

1, 2. CSIBER, Kolhapur

The demonetization had a great significant and immediate impact on the state of the Indian economy. In this paper, an attempt has been made to find impact of demonetization on the Indian Tax System. Demonetization is the act of a currency unit of its status as legal tender. The November 8 announcement by Government to Demonetize high value notes has in one stroke junked 86% of the currency in circulation and holders of the discontinued notes can deposit them in banks before the end of the year and withdraw money in new currency. The money has to be accounted for and taxes paid 50% on voluntary disclosures of unaccounted money and 85% for any failures.

Keywords: Demonetization, Types & Changes in Direct and Indirect tax

Edited By
Dr. U. M. Deshmukh
Conference Secretary
HOD., M.Phil., CSIBER
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On

"Demonetisation and Remonetisation: Issues and Challenges for Global Business"

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Fostering Innovation, Integration and Inclusion Through
Interdisciplinary Practices in Management

A Study on Moving Average of Selected Stocks in
Banking Sector using Technical Analysis

Mr. Krishnat H. Chougale

PhD Research Student, Shivaji University, Kolhapur, Maharashtra, India

Organised By:

Management Department, Chhatrapati
Shahu Institute of Business Education
and Research, Kolhapur, Maharashtra



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IJTSRD23084

ABSTRACT

The study is about analysis of moving average of shares in banking sector by using technical analysis. The technical analysis shows the turning points, which predicts when to buy or sell the stock. This paper helps to know which bank performs better compared to other banks based on the price fluctuation by using technical analysis.

KEYWORDS: Moving Average & Technical Analysis

I. INTRODUCTION

Shares are the one of the best saving mechanism to get maximum returns in future compare to any other instrument like bank deposits, debentures, gold etc., but shares have high risk involved. Most of the investors fear about stock market because they don't know the full pledge knowledge in stock market. In share market only our investment make double or triple within a short period when compare to other instrument. (Chandra, 2008)

II. Technical Analysis

Technical Analysis is the prediction of future stock price movements based on past price movements. It can help investors to anticipate what possible can happen to the prices over time. It helps to present trends for buying and selling. It shows the historical movements and key areas of support and resistance. It indicates the probable future action of the market by projection. Technical analysis is to generate returns by chart patterns decide when to enter and when to exit in the security. (Pandian, p. 2010)

III. Moving Average

Moving averages are one of the most popular and easy to use tools available to the technical analyst. They smooth a data series and make it easier to spot trends, something that is especially helpful in volatile markets. They also form the building blocks for many other technical indicators and overlays. (Moving Averages)

IV. Research Methodology

In this study, the researcher has focused on the subject of technical analysis. It is a method of evaluating the securities by analyzing past market data such as share price movement, graph etc. It is a broad topic, so the researcher has just selected few banks and analysis their moving average to understand the price movement of the stocks. Data for this study was collected from 1st April 2013 to 31st March 2018 (Weekly closing prices).

V. Scope of the Study

This study mainly focused on investment decisions by predicting futures stock price movements through the use of Technical analysis. This study was based on five selected banks from those listed on the National Stock Exchange.

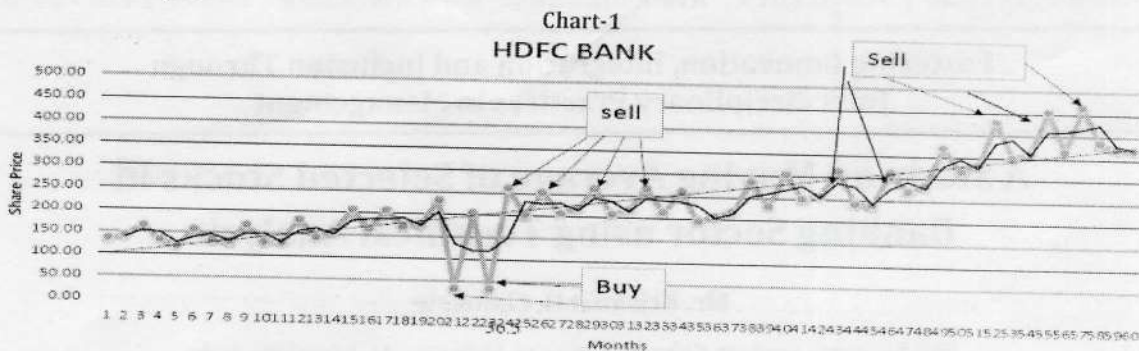
VI. Objectives of the Study

1. To know the movements of stock prices of selected banking stocks through technical analysis.
2. To study how future behavior of the market is predicted by using moving averages.

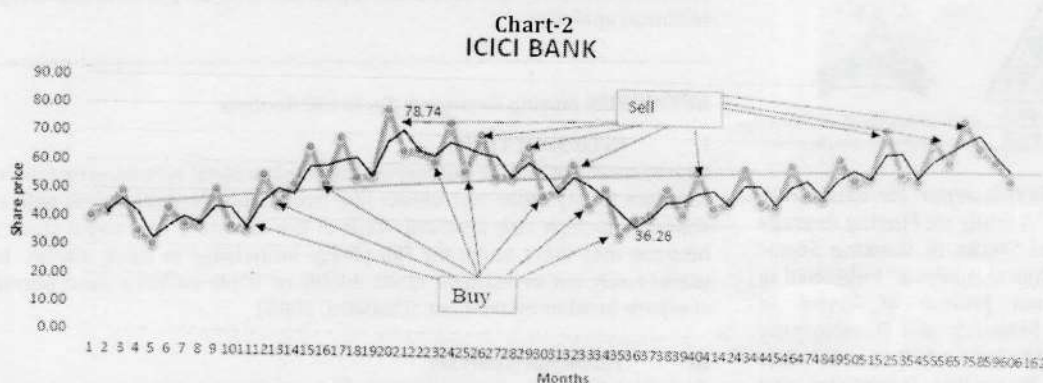
VII. Chart Pattern

Charts reveal a certain pattern that is of predictive value. They are used as a supplement to other information and as confirmation of signals provided by trend lines. Charts are valuable and easiest of tools used in technical analysis. The graphic presentation of data helps the investors to find out the trend of prices without any difficulty.

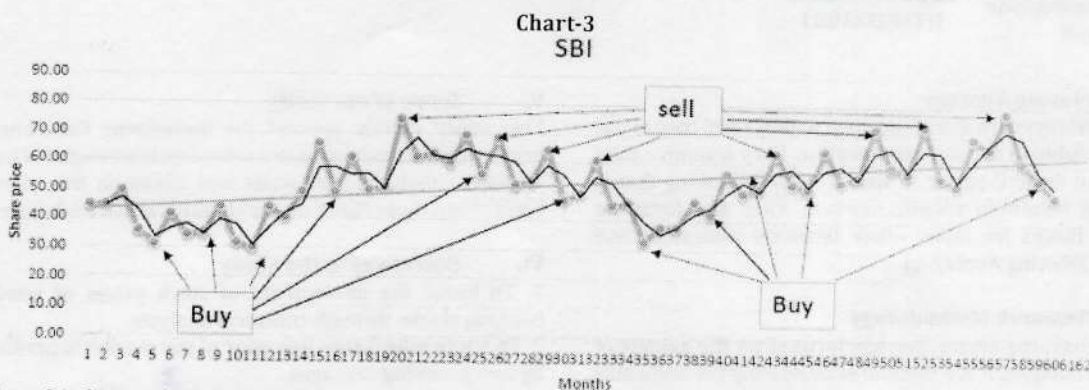
VIII. Data Analysis



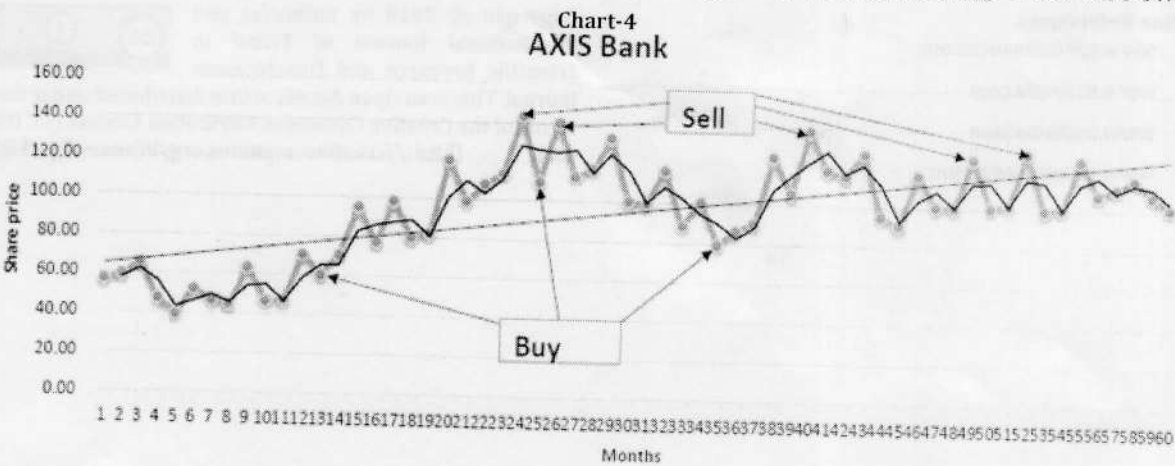
The chart 1 depicts the prices and moving average of HDFC Bank on monthly basis from 1 April 2013 to 31 March 2018. The above chart explains the point when to buy the share and when to sell it. In a second year means in the months of 21 and 23 the share prices are fall, it best time to buy the share to investors (i.e. at Rs 36.5) and also price is the below the moving average line it meant that the stock was in a weak position. When the stock prices are above the line then it is strong position i.e. in the last year 2018, so it is time to sell the share or execute the short sell position. The technical analysis of HDFC bank shows that upward trend.



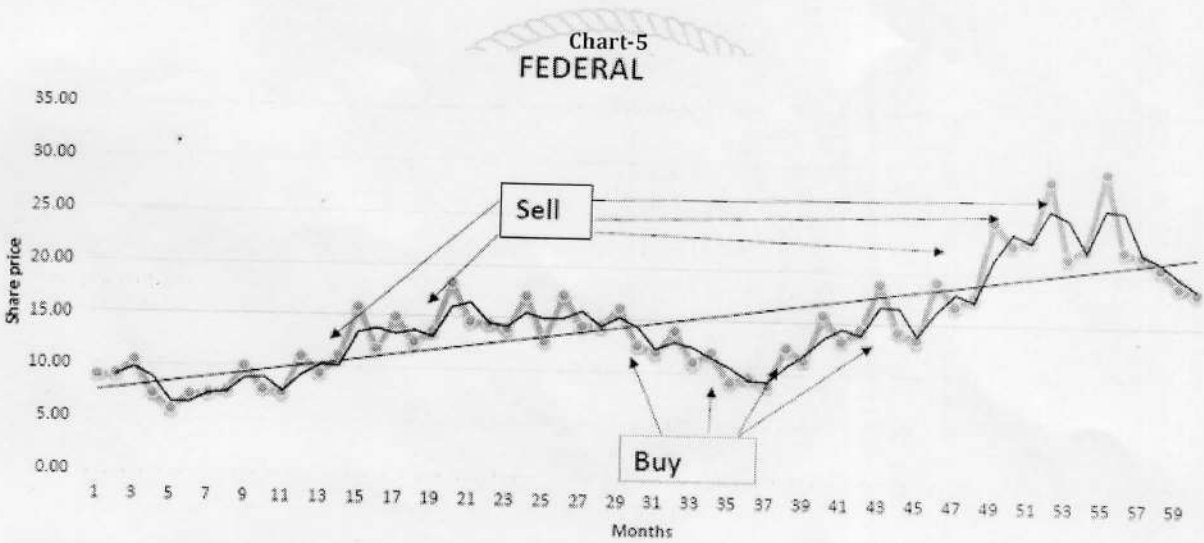
The chart 2 reveals that price and moving average of ICICI bank on monthly basis from 1 April 2013 to 31 March 2018. The above chart indicates that point when to buy the share and when to sell it. In a first year and second year that was in the months of 11, 30 and 36 the share price was fall. It was good time to buy the share and also price is the below the moving average line it means that the stock was in a weak position. When the stock price was above the line then it was strong position i.e. in the last year 2018. So it was time for sell the share or executes the short sell position. Because after two year prediction shows that market will be decline.



The chart-3 indicates that, price and moving average of SBI bank on monthly basis from 1 April 2013 to 31 March 2018. The above technical analysis explains that when to buy the share and when to sell it. In a first year and second year a mean that is in the month of 11, 30 and 36 the share prices are fall. It was best time to invest in this company share and also price was the below the moving average line it means that the stock was in a weak position. When the stock price was above the line then it was strong position i.e. in the last year 2018. So it was time to sell the share or execute the short sell position. Because after two year prediction shows that market will be falling.



The above analysis reveals that price and moving average of AXIS bank on monthly basis from 1 April 2013 to 31 March 2018. The above chart explains that when to buy the share and when to sell it. Best time to buy the share when price was below the moving average line it means that the stock was in a weak position. When the stock price was above the line then it was strong position so, it was time to sell the share or execute the short sell position. Because after two years prediction shows that market will be decline.



The above chart indicates that the price and moving average of FEDEAL bank on monthly basis from 1 April 2013 to 31 march 2018. The above chart explains that when to buy the share and when to sell it. In a third year means in the month of 31 to 40 the share price was decline. It was best time to buy the share. Furthermore when price was below the moving average line it means that the stock was in a weak position. When the stock price was above the line then it was strong position so, it was time to sell the share.

IX. Conclusion

The study shows that all banks are earning normal profits. Technical analysis is tool to predict the future direction of individual securities. There are more number of tools to analyze the securities, but technical analysis is one of the best tools to provide practical exposure to investors. Researcher concluded from the result that technical indicators can play useful role in the timing stock market entry and exit. By applying technical tools brokers or investors enjoy substantial profit. Shares volatility of banking sectors differ from other sectors because banking share volatility depends upon RBI rules & regulations.

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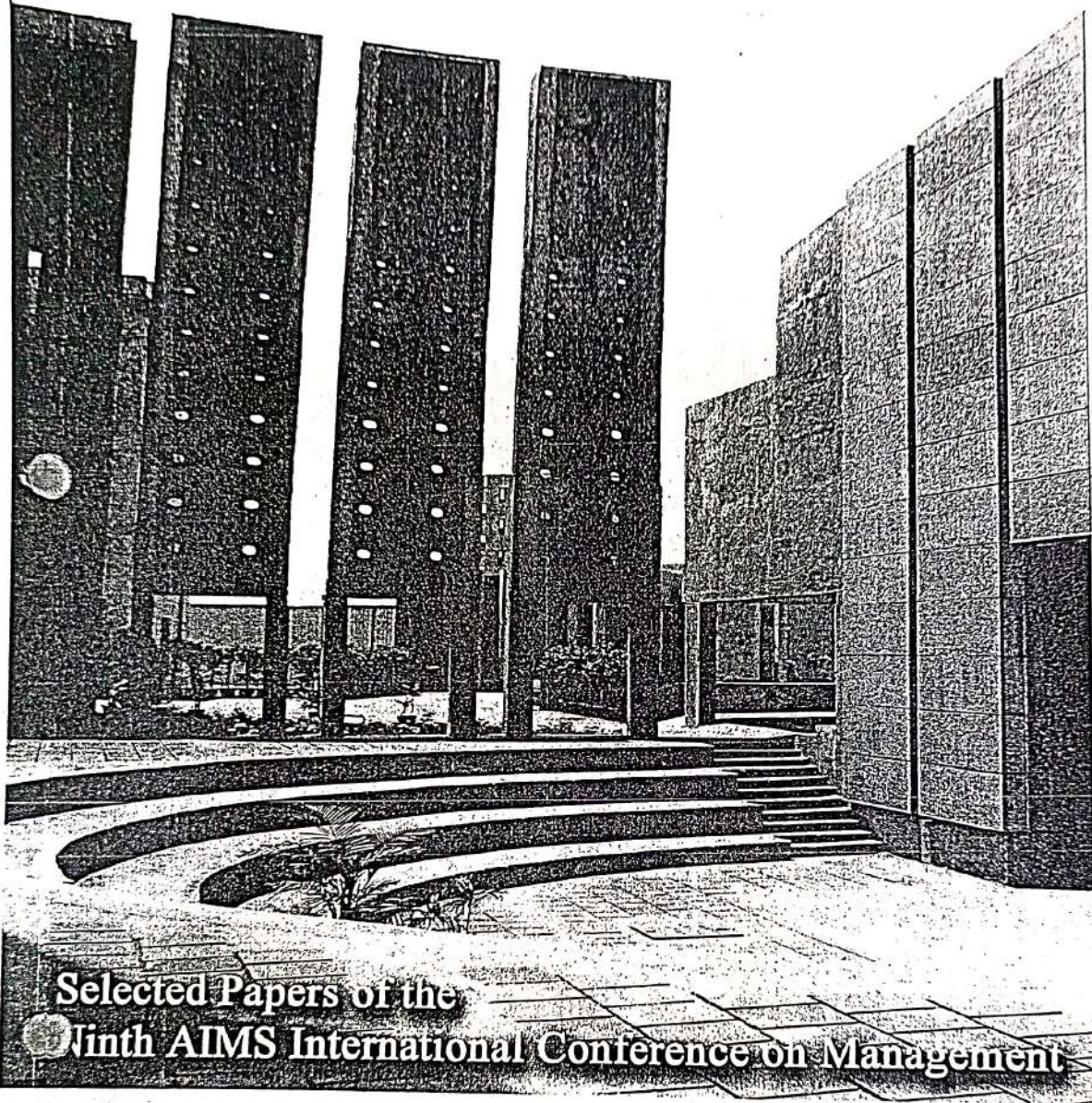
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Managing Turbulence and Uncertainties in Management Education:
New Landscapes and Roadmaps

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**Selected Papers of the
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Omprakash K. Gupta
Amit J. Shah
Shivprakash Agrawal

individuals may have a great motivation to engage into excessive risk out of their upward slopping utility curve would also call for scientifically researching it out. Yes, till it gets so established, we must consider it as the limitation of this work.

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Impulsive Buying Behaviour at Big Bazaar Kolhapur

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Impulsive purchasing, generally known as a consumer's unplanned purchase is an important part of buyer behavior. The objective of the study is to analyze the buying behaviour of the consumers of Big Bazaar, to measure the level of satisfaction derived by the shoppers at Big Bazaar and to assess the future relationship between the retailer and his customers. The study is based on the primary data collected from Big Bazaar in Kolhapur City with the help of a structured questionnaire. The findings of the study states that consumer impulsive buying behaviour and customer satisfaction is linked with buying performance.

1. Introduction


The last millennium has witnessed innovations at every stage of the supply chain, giving rise to new models. The consumer interface, i.e. the retailing factor has undergone a sea of change, partly due to changing consumer needs and partly due to the emergence of new technologies. While some of the changes have been evolutionary in nature, some others have been category killers, leading to radical change in both consumer perceptions and formats. The ever-increasing focus on the customer will encourage all retailers to investigate the best way to foster and retain customer loyalty. With the conventional wisdom in retailing questioned and factors like location and prices not deemed as differentiating enough the retailers look into more innovative methods to attract customers. The trend in marketing toward building relationships with customers continues to grow, and marketers have become increasingly interested in retaining customers over the long run. It is with this platform that all retailers are vying for a share in the pie with new promotional offers every day.

Organized retailing provides an ideal shopping experience through consumer preference analysis, excellent ambience and choice of merchandise. Changing lifestyles, strong income growth and favorable demographics are the drivers for the fast growth of this sector. Rising income level, education, acceptance of smart and credit cards and global exposure have an impact on the Indian consumer's shopping habits. Impact of factors like availability of favourite brands, social status, buying behaviour during discounts, influence of family and friends over the store and brand choice, relationship between store and store brand, and consumer perception-towards

Managing Turbulence and Uncertainties in Management Education: New Landscapes and Roadmaps

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Role Of Yoga In Technical Education: A Review

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Abstract: With industrial development, the need for technical manpower grew to a large extent. Technical education in the India has generally starts after completion of 10th standards. To cater the need, new industrial training institutes, polytechnics and engineering colleges were started. These institutes produced skilled workers, technically qualified supervisors, and shop floor and design engineers. But, along with raising the no of branches of technical education, depression among the engineering students commonly observed in India. Many engineering students tend to have psychotic symptoms or bipolar disorder, which leads to depression. The present paper focuses on the details of technical education which increases depression in students and effective solution Yoga to reduce stress, depression etc.

Yoga has positive effects on a psychophysiological level that leads to decreased levels of stress in college and technical education passed students. Yoga is affordable and easily implemented solution for the mental health issues of the students of technical education. Further research is needed to examine the extent to which different types of yogic practices address the needs of different sub-populations e.g. overweight, sedentary, smokers etc.

Key-Words: Technical-Education, Students, Yoga, Depression, Engineering, Health-issues.

1. INTRODUCTION

India has one of the largest technical manpower in the world. Education improves functional and analytical ability and thereby opens up opportunities for individuals and also groups to achieve greater access to labor markets and livelihoods. A better educated labor force is essential if we are to meet the labor supply requirements of faster growth. Skills and knowledge are the engines of economic growth and social development of any country [1]. Technical programs develop the economy by bridging the demand and supply gap with highly skilled workers. It also gives students the opportunity to take marketable skills from the classroom directly into the working world.

In the every state of India, the Directorate of Technical Education has given the responsibility of degree and diploma level institutions in Engineering and Technology, Architecture, Pharmacy, Hotel Management and Catering

Technology, etc. The Directorate has also entrusted with the monitoring and control of management institutions imparting degree and diploma level training in various branches of management [2].

In the technical education system, the introduction of the vocational stream was recommended by the central Kothari Commission (1964-66). The National Policy on Education, 1986 (revised 1992) sets a target of twenty-five percent of higher secondary students in vocational courses by 1995. So far, the enrollment is far below this. In Maharashtra state, the student acquiring a does not have direct participation in the industrial working and thus these students have very low employability.

When some one chooses to study doctor or nurse they end up being a doctor or a nurse. But engineering students at least most of them join engineering colleges with false hopes about their career. Even more engineers from cities after engineering prepares 2 years or so to end up in a government job which just requires any graduate (which an Bsc English, 3 years course with way less fees than engineering) But still the craze isn't over and fall into engineering without knowing what comes next [3, 4].

There are three broad reasons for depression:

1. The high level of competition for admissions and jobs.

2. How increasingly young adults in urban families are being brought up with a sense of entitlement and reduced sense of frustration tolerance and or resilience.

3. The stigma against the use of counselling which limits the help a young person can receive which potentially lowers the numbers of students who might otherwise utilise mental health services [5].

The technical educational system, is divided into Diploma in Engineering and Technology, Degree in Engineering and Technology, PG degree courses in Engineering and Technology [2].

Yoga is characterized by balance, health, harmony, and bliss meditation being part of yoga, which is the seventh limb of ashtanga. Yoga a state of alert rest as stated by Maharishi Mahesh Yogi, who founded a technique of meditation, popularly known as transcendental meditation [6].

By practicing yoga, a person is supposed to reach a state of mental equanimity, where responses to favorable or unfavorable external events are well under the individual's

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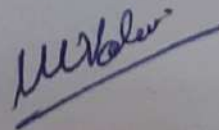
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Financial Accounting

(Academic Year 2019-20)

Preface

Accounting is a process of recording transactions and preparing financial statements. However, this process is made for the use of accounting information by internal users and external users. Hence, accounting is nothing but information system according one approach when it collects data, store data and avail it whenever required. On the other hand, accounting is a language of business according to another approach where accounting serves purpose of communication as main function of language.

This book is written for the purpose of students on distance mode. It is contemplated here that the students will read the book, they will make exercise and come to the contact sessions with their queries which can be solved in it. This book is for their basic preparation for their study however they can make supplementary and extensive learning by using reference books.

This book is divided into eight chapters of 'Financial Accounting' for B. Com. Part-I (covering Semester-I and Semester-II). The book is divided for the convenience of the students into two parts, semester-wise. In the first section of the book, four units are on the topic of 'Introduction to Accounting', 'Amalgamation of Partnership Firms', 'Consignment Accounts' and 'Accounts of Professionals'. In the second section of the book, other four units are on the topic of 'Single Entry System', 'Conversion of Partnership firm into Limited Company', 'Branch Accounts' and 'Computerized Accounting System'.

Along with the theoretical components illustration are given in every unit to understand and learn every concept clearly. The model accounting entries are stated wherever necessary. At every regular interval, objective type questions are given to check the progress of the student. At the end of each unit, exercise is available which will be useful to students to make preparation according to the syllabus stipulated.

We are grateful to Hon. Vice-Chancellor Prof. (Dr.) Devanand Shinde and Hon. Pro-Vice-Chancellor Prof. (Dr.) D. T. Shirke, Prof. (Dr.) Anuse, Director, Centre for Distance Education and Registrar Dr. V. D. Nandavadekar for their support and cooperation. We are thankful to all authors and university staff for timely support for this book.

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Factors Influencing Women's Decision to Work : A Service Sector Wise Analysis of Kolhapur

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Abstract :

There is dynamic interplay of familial, cultural, personal and labour market conditions which influence a woman in unique ways in her decision to remain a fulltime home maker, or to combine home maker and economic roles. The significant factors which inspire women to work are the inadequate income of the principal earner which force women to work and supplement income, mishaps such as incapacity of breadwinner, death of the breadwinner, and a woman's desire for economic independence for securing higher standard of living. Also the desire to the part of the women to give expression to their own talents and skill. The present study tries to highlight factors influencing women in selected service units in kolhapur .

Keywords : women, service units, motivation to work participation, women role, women employment.

Introduction:

In the semi urban cities like Kolhapur women with educational skills seeks employment or remain homemaker is mainly influenced by awareness among women about required educational skills in the organisations, having strong mind-set that only one income is inadequate for comfortable living, shifting of family type from joint to nuclear and relatively ease of women's employment in nuclear family. Further, changing attitude towards women employment resulting in increasing percentage of Women's Decision to Work. It is viewed that as women are ready to shoulder domestic responsibilities they are perceived positively. As they denied the reactions would be vice versa.

Earlier (two, three decades back) women were seeking a job when she is forced by situations like support family income or work decision as a main bread earner of the family. She is not desired to attach too much importance to her performance to her work role and make serious attempts to excel at it. Her success as a woman would be judged by her performance as a mother and wife. Family member still expecting her performance in the traditional role to which she has been socialized.

Thus, family up to some extent creates hurdles in woman's career advancement. The demands of home and family render it impossible for married women to compete with Male colleagues who are not burdened with the daily routine of homeworking.

Objectives:

1. To understand role of working women in familial, organizational and social scenario.
2. To review service sector wise women's work participation.

Research Methodology:

Sampling:

Women Employees: Out of the women employed in the service unit



selected for the propose of drawing the sample, only those who satisfied the above mentioned perquisites were selected to from the group, of which, randomly college teacher- non teaching staff-, Traditional course teacher-, Professional course teachers, office workers from Top level, Middle level, Lower Level, Medical doctors, nurses, Lab Asst., Technical employees, professionals were selected from the final sample of 709 working women. The exact population of service firms in select area and the number of women employees working in select service firms is not available the population is considered to be infinite and following formula has been used to calculate the sample size i.e.

$$n = (Zs/e)^2$$

Where n = sample size

Z = value of z at 5% level of significant i.e. 1.96

S = standard deviation assumed from normal distribution i.e. 0.66

e = assured error i.e. 5%

Using above formula sample size is calculated to be 669.360 rounded off to 670. This size is equally divided into nine service organization sectors. Hence, per service organization section sample size comes to 75. Since in per service organization sector samples are to be selected form public and private sector so the sample size again divided and it comes to 37.5 rounded off to 38. Hence, 38 samples minimum from public and private sector undertakings each are taken from each service organization sector using convenient sampling method.

Table no.1.1 Sample selection

Sr. No.	Particulars	Total Population	No. of Sample Selected
1	Women Employees	Infinite Population	709
2	Total No. of Samples Selected		709

(Source: Field Work)

Samples approached for this study are more than actually used for data analysis. While pruning outliers the extreme samples are deleted and the sample size has brought to minimum 38 samples per organizational constitution i.e. public and private sector per service organizational sector i.e. nine sectors taken for study. The proposed sample size in the research design 709 samples.

Data Analysis and Interpretation:

There are number of reasons due to which women employees started working for instance gross economic necessity, insufficient income, to have independent, liking for a particular job, supplementing husbands income, individual status, fulfilment of their own personal needs or ego satisfaction, achievement, recognition and self-justification etc. It relates up to extent the above elements sector wise influencing on women from various selected service units.

Table No. 1 Women Employees Workforce Participation

Sr. No.	Particulars	N	Mean	Std. Deviation	Variance
A	Finance				
1	Husbands Education	78	2.525	1.053	1.110
2	Husband's Salary	78	3.589	1.753	3.076



3	Husband's Professional Status	76	1.828	0.640	0.410
4	Husband's Employment Status	76	2.289	0.511	0.262
5	Family Life Cycle Stage	76	3.276	1.161	1.349
6	Valid N (list wise)	76			
H	Healthcare				
1	Husbands Education	83	2.144	1.260	1.589
2	Husband's Salary	83	3.000	1.343	1.805
3	Husband's Professional Status	83	2.024	0.517	0.268
4	Husband's Employment Status	83	2.253	0.489	0.240
5	Family Life Cycle Stage	83	3.048	1.058	1.120
6	Valid N (list wise)	83			
I	Consultancy				
1	Husbands Education	76	2.065	0.821	.676
2	Husband's Salary	76	3.394	1.286	1.655
3	Husband's Professional Status	76	1.894	0.505	.255
4	Husband's Employment Status	76	2.131	0.377	.142
5	Family Life Cycle Stage	76	3.263	0.984	.970
6	Valid N (list wise)	76			

(Source: Field Work)

Table No.1 shows that the factors affecting women employees workforce participation considering five related variables i.e. husband's education, husband's salary, husband's professional status, husband's employment status and family life cycle stage. The result shows that the mean scored in all service sectors is *highest 1.28 to 2.16 for second variable is husband's salary. The Standard Deviation value lies between "0.142 to 4.68". The results are much closed from related opinions.* The Mean score has immediate followed by first and fifth variable i.e. husband education and family life cycle stage which may affect on selected sample respondents.

The researcher has interpreted that the various aspects in case of workforce participation has directly or indirectly influences on QWL of sample respondents in various service sectors. After reviewing all the nine service sectors, researcher has **firstly** found that husbands salary having great influence on sample respondents' workforce participation. **Secondly**, husband's education and thirdly, Family Life Cycle Stage has also influences on sample respondent's workforce participation. It seems that salary, education of husband extents sample respondents workforce participation also family life cycles have prominent influence on sample respondents workforce participation. the above mentioned factors plays dominating role in standard of living, familial satisfaction and economic conditions of the respondents family .It is resulted in happiness at domestic end and peaceful mind at work. The healthy and satisfied family background converts into better performance at workplace and better QWL.

Concluding Observations:

A number of contributing factors directly lead to women employees workforce participation with husbands education salary, husbands professional status, husbands



employment status and family life cycle stage. It is found that husband salary was directly related to inspiring women to work in about all the selected services units. However it is reported that family life cycle stages influencing women to work in healthcare. Due to unpredictable working hours sample respondents in health care services considered family life cycle stages before entering in the work. Duty shifts, emergencies were the routine practices at healthcare obviously respondents were managing their work as per family life cycle stages. Further, it has been observed that husband's education does not matter in women's decision to work especially in insurance and telecom services because many women in both the services were working on the **compassionate ground**.

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A MULTIDIMENSIONAL IMPLICATIONS OF CSR PRACTICES IN INDIA: A LITERATURE REVIEW

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Abstract:

This paper presents a roadmap of corporate social responsibility (CSR). It discusses the scholar's views on CSR and highlights the practices that have adopted or are currently adopting in India. Results showed that CSR implications in India are progressively managing. There is no general definition of CSR; however, various concepts are connoted into it. An initial conceptual framework for CSR is drawn reflecting the current practices and prospects for disciplinary strategies. Such framework can be used in organizing and streamlining CSR elements.

Key Words: *corporate social responsibility, CSR practices and CSR initiatives.*

Introduction:

With the passage of the Companies Act, 2013 the mandate for corporate social responsibility (CSR) has been formally introduced to the dashboard of the Boards of Indian companies. The industry has responded positively to the reform measure undertaken by the government with a wide interest across the public and private sector, Indian and multinational companies. The practice of CSR is not new to companies in India. However, what this Act does is bring more companies into the fold. Also, it is likely that the total CSR spends will increase. What is clear to many companies is that this increased spending is to achieve results on the ground – which is the intent of the Act – then it needs to be done strategically, systematically and thoughtfully.

(**Rakesh Bharti Mittal** Chairman, CII's Development Initiative Council and Vice Chairman and Managing Director, Bharti Enterprises)

On this context, the Multidimensional Literature Review On CSR Practices in India has to be taken in the present research article by the author. The roots of CSR lie in Philanthropic activities (such as donations, charity, relief work, etc.) of corporations, globally, the concept of CSR has evolved and now encompasses all related concepts such as triple bottom line, corporate citizenship, philanthropy, strategic philanthropy, shared value, corporate sustainability and business responsibility. Philanthropy and CSR is not a novel concept for Indian companies, however a few organizations are likely to struggle.

The role of civil society in fuelling this change is bound to be extremely important. With the new corporate resources in their tool bag much will depend on their ability to innovate and adapt.

(Harpal Singh Mentor and Chairman Emeritus, Fortis Healthcare Limited).

Thus both the scholarly views expects strategic, systematic and thoughtful intervention of civil society with innovative and adaptable approach towards CSR.

MEANING AND DEFINITION OF CSR:

The EC defines CSR as “the responsibility of enterprises for their impacts on society”. To completely meet their social responsibility, enterprises “should have in place a process to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders”

The WBCSD defines CSR as “the continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large.”

According to the UNIDO, “Corporate social responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives.

CSR is generally understood as being the way through which a company achieves a balance of economic, environmental and social imperatives (Triple-Bottom-Line Approach), while at the same time addressing the expectations of shareholders and stakeholders.

In this sense it is important to draw a distinction between CSR, which can be a strategic business management concept, and charity, sponsorships or philanthropy. Even though the latter can also make a valuable contribution to poverty reduction, will directly enhance the reputation of a company and strengthen its brand, the concept of CSR clearly goes beyond that.”

From the above discussion on various definitions, we can understand that: The CSR approach is holistic and integrated with the core business strategy for addressing social and environmental impacts of businesses. CSR needs to address the well-being of all stakeholders and not just the company’s shareholders. Philanthropic activities are only a part of CSR, which otherwise constitutes a much larger set of activities entailing strategic business benefits.

SCOPE AND OVERVIEW OF THE PAPER:

The purpose of this paper is to explore how the scholars views on CSR and highlights the practices that have adopted or are currently adopting in India. This paper is structured as follows. The first

section discusses brief view of CSR in India. The second section outlines the Visuals Of CSR In India and In the third section, Literature Review demonstrate how CSR implications are going at various strolls of life with different perspective.

BIRD'S EYE VIEW OF CSR IN INDIA:

CSR in India has traditionally been seen as a philanthropic activity. And in keeping with the Indian tradition, it was an activity that was performed but not deliberated. As a result, there is limited documentation on specific activities related to this concept. However, what was clearly evident that much of this had a national character encapsulated within it, whether it was endowing institutions to actively participating in India's freedom movement, and embedded in the idea of trusteeship.

As some observers have pointed out, the practice of CSR in India still remains within the philanthropic space, but has moved from institutional building (educational, research and cultural) to community development through various projects. Also, with global influences and with communities becoming more active and demanding, there appears to be a discernible trend, that while CSR remains largely restricted to community development, it is getting more strategic in nature (that is, getting linked with business) than philanthropic, and a large number of companies are reporting the activities they are undertaking in this space in their official websites, annual reports, sustainability reports and even publishing CSR reports.

The Companies Act, 2013 has introduced the idea of CSR to the forefront and through its disclose-or-explain mandate, is promoting greater transparency and disclosure. Schedule VII of the Act, which lists out the CSR activities, suggests communities to be the focal point. On the other hand, by discussing a company's relationship to its stakeholders and integrating CSR into its core operations, the draft rules suggest that CSR needs to go beyond communities and beyond the concept of philanthropy. It will be interesting to observe the ways in which this will translate into action at the ground level, and how the understanding of CSR is set to undergo a change.

VISUALS OF CSR IN INDIA:

Today business environment becomes increasingly complex and stakeholders gradually and prominently expressing about their expectations, good CSR practices can only bring in greater benefits, some of which are as follows:

Communities provide the license to operate: Apart from internal influencing elements such as values and ethos, some external elements that influence corporate behavior includes government recommended laws and regulations, investors and customers. In India many companies have started realizing that the 'license to operate' is no longer given by governments alone, but communities that

are benefited by a company's business operations. Thus, CSR practices that meets the aspirations of these communities not only provides them with the license to operate, but also to maintain the license, thereby improving image in the eyes of the government.

Attracting and retaining employees: Several human resource studies today have assessed a company's ability to attract, retain and motivate employees with their CSR awareness. Interventions that encourage and enable employees to participate are shown to increase employee morale and a sense of belonging to the company.

Communities as suppliers: There are certain innovative CSR initiatives emerging, wherein companies have invested in enhancing community livelihood by incorporating them into their supply chain. This has benefitted communities and increased their income levels, while providing these companies with an additional and secure supply chain.

Communities as suppliers: There are certain innovative CSR initiatives emerging, wherein companies have invested in enhancing community livelihood by incorporating them into their supply chain. This has benefitted communities and increased their income levels, while providing these companies with an additional and secure supply chain.

LITERATURE REVIEW:

After considering the above discussed contents of CSR practices the author insights in heterogeneous aspects linked with the CSR. Literature is available in the specific context of 'CSR' therefore deserves a brief review. It would be relevant to mention here some pillars of the notable works as a part of the background to the present study as follows:

1. Corporate Social Responsibility (CSR) From An Ancient Indian Perspective Balakrishnan Muniapan and Mohan Dass in this paper, have made an attempt to explore the philosophy of Corporate social responsibility (CSR) from an ancient Indian perspective. A review of literature in CSR shows that there are thousands of articles which have been written by several academics on this subject from numerous perspectives, but limited articles written about CSR from the philosophical, historical and from the ancient perspectives. As a result, this article not only fills the gap in the literature, but also provides insights on CSR philosophy from the ancient Indian perspective. In the Indian context, the origin of CSR can be traced from the Vedic literatures such as the Valmiki Ramayana, the Mahabharata (includes the Bhagavad-Gita) and the Puranas. These literatures were written more than 5,000 years ago in Sanskrit language. However, in this paper the authors will explore CSR philosophy from Kautilya's Arthashastra, which was also written in Sanskrit in the 4th century BC. This paper is based on hermeneutics, a qualitative

research methodology which involves study, understanding and interpretation of ancient or classical text. By using the above methodology, the authors reveal some ancient lessons on CSR, which can provide guidance to corporate leaders today. In a nutshell, the Kautilya's Arthashastra provides an inside-out approach to CSR, which is development of the individual leader's self conscience, contrary to the western approach that takes an outside-in perspective. The leaders and the role they play in corporations are crucial in ensuring transparency, good conduct and governance towards the ultimate aim of achieving CSR.

2. Significance CSR Holds For Indian Companies

Under this heading report prepared by SSJ Solutions has been reviewed which includes.

i. The Emergence of CSR

The strategic imperative for Corporate Social Responsibility (CSR) continues to build as both the social need and the business case for corporate giving grow over time. From the early beginnings in the 1950's with the proposal that corporations should focus on more than just profit, CSR has developed into an integrated approach of social involvement. The initial attempts at philanthropy in the form of charitable donations for the sake of positive publicity have become programs that reach to the core business of corporations and involve all levels of employees. Ratan Tata, former chairman of the Tata Group has signed up to a new global experiment christened Plan B, which seeks to infuse businesses with a new DNA that puts people and planet alongside profits. The prevalent Plan A in which companies relentlessly pursue profits to the detriment of the other two - according to its members - is no longer acceptable for 'future incentives' it was about time to initiate new dialogues and adopt multi-stakeholder approaches to maximize returns even for the people and planet. It was also decided that the leaders would work towards fostering values at the workplace and help develop leaders driven by a moral compass.

ii. Law on CSR

In the new Indian Companies Bill, the section mandating CSR spending by large companies came as a surprise to many CEOs and philanthropists. Under this new Bill, guidelines state that companies have to spend 2% of net profits on CSR activities. It is not the spending that is mandatory but the reporting on how much was spent on CSR that has been made compulsory. The aim is to protect the interests of employees and small investors while encouraging firms to undertake social welfare voluntarily.

iii. Rationale

1. To achieve a balance among its economic, social, and environmental responsibilities.
2. An effective approach to CSR can open up new opportunities, and increasingly contribute to the corporates' ability to attract passionate and committed workforces.
3. To build the relationship with business in the community and with Local Authorities.

iv. Driving forces for CSR:

Creating a synergy of ethics, a cohesive society and a sustainable global economy where markets, labor and communities are able to function well together. It is believed that there is growing consciousness among corporates, and general sense of belonging to community and society. Companies considered active participation in the community to be fundamental driver of CSR. The demonstration by a corporation that it takes into account its complete impact on society and the environment as well as its economic influence. CSR is looked up as an important aspect of image building and goodwill which is one of the ways smart companies benefit from sustainability.

v. How Are The CSR Programs Implemented?

"It is not necessary to have a CSR department for functioning for CSR, we have our forums and NGO's responsible for implementing CSR activities." CEO, Software Company 12% Internal to organization Part of HR By top management/CEO CSR department 15% External to organization Both NGO Company's foundation.

vi. CSR Funding Analyses

"Proper auditing of all the CSR initiatives is required to ensure that funds are not being misused and the funds are utilized to support the beneficiaries". CMD, Travel and Tourism Corporation

vii. CSR Maturity Model

CSR vision and strategy clarifies with maturity. Most successful organizations implemented CSR planning in stages. CSR Performance measures are integrated for both business and society. Stakeholder engagement and communication becomes more effective with maturity. CSR practices become more focused, frequent, and flexible. CSR value creation and integration increases with maturity. KRA's are established for better CSR implementation. Major CSR initiatives found in Health Care and Environment Friendly Practices. Thus the study concludes with insights in significance CSR holds for Indian companies, provide a clear picture of present CSR initiatives undertaken by the companies and its contribution to Indian society. Explored various changes or innovations Indian companies have brought up in their CSR initiatives. With Companies Bill passed on mandate CSR spending help to have an insight of the company's investment in CSR initiatives.

3. CSR and its Relationships with Stakeholders for the Common Good

- a. This undertakes the report prepared by **Jana Foundation on Modern CSR - A shift from profit maximization to Profit optimization and Shareholders to Stakeholders**. The report focuses on

Business Perspective

Focuses on the importance of 'reputation capital' for capturing and sustaining markets. CSR is nothing but a new business strategy to reduce investment risk and maximise profits by taking all the stakeholders into confidence.

Eco - Social Perspective

Recognises the fact that social and environmental stability and sustainability are two major prerequisites for sustainability of the market in the long run. CSR is both a value and a strategy for ensuring sustainability of a business.

Right - Based Perspective

Focuses on the fact that consumers, employees, stakeholders and affected communities have a right to know about corporations and their businesses. It stresses accountability, transparency, and social and environmental investment as major aspects of CSR.

The report further highlights on spiritual dimensions of CSR such as,

Kautilya On CSR: Kautilya emphasized ethical practices and principles while conducting business.

CSR & Hinduism: Merchants belonging to the Hindu religion gave alms, got temples and night shelters made for poor. Hindus followed Dharmada where the manufacturer or seller charged a specific amount from the purchaser which was used for charity.

CSR & Islam: Islam had a law called Zakaat which ruled that a portion of one's earning must be shared with the poor in the form of donation.

CSR & Sikhism: Similar to Islam's zakat, Sikhs followed what they called daashaant

In this context the following comment is more supportive. Meeting the legal requirement and adhering to public and society norms will motivate companies to undertake CSR initiatives and fulfill its social obligations.

"CSR is the pre-requisite of the very existence of business today".

Executive – HR, Pan India Banking and Insurance Company

- b. **Nilesh Vitthal Limbore And Ajit Ashokrao Chandgude in their case study**

"A Review of the Current Scenario of Corporate Social Responsibility in It Business Sector with the Special Reference to Infosys. "with the objectives of to study the corporate social responsibility

to current scenarios in IT business sector, to study the case of corporate social responsibility to current scenarios in Infosys and to study the benefits of corporate social responsibility to current businesses in India tried to have insight in all the CSR bottom-line approach.

The study further concentrates on CSR in Infosys such as In1996, Infosys created the Infosys Foundation in the state of Karnataka, operating in the areas of health care, social rehabilitation and rural uplift, education, arts and culture. Since then, this foundation has spread to the Indian states of Tamil Nadu, Andhra Pradesh, Maharashtra, Kerala, Orissa and Punjab. The Infosys Foundation is headed by Mrs. Sudha Murthy, wife of Chairman Narayana Murthy. Since 2004, Infosys has embarked on a series of initiatives to consolidate and formalize its academic relationships worldwide under the umbrella of a program called AcE – Academic Entente. Through case study writing, participation in academic conferences and university events, research collaborations, hosting study trips to Infosys Development Centers and running the In Step Global Internship Program, the company communicates with important stakeholders in the academia.

From the above discussion on the CSR practices of Infosys researcher conclude that from ancient days to this global world CSR is passing through various dimensions. This concept is having deep roots in India. From old days to this globalization, Indian cooperators are aware about their social responsibility, because media culture is based on pure holistic approach and this is the main reason of success of Indian economy and business world. Also the Infosys are plays very vital role in corporate social responsibility in current Indian scenario. The management team at Infosys continues to set examples in the area of corporate citizenship and has involved itself vigorously in key national bodies. Infosys has enormously large activate group to done corporate social responsibility in India.

CONCLUSION:

In today's world it is no longer just acceptable that a corporation does well by doing good. It is expected Companies are subjected to new levels of transparency, whether in terms of demands for greater disclosure and corporate governance. On this backdrop certain questions have raised which certainly helps to have inclusive CSR practices.

➤ Does Public plus Private partnership on CSR is expected now ?

Yes, the government has set out specific guidelines on how *CSR activities* should be handled.

These stipulate that the *CSR activities need* to be implemented by a *CSR committee* that includes independent directors. This committee will be responsible for preparing a detailed plan

on *CSR activities*, finding right NGO partner to project the idea its impact on society and alignment of CSR with social development is needed.

- CSR practices with credit worthy NGO's is required? It ensures Corporate-NGO partnerships in *CSR activities*: why and how?.

Because creating a CSR department may entail significant costs, such as increased headcount, overhead, and administrative expense, many companies may choose to implement their *CSR activities* through NGOs, such as the existing societies, trusts, or foundations that the New Act contemplates. It is found that 50%-60% funds are used in development processes. Further it is observed that 60%-70% placements have done through CSR. Hence it is necessity to check credibility of NGO's.

- Does extent of Youth intervention in CSR is significant?

Yes, among others. Companies prioritized sport-based efforts towards children and *youth*. In practice, CSR through sport is done via partnerships and sponsorship. Concrete ways for implementation such as planning facilities and organizing a *youth academy* were found. Surprisingly, majority of the companies are only concentrated on Feel good factor of CSR. Instead maximum participation of youth through field visits and study tours is possible also alignment of educational institutions with creditworthy NGO's is needed.

- As a corporate what are the challenges in engaging CSR?

Here we can apply TATA Trust's employee engagement policy. As a trust is working independently, they are focusing on employee has to be shifted in CSR volunteers around 50% to 60% employees becomes volunteers and Trust made it habit for them then such habit converted into CSR culture. It requires clear basis of CSR. Monetary assessment, impact assessment and need assessment is significant. Further required minimum three years action plan with Institute, Corporate, NGO and Government alignment.

- Does CSR is Patch Up Value?

Such type of criticism on CSR are obvious but it's easy for companies to talk *up* their commitment to *corporate social responsibility (CSR)* during the good times, until they hit rough *patches*. "The real test is how companies live *up* to those *values*. How they integrate them into their business and how they stay true to them". For the better results companies have to develop confidence building mechanism among themselves.

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INTELLECTUAL PROPERTY REGIME AND INDIA AS A KNOWLEDGE ECONOMY

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ABSTRACT

It is often said that India is moving towards knowledge economy. There are various definitions of knowledge economy but one thing is sure that the next era will continue to be a knowledge era and the economic prosperity of a country or a firm will be closely linked with its knowledge capital stock. There are various ways of describing a knowledge economy like number of knowledge workers, knowledge sectors, knowledge industries and so on. But one thing is sure that the stock of knowledge cannot be definitely measured and yet it's widely accepted measurement yardstick is Intellectual property and patents filed by a country or a firm.

As noted by Walter W. Powell and Kaisa Snellman, "We define the knowledge economy as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence. The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources."

This paper examines the Indian capabilities and efforts towards creating the knowledge capital through filing and getting patents, trademarks, or intellectual property rights, industrial designs etc. If India is moving towards the knowledge economy then its place as compared to that of other countries in the world also matters. Not only the advanced and developed economies but also the emerging economies with similar GDP and growth rates are moving towards knowledge economy, then we have to examine the relative speed and position of India in this regard.

Key words:

Knowledge, knowledge economy, intellectual property, GDP, knowledge capital, physical and natural resources.

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INTRODUCTION

Indian economy is one of most promising economy in the world. In 2014 the Asian Development Report predicted that India can become a Knowledge Economy. As the report says, "India, with its youthful population and thriving information and communication technology (ICT) industry, can become a leading knowledge-driven economy as long as regulatory, education, and infrastructure barriers are overcome," ADB said in its report 'Innovative Asia: Advancing the Knowledge-Based Economy' published in September, 2014. The Report also has thrown light on the measures and description of knowledge economy. As per the report, "A knowledge-based economy describes an economy that uses information resources-technologies, skills, and processes-to achieve and accelerate economic growth potential. This report adopts the following definition which combines World Bank and OECD descriptions: A knowledge-based economy is one that has an economic incentive and institutional regime that stimulates the acquisition, creation, dissemination, and use of knowledge and

information to improve its growth and welfare, as well as effective systems of education and skills, information and communication technology (ICT), research and development (R&D), and innovation. Further the World Bank has developed a Knowledge Index and calculated on the basis of the four pillars such as Economic incentive and institutional regime, Education and skills of population, Innovation and technological adoption system, Information and communication technology infrastructure. Each of the four pillars has Rationale and indicators. As mentioned in the report they are given below.

KAM (Knowledge Assessment Methodology)-Basic Scorecard Variables

Performance

Average annual GDP growth (%)

Human Development Index

Economic incentive and institutional regime

Tariff and nontariff barriers

Regulatory quality Rule of law Education and human resources Adult literacy rate (% age 15 and above)

Secondary enrollment Tertiary enrollment

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Innovation system

- Researchers in R & D, per million populations
- Patent applications granted by the USPTO, per million populations
- Scientific and technical journal articles, per million populations

Information infrastructure

- Telephones per 1,000 persons (telephone mainlines + mobile phones)
- Computers per 1,000 persons
- Internet users per 10,000 persons

Note: The World Bank developed the Knowledge Economy Index (KEI), an indicator of the knowledge economy based on these four pillars and uses that index to benchmark economies. Source: World Bank Knowledge Assessment Methodology and Knowledge Economy Index.

This indicates that while calculating knowledge index of various countries innovation and R&D has been given important place. Hence it will be appropriate to make use of the IPR and Patents to determine Indian economy's journey towards attainment of the status of a Knowledge Economy.

Objectives: The main objective of this paper is to discuss the essentials of Knowledge Economy and India's efforts and results in knowledge economy journey. The important element of knowledge based society is the Intellectual capital or intellectual property that the people in the country create. The objective is to examine the relative position of India in this regard. It is determined via the number of patents files and granted, industrial design applications and design registrations and Trademarks registrations.

Literature Reviewed: The starting point of this paper was the Asian Development Bank's (ADB) report on the 'Innovative Asia: Advancing The Knowledge-Based Economy' *The Next Policy Agenda*, published in 2014.

The literature reviewed is mainly for three purposes. One is for definition of knowledge economy, for studying the determinants of knowledge economy used by various scholars for various objectives. Second literature is reviewed for determining whether, Intellectual Property Rights, patents, trademarks can be used as an indicator knowledge capital and knowledge economy determinant and then determine the condition of Indian economy in this regard. Innovation and its role in economic development is already accepted in economic literature, but here the efforts are to assess the knowledge economy position of our country by making use of IPR and related statistics.

Though Knowledge Economy has been considered as a result of latent variables and its determinants are unobservable a study has been conducted by Frank G. van Oort · Johan H. L. Oud, Otto Raspe, entitled, 'The urban knowledge economy and employment growth: a spatial structural equation modeling approach' published online in March, 2009. They have come to the conclusion after their study of three latent variables i.e. R&D-intensity, innovativeness and 'density of knowledge workers, that the latent variables of 'density of knowledge workers' and 'innovativeness' have significant positive and strong impacts on employment growth.

The economic development has been a continuous process of change. All over the world the countries and economic agents try to bring out positive results from this change. Innovations and Research are the foundations of these changes, and the change agents try to get maximum returns from these innovations. As note by David J. Teece in *Capturing Value from Knowledge Assets* published by California Management Review Vol 40, No. 3 SPRING 1998. WalterW. Powell and Kaisa Snellman, have also noted that there is a transition from emphasis on use of natural resources to use of knowledge resources. To quote, 'We document this transition with patent data that show marked growth in the stocks of knowledge, and show that this expansion is tied to the development of new industries, such as information and computer technology and biotechnology. The literature on the knowledge economy focuses heavily on knowledge production, however, and attends less to knowledge dissemination and impact.' (Annu. Rev. Sociol. 2004.) Further they have measured the acceleration in knowledge production. The paper quotes that, 'A challenge for social science has been to find metrics to gauge the extent to which society has become more dependent on knowledge production. Although there is wide recognition of the importance of knowledge and intangible capital in fostering economic growth and social change, devising useful measures of these assets has been difficult. One focus has been on stocks of knowledge-human, organizational, and intellectual capital, while another focus has been on activities-R&D efforts, investments in information and communication technology and in education and training, and organizational reforms. Patents have become a widely used indicator of intellectual capital (Grindley & Teece 1997) and economically valuable knowledge (Pakes & Griliches 1980, Griliches 1990).

Taking up the same line forward, in this paper the condition of India in the Knowledge Economy is measured in terms of patents applied, patents granted, industrial designs, trademarks etc.

METHODOLOGY

The World Intellectual Property Organization publishes data of almost all the countries with respect to various aspects such as Patent applications, Patents granted, industrial designs, Trademarks etc. which has been used and it is compared against the GDP of the country. The GDP data published by IMF in their world economic outlook is used here. This paper attempts to examine the ranking of various countries in terms of its GDP and as against its ranking terms of Patents granted. The main purpose here is to examine whether the countries with higher GDP are creating more knowledge capital as compared to low GDP countries? Whether it is essential for a country to create more knowledge wealth in order to become developed and High Income Group country? The data for this purpose is presented below:

Table 1:

TOP 12 Countries In The World In Their Gdp Ranking: 2017 and 2016 ranks

Sr. No	Name of the country	GDP Nominal (billions of \$) 2017	Rank	GDP Nominal (billions of \$) 2016	Rank
1	United states of America	19,417.144	1	18,561.93	1
2	China	11,795.297	2	11,391.62	2
3	Japan	4,841.221	3	4,730.30	3
4	Germany	3,423.287	4	3,494.90	4

Rank	Country	Patent Applications	Share of total (%)
6	UK	2,496,757	5
7	India	2,454,458	6
8	France	2,420,440	7
9	Brazil	2,140,940	8
10	Italy	1,807,875	9
11	Canada	1,800,765	10
12	Russia	1,560,706	11
	Korea	1,498,074	12

Source: International Monetary Fund World Economic Outlook April 2017
<http://www.imf.org/en/Publications/WEO/Issues/2017/09/19/world-economic-outlook-october-2017>

As compared to 2016 India and Brazil's rank shows an upward projection in 2017. Same is with Russia while USA and China have retained their positions in GDP. Now if we assume that the resulting rise in the GDP is due to the rising patents received by the companies and individuals of the country then we have to take a look at the following data.

Table 2

Patent applications for the top 10 offices

Office	Patent applications		
	2014	2015	Growth (%) 2014-15
China	928,177	1,101,864	18.7
United States of America	578,802	589,410	1.8
Japan	325,989	318,721	-2.2
Republic of Korea	210,292	213,694	1.6
European Patent Office	152,662	160,028	4.8
Germany	65,965	66,893	1.4
India	42,854	45,658	6.5
Russian Federation	40,308	45,517	12.9
Canada	35,481	36,964	4.2
Brazil	30,342	30,219	-0.4

Note: Application numbers are a sum of direct filings and PCT national phase entries received by offices
 Source: WIPO Statistics Database, October 2016.

Table 3 Total applications and growth in applications

Applications worldwide	Year		Growth (%) 2014-15
	2014	2015	
Patent	2,680,900	2,888,800	7.8
Utility model	948,900	1,205,300	27
Trademark	7,426,867	8,445,300	13.7
Industrial design**	1,137,500	1,144,800	0.6

Table 4 Total patent applications

Office	Patent applications	
	2014	Share of world total (%)
China	1,101,864	38.1
United States of America	589,410	20.4
Japan	318,721	11.0
Republic of Korea	213,694	7.4
European Patent Office	160,028	5.5
Others	505,083	17.5
World total	2,888,800	

Note: Application numbers are a sum of direct filings and PCT national phase entries received by offices (where applicable)
 Source: WIPO Statistics Database, October 2015.

Table 5 Share in IP filing activity by Region (Data for year 2015)

Patents		
Geographical region	Applications	Share of total (%)
Africa	14,800	0.5
Asia	1,786,800	61.9
Europe	360,000	12.5
Latin America & Caribbean	65,600	2.3
North America	626,400	21.7

Trademarks		
Geographical region	Applications	Share of total (%)
Africa	133,200	2.9
Asia	4,669,800	55.1
Europe	2,041,400	24.1
Latin America & the Caribbean	454,900	5.3
North America	411,700	4.8

Utility models		
Geographical region	Applications	Share of total (%)
Africa	240	0.01
Asia	1,152,600	95.6
Europe	46,400	3.8
Latin America & the Caribbean	4,230	0.4

Industrial designs**		
Geographical region	Applications	Share of total (%)
Africa	16,300	1.4
Asia	778,100	68.0
Europe	281,000	24.4
Latin America & the Caribbean	15,000	1.3
North America	46,000	4.0
Oceania	8,400	0.7

** refers to design count - the total number of designs contained in industrial design applications.

Source: for all the above tables WIPO Statistics Database, October 2015.

Table No. 5 has four components hence it is divided into four separate small tables. That is patents, trademarks, utility models and industrial designs. These four are the main assets of knowledge capital and hence shows that maximum capital will be created in Asia.

India in the World Economy

If we look at the position of India in this regard we find that India has constantly shown a rising trend since last 14 years in areas of Patents, Trademarks, and Industrial designs.

Table 6 India's IP Filings (Resident + Abroad, including Regional) and Economy)

Year	Patent	Trademark	Industrial Design	GDP (Constant 2011 US\$)
2002	4,164	90,751	2,618	2838.92
2003	5,370	79,488	3,034	3083.65
2004	6,728	67,504	3,465	3327.96
2005	8,028	77,908	3,867	3636.96
2006	9,434	93,736	4,078	3971.88
2007	10,529	125,078	4,759	4363.38
2008	11,546	128,122	4,949	4533.16
2009	11,939	143,626	4,610	4917.56
2010	14,869	181,621	5,030	5422.1
2011	15,896	186,783	6,472	5782.04
2012	18,202	188,154	5,900	6097.53
2013	20,908	196,262	6,101	6486.92
2014	22,445	218,725	7,401	6973.78
2015	23,946	270,333	8,245	7532.38
2016	25,795	284,286	7,600	8067.71

Source: World Intellectual Property Organisation.

Intellectual property of India as a percentage of Asia 2015 data

Sr No	Type of Intellectual Property	Asia	India	%age
1	Patent Applications	1786800	45658	2.55
2	Trademark Applications	4669800	274810	5.88
3	Utility Model applications	1152600	-	-
4	Industrial design applications	778100	10290	1.32

Calculated on the basis of two separate tables on regional patterns and India's data

DISCUSSION

India because of its size is among the top 10/12 Economies of the world in terms of the GDP. Its rank in terms of patents filed is even better than some developed countries like Japan, Germany, Korea.

- The earlier literature shows that, in measurement of knowledge economy, Innovation is an important criterion. Patents and Intellectual property is the indication of innovation systems of the country. Hence we can say that India is on the path of knowledge capital creation. The knowledge regime has created challenges for many of the stable economies of the world. At the same time it has also created opportunities for many countries of the world. When Europe and America are lagging behind in growth rate of new patents applications, china has gone much ahead of everybody else.
- Table no1 and Table no2 clearly show that China and United states have maintained their positions as knowledge economy because of the total number of patents applied from these two countries. China has definitely created more knowledge capital than any other country of the world. Overall picture of the world shows that Asia Region is ahead of rest of the world and India enjoys a dominant position in Asian subcontinent.
- Table No.6 clearly highlights the rise in India's growth in patents is more but in number India has more trademarks than patents. Industrial designs also reflect the innovations in the field of engineering and technology where India has not done a remarkable performance as compared to other areas.
- If we are comparing India and China as world's future growth centers India is much behind china in terms of its intellectual capital and the rate or such capital formation. In fact the world will see China taking over USA in knowledge capital in near future. India is said to have growth potential in service sector.
- If more and more knowledge workers are found in service sector especially in Information Technology and computer software field then we should see more patents to be filed in those sectors. Though accurate measurement of knowledge economy is still difficult, it is clearly established that intellectual property like patents, trademarks, industrial designs are playing important role in the growth of GDP as well as in international trade, when the countries are getting rewards of their stock of knowledge capital then we have to examine our country's own position in this regard.

CONCLUSION

India has to nurture and encourage the innovation culture and also develop the systems where by this intellectual property not only results in actual production and exports but also earnings out of the patents and royalties sold to other countries' manufacturers. The Universities and the Educational Institutions are traditionally known as the knowledge centers of a county but in India the research that takes place in academics does not lead to innovations; it remains only for the academic purpose. The knowledge economy of India has created knowledge workers its time to create knowledge capital. While Asia has always been number one for all types of IP applications India's share in it is very less. The majority of Asia region is from China followed by Japan, India, Korea. India has a long way to go before it becomes a Knowledge Economy but the process as certainly began.

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Exploratory Study on Factors Influencing Selection of Supermarket in Kolhapur City

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Abstract:

Indian organised retailing is under changeover today through bringing a lot of changes in the formats of retailing to catering the needs of the customers. The customers enjoy the privilege of shopping the goods and services required by them in a variety of formats. The consumer behaviour is mostly influencing on various dimensions like product, price, facilities, promotion, convenience, services and physical appearance. The present study explores the factors influencing the selection of supermarket through using exploratory factor analysis in Kolhapur city. The empirical evidence of 154 customers reveals that product variety, product access, promotion, location; value-added facilities, price, refreshment facilities and reactive time.

Keywords: Consumer Behaviour, Retailing, Supermarket.

Introduction:

The Indian retail industry has emerged as one of the most dynamic and fast-growing industries due to the entry of several new players in the recent times along with rising income levels, growing aspirations, favorable demographics and easy credit availability. It constitutes over 10% of the country's Gross Domestic Product (GDP) and around 8% of the employment and is valued at USD 672 billion. Globally, India is a fifth-largest global destination in the retail space and is growing at a rate of 12% per annum (CARE Ratings, 2017).

Consumerism is increasing in India moving it to the fourth largest economy in respect to the purchasing power with USA, Japan, and China leading in order. Marketers predict customer needs, interpret them into products and pull the customers towards the products by manipulating the 4 Ps of marketing mix they are a product, price, place, and promotion. However, over the time, maintaining long-term relationships with customers emerged as an all-important mission for companies. There is an increase in competition among types of modern stores, grocery stores, supermarkets, discount stores, department stores, catalog showrooms; they are competing for the same customers. (Kotler & Keller, 2006). Therefore, the supermarket owners need to have not only the marketing strategies to give them an advantage over the competitors but also need to develop these in a manner that the uniqueness can be maintained. (THUONG, February 2016.) The size and share of Indian hypermarket is expected to increase in the coming years, given the strong macroeconomic performance, favorable consumption pattern due to growing personal disposable income, rapid development of Tier II and III cities, availability of quality retail space

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A Study on Consumer Perception and Behaviour Towards online Buying

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Abstract:

With the increasing usage of digital media by consumers, more companies are using digital marketing to reach their target markets. The purpose of this study is to examine various reasons because of that people will attract for online buying of the product. This paper reports on a study that was undertaken to assess consumer awareness and use, of product review websites. Factors included the impact of e-opinion leadership, consumer susceptibility to informational influence, and gender on awareness and use of these websites. Participants completed a survey that solicited information on awareness of product review websites, extent of usage, as well as demographic information. Results indicated that young and self incoming people are more involved in online shopping the frequency of online purchase is also high & the most important reason to buy a product on line is product variety & Price effective.

Keywords: consumer awareness, susceptibility, demographic, perceptions.

Introduction:

Indian consumers as a whole spend about 55% of the total consumption expenditure on food items. Consumers decide whether, what, when, from whom, where and how much to buy. They can avail various mediums to buy the products. Attitude toward online shopping and goal to shop online are not only affected by ease of use, usefulness, and enjoyment, but also by other factors like consumer individuality, situational factors, product distinctiveness, previous online shopping understanding and faith in online shopping.(1) Four major categories of determinants: perceived technology, perceived risk, company competency, and trust propensity made the online initial trust.(2) Internet is changing the way consumers shop and buy goods and services and has rapidly evolved into a global phenomenon. Many companies have started using the Internet with the aim of cutting marketing costs, thereby reducing the price of their products and services in order to stay ahead in highly competitive markets. Companies also use the Internet to convey, communicate and disseminate information, to sell the product, to take feedback and also to conduct satisfaction surveys with customers.(3) As in the case of traditional marketing in the past, most of the recent research and debate is focused on the identification and analysis of factors that one way or another can influence or even shape the online consumer's behavior; a good deal of research effort is focused on modeling the online buying and Decision-making process.(4)

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Overview of Green Supply Chain Management

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Abstract:

The current pressure of global competition demanding faster, reliable, flexible and cheaper products is prompting organizations to adopt new strategies and improve their operations so that organizations need to maintain its competitiveness, and Supply Chain (SC) is currently the most reliable approach to achieve their goals. The green supply chain management (GSCM) is a commanding way to differentiate an organization from its competitors and it can greatly influence the plan success. With increased awareness to corporate responsibility and the requirement to meet the terms with environmental policy, green supply chain management (GSCM) is becoming increasingly important for Indian manufacturers. Organizations that have adopted GSCM practices with a focus on distribution activities have successfully improved their business and environmental performance on many levels. The growing importance of GSCM is motivated mainly by the mounting deterioration of the environment. One of the critical aspects to green supply chains is to improve both economic and environmental performance concurrently throughout the chains by creating long term buyer-supplier relationships. Major activities of the green supply chain management; namely Green Purchasing, Green Product Design, Green Material Management, Green Manufacturing Process, Green Distribution and Marketing, Reverse logistics are being covered throughout the paper.

Keywords: Green supply chain management (GSCM), Supply Chain (SC), Green Product Design, Green Material Management, Green Manufacturing Process, Green Distribution and Marketing.

1. Introduction:

In today's competitive world, it is very essential for organizations to continuously and consistently thrive for retaining their market share. Supply Chain comprises of the stream of products and services from the main manufacturer to the final end customer or customer. A supply chain has several components which can be as follows:

- a. Raw materials manufacturers
- b. Raw material supplier
- c. Component and intermediate manufacturers
- d. Final product manufacturers
- e. Wholesalers and distributors
- f. Retailers

A Supply Chain is well linked by transportation and storage activities and is integrated through information, planning and other integration activities. In this era of globalization, many large enterprises are moving away from their in-house vertically integrated structures to a crisp and composed Supply Chain Management. An organization in a supply chain focuses on activities

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Dr. Poornima G. Naik Dr. Girish R. Naik



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By

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Preface

It gives us an immense pleasure to bring out a book entitled ‘**Android Lab Manual for Novice – Vol I**’. In this era of globalization, mobile apps have revolutionized the way the business is conducted. To cater the needs of customers, IT companies are investing tremendously in app development which has opened new employability opportunities for computer professionals. Currently Android is the most popular mobile platform available in the market having more than 85% of market share. Android operating system is dominating the mobile platform market. Android is an exciting and evolving technology Google keeps on updating the Android operating system with new features and enhanced security which is the need of an hour. Since Android is open source it requires comparatively lesser investment and tremendously reduces development cost. The entire Android platform is ready for customization which makes simple complex technical customization. The remarkable feature of Android is the minimum time to market which provides an upper hand and a competitive edge over the rivals. As new android enabled devices are popping up, the new avenues are opened for Android developers and there is very high demand for Android developers. With hundreds of millions of users around the world, the possibilities for gainful employment seem endless. The basic skill sets demand an extensive exposure to Android IDE and SDK. This book is exactly meant for that which unleashes most of the concepts hidden behind the set of APIs and brings them in front of the reader. This book is intended for a novice who is keen in getting first-hand information about Android. The basic skill required for improving employability opportunities in this area include understanding of layouts and views, exposure to basic components of Android, android resources, data persistence, to name a few. The only pre-requisite for understanding the content of this book is the basic knowledge of java language. The book is thought provoking which motivates the reader to think out of the box and explore new features available in the application framework.

How this book is organized

Chapter 1 focuses on basic features and architecture of Android and provides insight into execution of Android application. The main feature of the chapter is setting up development environment which focuses on setting up ADT bundled eclipse and Android Studio. Android application folder

Android Lab Manual for Novice

structure is explored at depth. Downloading Android platforms and creating AVD for testing Android applications are also discussed. Chapter concludes with discussion of command-line tools, Android Debug Bridge (ADB), Activity Manager and Package Manager. **Chapter 2** is devoted for basic building blocks of Android, core Android libraries and different types of layouts understanding of which is crucial for developing working application in Android. Anatomy of Android application is presented. The structure of R class and basic elements of AndroidManifest.xml file where the prime system configuration information resides are also discussed. The main highlight of the chapter is more than one ways of handling events in Android with are discussed along with suitable examples in each case. **Chapter 3** explores different types of resources available in Android. Basic steps involved in creating and using string resource, string array resource, style resource and menu resource both in eclipse and Android Studio are discussed. Finally **Chapter 4** provides an overview of various pre-defined dialogs available in Android such as AlertDialog, DatePickerDialog, TimePickerDialog, ProgressDialog and CharacerPickerDialog which aid in rapid application development and help in rendering the application user friendly.

The content of this book is derived from different sources which are listed at the end in a ‘references’ section.

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Android Lab Manual for Novice- Vol II

By

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How this book is organized

Chapter 5 focuses on crucial part of Android User Interface (UI), Menus. Different types of menus - Android Options Menu, Context Menu and Popup Menu are discussed at length along with numerous working examples. The emphasis is laid both on creating a menu visually using the editor and programmatically in a code. The salient features of the chapter are creating menu hierarchy, creating

menu groups, creating submenus among others. The chapter concludes with introduction to ActionBar in Android. The programs to demonstrate modification of ActionBar and ActionView associated with ActionBar item are dealt with.

Chapter 6 provides hands-on experience with Android widgets. Tips in designing better user interfaces and improving user experience are given due importance. Android supports numerous layouts, the knowledge of which is crucial in designing complex and re-usable user interfaces. The re-usability of layouts using `<include/>` and `<merge/>` tags is highlighted. Both Eclipse and Android studio support more than 50 widgets from very simple common controls such as TextView, Button, EditText controls to complex controls such as ListView, GridView, ExpandableListView, TabHost, SearchView etc. The highlight of the chapter is exploration of transitions controls such as ImageSwitcher, AdapterViewFlipper, StackView, TextSwitcher, ViewAnimator, ViewFlipper, ViewSwitcher and customization of ListView and GridView layouts by designing custom layouts. The chapter concludes with designing splash screens in Android.

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Dr Poornima G. Naik bears twenty-two years of teaching and research experience in the field of Computer Science. She has been associated with teaching in thrust areas of computer science such as Big Data Analytics, Mobile Computing, Information System Security and Cryptography and her current research areas are Cyber Security, Machine Learning, Soft Computing and Big Data Analytics. She has guided three M Phil. Students. She has published more than 50 research papers in different national and international journals and presented more than 30 papers in different international and national conferences. She has authored 18 books on various cutting edge technologies in information technology. She is the recipient of prestigious Dr. APJ Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications awarded by International Institute for Social and Economic Reforms, Bangalore. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solution

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(Apache Flume and Apache Spark)

By

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- To understand big data platform and its use cases.
- To understand MapReduce jobs and interfacing with HDFS.
- Exposure to different tools in Hadoop ecosystem
- Applying data analytics on structured, semi-structured, unstructured and streaming data.

How this book is organized

Apache Flume is one of the most popular data ingestion tool from multiple sources into centralized data store. It is data ingestion tool of choice among data scientists due to its unique features conforming to multi-hop flows, fan-in flow, fan-out flow, contextual routing etc. to name a few. It is extensively distributed in nature and can easily be scaled up horizontally by adding new nodes to the active cluster which makes it more suitable for analyzing big data. As of now, there are 20+ different sources, 15+ different sinks are supported by Apache Flume. Apache flume can be extended further by adding new sources and sinks to the storage layer for which a suitable plugin is available for allowing data ingestion from disparate sources of data.

Chapter 7 deals with Flume model and configuration of Apache Flume agent. The topics in Flume which are more difficult to comprehend and assimilate, such as Interceptors, channel selectors, event serializers, sink processors are explored in greater detail with suitable working examples. The salient feature of the Chapter 7 is case study illustration on fetching Twitter data and storing it in HDFS, fetching data from sequence generator and netcat source. The chapter concludes with installation of Flume and hands-on lab sessions with Apache Flume.

In the big data era, Apache Spark emerged to address the high latency associated with MapReduce Model which the Spark addresses using its own specialized fundamental data structure, Resilient Distributed Datasets (RDD). RDD is key to the high performance of Apache Spark. The in-memory computation supported by Spark makes it a language of choice for implementing machine learning algorithms, graph algorithms etc. which otherwise would involve high latency in MapReduce processing paradigm. **Chapter 8** focuses on different components of Apache Spark and Spark deployment architectures. Programming with RDD is dealt with with special emphasis on Spark functional programming, RDD transformations and actions, chaining RDD transformations, Spark lazy evaluation. Step-by-step procedure for installing Spark over Hadoop is described. The main highlight of the chapter is setting up of virtual multi node cluster using VMWare Workstation 15.0 and configuration of master and slave nodes for launching Spark on multi node cluster.

The content of this book is derived from different sources which are listed at the end in a '*references*' section.

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- Exposure to different tools in Hadoop ecosystem
- Applying data analytics on structured, semi-structured, unstructured and streaming data.

How this book is organized

Apache Pig has emerged as an indispensable tool for analyzing all sorts of data such as structured, semi-structured and unstructured data being generated at exponential rate from different big data sources. It is script-based and is an abstraction over MapReduce. It provides plethora of data types and operators at programmer’s disposal. Owing to these unique features Apache Pig, it is a first-hand tool of choice among data analysts. **Chapter 4** focuses on architecture of Pig, Apache Pig execution modes, Pig data types and operators. Apache Pig Latin data model is based on nested relations. The chapter provides description of different components of Pig Latin data model. The lab session includes installing Pig over Hadoop and exploring different Pig Latin operators.

Owing to the complexity of distributed environment, coordinating and managing a service in a distributed environment is an extremely complicated process. Apache Zookeeper addresses this issue by helping coordinate different nodes of a cluster and enables managing shared data with the robust synchronization mechanism in place. There are a fistful of benefits offered by distributed applications such as scalability, reliability, transparency etc. But these benefits do not come free of cost. There is a cost associated with each of these benefits which poses various challenges in implementation of distributed architecture in real-life scenario. Such applications demand the external services which can take care of different intricacies involved in deploying and managing distributed application so that the developer can completely concentrate on application logic worrying less about infrastructure

management. This is exactly what zookeeper is all about. **Chapter 5** deals with common services provides by zookeeper, architecture and components of zookeeper and zookeeper operation modes. The salient feature of the chapter is exploration of leader election algorithm and security of ZNodes through access control list. The chapter concludes with the hands-on lab sessions on installation of zookeeper and exposure to zookeeper command-line interface.

HBase is a NoSQL column-oriented distributed database management system on top of Hadoop built especially for random read and write operations and low latency operations. It was designed to address the various limitations imposed by HDFS. **Chapter 6** discusses different types of NoSQL databases, transformation rules from one data model to another and performs in-depth analysis of HBase data model. The features which are difficult to comprehend such as data compaction, data locality, HBase read and write operations are simplified with easy to understand figures and explanation. As a part of hands-on lab sessions, installation of HBase over Hadoop and exercises based on HBase general commands, DDL commands and DML commands are dealt with.

The content of this book is derived from different sources which are listed at the end in a '*references*' section.

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BIG DATA TOOLS WHICH, WHEN AND HOW? (VOLUME - I) (SQOOP AND HIVE)

Dr Poornima G. Naik bears twenty-two years of teaching and research experience in the field of Computer Science. She has been associated with teaching in thrust areas of computer science such as Big Data Analytics, Mobile Computing, Information System Security and Cryptography and her current research areas are Cyber Security, Machine Learning, Soft Computing and Big Data Analytics. She has guided three M Phil. Students. She has published more than 50 research papers in different national and international journals and presented more than 30 papers in different international and national conferences. She has authored 18 books on various cutting edge technologies in information technology. She is the recipient of prestigious Dr. APJ Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications awarded by International Institute for Social and Economic Reforms, Bangalore. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management,

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Big Data Tools – Which, When and How? (Volume - I) (Sqoop and Hive) ● Dr. Poornima G. Naik Dr. Girish R. Naik



BIG DATA TOOLS WHICH, WHEN AND HOW? (VOLUME - I) (SQOOP AND HIVE)



Dr. Poornima G. Naik | Dr. Girish R. Naik

Big Data Tools – Which, When and How? **(Volume - I) (Sqoop and Hive)**

By

Dr. Poornima G. Naik

Dr. Girish R. Naik

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Preface

It gives us an immense pleasure to bring out a book entitled ‘**Big Data Tools – Which, When and How? (Volume - I) (Sqoop and Hive)**’. Data is indispensable in today’s business and technology-driven world. Big data technology is emerging to analyze the data to gain more insight into the hidden information for making in timely strategic decisions. Big data analytics emerged as a revolution in the field of information technology. It is the ability of the organization to stay agile which gives it a competitive edge over its competitors. Data harvesting and data analytics enable the organization identify new opportunities which in turn results in efficient operations, leads to smarter business moves and higher business turnovers. All these issues are addressed by big data analytics and its initiatives. The objectives set for the reader are :

- To understand big data platform and its use cases.
- To understand MapReduce jobs and interfacing with HDFS.
- Exposure to different tools in hadoop ecosystem
- Applying data analytics on structured, semi-structured, unstructured and streaming data.

How this book is organized

Chapter 0 is a pre-requisite for understanding the rest of the contents of a book and mainly focuses on intricacies of big data. The chapter begins with introduction to big data and addresses the various challenges involved in storing, processing and analyzing big data. The chapter aims at bringing in clear distinction between local file system and a distributed file system. The most challenging task is comprehension of how data is organized in distributed hadoop file system. Hadoop architecture and the functions of name node, data node and secondary name node are discussed at length. HDFS read and write images are detailed out. MapReduce is a new processing paradigm introduced in hadoop for distributed processing. The chapter concludes with hadoop operation modes and limitations of hadoop along with their solutions.

Chapter 2 deals with installation of hadoop on Ubuntu 16.06 LTS installed on VMware Workstation 15.0. The scope of this chapter is limited to installation of hadoop on a single cluster. The pre-requisites for hadoop installation and structure of hadoop configuration files are discussed in detail. The chapter also focuses on exposure of an end user to hadoop environment. This chapter also serves as a starter kit for various hadoop commands to render the reader get started with exploration of various tools in hadoop ecosystem.

Sqoop is a versatile tool, a popular framework for transferring data from/to hadoop (HDFS, HBase and Hive) to/from relational database management systems. **Chapter 3** discusses sqoop workflow, working of sqoop and basic sqoop commands. The prominent sqoop commands discussed are, sqoop import, sqoop export, incremental import, importing data into target directory, data filtering, importing all tables, execution of DML commands using '*sqoop eval*' command, listing all databases and tables.

Chapter 4 discusses at length a Hive tool which is an ETL (Extract, Load and Transform) and data warehouse system of hadoop. The salient features of this chapter are discussion of hive architecture, different deployment options for hive metastore, hive workflow, hive execution modes etc. among others. The chapter also brings out a clear distinction between hive and RDBMS. Hive data types, basic hive commands. The chapter concludes with the description of hive partitioning and buckets, the techniques used by hive for efficient query processing.

The content of this book is derived from different sources which are listed at the end in a '*references*' section. Appendix A summarizes different HDFS commands for quick reference.

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Android Lab Manual for Novice- Vol IV

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Many individuals share credit for this book's preparation. We extend our sincere thanks to Late Prof. A.D.Shinde, the Founder Director and Managing Trustee who has been a constant source of inspiration for us throughout our career. His support is really a driving force for us. Also, we would like to thank Dr.R.A.Shinde, Hon'ble Secretary, CSIBER, Kolhapur for his whole hearted support and continuous encouragement. We are grateful to Dr. P.K.Waychal, Director CSIBER, Kolhapur for his invaluable guidance. We take this opportunity to thank Dr.V.M.Hilage, Former Director and Trustee Member, CSIBER, Kolhapur, Mr. Bharat Patil, Chairman, Mr. Sunil Kulkarni, Vice Chairman, and Deepak Chougule, Secretary, KIT, Kolhapur, Dr. R.V.Kulkarni, H.O.D., Department of Computer Studies, CSIBER, Kolhapur for showing a keen interest in the matter of this book and extending all support facilities for the in-timely completion of this book. Last but not the least we thank all faculty members and non-teaching staff of department of computer studies, CSIBER, Kolhapur and Production Engineering department, KIT's College of Engineering, Kolhapur who have made contribution to this book either directly or indirectly.

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Preface

It gives us an immense pleasure to bring out a book entitled ‘**Android Lab Manual for Novice – Vol IV**’. In this era of globalization, mobile apps have revolutionized the way the business is conducted. To cater the needs of customers, IT companies are investing tremendously in app development which has opened new employability opportunities for computer professionals. Currently Android is the most popular mobile platform available in the market having more than 85% of market share. Android operating system is dominating the mobile platform market. Android is an exciting and evolving technology Google keeps on updating the Android operating system with new features and enhanced security which is the need of an hour. Since Android is open source it requires comparatively lesser investment and tremendously reduces development cost. The entire Android platform is ready for customization which makes simple complex technical customization. The remarkable feature of Android is the minimum time to market which provides an upper hand and a competitive edge over the rivals. As new android enabled devices are popping up, the new avenues are opened for Android developers and there is very high demand for Android developers. With hundreds of millions of users around the world, the possibilities for gainful employment seem endless. The basic skill sets demand an extensive exposure to Android IDE and SDK. This book is exactly meant for that which unleashes most of the concepts hidden behind the set of APIs and brings them in front of the reader. This book is intended for a novice who is keen in getting firsthand information about Android. The basic skill required for improving employability opportunities in this area include understanding of layouts and views, exposure to basic components of Android, android resources, data persistence, to name a few. The only pre-requisite for understanding the content of this book is the basic knowledge of java language. The book is thought provoking which motivates the reader to think out of the box and explore new features available in the application framework.

How this book is organized

Chapter 13 focuses on data persistence in Android. The chapter is divided into three discrete sections dealing with data persistence through flat files, shared preferences and SQLite database. Creating and accessing the file both on internal and external storage device (SD card) is dealt with in detail. The file organization on the device is revealed at depth. The salient feature of this chapter is pushing and

pulling the files from one location to another using ADB commands and DDMS perspective. The chapter concludes with introduction to firebase, a no SQL real-time database for storing data in a key/value pair.

Chapter 14 deals with invoking web services and restful services from Android. JSON provides a key mechanism for invoking restful services. Considering its important in industry today, the initial phase of the chapter is devoted to understanding of JSON which comprises of JSON types, JSON object and JSON array. Parsing of JSON object and array in Android is described.

Chapter 15 describes content provider for sharing data between Android applications which otherwise do not share the data owing to sandbox security. The chapter focuses on different terminologies and tility classes required towards design of content provider in Android.

Chapter 16 focuses on communication between thick and thin client. The methodology involved for invoking JSP pages and PHP pages from Android is highlighted. The chapter concludes with two case studies on database management using Android and PHP and synching data between SQLite mobile database and corporate database server.

Chapter 17 and 18 provide a formal introduction to location-based services and Google Maps.

Chapter 19 focuses on miscellaneous features of Android which includes, parcelable interface, text to speech library, themes, RecyclerView and CardView which play a key role in designing professional applications in Android.

The concluding **Chapter 20** deals with publishing Android application on Google play store. The chapter discusses on life cycle of Android application, google play registration, signing APK for making the Android app ready for publishing.

The content of this book is derived from different sources available on internet especially those which are listed at the end in a '*references*' section.

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Exploring Object Oriented and Database Programming Concepts of **PHP**

- Harnessing the Power of

XAMPP

Dr. Poornima G. Naik Dr. Girish R. Naik

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Exploring Object Oriented and Database
Programming Concepts of PHP -
Harnessing the Power of XAMPP

By

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Preface

It gives us an immense pleasure to bring out a book entitled '**Exploring Object Oriented and Database Programming Concepts of PHP - Harnessing the Power of XAMPP**'. As of now, most of the high level languages are objected oriented in nature. Object oriented programming paradigm enables easier software maintenance as compared to the structured programming, reduces flaws that would creep into large programs and minimizes the development cost and time. Owing to this most of the software industries have adopted object oriented programming as their de-facto standard in development of robust, easy to maintain softwares. The most appealing features of object oriented programming paradigm are code reusability, feature inheritance and polymorphism which have eventually emerged as three pillars of object oriented programming. Four key advantages of object oriented programming are, effective problem solving approach, easier troubleshooting owing to modularity, code reusability through object inheritance and delegation or containment, flexibility through polymorphism. Different object oriented programming languages such as C++, Java, Dot Net, PHP implement these concepts differently. Hence it is mandatory for a software developer to educate himself with the ins and outs of implementation details. This book is written to exactly address these issues and to cater the needs of object oriented software developer. Real life applications are of two types, processor bound and I/O bound. The I/O bound applications deal with the huge data. Most of the commercial applications are data-aware and for developing such applications the clear understanding of database concepts is essential. Data is constantly changing and generating every second which in turn has created the new dimensions of growth and challenges. It is not only necessary to accurately record data, but to update and track it on a regular basis. Database management systems are therefore crucial and important links in the creation as well as management of data. They play a crucial role in effective running of business and achieving higher position in market place. This book is intended for the PHP developers from novice to intermediate level and unleashes many of the concepts hidden behind object oriented and database programming concepts. The book is thought provoking and compels the reader to go beyond basics and to improve coding styles.

How this book is organized

Chapter 1 focuses on implementation of object oriented programming concepts in PHP with a special emphasis on encapsulation, inheritance and polymorphism. Two modes of code reusability viz., inheritance and delegation are dealt with at depth. The often confusing concepts among novices such as object copying vs cloning, inheritance vs. delegation, abstract classes vs. interfaces, are clearly dealt with along with an example in each case. Other highlights of the chapter are bit more involved concepts such as object iteration, type hinting, traits, etc. **Chapter 2** explores XAMPP in larger detail. The chapter begins with installation of XAMPP on Windows operating system and different ways of starting XAMPP control panel. The few noteworthy mentions about the chapter are discussion of more involved features of XAMPP such as creating virtual hosts on Windows, deploying application using Git which is distributed version control system, resetting MySQL password, The location of different files in XAMPP folder structure and structure of different configuration files affecting the way an application behaves are discussed at length. The chapter concludes with introduction to phpMyAdmin. Database user management, database manipulation, indexes, views, stored procedures and functions, database triggers are explored here. MySQL database replication, synchronization, configuration of FTP access using FileZilla, accessing XAMPP remotely are also incorporated in the chapter. **Chapter 3** is devoted to basic concepts in database programming in PHP which begins with exploration of mysqli class which is at the heart of database programming in PHP. PHP enables development of database application in two different styles, procedural and object-oriented. Throughout the chapter the two mechanisms are evaluated and compared. All the examples considered in Chapter 2 are re-considered here and are implemented in PHP programmatically through PHP coding. **Chapter 4** focuses on implementation of advanced concepts in database programming such as sorting, filtering, pagination, establishing master-detail relationships between tables, hierarchical grid control, in-place editing of table contents etc. to name a few. The complete source code for implementation of the said concepts is enclosed. The salient feature of the chapter is development of application in 3-tier architecture. Interaction between data tier, business logic tier and presentation tier is discussed. PHPMailer is a most popular open source library for sending email developed in PHP. It employs standard SMTP protocol for sending

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email. It is fully featured e-mail creation and transport class for PHP. **Chapter 5** deals with downloading PHPMailer library, SMTP configuration, uploading multiple files using PHPMailer.

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Dr. Girish R. Naik

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This book aims at providing fundamental concepts of Python programming. It is a good text book as well as reference book. Here concepts are presented in the form of programs making it quite easy and simple for students to understand. It showcases actual screen shots of the programs from the programming environment to make it more student friendly. Because of the user friendly interface provided in the book a novice learner can also learn Python programming without any difficulty. As Python is open source, programs written in this book can execute on different operating systems like Windows, Linux, and Mac etc.

Topics covered in this book Python Language Basics, Python Collections-Compound Data Types, List, Tuple, Dictionary and Set, Setting up Development Environment, Introduction to Anaconda and Installation of Anaconda. All the concepts are explained with practical examples and screenshots of the same are embedded.

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Python with Spyder

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PYTHON WITH SPYDER

An Experiential Learning Perspective

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Python with Spyder: An Experiential Learning Perspective

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Preface

The altruistic revolution evidenced by the Computer Science arena is the Free Open Source Software (FOSS) movement which is now encompassing the entire scholastics world never than ever before. The free licensing and more than that the openness has attracted many software professionals and there is seemingly an absolute migration of the computer science fraternity from its proprietary counterpart.

However inspite of the benefits paved by the FOSS such as security, stability, reliability, stability and cost effectiveness, there are not many guiding sources for opening oneself as a programmer in this exciting part of the realm. Undoubtedly 'Python', has emerged as the widely accepted programming platform. Most of the UG / PG students are not that familiar with Python platform. But as per the new curriculum, Python programming is an important component introduced.

This book aims at providing fundamental concepts of Python programming. It is a good text book as well as reference book. Here concepts are presented in the form of programs making it quite easy and simple for students to understand. It showcases actual screen shots of the programs from the programming environment to make it more student friendly. Because of the user friendly interface provided in the book a novice learner can also learn Python programming without any difficulty. As Python is open source, programs written in this book can execute on different operating systems like Windows, Linux, and Mac etc.

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PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING

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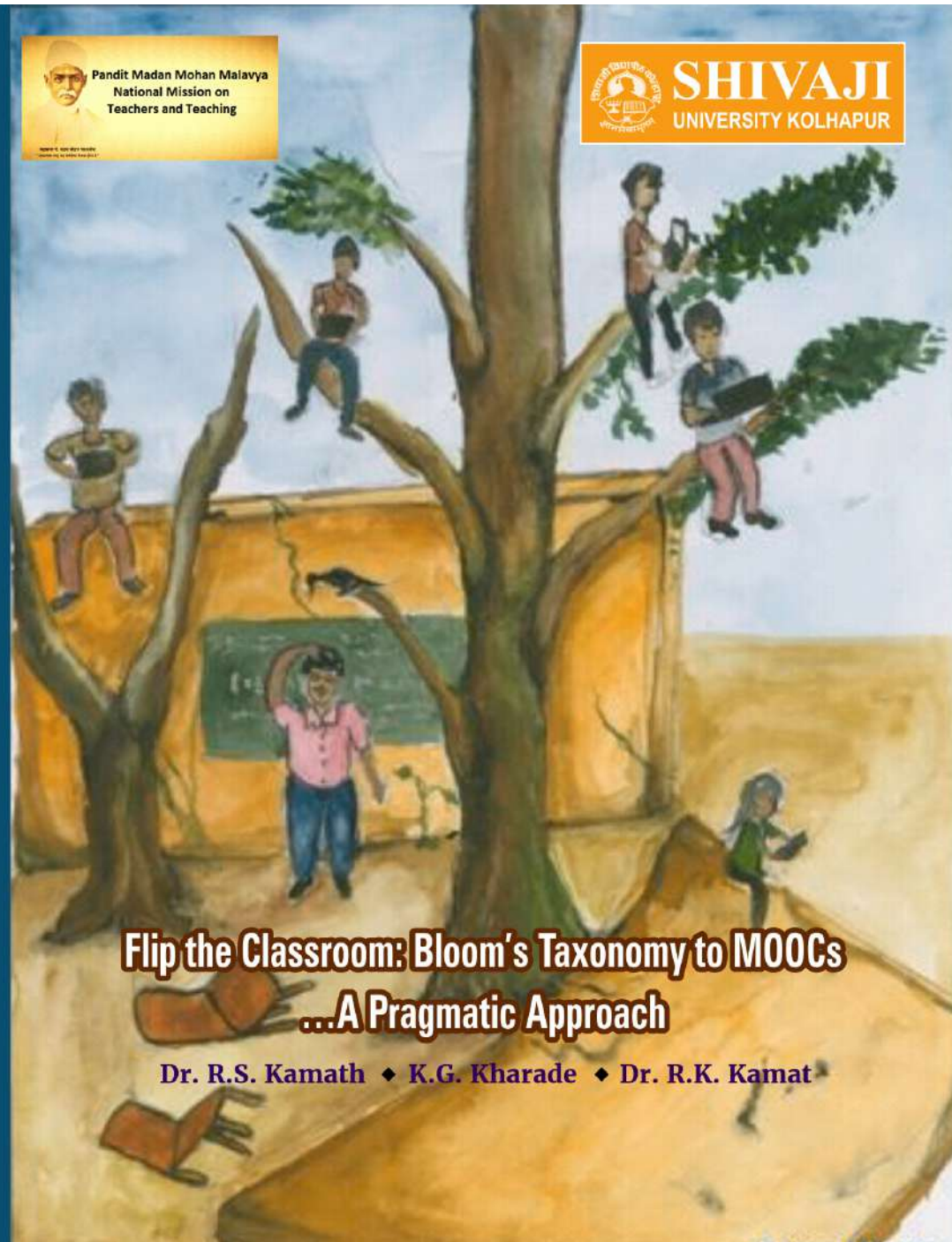


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**Flip the Classroom: Bloom's Taxonomy to MOOCs
...A Pragmatic Approach**

Dr. R.S. Kamath ♦ K.G. Kharade ♦ Dr. R.K. Kamat

1

Brain Based Learning and Bloom's Taxonomy: Connecting the Dots

1.1 Fascination of Brain Based Learning (BBL)

Brain Research is portrayed as research on any parts of the brain and the nervous system with an intention of producing new fact. It is the combination of a wide collection of domains from neuroscience to associated clinical research. It deals with different forms that individuals learn. Applying these findings of brain research in teaching practice result a new domain termed as Brain Based Learning (BBL). It is away of contemplating learning process. It is a set of standards and aptitudes where upon we can settle on better choice about the learning procedure.^[1] By coordinating brain research with standard education practices, BAL proposes the ways that schools can be changed into complete learning associations.

BAL deals with wide range of teaching methods that are based on research on learning patterns of brain. It focuses on various factors of a student for the cognitive development such as emotions, environments, attitude, gender, age etc. Researchers figure that the brain is constantly searching for meaning and seeking pattern. Significant learning conditions increase the mind's capacity to make connections and hold new information.

1.1.1 Fundamentals of BBL

Brain based learning theory is based with respect to structure and ability of the human brain. Table 1.1 details brain lobes and their functions. As long as brain is not denied from satisfying its ordinary procedure, learning will happen.

Brain regarded as the most complex organ leading to human behavior weighs approximately only 1300 Grams

Brain cells, i.e., Neurons which are responsible for learning are approximately 100 billion at the time of birth

Learning leads to growth of dendrites with the accomplishment of learning new things

Brain cells require adequate amount of glucose, water, oxygen, proper air and lighting conditions as well as enough rest to function effectively and consume twice the energy compare to other body cells

Synapse formation, i.e., brain development takes place rapidly in first three years post birth.

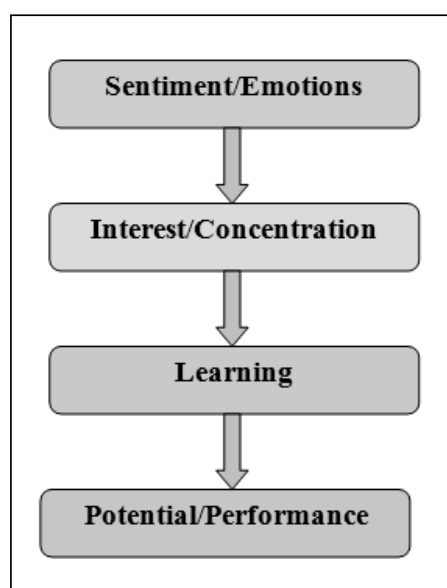
In the first 3 years the brain rises in size from 25% to 75% of its adult weight

The human brain which is a network of approximately 10^{14} neurons is presently being tried to emulate by using reconfigurable devices like Field Programmable Gate Arrays (FPGA)

Table 1.1: Brain Lobes and their Functions

Sr. No.	Name	Location	Function
1.	Frontal Lobes	Under the forehead	Reasoning, Planning, speech, movement, emotions, problem solving.
2.	Parietal Lobe	At the top of head	Feelings related to touch, pressure, temperature and pain.
3.	Temporal Lobe	Sides of the head above the ears	Speech, Perception, hearing, some types of memory.
4.	Occipital Lobe	At back of the head	Visual Cortex that processes signals from eyes.
5.	Cerebellum	At the back of the head under the cerebrum	Movement, Balance, Posture.
6.	Brainstem		Breathing, digesting, waste elimination, sleeping, body temperature preservation.
7.	Corpus Callosum	Centrally between the left and right hemispheres	Creativity and Problem Solving
8.	Neurons	—	Growing the dendrites responsible for learning.

The brain based approaches emphasises with respect to sentiments, segregated learning and the utilisation of mental models as showed up in Figure 1.1. The more interest the brain pays, the all the more richly the information will be encoded and held. Thus the better learning depends on better interest.

**Figure 1.1: Brain-based Learning Theory**

The effects of Brain-based Learning in education are:

- **Curriculum:** Curriculum is designed in such a way that it should create interest among students and make learning genuine.
- **Teaching:** The pedagogical approach is structured around real world problems with urging students to learn not only inside the classroom.
- **Assessment:** The assessment allows the students to understand their learning approach and inclinations. This makes the students analyse and enhance their learning process.

It's vital to be a dendrite hunter which no one other than the learner can do; therefore learning on own should be encouraged at an early age. The creativity, innovative perspectives and critical thinking won't get exhausted, on the contrary, more one use the more you get...

1.1.2 BBL Inspirations^[2]

Brain research and BBL unfolds that learning can be improved by presenting skills in natural way in terms of reflections, interactions and collaborations. Caine et al have plotted 12 principles for brain based approach for teaching-learning process in any educational organisation. These principles are derived after conducting several experiments and research in brain based learning domain. The highlights of these principles are given in Table 1.2.

Table 1.2: Brain-based Learning Principles^[2]

Principles	Description
Driving force for learning is to find meaning	Encourage here with detailed reflective questions.
Pattern gives meaning	Brain uses patterns to learn. So teaching should create patterns to present information.
Brain perceives and creates parts and wholes	Information or knowledge in parts helps the students in understanding and remembering.
Learning engages entire physiology	Learning happens naturally.
Parallel processing nature of brain	Teaching should not be monotonous, it should use different techniques.
Importance of emotions	Since emotions affects students' learning, emotions need to be respected by teachers
Focused attention is part of learning	Brain based learning needs teachers to use different modes to grab students attention.
Conscious and unconscious processing in learning	Students need to access all their abilities to maximise learning.

Every brain is unique	Same set of systems integrated differently in brain. So the teaching should attract and entertain learners as well as their interest.
Spatial memory and rote learning memory	Spatial memory for instant memory of experiences where as rote memory for storing information.
Learning will be best when facts and skills are embedded	This is with use of spatial memory, <i>i.e.</i> , through experiences and real life activities in the classroom.
Challenges can improve learning	Optimal learning occurs when tasks are appropriately challenged.

1.1.3 Strategising BBL

The natural way of learning plays a vital role in brain based learning. Gardner's Theory of Multiple Intelligences is correlated with brain based learning.^[3] The primary goal of applying Gardner's theory of multiple intelligences is to take advantage of considering students individuality. This helps the teachers to select suitable instruction mode for each student. Brain based education strengthens the need to differentiate teaching.

Figure 1.2 shows strategies of Brain-based learning process. It has been watched that these brain based learning methods are appropriate for all students, paying little respect to their learning challenges. The impact of music, physical exercise, food, memory techniques, articulation of the experiences, social parts on brains and their effects on learning are some of the examples that have produced rich information for teachers.

Dendrite hunting techniques

1. *Help the students to increase adrenaline, i.e., more secretion of Endorphins through practicing sessions of relaxing, exercising, laughing, slow, deep breathing and ever learning the new things.*
2. *Emphasize on experiential learning through projects, group discussion, role play, field trips and brain storming.*
3. *Adopt games, visuals, animation, mnemonics and music as complementary techniques.*
4. *Facilitate enriched environments with extra sensory and social stimulation by the way of interclass / interdepartmental/ inter-institution interactions, visit to museums etc.*
5. *Teaching-learning devoted to memorization should be greatly discouraged in lieu of which the skills based techniques be embedded .*

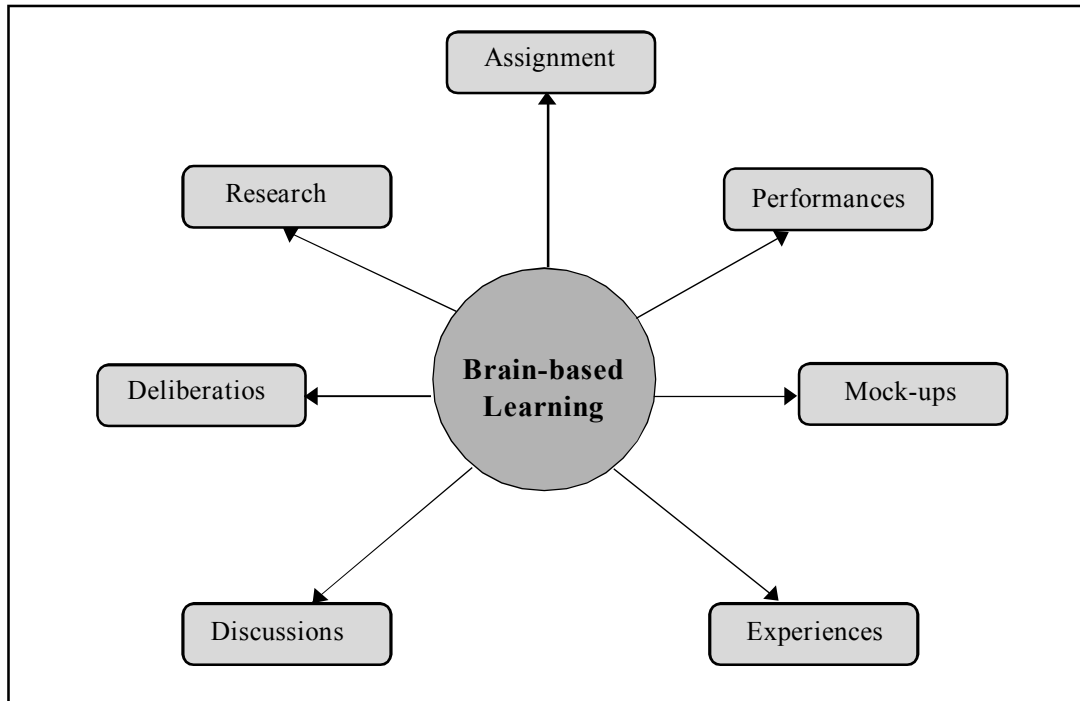


Figure 1.2: Strategies of Brain-based Learning process
 (<http://core21.yolasite.com/brain-based-learning.php>)

The three important interactive teaching strategies recommended by Caine are:^[2]

1. Creating a learning environment that conceals the student with interesting, related, hands-on activities.
2. Eliminating fears while creating a challenging learning environment.
3. Connecting to earlier learning and allowing the student to actively process the new information.

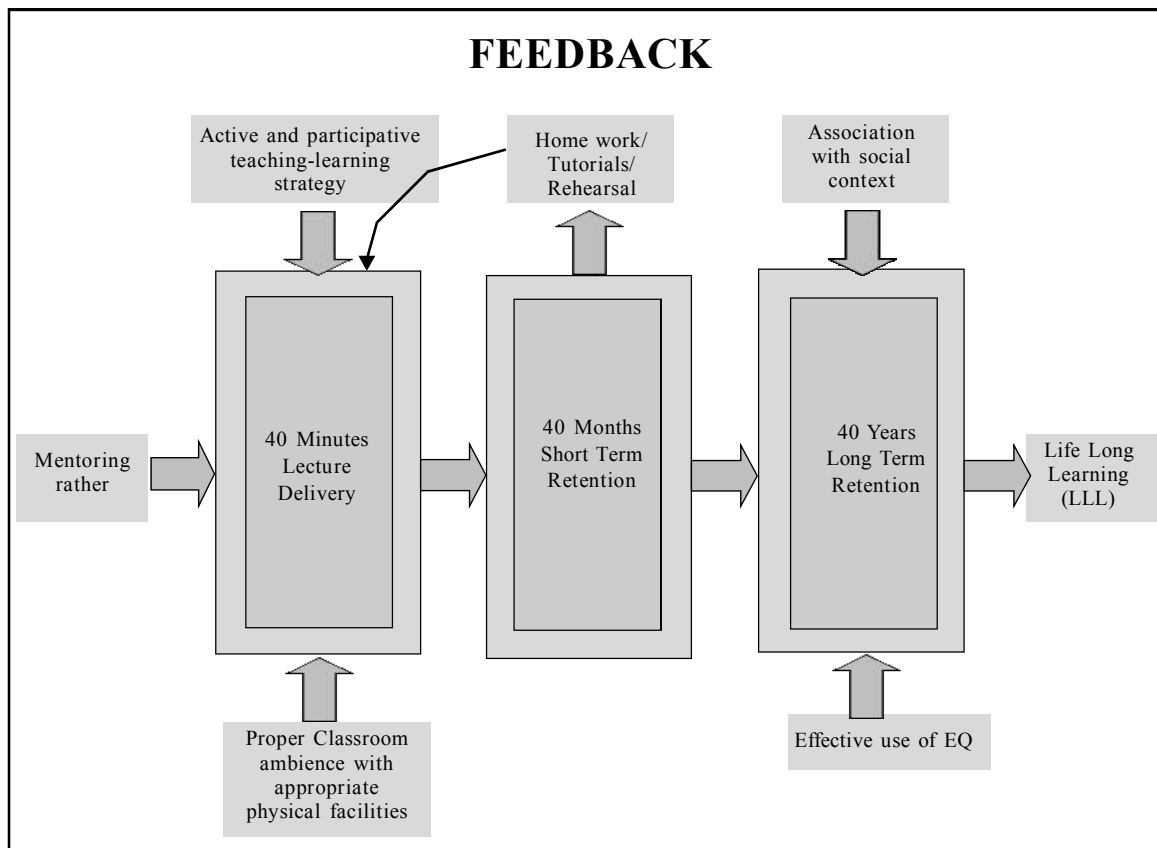
1.1.4 BBL Significance

Table 1.3 records the differences between teacher centered classroom and student centered classroom. Student centered learning enhances instructing learning process reasonably. An interdisciplinary educational program strengthens Brain-based Learning, in light of the way that the brain can better make connections when material is introduced in a joined way, instead of as disengaged bits of data.

Table 1.3: Teacher-centered classroom and Student-centered classroom

Teacher-centered classroom	Student-centered classroom
Conventional	Progressive
More focus on completion of syllabus	More focus on complete learning
Single subject and grade level focus	Thematic and real world application
Rote learning	Experiential learning
Product oriented	Process oriented
Short time on each concept	Focus on cross curricular activities

A nonthreatening condition that expels students' fear of frustration is viewed as best for Brain-based Learning. Teaching approach that upgrades Brain-based Learning includes Manipulative, Active Learning, Field Trips, Guest Speakers, Real-Life Projects that enable understudies to utilise many learning styles and different encounters as explained in figure 1.3.

**Figure 1.3: Teaching approaches that BBL**

1.2 Bloom's Taxonomy

The taxonomy of educational objectives is a system for depicting elucidations of what we expect that or mean students will learn subsequently of teaching.^[4] Bloom's Taxonomy was made in 1956 under the leadership of educational psychologist Dr Benjamin Bloom recollecting a definitive target to advance higher sorts of speculation in preparing, for example, analysing and evaluating concepts, strategy, systems, and models, rather than simply reviewing facts. Bloom's Taxonomy is a classification structure used to depict and see distinctive levels of human cognition, *i.e.*, thinking, learning, and understanding. Bloom's Taxonomy is a course of action of three distinctive leveled models used to mastermind enlightening learning goals into levels multifaceted nature and specificity.

Taxonomy is in a general sense a word for a classification. The large portion of the taxonomies underneath is dealt with the target that they continue from the least difficult to more intricate levels. An educational objective is an essential tool for teaching. It enables a teacher to express rational behind learning for students, which can admonish while arranging lesson outlines, test and task sheets. The formulation of educational objectives follows well defined approach.

1.2.1 Revised Bloom's Taxonomy

The first taxonomy gave deliberately made definitions to each of the six basic classes in the cognitive region.^[5] The classes were Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. Beside Application, each of these was broken into subcategories. The groupings were requested from easy to complex and from concrete to process. The revised taxonomy focused both on Knowledge dimension and cognitive process dimension [7]. The noun and verb, two separate dimensions are taken an interest in the revised Taxonomy. The noun giving the idea of the Knowledge domain and the verb forming the reason behind the Cognitive Process dimension:

- **Knowledge Dimension:** The knowledge about cognitive, a new knowledge dimension included in the revised taxonomy. Researchers are convincing the importance of students being made aware of their metacognitive activity and the appropriate usage of the same.
- **Cognitive Process Dimension:** Here the categories are renamed in which the order of the two was interchanged. Three orders were renamed, the demand of two was exchanged, and those class names held were changed to verb edge to fit the way they are utilised as a part of goals. And also category names are changed to verbal form for its usage in framing objectives.

The revised Bloom's taxonomy is revealed in the figure 1.4. It shows that the names of six major classes were changed from noun to verb.^[6] Following are the major changes saw in revised taxonomy:

- Verbs were used instead of nouns in the revised taxonomy
- Since the word *Knowledge* is not a suitable word to explain thinking, its renamed as *Remembering*
- For the betterment in defining thinking in each category, *Comprehension* and *synthesis* were retitled to *understanding* and creating respectively.
- *Application*, *Analysis*, and *Evaluation* were preserved, but in the verbal form as *Apply*, *Analyse*, and *Evaluate*. Along with main categories, the subcategories also replaced by verbs and some subcategories were reorganised.

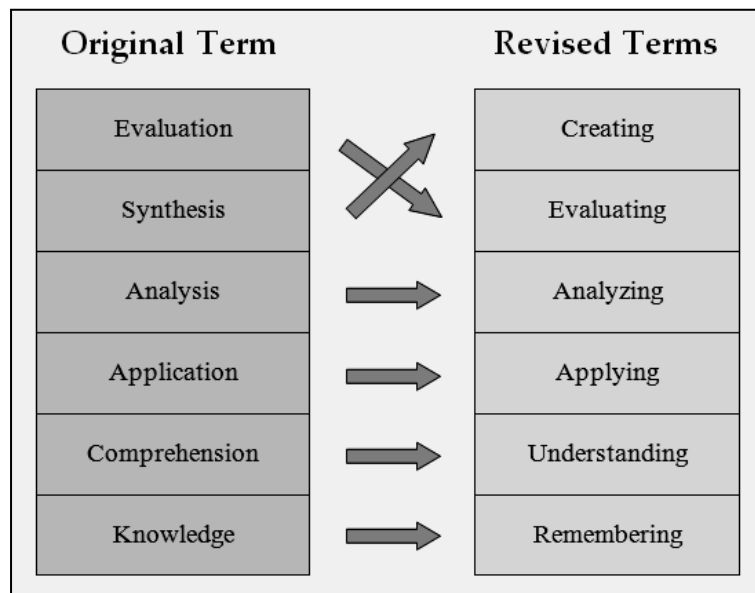


Figure 1.4: Blooms Taxonomy - original and revised
(Pohl 2000, Learning to Think, Thinking to Learn)

1.2.2 Bloom's Taxonomy — Structure of the Cognitive Process

Bloom's taxonomy gives an approach to manage thinking skill from basic to complex into six levels as shown in the figure 1.5. Table 1.4 clears up structure of revised Bloom's Taxonomy. This hierarchy of levels can help teachers in designing performance tasks, framing questions for meetings with students, and giving feedback on student work.

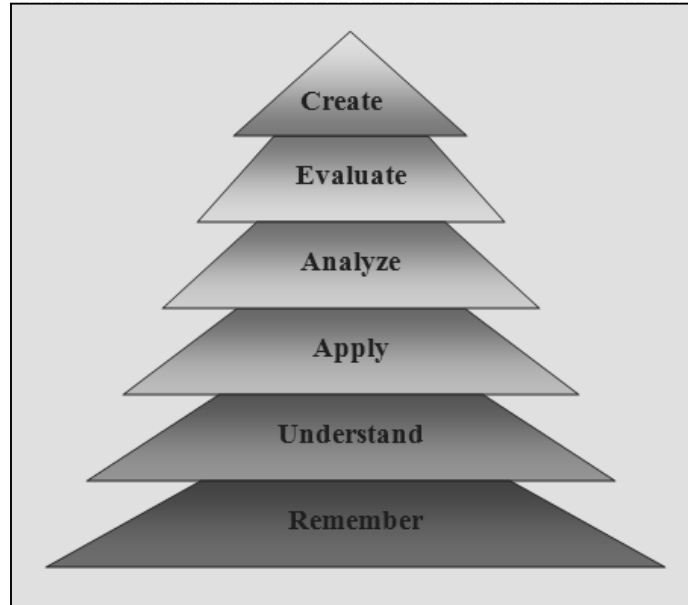


Figure 1.5: Bloom's Taxonomy

1.2.3 Setting Effective Objectives in the Classroom: Usage of Bloom's Taxonomy

An objective convinces the student why he/she needs to learn that lesson. If the objectives are used correctly, it help the students more reflective and active learner.

The study reveals that making use of variety of verbs while setting objectives is a good practice to achieve effectiveness in objective setting. These verbs can be part into levels addressing Bloom's Taxonomy. A verb diagram can help with this. Making objectives with these verbs not simply enables teacher to focus on where students should be toward the end of the lesson, yet it in like manner prompts creative lesson. Along these lines Bloom Taxonomy can be balanced for classroom as planning tool. Table 1.5 records some of illustration verbs according to classes of Bloom's Taxonomy which are helpful while setting goals.

Table 1.4: Structure of revised Taxonomy^[7]

Categories	Description — Cognitive process	Sub Categories
Remembering	Reveal memory of already learned material by reviewing facts, terms, essential ideas, and answers.	Recognising Recalling
Understanding	Exhibit understanding by sorting out, comparing translating, interpreting and expressing fundamental thoughts.	Interpreting Exemplifying Classifying Summarising Inferring

		Comparing Explaining
Applying	Tackle issues to new circumstances by applying gained information, facts, methods and standards in a different way.	Executing Implementing
Analysing	Inspect and break data into parts by recognising thought processes or causes. Make derivations and discover proof to bolster speculations.	Differentiating Organising Attributing
Evaluating	Display and protect conclusions by making judgments about data, legitimacy of thoughts, or nature of work in view of an arrangement of criteria.	Checking Critiquing
Creating	Aggregate data together distinctively by joining components in a new pattern or giving an alternative solution.	Generating Planning Producing

Table 1.5: Example Verbs with Reference to Blooms Taxonomy^[8]

Knowledge	Understand	Apply	Analyse	Evaluate	Create
Identify	Summarise	Solve	Analyse	Assess	Design
Describe	Classify	Apply	Compare	Rank	Hypothesise
Match	Distinguish	Demonstrate	Infer	Conclude	Write
Discover	Convert	Sketch	Calculate	Debate	Produce
Duplicate	Estimate	Interpret	Criticise	Justify	Role play
Visualise	Infer	Teach	Deduce	Persuade	Collaborate
	Illustrate	Predict	Plan		Present
	Research	Write	Test		Test

1.3 Moving from Physical to Online Courses: Pedagogical Shift

In a physical classroom, there are three basic elements - the learner, the content and the teacher as shown in Figure 1.6. The teacher utilises various strategies and tools to facilitate effective teaching-learning interactions between these elements. We can identify four types of interactions in the classroom:

- 1. Teacher-Learner interaction:** The dialogue between the teacher either as the explanation based on the slides or the question answer sessions in the class
- 2. Teacher-Content interaction:** The teacher is interacting with the content that is the slides that was prepared by referring various sources, like books, papers etc.
- 3. Learner-Content interaction:** Students referring various educational resources for understanding and for problem solving

4. **Learner-Learner interaction:** Discussion between the students in entire process of learning

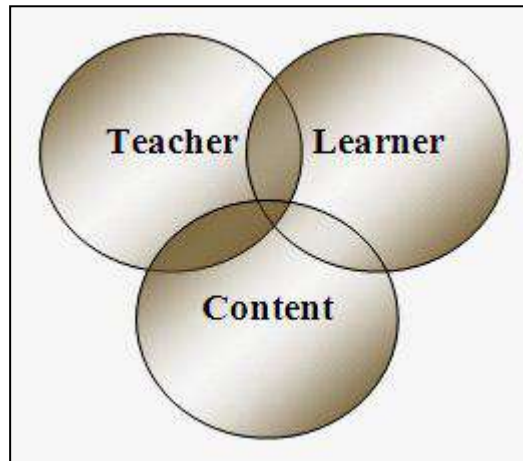


Figure 1.6: Three basic elements of classroom

Online learning settings are also able to provide learning elements, interactions, and features. The three main elements still remain the same in online learning. The major differences in online learning setting are:

- The teacher plays a role of facilitator who uses the various features available in the learning platform to ensure that all these interactions happen in an online setting.
- Facilitator initially interacts with the content and prepares videos, resources like slides, practice problems etc., for students to work out. This is then made available as an entire course.
- The students will interact with the content by accessing the course, watching videos and doing problems.
- Discussion forums plays major role for facilitator-learner interaction and the learner-learner interaction.

1.3.1 Changing Role of Teachers in 21st Century

Traditionally, teachers spend most of their time in preparing for lectures and in delivering the same. In addition to this teachers give assignments and homework to students and students solve them. But, today the scenario is so different in terms of the ability of learners to learn not only from teachers but from a variety of other sources.

- There is a greater access to knowledge in the digital form. The greater access means that learners are able to use internet to access not only online tutorials but even pre-recorded lectures.

- The use of technology has become Ubiquitous. Every learner practically has access to internet and access to such resources.
- The most important point is that the learning of a student does not depend upon how well teacher deliver the lecture, but it depends upon how much active time a student spends in learning.

A transformation, *i.e.*, teachers being the information provider becoming learning facilitators is a notable pedagogical shift in 21st century. Here teachers are adopting the technology based teaching to achieve this transformation. The teaching learning environment comprises all aspects of technology that is useful for education such as online and blended or hybrid pedagogy process. Since students have independent access to that knowledge, it is very much required to utilise lecturing time to do something else. Technology enhanced pedagogy can facilitate students to learn better by engaging them in our classes, not in conventional delivery of lectures but in solving problems in discussion session and so on.

1.3.2 Online Learning Environment: Learner-centric Approach

We can achieve pedagogic modifications in pedagogic features to ensure that the entire online teaching-learning experience is more learner-centric. The features are:

- **Learning Dialogues:** In online settings, facilitators' video is equivalent to the teacher lecturing in front of the students. Learner can play the video or pause it by clicking on the play or pause button, learner can watch the video from anywhere, anytime
- **The Reflection Spots** that are kept in the video to make the learner pause the video think and then write the answer to a reflection question. By adding reflection spots, learner will no longer be watching passive videos rather learner will be involved in a learning dialogue with the facilitator of the course.
- **Learning by Doing Activities:** These are the concept of doing practice problems immediately after watching the video. Answering such practice activities will help in reinforcing the concepts that were discussed in the Learning Dialogue Videos.
- In online settings the minor difference is that each learner gets an opportunity to answer question and gets a detailed feedback. This helps in making the learning process becomes more learner-centric.
- **Learning Extension Resources:** The resources meant for extending learning on what the learners have already learnt. That is, they are advanced resources that help learners in going deep in a particular content.
- **Assimilation Quizzes** help to test whether learners have assimilated the key concepts from these resources. By making assimilation quizzes as graded facilitators can also ensure that there is the sufficient premium for learners to go through these learning extension resources.

- **Learning Experience Interactions:** It provides a platform for learners to exchange their own experiences. It consists of a focus discussion having specific instructions on what to discuss and how to discuss, followed by a graded reflection quiz.
- **Reflection Quiz:** It is based on the discussions within the forum and will ensure that learners go through most of these discussions before trying to answer the quiz. It ensures learners participation and hence improves the collaboration.

1.3.3 Mentors' Web Presence

There are various options available to setup a simple website for teaching and research faculty. Along with consuming content, teachers also need to create content which is to be used by others, particularly our students. Some of them could be our curriculum vitae, research work which could be topics, publications. Teachers can create a blog to post teaching material or other course related contents. Teachers can make use of Content Management System (CMS) tools for their web presence. There are open source and freely available tools such as Drupal, Joomla WordPress etc.

Benefits of mentors' web presence are:

1. Mentor can host all sorts of resources on website and can make it available to learners.
2. Students can access learning resources as and when required.
3. Online discussion between mentor and learner, as well among peers.
4. Less or no face to face interaction.

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2

ICT Savvy Classroom: An Constructivist Approach

2.1 Evolution of ICT Tools^[1]

Education has always been a changing system that is continuously adapted by the society of the time. All through this time, education has subsequently taken after various publication technologies which have in course, changed certain parts of the standard classroom and the learning process. This has created positive impact on the process of communication inside the classroom as well as outside the class. The way in which students intermingle, access and record information has been at the cutting edge of societal change, sensibly influencing our educational system. The best in class ICT devices have amazing impact in renaming classroom development. The modern Smart Boards have altered the sphere of learning considerably, framing the very means of passing on knowledge to a more prominent size of students.

2.1.1 Blackboard: An Unparalleled History

Since 1853, the chalkboard has been completely utilised all through education systems, and still remains a staple gadget in any classroom today. It is relatively simple to use, present a lesson with chalk, keeping large amount of students engaged. Thus sharing knowledge and discussing in a fundamental way. Precisely when at first introduced Chalkboards were picked up as a substitution to old hand-held slates, were instructors and students would gradually need to make whole lessons on, making it particularly troublesome for one on one correspondence and effective learning. Going before this time, teachers and schools required methodologies for visual presentation of information to many students at the same time. They were struggling to present contemplations, diagrams and exercises. Chalkboards transformed the system of learning, affecting a way for expansive class lessons, to aggregate interaction and persuading one on one movement. It empowered lessons to be composed on this noteworthy scale, enhancing exchange and the comprehension of subjects.

2.1.2 Smart Board: A Wonderful Innovation

Moreover as with most conventional publishing technologies, the chalkboard is finding the opportunity to be discernibly outdated and it is essential to adapt to new emerging education tools for example, the Smart Board. A snapshot of Smart Board is given in figure 2.1. Much like the chalkboard, the introduction of the Smart Boards in the mid 2000's, revived this technique for education. It basically adjusted the classroom by introducing additional features such as

connecting to web, collaborative document sharing, Java, Flash all accessible for Smart Boards. Smartboards are directly going about as a digital window for teachers and students.



Figure 2.1: Smart Board – A Snapshot

2.1.3 Chalkboard to Smart Board: An Era of Digital Transition

Pedagogical shift from that past one dimensional space to a multi perspective world is showed up in figure 2.2. It is creating new chances to both the students and educators. In case of chalkboards, students get lesson on the board, they copy the same into their notebook and carry the notebook whenever required. But the current students are using digital documents which are available on websites any time. Smart Boards provides multidimensional way to deal with learning with advanced technologies. As students comprehend how to connect with each other and the material being appeared, there is an expanded level of engagement between the students and board and among the students themselves.

This sort of facilitated learning has made these publication technologies effective in educational domain. The substance of education has adjusted to these key new types of developments, updating educational measures and redesigning styles of learning for the better future of education.

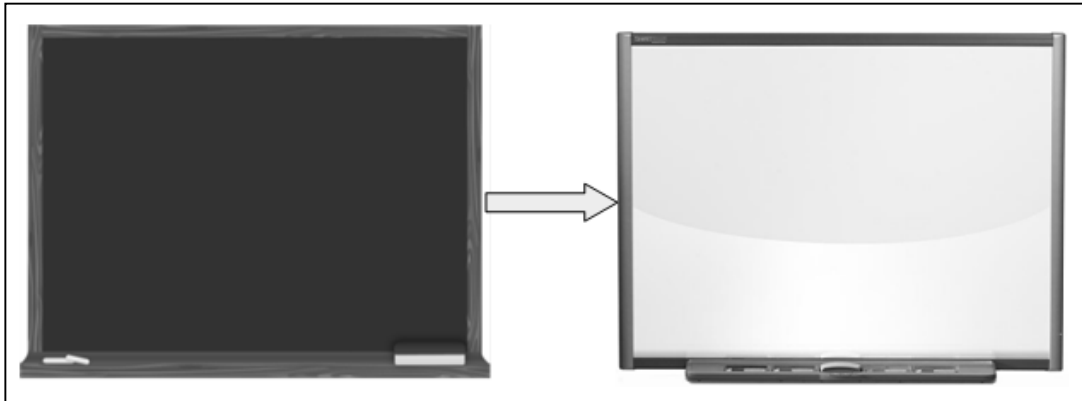


Figure 2.2: Chalkboard to Smart Board

2.1.4 Ultimate Journey of Chalkboard to Smart Board

Smart Board is an expensive technology. Since it is touch screen, number of the applications and cursors bob up if you press against the board, making the control of your own created work progressively troublesome. Only one person at a time can also use the board which makes it a bit time consuming at times. The chalkboard, an educational communication tool, is definitely a reliable technology without having any burden of modern day system crashes, unlike the smart boards of today. The chalkboard is also very simple to use, no complex manuals involved, a rather familiar technology for all. It in addition helps students to work collaboratively.

Smart Board Technology in the classroom can improve educational tasks by taking a typical lesson and transforming it into a fun, more intuitive one. The touch screen licenses instructors to run programs with the tap of their finger. This makes it difficult to research for the educator, however for the students besides.

2.2 A Wealthy Account of Publication Technologies

A teaching aid is something which makes teaching simple for the teacher and makes learning more effective and great for the students.^[2] A reliably growing number of innovative advances offer new ideal models for preparing, permitting novel sorts of teaching and understanding how to be made. These classroom publication tools are used for exchanging photographic and varieties of pictures in an enlarged form onto a viewing screen. Many of such projectors utilise a light source and a focal point framework. This section explores such projector based publication technologies which are useful in classroom.

2.2.1 Overhead Projector (OHP)

This kind of projectors uses transparency slides, Slide projectors were commonly used for entertainment in the 1960s. These are still in use even though there are more advanced

tools presently available. The slide projectors are usable and useful gadgets that utilisation photographic slides to show pictures on a screen or divider, a snapshot is showed up in figure 2.3. The new slide projectors have small built in screens or walls enabling instant and portable viewing. One can view any kind of presentation from anywhere. There are different types of slide projectors, *e.g.*, carousel projectors, dual slide projectors and single projectors. Currently the slide projector has been supplanted by digital cameras, video/DVD players, TVs etc. There is a moderate decrease in buying a slide projector as the makers have quit making them.



Figure 2.3: Overhead Projector – A Snapshot

2.2.2 Digital Projector

The digital projectors enabled the educator to pass on lessons to the entire class from the PC. One link connects the computer to the projector, which by then expected the computer screen on to the wall. In collaboration with the class, the teacher inserts images and graphs to the slides of a presentation. This was a basic, yet delighting to hold students' attention.

Digital projectors are to a great degree valuable and extraordinary instructing tools that empower a degree of learning openings when related with desktop PCs in entire class educating conditions. Advance usefulness is accomplished by the utilisation of an intuitive whiteboard. A digital projector is a computer demonstrate structure that introductions broadened picture on a screen. This can be utilised as a bit of a program that view 3D, normal PowerPoint presentations, and MP3 movies from a PC.

The following points list some of the more typical uses for Digital Projectors.

- Presenting student work to the entire class.
- A powerful method for demonstration in classrooms, computer laboratories, staff training, or any sort of meetings
- Facilitating video conferencing through huge screen group participation

- Displaying and browsing Web pages in a controlled and collaborative way.
- Enhancing proficient advancement with staff groups by means of vast screen projection
- Image projection in conjunction with wireless devices or an interactive whiteboard.
- In conjunction with a TV, video or web source, an advanced projector gives methods for introducing video to students group.
- Students with unique needs can especially profit by material being introduced outwardly as it can help in both data preparing and maintenance.

2.2.3 Liquid Crystal Display (LCD)

LCD projectors are lightweight and adaptable; they give great quality pictures. One can go for LCD projector depending on its usage. Digital LCD projectors are much of the time utilised for places, for example, the exhibitions, advertising or cinema hall etc. The LCD projectors are the forefront elucidations of overhead and slide projectors, showed up in figure 2.4. Be that as it may, are littler and extend pictures to about any level surface. This is the most broadly utilised projector with the capacity to transmit superior quality pictures with high pixel thickness.



Figure 2.4: Liquid Crystal Display – A Snapshot

2.2.4 Digital Light Processing (DLP)

DLP innovation is sensibly valued for the home, business and schools, shown in figure 2.5. They are great, lightweight projectors which you can simply connect to and begin utilising straight away. Envision a compact projector that fits in the palm of your hand or is a piece of our PDA. Projectors that can fit in your pocket so you can extend anything, whenever, anyplace while delivering a photo etc. DLP Projectors are accessible now making your versatile projection conceivable outcomes interminable.



Figure 2.5: Digital Light Processing – A Snapshot

DLP Cell Phone Projectors are a mobile phone and also a projector. Using this projector, there is no need of sharing pictures, pictures, sound, video, website pages or messages from phone to others. With a DLP projector melded with your mobile phone, sharing pictures or video has taken a whole new significance. Picture taken from mobile phone camera and can be presented them in a split second on any surface to a major anticipated picture. Snapshots of DLP Cell phone projector and DLP Handheld projector shown in Figure 2.6.

Advancements in DLP are:

- **DLP Projectors:** Ultra versatile and minimal can be effortlessly associated with almost any gadget's video-out port – Smart telephone, iPod, digital camera, digital camera, tablet and that's just the beginning.
- **DLP Cell Phone Projectors:** With a DLP projector incorporated with cell phone, sharing pictures etc. has gone up against a radical new importance. Picture brought with phone camera and after that imparting them instantly on any surface to a major enlarged picture.
- **DLP Handheld Projectors:** These give a simple approach to give an improvised slide appear. It is a definitive travel sidekick, furnished with front line innovation for imaging advancements.
- **DLP Notebook Companion Projectors:** It helps in sharing thoughts, displaying data or sit back and watch a movie on the wall – without the weight and heft of a conventional projector.



Figure 2.6: DLP Cell Phone Projector and DLP Handheld Projector

2.2.5 Technology Innovation for 21st Century

The present techno savvy students like to engage in dynamic and immersive way. DLP projectors convey intuitiveness and multi-dimensional educational programs to the classroom with unparalleled picture quality. Improvement in students' participation and performance are the expected outcome. The 3D contents are more accessible today and with DLP 3D prepared projectors. Some of the illustrations on educational benefits of use of projectors in the classroom are as follows:

- Walk through in virtual building structures, 3D condition to feel immersion.
- Show the subtleties of the astonishing human life structures in detail.
- Explore virtual photography to bring science, topography lessons in classroom.
- Use of 3D lessons, for example, simulating theoretical concepts.
- Fly through the universe in 3D and motivate new space adventurers in the class.

A DLP education projector can help enhance student performance by empowering more noteworthy classroom participation to expand the help of the substance being showed up. From computer interactive simulations and advanced imaging based presentations to connecting with internet students get a lot more from the educational modules when it's accomplished through the smartness and clearness of a DLP projector.

2.3 Interactive Panel/Smart Board

The chalkboard is improved by advancement as Smart Board. Electronic slates (Smart Boards), now routinely utilised as a part of business conditions, meanwhile oblige free casing, hand-drawn content and graphics and projected content. It has additional portion that the customer (educator or student) can download a preview of the content to a printer or an archive. Technology that helps educators joins mentally fortifying intuitive mixed media material into their lessons.

2.3.1 Components and Features – Interactive Panel

A snapshot of interactive panel is given in figure 2.7. Table 2.1 lists feature and corresponding descriptions of interactive panel. Table 2.2 details the parts of interactive panel.

Table 2.1: Interactive Panel – Features

Feature	Description
Touch support	The features of computer such as activating applications, creating and editing new documents, browsing, multimedia apps, so on — by touching the panel's surface.
Writing and drawing Support	User can write over any application in digital ink using pen feature, and also can erase the writing. Different ink features are enabled by Pen ID.
Audio support	Interactive panel incorporates integrated speakers for exhibiting sound from associated input sources.

Table 2.2: Interactive Panel — Components

Component	Description
Touch Screen	Various operations just by touching the panel's surface.
Cameras	Track finger and pen positions over the screen.
Pen with Eraser	Two pens with erasers connected. Expelling a pen from the holders enacts it and empowers user to either draw or delete digital ink.
Connector board	Contains arrangements for interfacing panel to power, computers and different gadgets.
Tape Channel	Channel that contains intelligent tape.
Speakers	Two coordinated side terminating speakers.
Front control board	Contains the Standby, Input Select, Mute and volume control catches.
Menu control board	On screen show menu contains alternatives for Picture mode, Color, Sound, Language, Setup etc.



Figure 2.7: Interactive Panel – A Snapshot

2.3.2 Equipment Basics for the Smart Board for Flat-panel Displays

The details of hardware for Smart Board are:

- **Interactive Whiteboard:** It is the Smart Board for Flat-panel Displays that fits over a current plasma screen or liquid crystal display panel. Connecting a computer to the plasma screen or LCD board shows the computer picture through the overlay. Computerised Vision Touch technology permits client to utilise finger as a mouse to control computer's applications. Digital cameras, situated toward the sides of the screen's casing, perceive the position of user finger or pen instrument on the panel. This empowers touch control and writing in digital ink.
- **The Smart Pen Tray:** This tray comprises of four shading coded spaces for pen tools and one opening for the eraser. Here each opening has an optical sensor to distinguish when the pen devices and eraser have been grabbed. The pen tool as well as finger can be used. The technology in the pen plate recognises recently used pen feature. The lights over the tool slots demonstrate which tool was evacuated last.
- **The Pen Tools:** There are four pen tools such as black, red, green and blue and one eraser. While writing a pen tool taken from the pen plate and to delete eraser is selected from the pen plate and moves it on notes.
- **The Pen-tray Buttons:** The first set of buttons to one side of the pen tools empowers two vital on-screen capacities. The top button is utilised to dispatch the On-Screen Keyboard. The base button is utilised to make user's next touch on the interactive overlay a right-click.
- **Display Control Strip:** The Display control strip to control the power, volume, screen width and input sources of the Smart Board.

2.4 Smart Software

To get benefits of interactive panel's characteristics, it is required to introduce Smart programming on the computer. Smart Notebook sets the standard for creating, passing on and managing interactive lessons within a single application. It puts all the instructional materials instantly open and allows saving of any notes or content written during the lesson.

Digital cameras of the panel/board track the position of the pens, eraser and user finger on the sharp surface, and after that send the data to the Smart programming, which translates this data as mouse snaps, computerised ink or ink deletion in the correct location. Adjustment decides the position and edges of the cameras to precisely recognise location of touches on panel/board.

Table 2.3 explains the components of SmartBoard software.

Table 2.3: Smart Board Programming Segments

Component	Explanation
Smart Start	start tools, applications and files.
Notebook Programming	application for making and delivering presentations.
Handwritten Identification	to convert notes to typed content.
Smart Console	on screen console for typing text and notes.
Floating Tools	for composing notes and drawing shapes.
Smart Gallery	to embed pictures and layouts on pages.
Smart Recorder	to spare the recording of activities on the screen.
Smart Video Player	to make notes over recordings.
Smart Display	to control board display on the screen.
Control Panel	to change the software and hardware settings.
Mobile Settings	Settings related to wireless devices.

2.4.1 PowerPoint — A Presentation Tool

PowerPoint is presentation tool that is a part of the Microsoft Office bundle. PowerPoint utilises a graphical way to deal with presentation as slide displays that keep running with the oral delivery of the subject. It is the worldwide utilised package for presentation. Following are the features of Power Point:

- PowerPoint presentation consolidates content, shapes, pictures, graphs, recordings and much more.
- PowerPoint template can act as blueprint for presentation contains layouts, theme colors, theme fonts, theme effects, background styles and even content.
- It has three noteworthy capacities: an editorial manager that permits content to be embedded and arranged, a strategy for embeddings and controlling pictures and a slide-indicate framework to show the content.
- PowerPoint equipped with the resources important to give an expert presentation for gatherings, lectures, talks or other comparable circumstances. Presentation often incorporates slideshows and other customisation choices that can be custom-made to the presenter's particular needs.
- It's a complete presentation package; the same slides can be printed on overhead transparencies.
- Microsoft PowerPoint is effective presentation programming created by Microsoft. PowerPoint is packaged together with Word, Excel and other office tools. The program utilises slides to convey information rich in multimedia.

2.4.2 Teaching Tools for Teachers

There are different online open source free teaching tools accessible for teachers. Table 2.3 lists some of them.

Table 2.4: Open Source Teaching Tools

Tools	Explanation
Periodic Table	Discusses element properties.
Geo-Gebra	Algebra application.
World Wide Telescope	Explores universe with telescope feature.
Screen recorder	Recording computer screen with background narration, <i>i.e.</i> , to create screencast.
Earth Explorer	Three dimensional view of the earth.
Anki	Note down things for future use.
Youtube downloader	To download Youtube videos.
HotPotato	To create simple exercises.
MicrosoftMath	Calculator with formula and equations.
Yenka	Provides 3D models for learning.
E draw max	Drawing software to draw charts, maps, diagrams etc.

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3

Surging a Smart Classroom: Educational Multimedia Approach

3.1 Learning Management System for Digital Ambience

Technology alone won't change education. Or maybe, technology must be comprehensively and systemically coordinated keeping in mind the end goal to change student learning. Teachers require a web-empowered social database that links educational activities, instructional contents, evaluation structures, student information, and staff proficiencies, which can be capable by Learning Management System (LMS). A LMS is a network based educational technology for the administration, documentation, monitoring, detailing and delivery of e-contents or preparing programs. It is a basic tool for e-Learning experts with an approach to make and convey content, monitor student participation, and assess student performance.

3.1.1 Need of Learning through LMS

It is required to attract teachers to control and oversee student accomplishment all the more successfully by contextualising the learning data. We are enlisting the need for LMS hereby:

- Identify gaps in teaching-learning process related to teaching resources, evaluation system, staff expertise in various programs
- Empower students with the interesting resources that enhances their learning
- Produce reliable, instant data about student performance for customise learning
- Enhance parental association in learning process
- Connect staff improvement projects with student learning and accomplishment
- Scope for staffs to work efficiently to enhance responsibility

3.1.2 LMS Learning Framework — Organising Digital Content

Figure 3.1 briefs the components of LMS, an online platform that empowers the delivery of contents, resources, tools, and exercises to students inside the classroom as well as outside. It permits instructors to offer custom made guideline that can be accessed by students at any time any place.

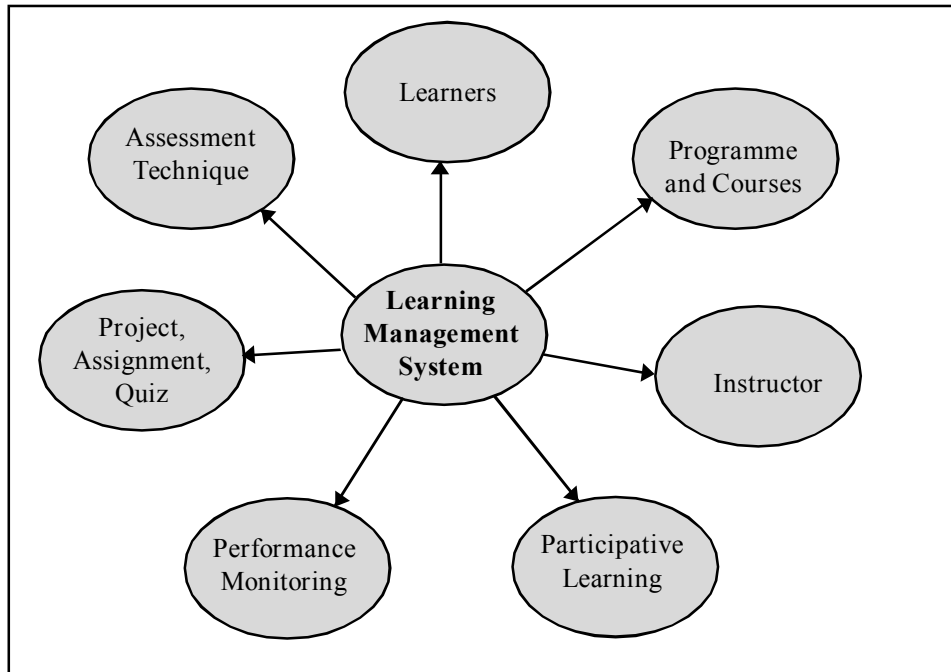


Figure 3.1: Components of LMS

Technology plays a vital role in achieving customised learning. In connection to this LMS able to monitor student's progress, evaluate their learning, empower educators know what to be provided to students, and records learner performance. A LMS can interface with educators, parents, and understudies by procedures for access to data that can change and shape a student's personalised learning approach.

Figure 3.2 gives structure of LMS. Through a LMS, facilitators, instructional experts, and teammates can elucidate learning goals, change the content. Instructional resources, for example, course contents, online applications, video lectures, e-books and so on are facilitated by the teacher. The learning method is connected and relevant. Teachers can report, record, and electronically share classroom lessons.

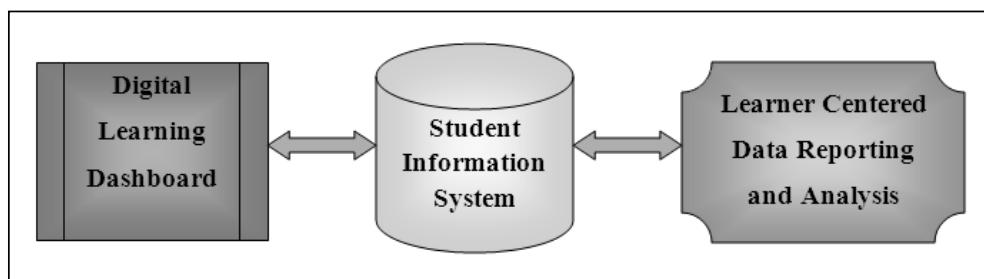


Figure 3.2: LMS Framework

3.1.3 Learning Process Handling: Capabilities of LMS

LMS is the structure that handles all parts of the teaching-learning procedure. LMS connects with following features:

- Create content and integrate content with outsider courseware.
- Access to content delivery including the medium, strategy and learners.
- Prepare lecture plans for learners, teachers and classrooms.
- Constructivist-based guideline for example learner-characterised objectives.
- Responsiveness to learner needs.
- Evaluate learners' performance and instant feedback on learning.
- Learning in and out of the classroom environment.
- Account security in terms of passwords and encryption.
- Parental participation.

3.1.4 LMS Tools

LMS tools encourage learning and correspondence with students in and outside of the classroom. This may include: Learning resources, links to online material, instant assessment and feedback mechanism, Discussion forum, Real-time messaging, E-mail, Announcement posts. In addition to this, appraisals and online review books are utilised to build educator profitability and track student performance while guaranteeing that the course is meeting curricular goals. Few such LMS tools for reference are enlisted here:

- Moodle
- Schoology
- Desire2Learn
- Blackboard
- Eliademy
- Rcampus
- Edu2.0
- Atutor
- Edmodo
- Forma LMS

3.1.5 Benefits of LMS

- Enables multiple learning modes such as video lectures, documents, presentations and set of activities

- LMS can contextualise the instructive experience and helps teachers to balance among teaching and learning.
- Enables teachers to provide additional resources to enhance the curriculum.
- Blogs, Wikis, Discussion Forum provides collaborative learning.
- Self-directed learning provides flexibility for students control over their learning.
- The LMS assists teachers in creating question banks and use other evaluation techniques to monitor students' understanding.
- Web-based LMS are open to all understudies, they can access course contents from anywhere.

3.1.6 Choosing LMS

An assortment of learning administration frameworks are accessible, both free and commercial. Suitable LMS is picked in light of following components:

- Reason behind adapting LMS with objective and goals
- Need to check can goals satisfied by open source LMS or go for commercial
- Support for web resource access
- Students evaluation system
- Details of multimedia support
- Communication and correspondence feature support
- Level of technical support

3.2 Moodle — An Online Learning Platform

Moodle is a web based Learning Management System (LMS) empowering instructors to make dynamic courses that broaden learning, at anytime, anyplace. The activities and resources are prime parts of courses in Moodle. This section explores various aspects of Moodle for the quality enhancement of teaching-learning process.

3.2.1 Teaching Supporting Features of Moodle

Table 3.1 briefs resources available in Moodle and their usage.

Table 3.1: Resources in provided in Moodle

Resources	Usage
Add Resource	Provision for adding course material such as Word Document, PowerPoint, URL to a webpage.
Lesson	To provide resources related to lesson.
Wiki	Use of some learning activities.
Glossary	Supporting tool for learning exercises.
Quiz	To get instant feedback on learning.
Assignment	Mechanism for learning evaluation.
News Forum	Convey course declarations.
Discussion Forum	Learning exercises and discussions.
Database	Storage for learning activities.

Moodle helps with accomplishing the following:

- Tools such as Resource upload, News, Glossary are example for easy Information exchange from instructor to learners.
- Discussion forums support dynamic correspondence and interaction among peer learners and interaction with the instructor.
- User friendly environment where resources can be attached with e-mail.
- Students can work in team projects, hence collaborative environment experience is possible in online learning too.
- Assessment mechanism allows teacher to get instant feedback on students' learning, survey helps in gathering feedback on learning process.

3.2.2 Moodle Tool Guide for Teacher

Moodle helps instructor in managing following activities:

1. **Course Settings:** Course creator can change settings of the course such as course in week format or section format, number of sections etc in course settings page. This is shown in Figure 3.3.
2. **Design Course Homepage:** Teachers can customise appearance of course page. There are different themes available for the display of blocks in different regions. Figure 3.4 demonstrates the parts of a common course landing page.
3. **Add an Activity or Resources:** Teacher can add resources for example, a file, a video or link in course the page to assist learning. This is done by clicking Add an activity or resource in a course area. Learning is possible by doing activities. So

Moodle provides activity module where learner can contribute in a discussion, upload assignment, answer inquiries in a test or team up in a wiki. Figure 3.5 shows adding an activity or resource to an already created course.

4. **Course Enrollment:** This is to enroll students to the course. There are different types of enrolment such as manual enrolment, as guest, self enrolment. Thus only the authenticated users can access the course contents. The enrolled user page records activities performed by users as shown in the figure 3.6.
5. **Quiz:** Teacher can get instant feedback on learning by using Quiz module. A quiz with different types of questions such as multiple choice, true-false and short answer questions can be set so that students need to answer immediately after learning the content. . The quiz design page is shown in figure 3.7. Thus created questions maintained in the question bank and can be re-utilised as a part of various tests.
6. **Grade:** All the grades for each student in a course can be found in the course grade book, or Grader report as appeared in the figure 3.8.
7. **Reports:** Teacher can create distinctive sorts of reports. A course action report, demonstrates the quantity of perspectives for every activity and resource.
8. **Forum:** The discussion is possible in online learning platform also. The forum module is an activity where students and instructors can exchange thoughts by posting remarks. Discussion posts can be reviewed by the instructor or different students.
9. **Reusing information:** Information can be reused by Activity completion or import course information.

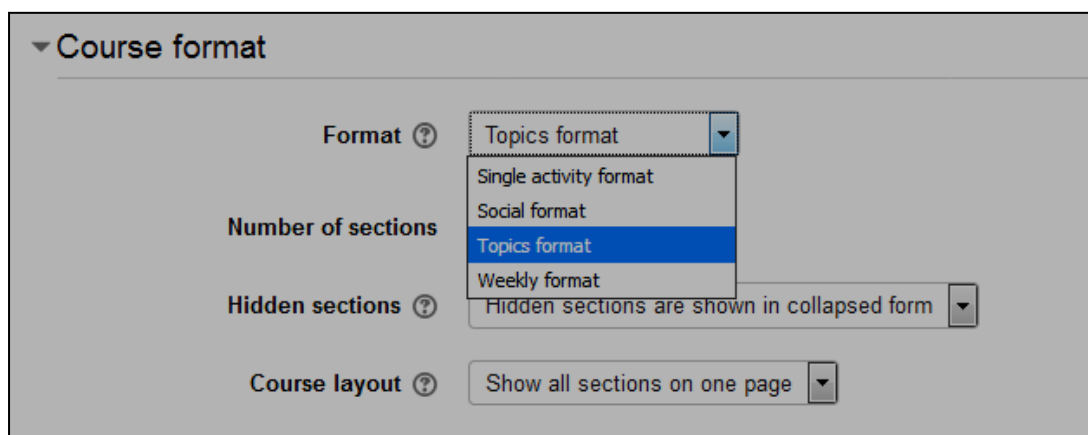


Figure 3.3: Course Setting

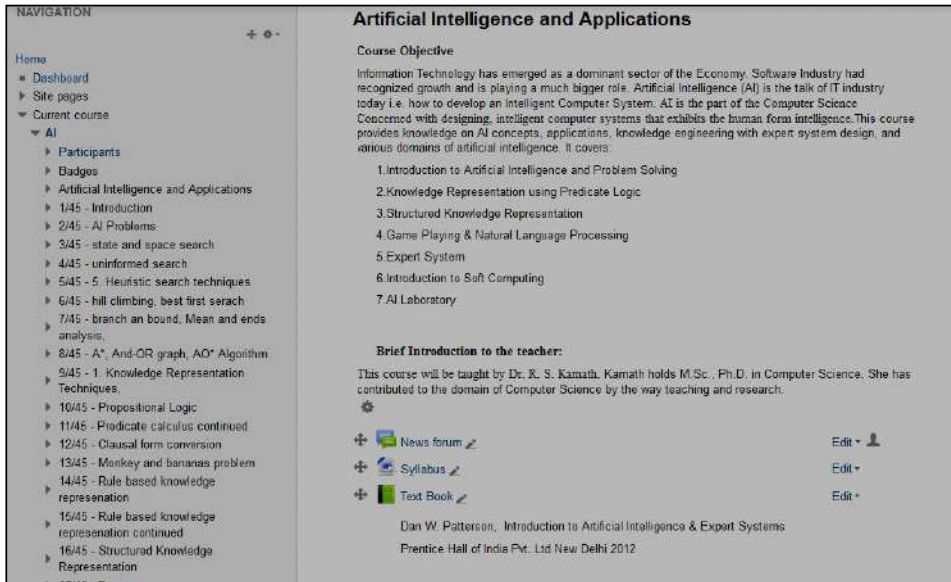


Figure 3.4: Design of Course Homepage

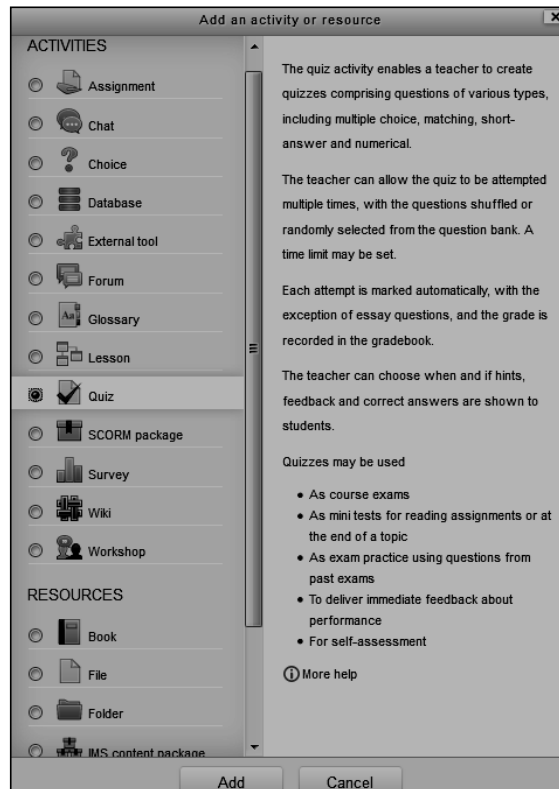


Figure 3.5: Add an Activity or Resource

404 - Computer Communication N/W: 62 enrolled users

Home > MCA 2015 > Semester-IV > 404 - Computer Communication N/W > Users > Enrolled users

Enrolled users

Search Enrolment methods All Role All Status All

First name / Surname / Email address	Last access to course	Roles	Groups	Enrolment methods
Aichay Ehat mca15003@siberindia.edu.in	Never	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
Anjali Deshmukh mca15010@siberindia.edu.in	3 days 21 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
maheshwari deshpande mca15012@siberindia.edu.in	2 days 21 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
mca1-2014 gkadam gkadam@siberindia.edu.in	1 day 18 hours	Student X		Manual enrolments from Thursday, 15 January 2017, 12:00 AM <input type="button" value="X"/>
Padmaja Gurav mca15013@siberindia.edu.in	3 days 21 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
Pooja Kadam mca15017@siberindia.edu.in	3 days 19 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
sameena kagwade mca15020@siberindia.edu.in	13 days 20 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
Rajani Kamath rskamath@siberindia.edu.in	7 secs	Teacher X Course creator		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>
pooja kamble mca15022@siberindia.edu.in	3 days 19 hours	Student X		Manual enrolments from Saturday, 14 January 2017, 12:00 AM <input type="button" value="X"/>

Figure 3.6: Course Enrollment

Choose a question type to add

QUESTIONS

- Calculated
- Calculated multichoice
- Calculated simple
- Embedded answers (Cloze)
- Essay
- Matching
- Multiple choice
- Numerical
- Random short-answer matching
- Short answer
- True/False

OTHER

- Description

Calculated multichoice questions are like multichoice questions which choice elements can include formula results from numeric values that are selected randomly from a set when the quiz is taken.

Figure 3.7: Quiz design page

Surname	First name	Quiz 2 - 2017	Course total
aniket	8001	10.00	100.00
Gouri	Chougale	3.00	30.00
abhi	chougule	9.00	66.67
Pooja	Gaikwad	10.00	94.44
Pravin	Garade	-	-
Saloni	Gupta	10.00	88.89
mahendra	hebbalkar	9.00	83.33
Apurva	Jadhav	10.00	94.44
Deepali	Kalagate	9.00	77.78
Akshaykumar	Kamble	10.00	94.44
Rohit	kamble	8.00	83.33
Shivaji	Kamble	10.00	88.89
Pramod	kenavade	9.00	83.33

Figure 3.8: Students' Grade Report Page

3.3 Smart Classroom

Smart classroom is motivation towards bridging gap between teacher and students using technology in the classroom. This is a technology upgraded classroom comprising learning innovation, for example, specialised software, audience response technology, assistive listening devices, networking, and audio/visual capabilities.

3.3.1 Smart Technology for Smart Classroom

In this scenario, the instructors and students work with the most recent technology - smart tools, computerised and flip cameras, interactive whiteboards and many software programs and online resources with an intention of students' learning. It's not just about technology - it's about what technology can accomplish for students and educators to make learning further, more prompt and all the more effective. This technology enhanced classroom incorporates audio content empowered teaching framework, 3D pictures mixed media content which makes the learning procedure more intelligent.

The creative features of Smart classroom are according to the accompanying:

- Flexible, participative learning environment.
- Smart learning within-built multimedia content.
- Instant recording of activities, video sessions.

- Image repository covers all domains.
- Optical finger-touch nano-technology.
- The smart board surface composed of covered metallic outline.
- Applicable in educational organisations, corporate sector etc.

3.3.2 Smart Classroom Framework

Smart Classroom projects is the combination technology based instructional method, shared instructing and the latest mechanical teaching gadgets to influence a front line and fruitful learning in advanced education setting. Figure 3.9 clarifies system of Smart classroom.

There are three basic points in the Smart classroom thought: Smart Pedagogy, Smart Learning Space and Smart Teaching Solutions.

1. A smart learning space includes both physical space and online learning space. It conveys adaptability to learning and makes the learning omnipresent.
2. Smart Pedagogy depends on technology enhanced teaching environment. It includes smart teaching system and smart evaluation tools.
3. Smart learning is the composition of technology enhanced learning material with set of learning tools.

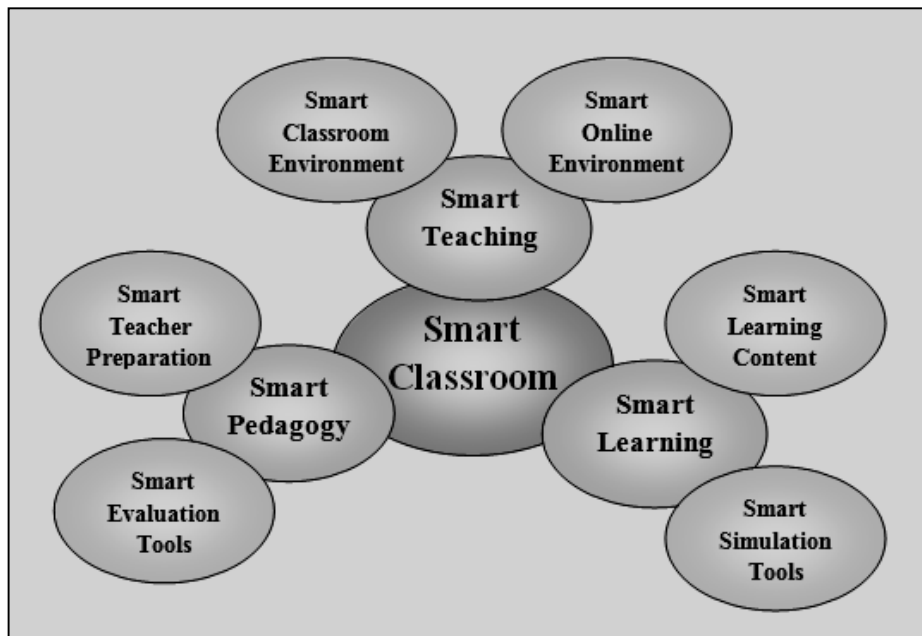


Figure 3.9: Smart Classroom Framework

3.3.3 Collaborative Learning with Smart Classrooms

The smart classroom concept enables the teachers to gather advanced learning tools, resources and student information in one place, that is accessible at anyplace, at any time. Students can make their own internet learning portfolio and partake in web based learning exercises. Guardians can monitor learning from home. Table 3.3 lists minimum requirements and optional accessories for Smart classroom setting. The equipments broadly utilised for technology enhanced teaching-learning models are:^[3]

- Interactive White Boards
- Digital Podium
- Power Podium
- Visual Presenter

Table 3.2: Smart Classroom Setting

Minimum Requirements	Optional Accessories
Smart Interactive board Projector Computer	Digital Content Visual Presenter Smart Interactive Teaching Pad Digital Console Student Response System Media Podium

3.5 e-Learning

The idea of e-learning coordination into an educational system begins with the teacher and the courses in which instructors instruct. E-learning is the constructivist model where learners work collaboratively and socially construct new knowledge. This technological classroom makes teaching comfortable for the teacher and takes advantage of new tools and opportunities.

Technology has propelled so much that the topographical gap is connected with the utilisation of instruments that make the learner to feel as if he/she is inside the virtual classroom. e-Learning is a technology based educational framework that empowers learners to learn at anyplace and whenever. Today e-Learning is generally conveyed through the web. It offers the capacity to share material in variety of formats such as audios, video, presentations, word documents and PDFs.

3.5.1 ICT as a Tool to Foster Learning

Blending the use of innovation with teaching by the teacher, students have been seemed to have substantially higher learning results. Technology should thusly be used as a facilitator

of learning advancement. Combining technology and instructional strategy along these lines prompts perceiving how teaching can change as the eventual outcome of using technology. The extent of e-learning advancements and their uses are portrayed in this section. e-learning, sharing of information and knowledge through web and other technology systems collectively known as Information and Communications Technologies.

3.5.2 Internet Learning Today

e-Learning is a wide term that spreads training, learning and the empowering instructive condition. With the use of technology and web in the twentieth century, e-Learning instruments and conveyance methods expanded. Inventive movements helped educational organisations provide education to a wider audience.

E-learning outfits the students with the ability to fit learning around their lifestyles, satisfactorily allowing even the busiest individual to help a job and increment new capacities. All this has become possible because of internet. Now a days student is proficient in the usage of phones, web contents and internet so sharing in and running an online course has transformed into a clear illegal relationship. e-learning offers viable instructional strategies, for example, consolidating joint effort, practicing with related criticism, customising learning ways in view of learners' needs and utilising simulation and recreations. Online correspondence allows students to remain in contact and discuss course related issues, while accommodating a group.

3.5.3 e-Learning Approaches

There are two general approaches to manage e-learning: self guided and instructor led. Self-guided students are distant from everyone else and totally autonomous, while instructor led e-learning courses give various levels of help from mentors and coordinated effort among learners.

- **Self-paced e-learning:** In this case learners are offered e-learning courseware supplemented by supplemental resources and evaluations. Courseware is typically hosted on a Web server, and learners can get to it from an internet learning platform or on CD-ROM.
- **Instructor-led e-learning:** In this model, a linear educational module is produced that incorporates a few content components and exercises into an ordered course or syllabus. The course is planned and driven by a facilitator through an internet learning stage.

3.5.4 e-learning Segments

As we have seen, e-learning approaches can combine different types of e-learning components, including:

1. e-Tutoring
2. e-Learning Content

3. Collaborative Learning
4. Virtual Classroom

E-learning exercises can be synchronous or asynchronous, listed in Table 3.3. Synchronous events happen continuously. Synchronous correspondence between two people obliges them to both be accessible at a given time. Asynchronous events are time-autonomous. A self-guided course is a case of asynchronous e-Learning in light of the way that web learning happens whenever.

Table 3.3: Types of e-Learning Activities

Synchronous	Asynchronous
Live webcasting	Discussion forum
Application sharing	Webcasting
Chat/ Instant Messaging	E-mail
Video/audio conference	Blog
Whiteboard	Wiki

3.5.5 Quality of e-learning

The quality of an e-learning course is enhanced by:

- **Personalisation:** Self-paced courses should be customisable to reflect learners' interests and needs;
- Instructor-led courses should provide mechanism to monitor the learners' progress and performance individually.
- **Learner-centered content:** e-Learning program should be vital and specific to learners' needs, roles and responsibilities.
- **Engaging content:** Instructional techniques should be used creatively to develop an appealing and motivating learning experience.
- **Granularity:** e-Learning content should be segmented to support retention of new data and to allow versatile arranging of time for learning.
- **Interactivity:** Frequent learner interaction is relied to maintain attention and propel learning.

Following are the few accepted procedures identified for e-Learning platform:

- Both the educator and the student should aware of benefits of web based learning since the all required resources are available in internet
- Students should be able to conceptualise whatever he/she is learning
- Students should aware of what they gain from the virtual class

- Teachers and e-Learning foundations should stimulate a strong sentiment gather among their online understudies.
- Both the instructor and students should aware of correspondence mechanism and content delivery methods

3.5.6 e-Learning Benefits

Important benefits are outlined underneath:

- **More Fun:** Learning materials comprises variety of resources such as documents, audio, video, games, simulations and quizzes so on makes the learning process more fun oriented.
- **No Restrictions:** e-Learning, encourages learning without organising when and where everybody who is occupied with a course can be available unlike the physical face-to-face learning.
- There are free screencasting tools available using which the educator can record lectures and host lecture on web.
- **Cost Effective:** Since all the learning materials are available on web either free or less cost, learning becomes feasible to anybody.

3.6 Virtual Classroom

A Virtual Classroom is an advanced learning condition, made using web, computers, supplicated video conferencing devices, in which either instructor is not physically present in the classroom. A virtual classroom not simply makes course materials available to the students, moreover gives a live, consistent and insightful condition for them. Likewise, teachers can control the learning and demonstrating process as they do in the conventional classroom

3.6.1 Virtual Classroom — Amenities

The virtual classroom platform accompanying following facilities:

- Whiteboard provides different colors, fonts, transparency levels, drag and drop, undo, document overlay abilities.
- Live Video Streaming Presentations that delivers simple viewing of slides and different archives by making use of internet access and virtual whiteboard etc.
- Application, document, and desktop sharing enable learners to see live streaming.
- Content delivery using Power Points, general reports etc
- The desktop or application window can be shared remotely with control capacities
- Provision for upload and download of files

- Individual reactions can be communicated by polling feature
- Instructor can see every student's session when during hands-on labs and can help while during assimilation phase
- Text conversation among teacher and learners or peers itself

3.6.2 Accessories in Virtual Classroom

Following constituents forms virtual classroom:

1. Video conferencing System and its accessories
2. Projector/LCDs
3. Intelligent Whiteboard or Touch Panel
4. Back end Server
5. Advanced Canvas
6. Superior quality Multimedia Visualiser
7. HD Cameras

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4

Social Networking in Teaching Learning Process

4.1 Introduction

The virtual communication exchanges got new space because of internet and Web 2.0 functionalities. In addition to this social networking has broadened its perspectives. Social networking is a gathering of Internet-based applications that allow creation and exchange of user generated content. Comprehensively, social media alludes to advancements that can encourage social communication. Instances of social networking incorporate wikis, blogs, and social networking sites, for example, LinkedIn, Facebook, Twitter, and virtual worlds. These social networking tools, because of their awesome potential for student engagement and strengthening, justify more academic research and creative application in teaching. In light of this well designed online courses are able to provide unique advantages for student-centric learning.

4.2 Learning through Social Media

The present learners and instructors live in the domain of Facebook, Twitter, Wikipedia and YouTube. The learning through social networking is best described by collaborations, resource sharing, student centered, creativity etc showed up in figure 4.1. Likewise, the today's students are techno savvy love to spend most of their time with computers, Smartphones, technology gadgets, and more over the internet itself. Along with their day-to-day activities they require a higher level of social and creative engagement in learning.

Some of the suggestions enlisted here for learning through social media:

- Usage of social media classroom approaches amplifies teacher-student communications.
- Incorporating web-based social networking approaches improves interest in student's learning.
- Both educators and students need to understand their parts in the course and conduct in the classroom.
- Students get different academic skills helps in their development.
- Learners presentation available in the social networking sites can be seen by a substantially by a wider audience.

- Instructors must plan time and opportunities for the utilisation of web-based social networking exercise into their course syllabi.
- Instructors need to spend enough time in content creation with social media components.

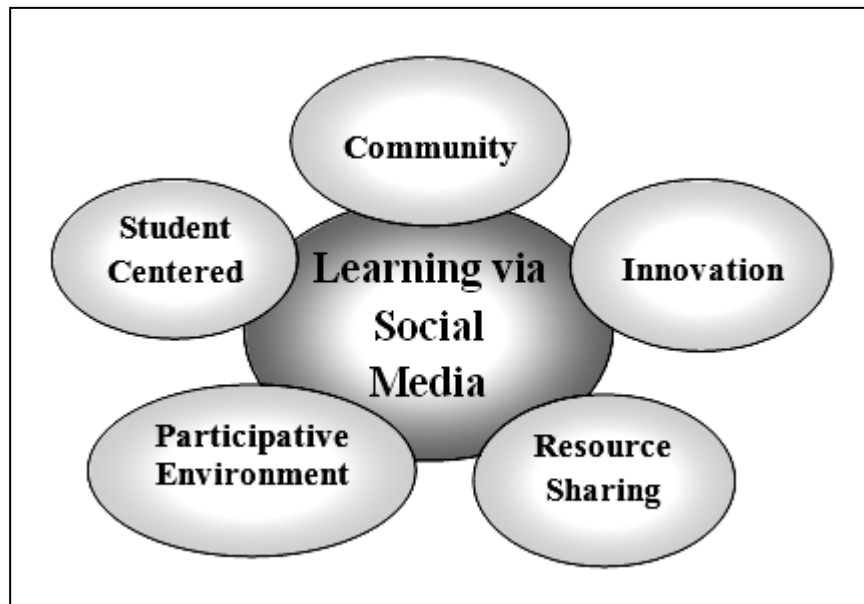


Figure 4.1: Learning through Social Media

4.3 Pedagogical Utilisation of Internet Social Networks

Social networking sites are drastically changing the communication space. Social networking is influencing teaching-learning environment. In social networks, articulation is refined when associations are developed between the network nodes. Such participations have a dynamic character, and their examination contemplate the cognisance of what sort of associations emerge in the network, and which ones are genuine social bonds. These instruments seem, to be ideal for empowering student focused exercises in perspective of the formation of material by the student, possibly drawing on different settings of learning in and across school settings. In today propelled training settings, teachers, students, and others collaborate on the task of knowledge construction. Web-based social networking applications can reinforce class material and positively affect discourses and collaborations.

Following are the new technologies based on social networking influencing the teaching-learning environment:

- **Wikis:** A wiki is a collective web space where anyone can incorporate or modify content that has as of now been distributed.

- **Twitter:** Twitter is a powerful tool for connecting with others and sharing content easily.
- **Social Bookmarking:** Bookmarking allow customer to make online mark of web pages. This empowers users to deliver a searchable, customised Internet.
- **Weblogs:** Weblogs or sites, are easily made and updateable sites that permit creators to post contents to the Internet quickly, in this manner permitting educators and learners to impart effectively.
- **Audio/Video Casting:** AVC makes it easy to make modernised voice and video archives and disseminates them over the web.
- **Really Simple Syndication (RSS):** RSS permits client to subscribe to news supports starting either from websites or daily newspapers and magazines. The substance goes to the reader rather than the reader retrieving the substance.
- **Online Photograph Galleries:** OPGs allow the posting of photographs that reinforce sharing of contemplations and experiences.

As per the learning theory interactions are important in learning. The learning theory also emphasises importance of technology in the learning process, i.e., the connection of individuals with technology as well as with other individuals through technology.

Different surveys have demonstrated the benefits of online social communication in the learning methodology. Positive parts of online relationship with instructors and peers are:

- Able to create basic deduction abilities and in addition aptitudes of self-reflection.
- Platform for communicating opinions, talking about and testing the thoughts of others.
- Can access peer and expert knowledge.
- Ability to get feedback from instructors and peers.
- Working together towards a team answer for a given issue.

4.4 Facebook a Learning Model: Share and Discuss

Facebook is a social networking tool that connects us with the people. Established in 2004, it has quickly accepted by people of different age group to connect with the others. With the prime objective to make the world more open and connected, Facebook is working with educational organisations as a tool for learning, and harness its ability to improve learning outcome for youths.

Thus Facebook in educational organisations:

- Encourages flexible social learning.
- Achieves a simple communication mechanism among shareholders.

- Encourages learning abilities through online communication.
- Supports subject educating over the educational programs.
- Supports out of school hours learning.

4.3.1 Face to Facebook: Learning with Social Media

Facebook has made the learning social, a key feature of 21st century education. and for making training more social. Share and discuss learning model of Facebook allow teachers to guide and discuss, students to access content and discuss as shown in Fig 4.2. Facebook tools, for example, Timeline, Groups and Search can possibly reform the way homework is arranged, finished and investigated, can be termed as Smart Homework.

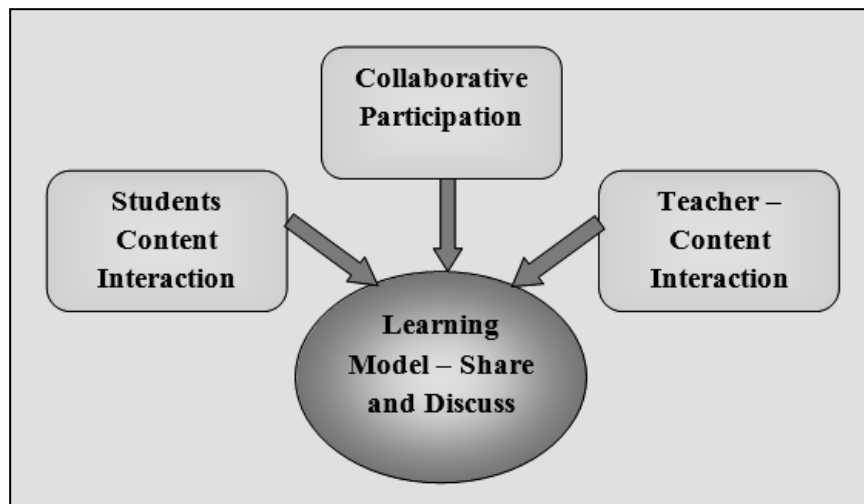


Figure 4.2: Learning Model — Share and Discuss

Social learning is empowered students by creating interest in learning process. Here teachers can pass instructive modules and energise learning. The Web 2 applications have made another universe of collaboration and communication.

4.3.2 Instructor Uses

Students may see an instructor's utilisation of Facebook as an endeavor to cultivate positive relationships with students, which may positively affect students' results. As already mentioned, social learning provides flexible learning environment. Table 4.1 lists formal and informal learning through Facebook.

Table 4.1: Facebook in Teaching-Learning

Formal Learning	Non-formal Learning
<ul style="list-style-type: none"> ● Facebook Group share and discuss contents ● As a platform for homework and corrections of the same ● Arguments and discussion on various issues online ● Peer learning and support ● A tool to post, share thoughts, etc ● Collaborative projects and assignments 	<ul style="list-style-type: none"> ● Flexible schooling ● App development for planning and solving exercises ● Transferring social and video podcasts to learners ● Private Groups for communication with staffs or peers

4.3.3 Uses of Facebook in and around Classroom

Facebook can be utilised in teaching-learning process as follows:

- **Communicate with guardians:** Parents or guardians can also become part of the group when face-to-face meetings aren't essential. Hence, the communication becomes more reliable.
- **Group via email:** Teacher can have full control about whether students likewise have access or not.
- **Create a space for resources:** Instructor can share resources, assignments with students by making groups. These contents are rapidly open to students from their cell phones from any area. Figure 4.3 shows snapshot of creating group in Facebook.
- **Set events for exams and paper due dates:** Instructor can set up an event in Facebook so as to guarantee that students don't miss an upcoming exam or article due date. Figure 4.4 shows snapshot of creating even in Facebook.
- **Collaborate with and learn from different instructors:** Facebook provides flexibility in communication with other instructors.
- **Set homework tasks:** Students can quickly get to homework assignments through phones. If they miss a particular lesson a supplementary assets can quickly be added by their instructor to a class Facebook Group
- **Use Facebook pages to empower group project work:** Setting up Facebook Pages can be a dynamic and interesting course for understudies to introduce group assignments. One can post news, photos, comments and information applicable to the page.

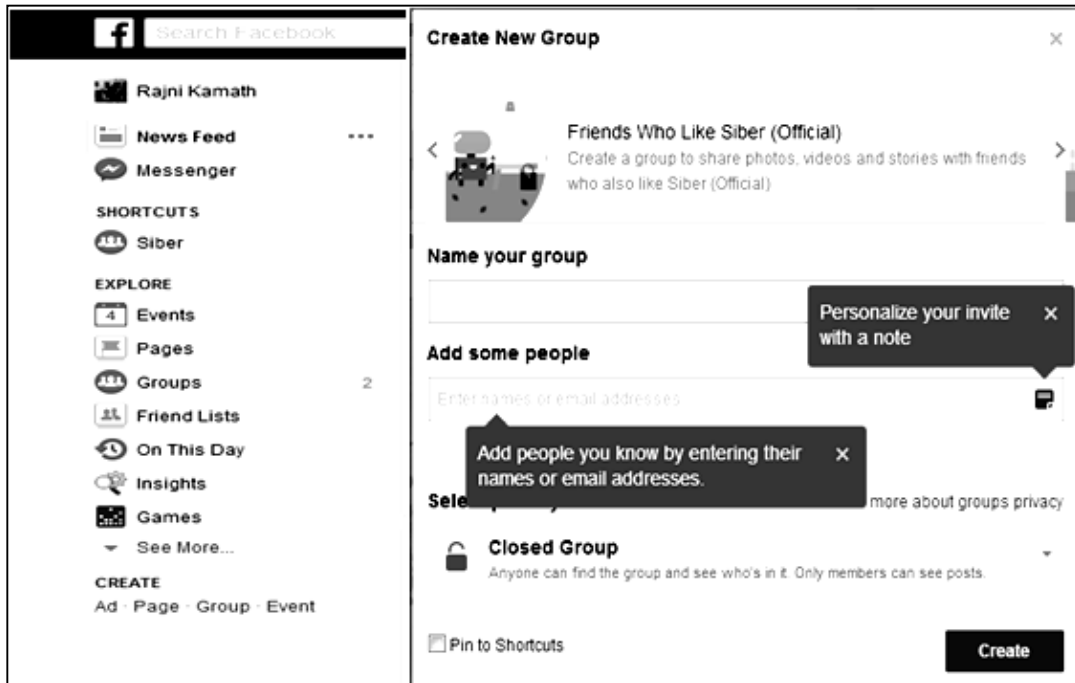


Figure 4.3: Creating Group in Facebook

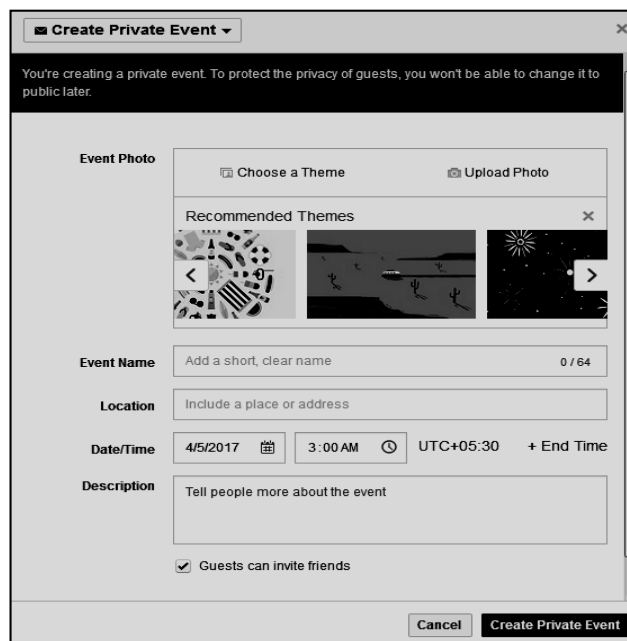


Figure 4.4: Creating Event in Facebook

4.4 Wiki

This section focuses on how Wikis can be used to make students centered learning condition. Wikis are programming based hypertext pages that support content creation, amendment, and redistribution by Internet users. In simple terms Wiki is a web page that anybody can alter. Figure 4.5 demonstrates a wiki page can be perused and altered by any client.

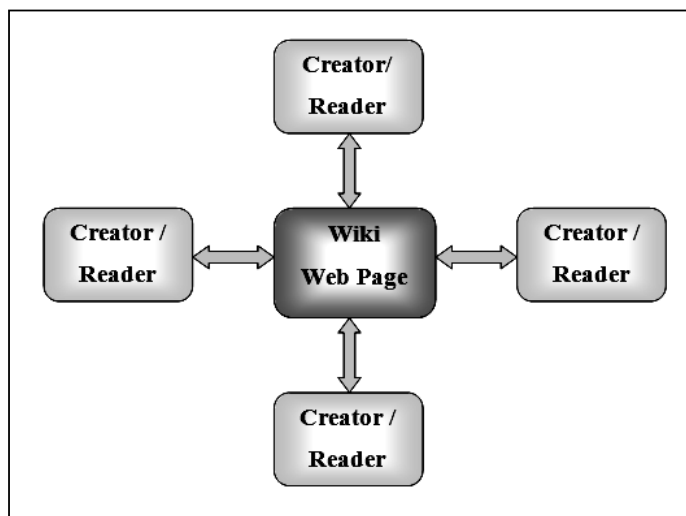


Figure 4.5: Wiki Page Access by User for Read/Alter

4.4.1 Cooperative Learning with Wiki

Wikis are web pages for creating, sharing and changing contents with users. A prominent instance of wikis is Wikipedia, an online reference book in which an extensive number of individuals over the globe volunteer to make, modify, and invigorate delineations of various topics. Figure 4.6 shows preview of Wikipedia's home page. This wiki-based course shows that a very much planned online course can support reasonable and quality speculation and what's more offer versatility to understudies' learning concepts related to online courses.

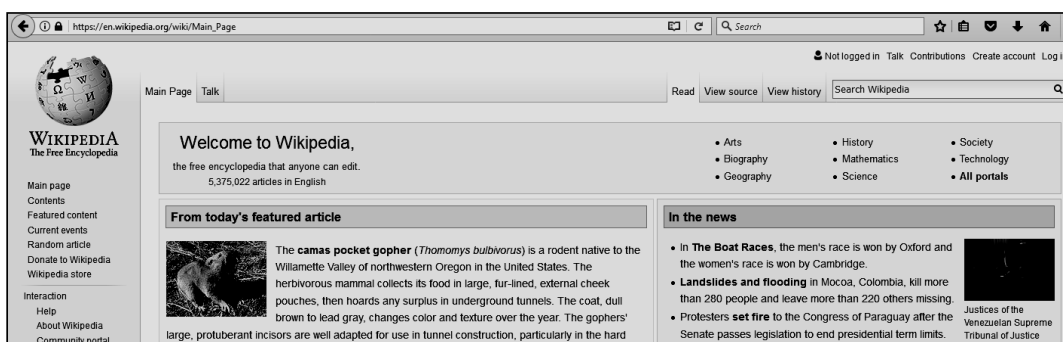


Figure 4.6: Wikipedia Homepage — A Snapshot

The components of wikis are melded into the online course settings; learners can access related content of the course by wiki course page. Students can use the wiki to cooperate with different cohorts on course extends. Synergistic learning exercises are student centered and empower themselves to the commitment of developing their foundational. Students can use wikis to make an arrangement of archives that mirror the shared data of the learning bundle.

4.4.2 Working of Wiki

Wikis have two states, read and alter. Wikis are in read state by default. Read state implies that the wiki page looks simply like a typical site page, as is shown in Figure 4.7. At the point when the user needs to alter the wiki page, they should get to the wikis alter state. To alter a wiki, a user indicates their internet program the wiki URL (e.g., <http://www.wikipedia.org/>) and clicks an alter catch or connection included on each wiki page. Wikipedia gives a tab style design at the highest point of each page which contains an interactive connection entitled edit this page which users can snap to get to Wikipedia's edit state. To edit this page tab is appeared in bold at the top of the page as shown in Figure 4.8. Users need to learn a set of basic mark up or syntax rules. Some wikis, for example, Wikipedia, don't require the user to know wiki linguistic structure. Figure 4.9 demonstrates Wikipedia in edit mode, the content in the word processing zone has as of now been organised utilising the altering toolbar.

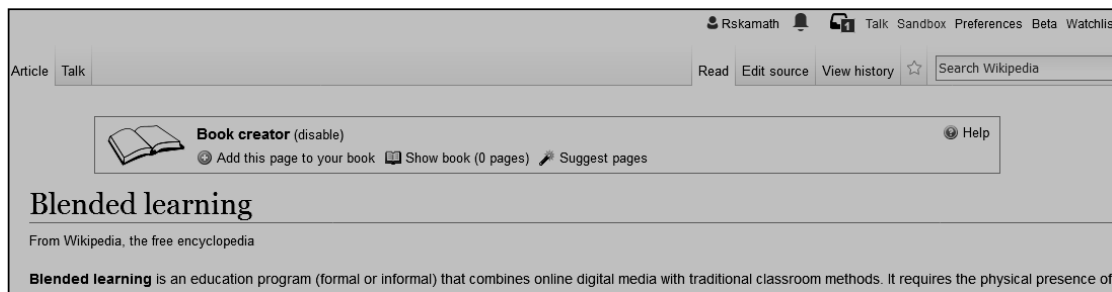


Figure 4.7: Wiki page in Read mode

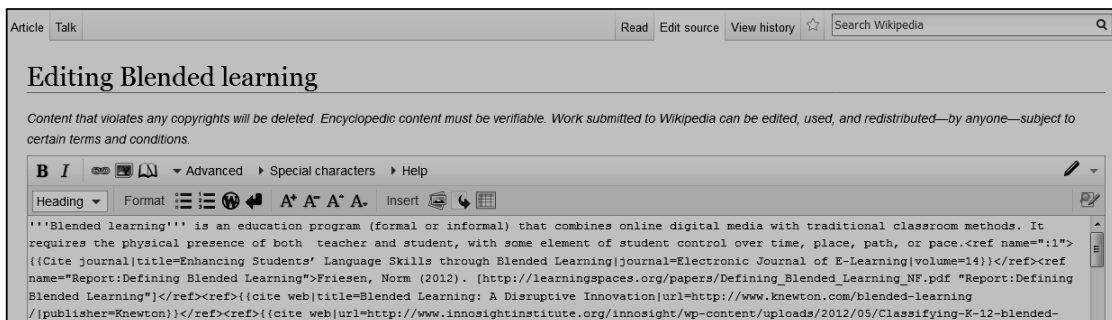


Figure 4.8: Wiki page in edit mode

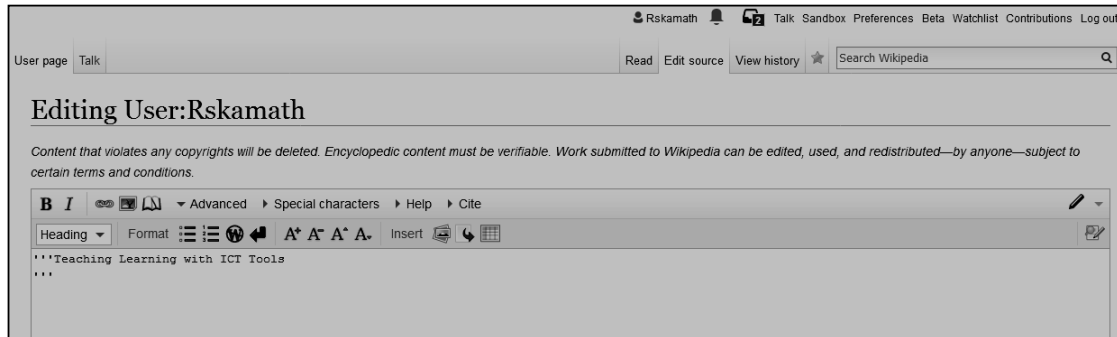


Figure 4.9: Wiki edit page

4.4.3 Pedagogical Usability with Wiki

A wiki-based learning condition can help change traditional online participations among instructors and students empower learners. The wiki-based course can exhibit that an overall sketched out online course can support quality venture, offer flexibility to students' learning, make experiential learning in a wide variety of advances. As shown in Figure 4.10, students in a web based learning condition interface with the instructor for through messages, raising issues on the discussion board and giving feedback. Educators connect with learners by sending messages, making presentations, posting on the web modules, giving feedbacks. Students coordinate with each other through group activities. The association among students and content demonstrates that students read and consider the online course content provided by the educator.

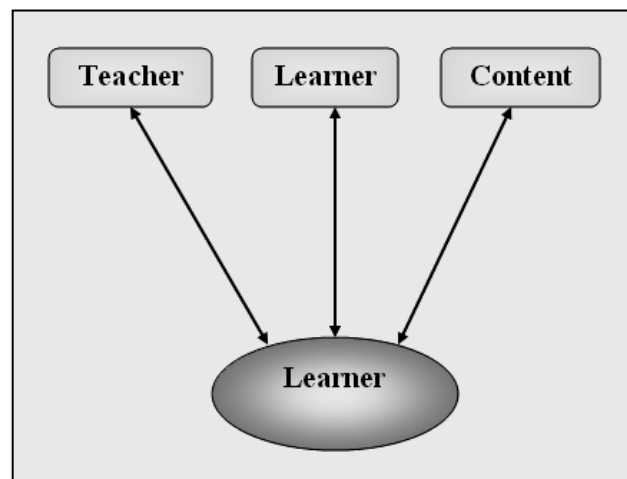


Figure 4.10: Traditional Web based Learning Framework

As Figure 4.11 shows up, learners have a collection of techniques for interfacing with the educator, peers, and course materials. Wikis can be used to make a participatory and group

arranged learning stage for students. Few examples for web based course configurations are Blogs, Twitter, LinkedIn, Facebook, Messenger, Videos and so forth.

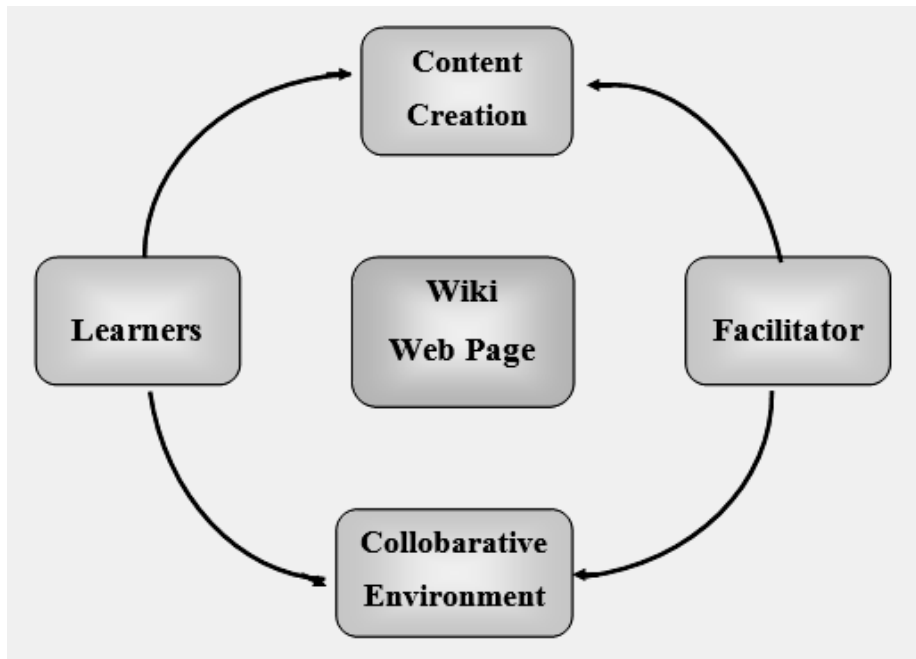


Figure 4.11: Wiki based community learning environment

4.4.4 Highlights — Wiki-based Knowledge Sharing

Major features of Wiki based knowledge sharing are given as follows:

- A wiki is a democratic tool which empowers collaboration, implying that there is no any ownership.
- Wiki uses simplified markup language for page design.
- Most wikis are plain HTML pages where importance is on content, not on format
- The history of each and every little change of each wiki page is accessible to anyone
- The wiki structure is characterised by group.

4.5 Blog

Blog is a routinely revived webpage, conventionally one continues running by an individual or small group that is made in a conversational style. These blogs are updated by their creator. They can contain information identified with a particular subject. Blogs are utilised as an instrument for joint effort and self-reflection on course content, peer feedback and as a resource bank. Peer feedback can empower a cooperative exchange with two-way collaboration, and it

works at a level that is less formal. Student papers can be made all the more generally accessible, and such collective exertion can encourage a feeling of group in the classroom.

Blogging has made among an assortment of electronic instructional materials with learners the capacity to interface in open setting, sharing their opinions, ideas, and expectations on the web. The likelihood of planning your own particular webpage without uploading documents through file transfer protocol (FTP), just embeddings pictures and content empowers students themselves can have a blog for its simplicity of creation.

4.5.1 Learning to Blog and Blogging to Learn

Technology intervened teaching and learning changed over time. Instructor utilises blogs in the classroom to accumulate, document and showcase the learning that students are delivering, and to which they are contributing. Positive feedback regularly broadens the feeling of group effectively settled inside the classroom to a healthy digital ecology. One of the normal issues to address in remarking is the difference between social and scholastic remarking. Students ought to be solicited to consider the reason from commenting and build a comprehension of how to take part in a respectful and constructive commenting discourse.

The essential difference in social event of people care can be all the more genuinely made with blogging as opposed to with-in-class flowing. Not in any way like much work submitted to their instructor, blogging gave in every way that really matters quick contribution on their posts.

4.5.2 Paradigmatic uses of Blogs: The Collaborative Potential of Blogging

The two-way communication between the class and the world, with the instructor and students is effectively hoping to associate with the stakeholders around the globe. Moreover these classrooms associate figuring out true opportunities to contribute in the learning process.

Following are the few major features of paradigmatic uses of blogs:

- The blog was expected as a space for communication for the students and for the intelligent exchange of issues identified during learning process.
- The students can blog moderately openly on inquiries that emerged for them in connection to course content.
- Blog writing as a pedagogical technique for attaining an understanding of course content. The course configuration supports the students in intelligent engagement with the writings and educators to take students' inquiries and understandings.
- The blog is expected both as a place for students to examine encounters and get exhortation on inquiries of scholastic written work.

4.5.3 Blogging Classroom: A Transition

Investigating what can be proficient with blogging and other new skill levels must be fundamental to the intelligent instructional method of educating, especially in today's general public. A teacher can change his part in the classroom fundamentally as he move from the being captain, to permitting students to wind up noticeably esteemed team individuals who can instruct their companions, and undoubtedly control others to well-known and outlandish places anyplace on the planet.

It is one thing to investigate about the joining of development, the centrality of 21st century proficiencies and even the effect of blogging, yet something else to endeavor it. Exactly when blog segments are presented to different supporters and obligations in regards to an accumulation of information about a specific subject are passed on, the effect of having a place with a social occasion of bloggers contorts up perceptibly clear. It is through that structure and assembling of preparing that bloggers get what is supervised by pulling in with the advancement.

As a coordinated tool, blogs offer the instructive number of advantages as follows:

- Blog facilitates the exchanging of resources and contemplations
- Blog enable learners' work to be assessed and evaluated by peers
- Blogs permit authors to contact a significantly more extensive group of audience than only a coach
- Peer feedback, coordinated effort and online intelligent learning conditions
- Blogs cultivate basic considering, in light of the fact that learners need to think about the possible responses of others to their postings

4.5.4 Working with Blogs

The blogging tool is, at its heart, a frame with two fields: title and segment-and the title field is optional. Blog programming accompanies an individual Website for the individuals who don't as of now have one. The software catches your words in dated passages, keeping up a sequential chronicle of earlier sections. Figure 4.12 demonstrates the blog created using <https://www.blogger.com/>. Figure 4.13 shows editing blog whereas publishing blog is shown in Figure 4.14.

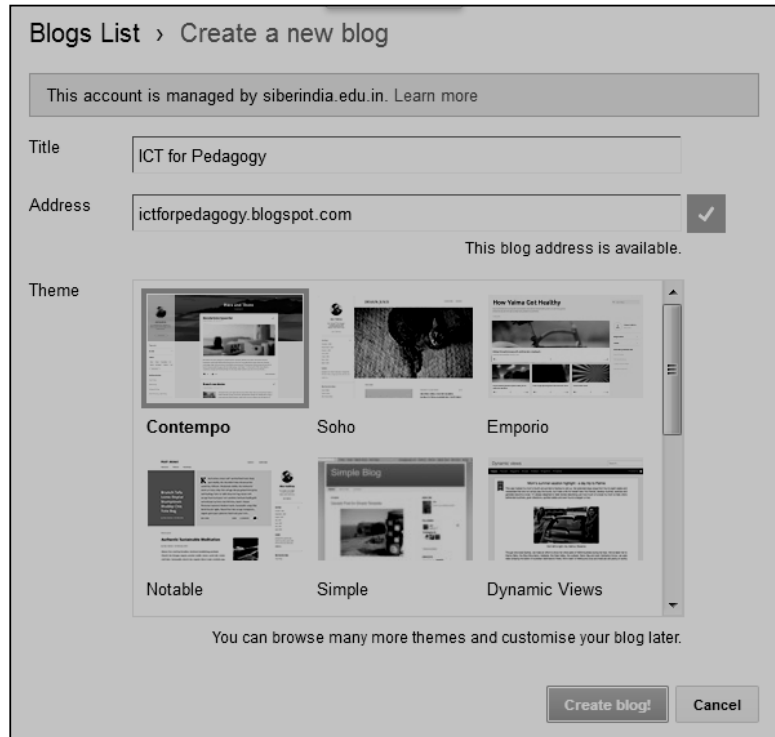


Figure 4.12: Creating Blog — A Snapshot

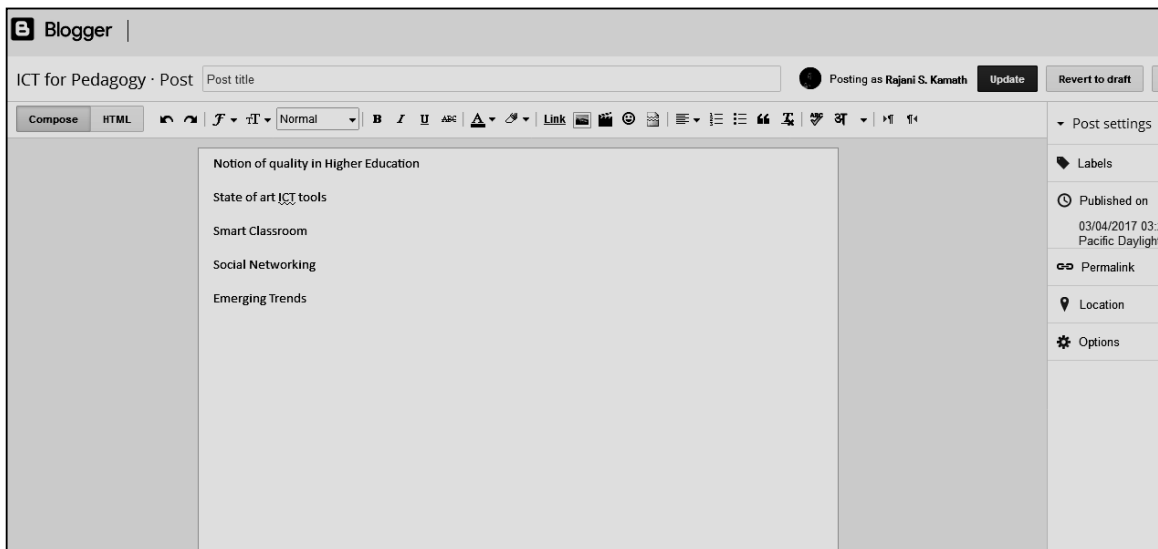


Figure 4.13: Editing Blog Entry — A Snapshot

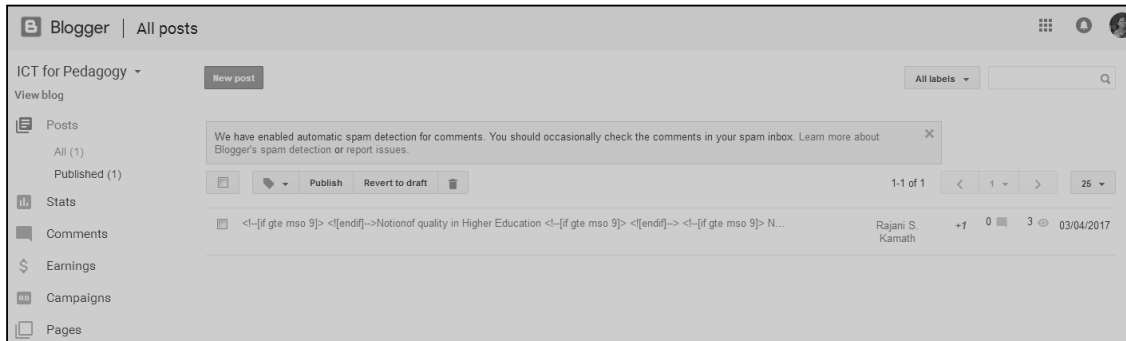


Figure 4.14: Publishing post in Blog — A Snapshot

4.6 Web 2.0

Web 2.0 is the certain types of utilisation of web-intervened technology, as opposed to specific advancements. All the more particularly, web 2.0 alludes to exercises and practices described by a high level of intelligent multi-route correspondence between users; bottom-up generation, propagation and change of content; continuous utilise and reuse across contexts; and renunciation of copyright and distributive initiation. The advantages of web 2.0 for learning are as follows:

- Web 2.0-based learning exercises are learner-centered educational designs in offering flexible learning environment.
- The integration of the experiences and perspectives of the learners in course activities affects learning.
- Because web 2.0 activities concentrate on the utilisation and reuse of content across contexts, their instructive business appear a conspicuous approach to encourage learners in associating and incorporating the assorted settings in which they take part, both in a life-long and life-wide point of view
- Blog features ease of investment in learning exercises using correspondence shapes common place from non-formal settings.
- Web 2.0-exercises apparently support the improvement of a scope of abilities of both an ICT related and a more broad nature.

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5

Integrating Three Pillars: Teacher, Learner and Technology

5.1 Learner Analytics

Learning analytics and Academic analytics are the two broad sectors of analytics in educational domain. Learning analytics the measurements, accumulation, investigation and detailing of information about learners and their specific circumstances, for reasons for comprehension and upgrading learning process. It emphasises on enhancing learner achievement. Academic analytics is the change of hierarchical procedures, work processes, resource assignment, and institutional estimation with the emphasis on improving organisational effectiveness.

Learning Analytics is the combination of the details of students, analysis of the same, customised content, focusing on predicting necessary outputs. It is an approach to provide stakeholders deep insights of the learning process as a value added to learner environment. It is way toward measuring and gathering data about learners and learning with the point of enhancing teaching and learning hone through examination of the information. A related field is educational data mining, which concentrates more on research.

5.1.1 Rationale behind Learning Analytics

Learning Analytics is the field empowered by the progress of enormous educational records, logically refined steady instruments, upgraded data courses of action and advances in figuring change. The web, cell phones and Learning Management Systems are all leaving *learner-created information trails* that can give knowledge into the learning procedure and open portal development. Advanced education reformers, who have regularly did not have the light-footed proof base required to actualise change, are currently looking to analytics as a sound structure for change.

Here is couple of clarifications behind why learning analytics can overhaul e-Learning background and make more compelling e-Learning situations:

1. Provides learners with customised e-Learning knowledge and helps to enhance future eLearning courses
2. Helps to anticipate learners' performance through the span of the e-Learning course.

3. More learners have the chance to upgrade their performance on account of learning analytics data and fewer learners will drop out or fizzle the e-Learning course.
4. Ability to accomplish higher quality e-Learning at a lower cost.

5.1.2 Approaches to Learning Analytics

A few sorts of learning analytics and Educational Data Mining have been known and used. Some of the examples are given here:

- Tracking tools in learning administration frameworks.
- Analysis of students' grades and test scores.
- Student and teacher overviews of different sorts, *e.g.*, course appraisal.
- Student modeling in artificial intelligence and training.
- Learning e-portfolios, *i.e.*, students assemble creations and reflect upon these for expert training.
- On a more individual premise analysis is identified with learning administration ideas and tools.

5.1.2 Learning Analytics Model — A Framework

Figure 5.1 shows structure of learning analytics model. Learning analytics contain people, computer, theory and affiliations. The three stages in learning cycle join information gathering, information processing and usage of knowledge. A combination of tools and strategies for knowledge is used as a part of Learning Analytics to give teachers quantitative data to settle on instructed decisions about learning process. Information is amassed from a wide level of sources including behavioral data taken from web learning systems and useful data taken from student affirmations structures and actuates reports. Table 5.1 records statistical methods and corresponding examples which can be related with this information. The resultant data would then have the ability to be used to inform activity, for instance, customising the learner experience, educational modules mapping, coordinating learning intercessions, anticipating conduct, and deciding capabilities.

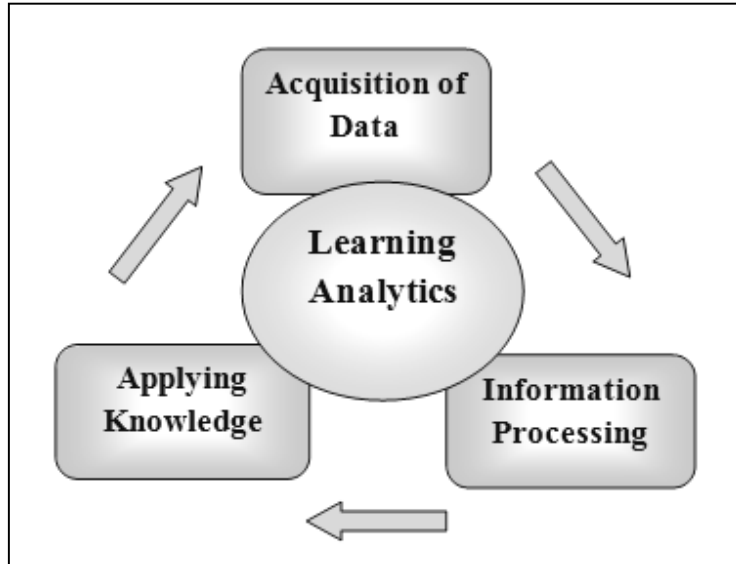


Figure 5.1: Learning Analytics Model

Table 5.1: Statistical Methods for Learning Analytics

Measurable Technique	Examples
Social network analysis	Study of the people network, groups and associations.
Information for human judgment	Data visualisation that empowers teachers to give timely feedback to students and incorporate same in pedagogy.
Prediction modeling	Anticipate information such as drop-out rates and learner performance.
Relationship mining	Analyses the connections between related data, for example, students' achievement rates.

5.1.3 Key Beneficiaries

Learning analytics incorporates the measurements, gathering, examination and detailing of huge amount of data identified with learners and their specific situations, with the aim of providing significant insight that backings educating and learning. Higher education institutions are starting to utilise analytics for enhancing the services they give and to expanding student evaluations and maintenance.

Following are the few key beneficiaries of learning analytics:

1. Individual students to consider their achievements and cases of lead in association with others.

2. Functional groups, for example, course teams hoping to improve current courses or grow new educational modules offerings.
3. Authorities of educational organisation taking decisions on matters, for example, efficiency and viability measures.
4. Teachers and support staff arrange supporting sessions with others.

5.2 Mobile Learning: Personalising Education for Students

Using convenient computing gadgets with wireless networks engages portability and mobile learning, allowing teaching and making sense of spaces beyond the ordinary classroom. Inside the classroom, mobile learning gives educators and students extended flexibility and new open doors for connection. M-learners use mobile phone informative innovation at their convenience.

M-learning is beneficial in that it is accessible to anyone, anytime, anywhere. Sharing is practically quick among everybody utilising a similar content, which prompts the gathering of instant feedback. Mobile learning is being embraced by all educational environments, from school to corporate training. Formal education settings are consolidating this innovation to enhance educating and learning.

5.2.1 Technology behind M-learning

M-learning permits students to move from desktop computers to cell phones with a particular true objective of learning in virtual space. M-learning is maintained by the use of web applications. Web applications are downloadable applications that can be added to a device through a wireless internet connection. Consolidated with applications, cell phones are presently fused into day to day life; they reinforce profound established, true bonafide learning.

The incorporation of mobile technology in pedagogical process is upgrading learning in a large number of ways. Few of such integration illustrations are:

- Tool to present and share students work.
- Allows collaborative participation for learners.
- Platform to access learning resources, including video and other materials.
- Method to access live sessions.
- Create interest in a Content Management System.
- Tool to attempt assessments such as tests, quizzes, questions, and self-appraisals

5.2.2 Mobile Learning Trends

M-learning activities can incorporate complex endeavors that utilise numerous applications to in learning process and complete assignments that incorporate dealing with multidimensional issues. A couple of exercise contains collaborative elements, utilising an assortment of devices

like social networking, logbooks, simulations, or augmented reality. M-learning tries a significant part of the time fall into characterisations like data gathering or utilisation of location based data, for instance, checking a guide to see whether venture colleagues are close-by.

Here we are enlisting mobile learning trends:

- Social networking sites like Facebook are changing social connection among learners and how they share information.
- Mobile application analytics insights into the behavioral pattern of the learners.
- Responsive web design for adjusting screen sizes for different mobile devices.
- Webpage to bring out interactive learning resources in m-Learning.
- Multi-screen usage for switch between various screens.
- Wearable technology can clear approach to rendering context sensitive content, particularly live streaming of an informational video.
- Learning through Augmented reality, a superimposition of digital data on the mobile.
- Bite-sized learning supports immediate availability of useful information.
- Competency-based learning with mobile recordings and simulations to improve competency.
- Learning can be made fun, attractive using Gamified learning.

5.2.3 M-learning Significances

Following are few reasons incline toward Mobile Learning, *i.e.*, learners need to learn on their mobiles:

1. Learning happens without any burden on the learners. Flexible learning is the prime feature of mobile learning.
2. Learning is more logical and heuristic since learners are progressing.
3. Since our students are techno savvy and majority of learners are using cell phones making it a helpful medium of getting information.

Following are the diverse inclinations for combining m-learning into instructing practice:

- Technology based learning makes the learner more engaged in learning process.
- Devices used for learning are portable in nature, makes learning reliable.
- May help learners with handicaps.
- In time learning is possible with mobiles.
- Interaction through phones facilitates communication between students and teachers.
- Online collaborative learning is possible among remote students.
- Ownership of the device extends obligation to using it for learning.

5.2.4 M-learning Implications

The cell phone is now the most generally perceived stage for M-learning, fitting communitarian and project based attempts that utilisation its ability to support the correspondence necessities of a group. The mobile lessons and activities can use the capacity to accumulate data from an assortment of interdisciplinary sources in a wide exhibit of organisations while misusing the estimation of location based learning. In developing nations where cell phones are accessible at a small amount of the cost of other registering equipment, m-learning has amplified the framework of separation training to remote regions that have already been ineffectively served.

5.3 Flipped Classroom: A New Approach to Education

The flipped classroom is a pedagogical model in which the conventional lecture and homework parts of a course are pivoted. Short video addresses are seen by students at home before the class session, while in-class time is focused on exercises, tasks, or talks. The video lecture is as often as possible saw as the key settling in the flipped approach, such tends to being either made by the educator or posted on the web or looked over an online store. While a prerecorded lecture could irrefutably be a podcast etc, the effortlessness with which video can be gotten to and seen today has made it so widespread that the flipped classroom has come to be identified with it. Figure 5.2 shows flipped classroom from point of view of Bloom's scientific classification. Exercises are turned around such that *recalling* and *understanding* will be at home whereas *applying*, *analysing*, *evaluating* and *creating* in home.

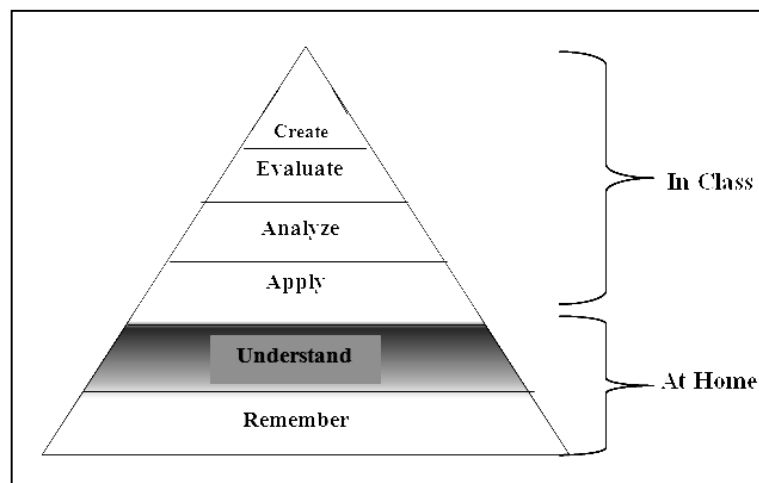


Figure 5.2: Flipped Classroom with Bloom's Taxonomy

The possibility of a flipped classroom features as dynamic learning, student engagement, hybrid course structure etc. The estimation of a flipped class is in the repurposing of class time into a workshop where students can get some information about lecture content, test their

aptitudes in applying data, and discuss with each other in hands-on works out. In the midst of class sessions, educators fill in as coaches or insight, engaging students in individual demand and cumulative effort. It's about associated learning and growing student/teacher collaboration. Directly, homework is more than a scrutinising undertaking. Use a blend of free and gathering activities to help learning and engagement.

5.3.1 Traditional v/s Flipped Classroom

Figure 5.3 briefs the contrast between traditional classroom and flipped classroom. In the traditional educational model, the instructor would consistently be the convergence of the classroom, focusing on delivery of maximum content in the classroom. New topics are covered in class, and students would customarily be given some homework to examine from the perusing material and do a couple of exercises to hone what they understood. In this condition, students' engagement is compelled as there is basically deficient time for them to discuss the point with the teacher or work openly in the midst of the lesson, as all their chance is dedicated to tuning in to what the educator needs to state. While teachers attempt to make the learning methodology as attracting as could sensibly be normal, an approach known as flipped classroom is expanding more noteworthy acclaim reliably.

In a flipped classroom, students concentrate on course material such as documents, videos or any other resources outside school. Significant in-class time is resolved to talk; instructors enable students to work through issues solely and in gatherings. By the day's end, understudies cover new course material at home and complete their work in class.

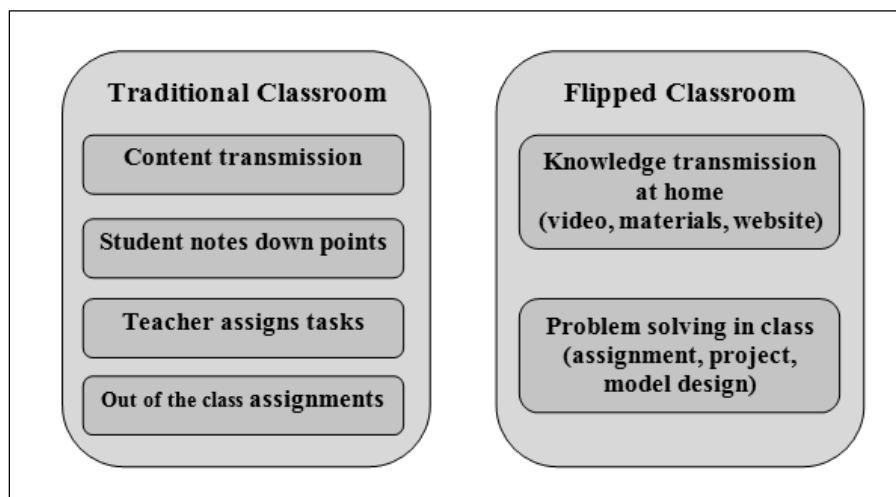


Figure 5.3: Traditional v/s Flipped Classroom

In a traditional classroom, students find difficulty in understanding of all the contents transmitted by the teacher. They can't stop to consider what is being expressed, and they may

miss colossal concentrations in light of the way that they are endeavoring to interpret the instructor's words. By separation, the use of video and their prerecorded media puts lecture under the control of the students: they can watch, rewind, and speedy forward as required. Lectures that can be seen more than once may in like manner help those for whom English is not their first vernacular. Class time is dedicated for usage of thoughts may give instructors a better chance to identify doubts and can clarify them to students.

5.3.2 Flow of Activities in Flipped Classroom

The online lectures are available for students to learn at anytime from anywhere before the following class. The classroom time is for dynamic learning. So teachers can use this chance to make significant learning information.

There is no single model for the flipped classroom, as per the basic model, students may see different lectures of five to seven minutes each. Online tests or activities can be planned to test what students have understood. Educators may change the classroom into a studio where students work together and put practice what they understood from the videos watched outside the classroom. Since this approach addresses a change in the class alterable, teachers can execute few segments of the flipped class or to flip only a few class sessions in the midst of a term. This flowchart of flipped classroom is shown in figure 5.4.

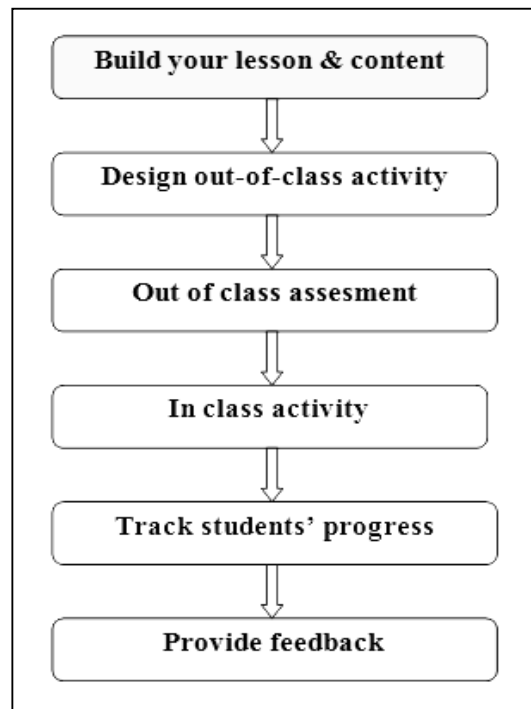


Figure 5.4: Flipped Classroom Design Flowchart

As an emerging trend in educational sector, teachers are flipped classroom concepts in their courses. Short instructional video lectures let students move at their own specific pace, rewind to survey segments, and skip through fragments they starting at now understand significance students come to class prepared to do creative endeavors with their peers. In-class time is used for open dialog or hands-on basic speculation where educator support is supplemented by understudy associates. Learning catalytics, that outfits instructors with free intelligent programming engaging students to discuss, apply, and get contribution from what they hear in video lecture.

5.3.3 Technology for Flipped Classroom: Essential Tools

There are various tools that can make the flipped classroom work for both instructors and learners and transform it into an effective test.

1. **Tool for making learning resources:** There are many open source free and commercial tools available in internet, can be utilised to create video lectures. Thus created videos uploaded to content repositories and made it available to students by sharing links.
2. **Tool for participative environment:** Students and teachers can share discuss in online learning environment. Moodle, Content Management System is one such example for same. Here teacher can stack resources and teaching materials, assignments and tests for students & students can access the same.
3. **Tool for polling:** Polling tool for collect online feedback from learners to test their understanding of the concepts.
4. **Tool for content repository:** The learning resources such as lecture videos, documents, question banks, web pages can be made available online by placing learning resources in the repositories. As an example video lectures can be placed in YouTube and the same URL need to be shared with students. Web pages can be shared by creating websites.
5. **Communication tool:** Online discussion forums allows the instructor and learners to interact, collaborate with each other in online learning environment.

5.3.4 Advantageous of Flipping

Flipped classroom fulfills free learning time so impelled students can participate in a testing venture while students can get the one on one time they require. On the other hand, completing practices empowers joint effort and social learning, which are on the whole parts of more significant learning. The advantages of flipping are appeared in the Figure 5.5.

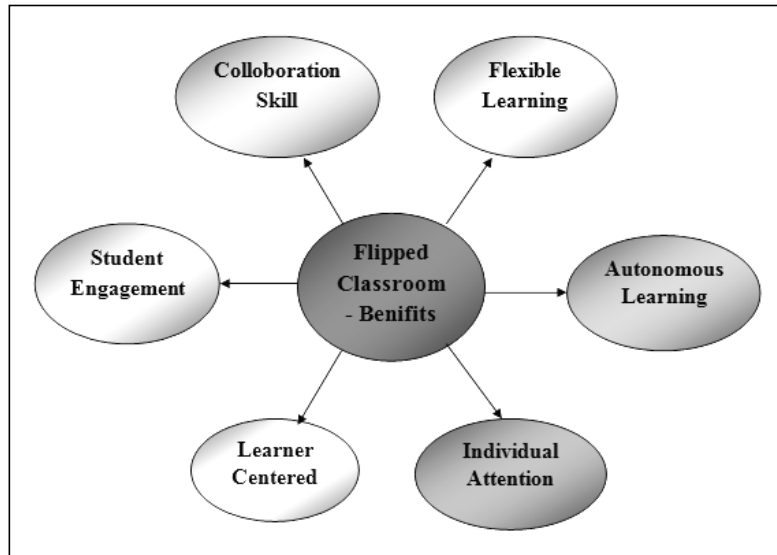


Figure 5.5: Advantageous of Flipped Classroom

There are many reasons why the flipped classroom show is getting a regularly expanding number of predominant over years. Just to give a few illustrations:

1. In the flipped classroom, the content transmission takes place outside the classroom as per the convenience of students. Student can watch video anytime from anywhere. In addition, student can pause, replay the video.
2. Classroom time is purely utilised for clarification of the contents what students learned. Teacher and students discuss on the issues in the classroom. Here teacher can make use of Think-Pair-Share activity or Peer Instruction activity to verify the students learning.
3. Classroom time is purely utilised for collaborative learning, *i.e.*, to learn together, help each other with clarifications and work on assignments together.
4. Flipped classroom encourages students engagement in learning procedure and provides more scope for understudies and instructors to cooperate.

5.4. MOOCs, Online Learning: Technology Rich Learning

The online learning is progressively adapted by higher education sector and it has supported the ascent of another model named a Massive Open Online Course or MOOC. MOOC an online course open to anyone without constraints, normally sorted out around a plan of learning goals in a region of study, which routinely continues running over a specific time allotment on an online stage which licenses natural possible results that empower the creation of a learning group. As it is the circumstance for any online course, it gives some course materials and assessment instruments for independent contemplating.

The MOOC is a model of online education delivery. MOOC students and educators can join the online class from wherever on the planet. Despite conventional course materials, for instance, videos, documents, and problem sets, MOOCs give interactive user forums that assistance build a group for learners, teachers, and educating assistants.

5.4.1 MOOC: The Scalability of Open and Online Education

MOOCs are courses proposed for huge amounts of individuals by anyone anywhere with internet connection without entry qualification and offer a full course experience online. MOOC is an online course offered through internet with boundless interest. Table 5.3 lists couple of sites that offer MOOCs. The homepage snapshots of these MOOC websites are shown in figure 5.6 to 5.10. MOOC joins both the conventional and current course materials for learning, for instance, videos, documents, projects, assignments and some more. These are open online courses that commonly allow anybody to enroll for the course. The level of receptiveness in MOOCs contrasts from course to course and if the course is offered on a MOOC platform, dependent upon the platform. .

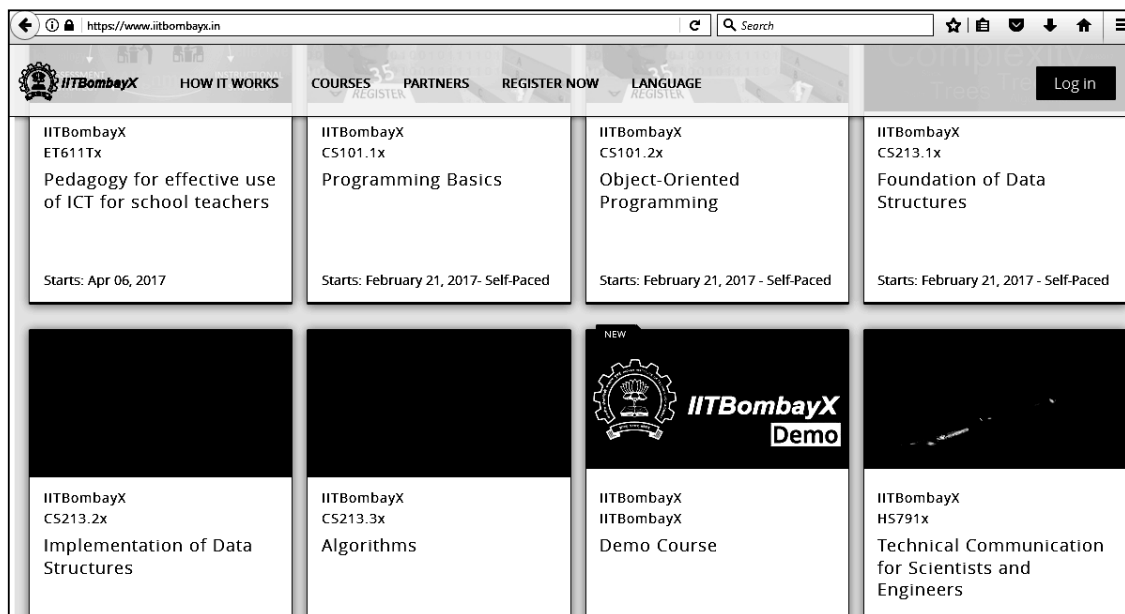
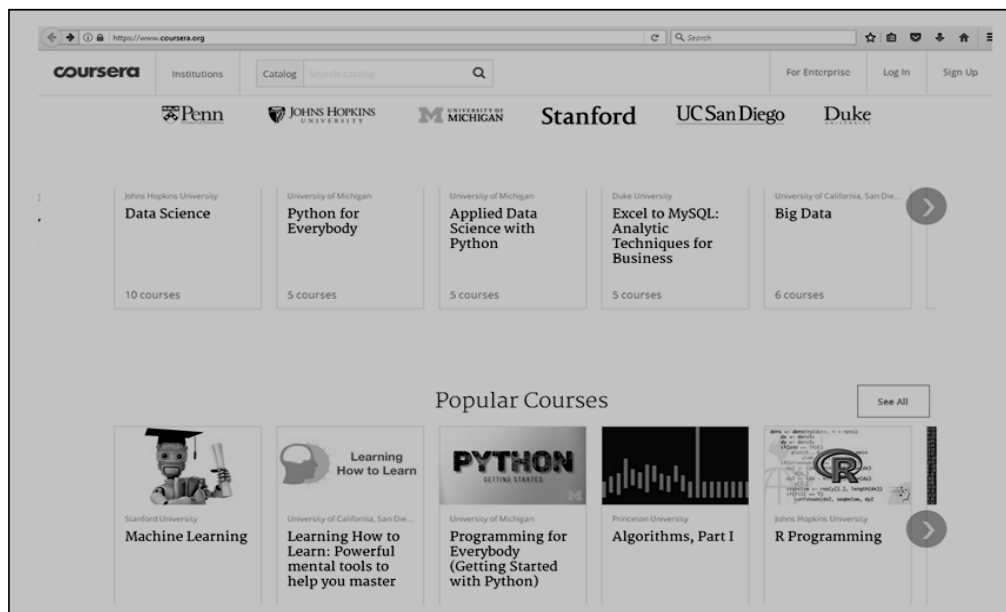


Figure 5.6: MOOCs — <http://www.iitbomabay.in/>

Table 5.3: Websites that offer MOOCs - Few Examples

MOOC Provider	Web link
Coursera	https://www.coursera.org/
Iiversity	https://iversity.org/
edX	https://www.edx.org/
ALISON	https://alison.com/
Canvas Network	https://www.instructure.com/
Open Learning	https://www.openlearning.com/
Academic Earth	http://academicearth.org/
Future Learn	https://www.futurelearn.com/
Saylor. Org	https://www.saylor.org/
Udemy	https://www.udemy.com/

Figure 5.7: MOOCs - <https://www.coursera.org/>

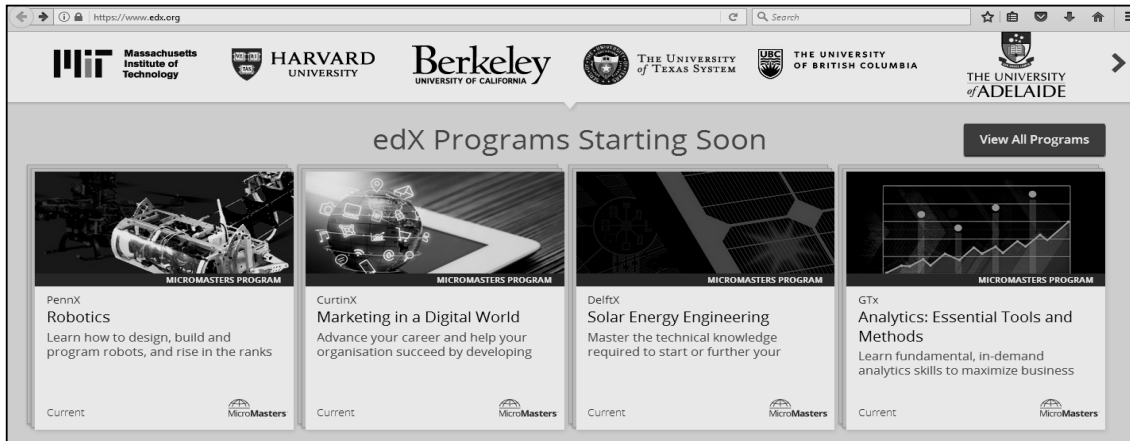


Figure 5.8: MOOCs - <https://www.edx.org/>

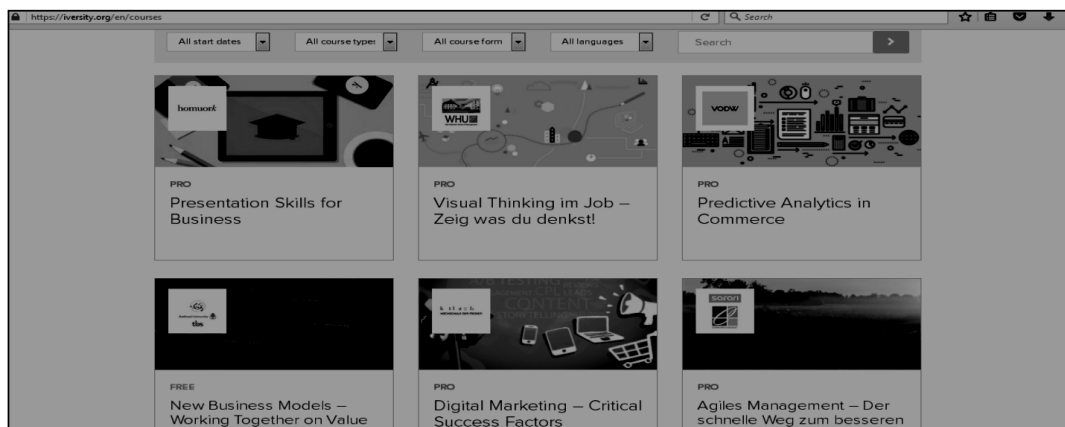


Figure 5.9: MOOCs — <https://iversity.org/>

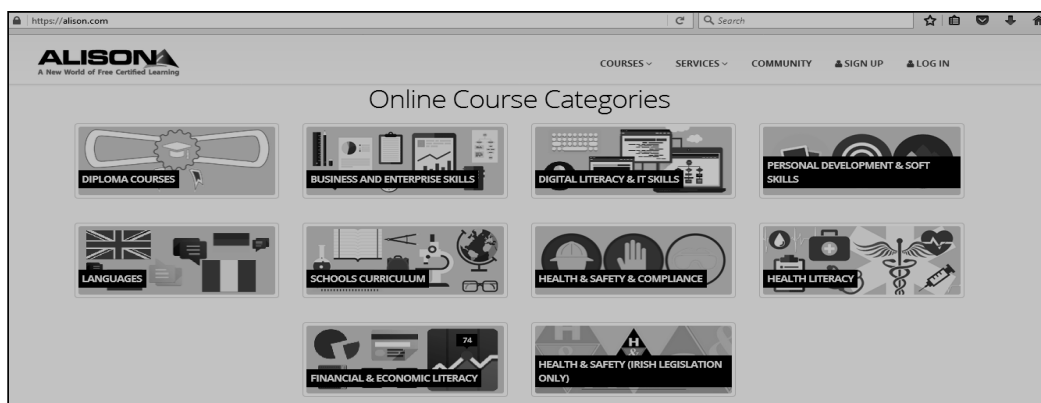


Figure 5.10: MOOCs — <https://alison.com/>

5.4.2 Diversifying Learning Pathways

MOOCs expand the open doors for students from different establishments to take part in enduring learning. The MOOC based learning comprised of the following:

- MOOCs, open online courses offer adequate online resources for learning.
- MOOC is a web based course delivery platform brings educational organisations' course offerings one place at a scale that draws in students who can utilise them for free or with reasonable price.
- MOOC supports collaborative environment through discussion forums where learners and instructor can share and discuss in virtually.

5.4.3 Learner Backgrounds

There are distinctive sorts of students who can pick or enlist course officered through MOOC. Following are the different types of learners identified by MOOC platform:

- Higher education students for extended learning.
- Prospective students hoping to investigate distinctive course choices.
- Educators use open educational resources for reuse and remixing in their own particular work with students.
- Professional learners to keep up their insight into a field.
- Hobby' learners out of interest learning new things.

5.4.4 Significances

Following are the major benefits of MOOCs:

- The courses offered by MOOCs are accessible through computers, cell phones, tabs and this makes learning more interesting since learners can learn at whatever time and anyplace.
- MOOC learners are free learners, there are no such entry qualifications for courses and courses are selected from providers that are accessible on the internet.
- MOOCs are mostly based on video lectures, online discussions, peer reviewed hence gives experience of learning in virtual space.
- MOOC courses offered are perceived globally as a large portion of these courses are offered by eminent colleges and organisations from the globe.
- Interactive online discussions help a group for students, educators, instructors and the majority of the users.

5.5 Blended Learning: Learner Engagement & Learning Enhancement

Hybrid Learning means that the learners are able to learn both from face to face interaction as we traditionally do and also from online resources such as registering for online courses. Now, this hybridisation must mean that teachers should facilitate the maximisation of learning of students in using the technology as well as using the face to face interaction.

The blended classroom is proposed to meet the individual needs of student by allowing instructors to customise direction. Blended learning joins face-to-face and online guideline as shown in Figure 5.11. It permits students to work with teachers in school and have online assets at home. It resembles the flipped classroom, however with more emphasis on in-class work with the teacher over video content. Project based learning is a sort of blended classroom. Students work at home, and in class they can approach the teacher for help, and continue on the task at home, with online materials for offer help. By having on the web materials open, students have section to reinforce when out of the classroom.

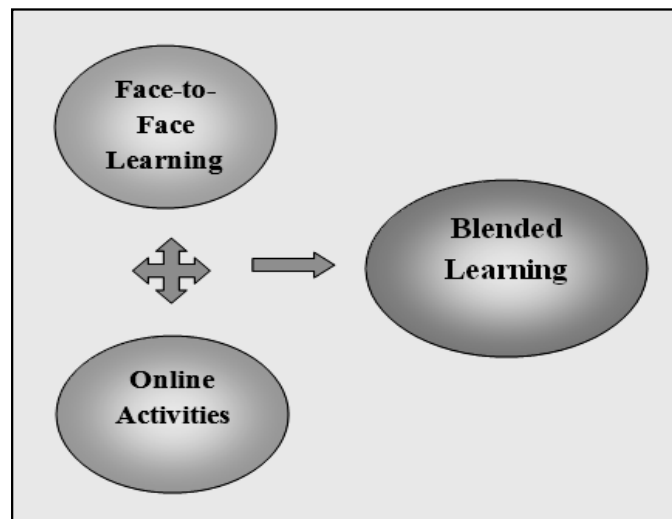


Figure 5.11: Blended Learning Model

5.5.1 Blended Learning v/s Other Forms of Learning

Table 5.4 explains the brief comparisons of traditional learning, blended learning and online learning.

Table 5.4: Comparison of Types of Learning

Goal	Classroom Learning	Blended Learning	E-Learning
Collaboration among students	Classroom setting Class discussions Face-to-face discussion	Classroom setting Class discussions Face-to-face discussion Online discussions Instant messages Blogs e-portfolios	Online discussions Instant messages Blogs e-portfolios Web conferences
Communication between teacher and students	Group lessons Group tutorials Assignments Face-to-face	Group lessons Group tutorials Assignments Face-to-face Digital materials Online discussions Instant messages Online calendar Online grade tool	Digital materials Online discussions Instant messages Online calendar Online grade tool Web conferences
Demonstration of learning	Pen and paper tests In person submissions Live presentations, Laboratory work Art, posters, and other physical artifacts	Pen and paper tests In person submissions Live presentations, Laboratory work Art, posters, artifactsetc Blogs e-portfolios Online discussions Online surveys, quizzes Online Assignments	Blogs e-portfolios Online discussions Online surveys Online quizzes Online Assignments Online submission Web conferences

5.5.2 Student Centered: Learning becomes a Process rather than an Event

Blended learning is a student centered approach to manage learning background whereby the learner interfaces with peers, with the instructor, and with content through keen mix of on the web and face-to-face environments as shown in figure 5.12. Student focused blended learning accomplishes learning as a procedure as opposed to conventional learning. In this manner the learning procedure incorporates:

- Teacher led guidelines which are face-to-face sessions, interactive in nature.
- Printed instructions are traditional course material.

- e-Learning, online course content.
- Online evaluation mechanism.

In a blended learning platform, teachers and students reliably join standard strategies for learning with technological advances. This emphasises on student centered learning. It gives abundant opportunity to students to learn and increase new data and capacities.

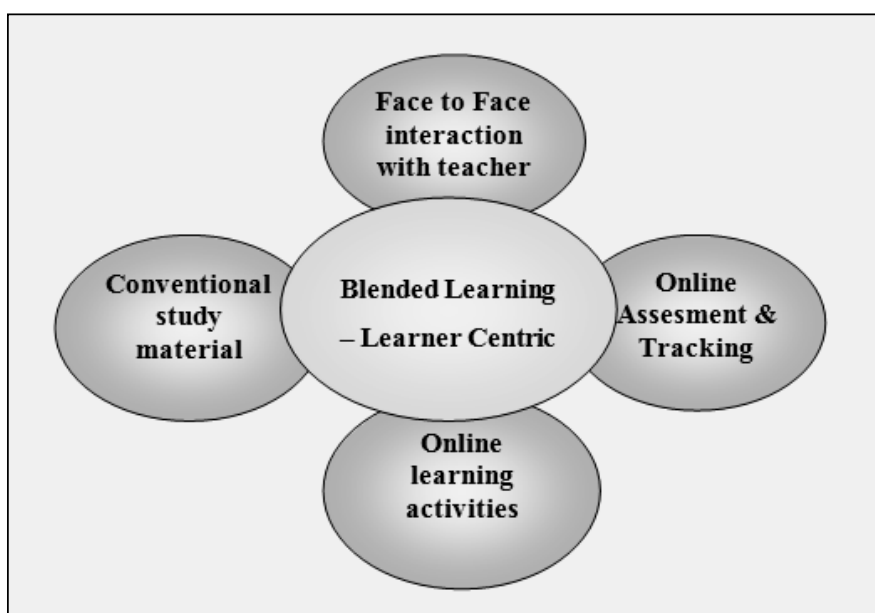


Figure 5.12: Student centered Blended Learning

5.5.3 Technological Support for Blended Learning

Blended Learning is a custom approach that applies a mix of other options to teach, reinforce, and keep up the aptitudes required for long-lasting learning. With this, the reliable regular learning methodologies are joined with new technology to make a synergistic, dynamic learning structure that can push making sense of how higher than any time in recent memory. Table 5.5 records the supporting innovations for Blended Learning Environment.

The highlights of this blended learning include:

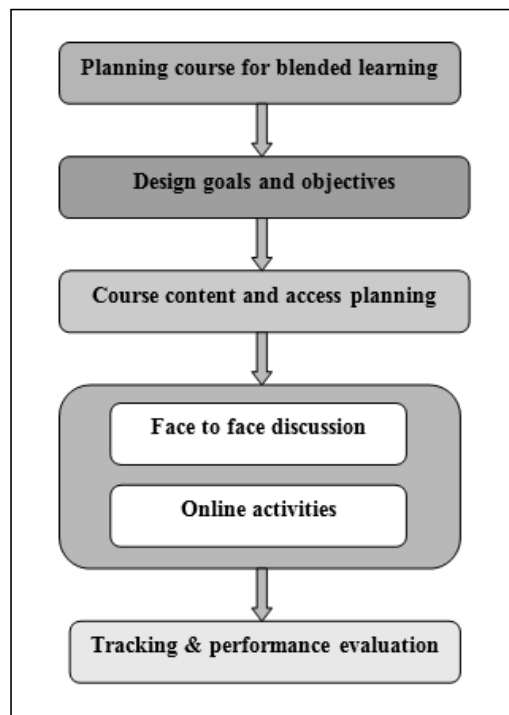
- Online materials are accessible to learners at whatever time, anyplace
- Websites, Learning Management Systems, Video repositories etc are the different ways to resources online
- Provides interactive exercises, support materials and learning assets
- Online monitoring and tracking system for facilitators
- Multimedia content locations diverse learning styles

Table 5.5: Technology support for Blended Learning Environment

Technology	Examples
Online (Live)	Virtual classroom, Webinar
Face to Face Classroom	Physical classroom, Field trips, Laboratory
Collaboration	Web Portal, Blog, Wiki Discussion Forum
Web based learning	Internet, Self paced tutorials Games, Simulation, Web 2.0
Multimedia Performance support	Video e-Learning, Digital media Knowledge management Workflow automation Mobile and Wireless Access

5.5.4 Work Flow in Blended Learning Environment

Blended learning is a formal training program in which a learner has the control over learning process. Figure 5.13 explains flow of activities for the design of course in Blended Learning Environment.

**Figure 5.13: Flowchart of Blended Learning Course Design**

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6

Advanced Case Studies

6.1 Flipped Classroom Activity

A case study on Flipped Classroom activity is designed for the topic K-Map Simplification of the course Computer Architecture for the students of MCA I year.

6.1.1 Out-of-class Activity Design

Learning Objectives of Out-of-Class Activity are as follows:

At the end of watching the videos student should be able to

- Familiar with K-map Notation using cell designations (Understanding level)
- Simplify Boolean expressions using Minterms grouping (Apply Level)
- Simplify Logic Circuits having 3 Boolean variables using K-map (Apply Level)

Students are provided URL of lecture video of the aforesaid topic and need to be watched out of the class for content transmission and assimilation of the key concepts. The video should have Creative-Commons Attribution License to ensure it is open source.

Out-of-class assessment aligned with learning objective is as follows:

Question: Represent the following Truth Tables as K-maps and simplify the Boolean expressions

1. $F(A, B, C) = \Sigma(1,3, 4,5)$
2. $F(x, y, z) = \Sigma(2,6,7)$
3. $F(P, Q, R) = \Sigma(0,1,4,5)$

6.1.2 In-class Activity Design

Learning Objective(s) of In-Class Activity:

At the end of the class, students will be able to:

- Simplify Boolean expression for the given truth table and design Boolean Circuit (Analyse level).

- Boolean expression implementation using universal gates such as NAND or NOR(Analyse Level).

Active Learning activities planned as part of in-class activity are

1. Problem solving using “Think-Pair-Share”
2. Concept clarification using “Peer Instruction”

6.1.3 Think-Pair-Share Strategy

Students engage in problem-solving activities during class time & they work collaboratively. Qualitative reasoning and conceptual thinking are emphasised.

Table 6.1: Think Phase for 3 Minutes

Question	Simplify the Boolean Expression $F(A, B, C, D) = \Sigma (3, 7, 11, 13, 14, 15)$
What Teacher does	Poses the question, asks the students to think individually and instructs to write answer in their book. Motivate slow learners to participate in the activity by giving some hints.
What Student does	To CREATE circuit, Students simply RECALLS about all the notations used for K-Map, UNDERSTANDS Map representation, APPLIES the Minterms grouping and ANALYSES Boolean expression and Finally EVALUATES it for correctness by writing answer to book.

Table 6.2: Pair Phase for 8 Minutes

Follow up Question	Discuss the solution to his/her paired one and ask students to Design Circuit for the expression derived in Think phase using Universal gates
What Teacher does	Poses the question, asks the students to pair up and discuss. Teacher goes around the class to monitor whether constructive discussion is going amongst the pairs and finally provides clues to pairs who are in doubt
What Student does	Pairs up with neighbor, Checks each other’s answer, Articulate the power and limitations of solutions and starts redrawing the solution. Students in the pair RECALL the K-map notation and UNDERSTAND constructs of Boolean Circuit, APPLY expression simplification, ANALYSES Boolean circuit diagram and finally evaluates for correctness.

Table 6.3: Share Phase for 10 Minutes

Questions	Share solutions with the class to identify the correct and best solution
What Student does	Shares their answers to entire class, compares one to other, finally checks answer with teacher's answer, Corrects themselves.
What Teacher does	Draws correct solution on the board and compares it to the different pair's answers along with their Pros-Cons. Summarises key concepts involved in designing the solution. Finally appreciates the students for their sincere efforts.

6.1.4 Peer Instruction Strategy

By using Peer Instruction, it is possible to get instant feedback on their learning.

Teacher poses the two PI questions at the start of the class and provide summary of basic identities and expression simplification. Students for each question they will first vote individually, then they will discuss with peers and come to consensus, listen to instructor's explanation.

Q 1: When "OR" gate gives output 0?

- (a) Both the inputs are 1
- (b) Both the inputs are 0
- (c) Inputs are different
- (d) Never becomes 0

Q 2: Determine the values of A, B, C, and D that make the sum term equal to zero.?

- (a) $A = 1, B = 0, C = 0, D = 0$
- (b) $A = 1, B = 0, C = 1, D = 0$
- (c) $A = 0, B = 1, C = 0, D = 0$
- (d) $A = 1, B = 0, C = 1, D = 1$

6.2 Handling Grading Diversities using Artificial Neural Network

We report Artificial Neural Network (ANN) architecture that unfolds innovation in pedagogy as an approach to handle grading diversities in the classroom by means of predicting students' academic performance in advance. This exploration exhibits optimum ANN architecture for the modelling of students' scholastic performance by varying the network properties such as the network type, training function, transfer function and number of neurons in hidden layer. ANN architecture hence inferred consists of nonlinear sigmoid activation function for hidden layer and Levenberg-Marquardt back propagation method for training the model. This reported research stands out mainly in the modelling of students' performance evaluation using ANN as a new approach to handle diversities in the classroom. The major component of neural

computing is learning by examples. The ANN learning procedure comprises the algorithms, materials and methods used for learning.

6.2.1 Introduction: A New Approach to Assist Pedagogy

Data helps in interfacing the educator with the students, their learning, and, thus, picks up knowledge in regards to the entire pedagogical process and in addition spurs to take an interest in a discourse with associates, understudies, and people. As it is prominently said "Not everything that can be counted counts, and not everything that counts can be counted" is well-suited for the higher education paradigm. In educating, connections and observations matter as much as educational curriculum and methodology. Educational Data Mining (EDM) is a rising request, stressed with making procedures for examining the remarkable sorts of information that begin from educational settings, and using those techniques to better fathom understudies, and the settings in which they learn.^[15] The capability of Artificial Neural Network for early prediction of students' academic performance is the most significant attainment of the present work which brings novel perspective in the field pedagogy as an approach to handle grading diversities in the classroom. The conventional e-learning systems focus mainly on the online content generation rather than needs and learning styles of learners. The learning style affects the learning process and its outcome. Artificial Neural Networks can be used for recognising learning style of each student according to navigation performed by learner in e-learning platform.^[16]

Disclosure of knowledge for the forecast of understudies' performance is required with a specific end goal to accomplish high level of quality in higher education system. This prediction helps in enhancing understudies' performance.^[12-13] The neural network is fit to catch the non-linear relationship than statistical strategies which makes the network to give higher forecast accuracy. ANNs have been effectively applied to expansive range of data-intensive applications such as financial, medical, industrial and educational. The proposed ANN model empowers the design of a simple to-utilise, customised understudy performance prediction component.^[14] This technique might be of impressive value in recognising understudies at risk early and allow the educator to give suitable exhorting in a convenient way. The early prediction utilising ANN modelling can help in enhancing understudies' engagement and performance in term end examination.

This case study is organised as follows: After introducing the theme, the emerging research directions in students' performance prediction has been explained. The design aspects and developmental framework of predictive analytics are presented in third section. Section four elaborates proposed model for handling diversities in the classroom. Conclusion at the end justifies the potentials of ANN modelling in perspective of higher education by predicting students' performance in advance.

6.2.2 Background: Emerging Research Directions in Students' Performance Prediction

The crucial focus of the proposed investigation is to apply ANN for the analysis of learner's academic performance. The principle point of the exploration is to propose a pedagogical model for handling grading diversities in the classroom using computational intelligence. Understudies' performance forecast is an essential issue to most scholastic organisations of higher learning. This had prompted many researchers in prediction work that included understudies from different background and study areas, for example, business, medical and computer technology.

Sandra and Jorge have presented and analysed the experience of applying certain data mining strategies and procedures on 932 Systems Engineering understudies' data, from El Bosque University in Bogota?, Colombia; exertion which has been sought after keeping in mind the end goal to build a predictive model for students' academic performance.^[1] Pauziah et al have detailed a comparative study between ANN and Linear Regression in anticipating the scholarly performance.^[2] The investigation was directed at the Faculty of Electrical Engineering, Universiti Teknologi MARA Malaysia. The results of the investigation from both models demonstrated a solid relationship between fundamental results for core subjects at semester one or semester three with the final CGPA. Minaei-Bidgoli et al have reported a way to deal with grouping understudies to anticipate their final grade based on elements separated from logged data in an education Web-based framework.^[3] A series of pattern classifiers planned, executed and assessed to compare understudies' performance in light of an online course dataset. Prediction accuracy is enhanced by taking in a proper weighting of the components utilised by means of a genetic algorithm. Arora and Saini have introduced Neural Network model for forecast of understudies' scholastic performance in light of some of their subjective perceptions like age, sexual orientation, instruction, past execution, work status, consider condition and so forth.^[4] The model is planned and designed in MATLAB. Pensri has introduced data mining model to anticipate learners' academic performance in computer programming subject to gather learners for cooperative learning by looking at the productivity of the models made from data mining with classification strategy.^[5] Mustafa has revealed four distinctive characterisation systems — support vector machine, decision tree algorithm, ANN and discriminant analysis for the forecast of teacher performance.^[6] These procedures' performance metrics are analysed over a dataset made out of reactions of understudies to a genuine course assessment questionnaire. The analysis demonstrates that the teachers' prosperity in view of the understudies' observation primarily relies upon the enthusiasm of the understudies in the course.

All through the progression of the pedagogy, educators are endeavouring hard to support the frameworks centring on the powerful learning. With the embryonic computerised age, there has been deep discussion everywhere throughout the globe, especially in the most recent decade about the utilisation of technology for customising the learning environment. Technology enhanced learning can encourages understudies with persuasive and higher quality learning encounters when contrasted with the traditional learning approach. Dongale et al exhibited

how an inventive computer based simulation of a complex nano gadget was a effective tool that enhanced the learning results of scholastically less-readied Bachelor of Nanoscience students in a rural university.^[8] Kamath et al built up a Virtual Reality (VR) tool for enhancing architectural design education.^[9] This framework includes a general purpose computer, mounted projector and passive glasses for Three Dimensional viewing. The exhibited work demonstrates that virtual reality innovation can impressively advance the effectiveness learning by enabling young architects to apply hypothetical information to real world issues. Veglis et al introduced the advancement of an intelligent computer laboratory exercise in light of the consolidated utilisation of Mathcad(R) and MathConnex/sup TM/.^[7] The activity was intended for showing system execution assessment to the college understudies of the Computer Science Department at the Aristotle University of Thessaloniki, Greece. Kamath and Kamat have created strategy for bringing an imperative feature of VR, stereoscopic display, to mechanical engineering students in a simple, practical manner.^[10] Yet another paper by Kamath and Kamat exemplified the emerging paradigm shift of educational technology continuously from simulation to virtual reality by designing VR based prototyping environment in which prototypes can be built, conveyed and outwardly assessed.^[11]

In this manner review recommends that innovations in content delivery and adaptive learning can change educating understudies in the 21st century. In the backdrop of the research endeavours portrayed above, the present work exploits soft computing approach in general, and technique like ANN in particular for the early prediction of students' academic performance. The optimum ANN architecture pertaining to students' performance prediction obtained by varying the network properties such as the network type, training function, transfer function and number of neurons in hidden neurons. The model is simulated in MATLAB environment.

6.2.3 ANN Modelling of Students' Academic Performance

ANN is a computational model in view of the structure and elements of biological neural systems. Figure 6.1 shows the framework of interconnected neurons that uses mathematical model for information processing. It follows learn by experience like human being. In ANN, the signals are passed between neurons over connection links. Each connection link has an associated weight, which, in typical neural net, multiplies the signal transmitted. Each neuron applies an activation function to its net input to determine its output signal. During the learning phase, network learns by adjusting weights so as to be able to predict values for input tuples.

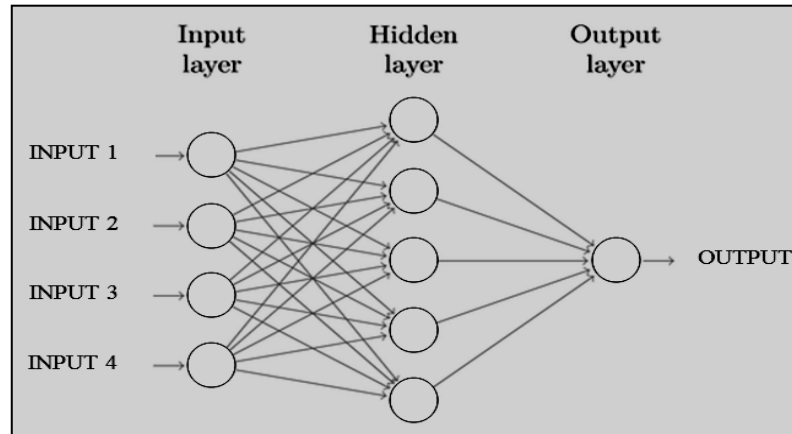


Figure 6.1: ANN Framework

For the present investigation, we have used typical feed-forward ANN. A schematic diagram of ANN model designed in the present study is shown in figure 6.2 (a and b). Network design comprises of nonlinear sigmoid activation function for hidden layer and linear activation function for the output layer. This network is trained by Levenberg-Marquardt feed forward method. The network comprises of one hidden layer and one output layer. Each layer comprises of multiple neurons to perform intelligent accomplishment. This exploration has gathered real time data that clarifies the relationships involving learning behaviour of students and their academic performance. The research has accessed the related database of CSIBER, a postgraduate institute for the solitary use of analysis and discovery of knowledge using ANN. The dataset comprises details of 200 Master of Computer Application students. Table 6.4 lists the attributes of dataset which are treated as predictor variables in the present analysis. The study revealed and identified the key factors that decide the outcome of students' performance.

To predict students' performance in incoming examination the set of predictor variables are decided with expert discussion. The dataset considered in this present study comprising following attributes related to students' performance are:

- Previous term end examination performance in terms of grades secured.
- Students' class participation performance.
- Performance in concurrent continuous evaluation scores as internal marks.
- Midterm examination performance is also treated as predictor variable
- Secured grade in practical examination.

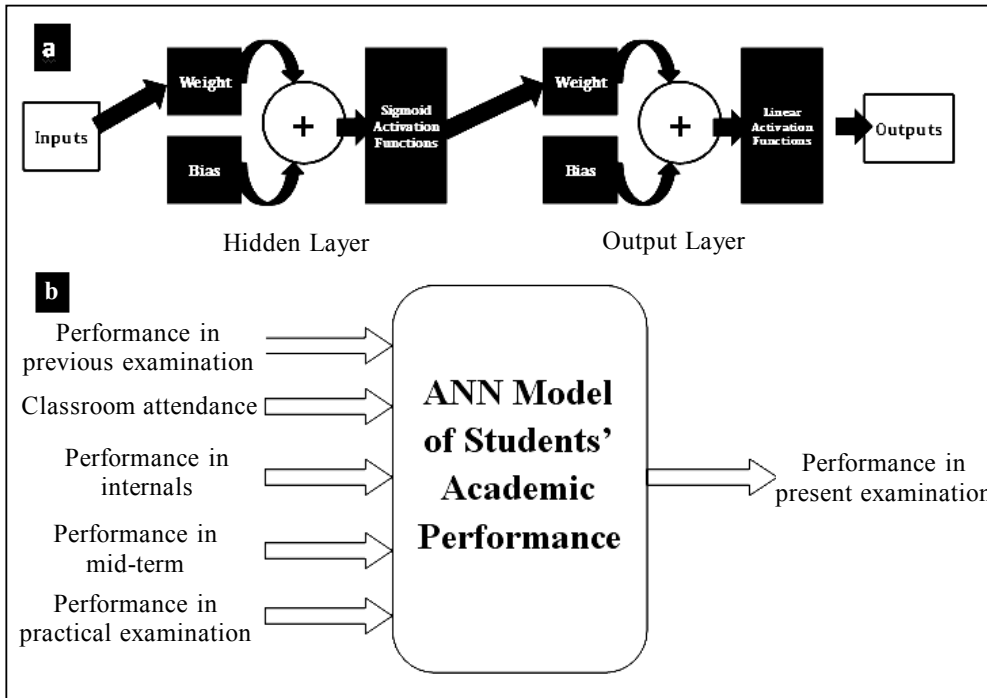


Figure 6.2: (a) Feed-forward Artificial Neural Network (ANN); (b) ANN Model of Students' Academic Performance^[19]

Table 6.4: Features Affecting Students' Academic Performance

Variable	Description	Possible Values
Previous attendance	Previous exam grade	[S : 91-100 E : 81-90 O : 71-80 A : 61-70 B : 50-60 X : <50]
	Current attendance	[poor, average, good]
Internal	Performance in internal	[poor, average, good]
Midterm	Midterm exam performance	[0-100]
Lab	practical exam performance	[0-50]
Grade	Grade scored current semester	[S, E, O, A, B, X]

Figure 6.3 presents the performance of ANN model of students' academic performance. Figure 6.3(a) represents correlation coefficient between expected output and output provided by the network. The correlation coefficient for training data set is equal to 0.96554, whereas for validation dataset, it becomes 0.95063 and for testing data set it to becomes 0.94643. The

overall correlation coefficient between expected output and the output provided by the network is equal to 0.95633. This value is closer to 1 indicates that the output provided by the ANN model is closer to the expected output. The performance of the present model is estimated by Mean Square Error that is the difference between the estimator and what is estimated. Figure 6.3(b) represents the Mean Square Error 0.08623 between training, testing and validation data. This value indicates the reported model is accurately predicting students' performance with very less error.

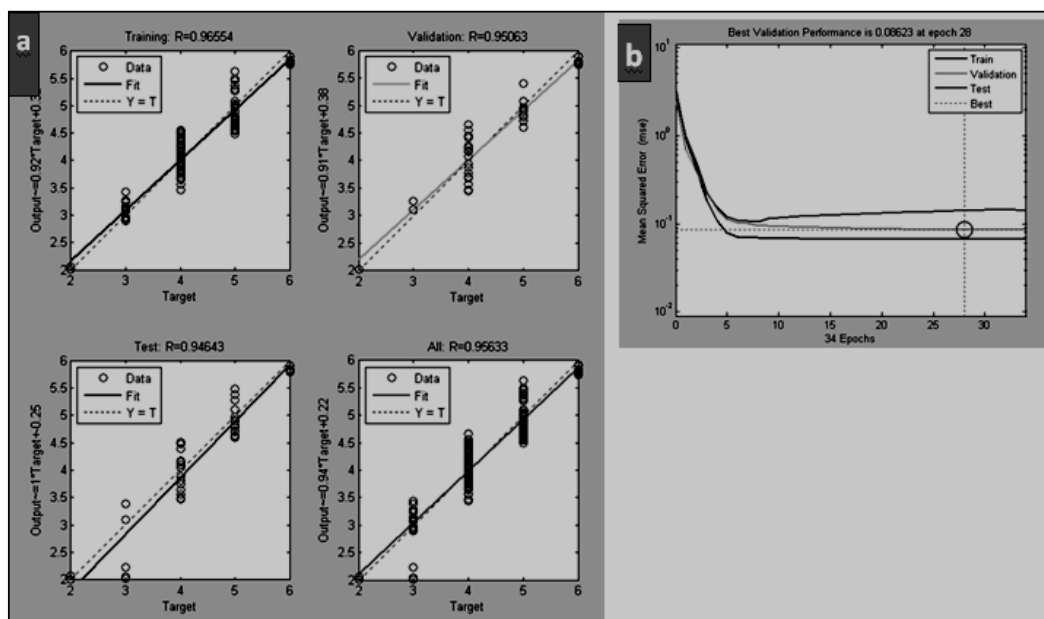


Figure 6.3: Performance of ANN model of students' academic performance.
 (a) correlation coefficient between expected output and output provided by the network;
 (b) mean square error of network

6.2.4 Handling Grading Diversities in the Classroom: A Proposed Model

The current educational framework is confronting various issues; dealing with grading diversities in the classroom is one among them. We can observe grading diversity in the classroom such as:

- The “strong ability”, understudies with a high likelihood of prevailing till the end
- The “medium ability”, understudies who may require assistance from instructors.
- For “low ability” understudies, the instructors can give careful consideration to them by giving them additional lesson and task to enhance their exhibitions.

EDM, concerns with developing techniques for discover knowledge from data initiated in educational environments. EDM bolsters educational system by anticipating understudies'

academic performance, knowledge discovery on scholastic accomplishment, classification based on learning style and so forth. The present research is foreseeing understudies' scholastic execution utilising ANN. This guides to recognise the understudies who require special counselling and enable the educator to give proper advising. It can help educationalist to dissect the understudies' learning practices and utilisation data to get an expansive perspective of an understudies' scholastic execution.

6.2.5 Conclusion

This case study portrays ANN modelling of students' academic performance evaluation as an approach to handle grading diversities in the classroom. Modelling is the process of considering some data and building the rearranged portrayal of the procedures that have delivered it. Thus derived model captured the knowledge exhibited by the sample data and constructed learning relationships between the input variables and target variable.

The result of experiment demonstrates that the model provides dual advantage to the educational institutions; first by helping educators to correct their teaching methodology in light of the level of understudies consequently enhancing understudies' performances and also predicting the performance of the students in advance. The research concludes effectiveness and expressiveness of ANN modelling of students' performance prediction which can be one of the measures to handle grading diversities in the classroom.

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6.3 Making the most of MOODLE Analytics: A Hand's on Tutorial

The MCA students' term end performance in Moodle Quiz is analysed in the present study. The size of dataset is 37. We have designed prominent clusters in R and Rattle, data mining environment. Following three aspects are chosen for the analysis:

- Students' term end quiz performance in first semester examination.
- Students' performance in Programming Courses from First semester to Fourth semester.
- Students' performance in Core Computer subjects.

6.3.1 Semester I Courses

MCA I students' quiz performances in following subjects are selected for the analysis and the corresponding quiz performances' descriptive statistics shown in figure 6.4.

- C Programming
- Digital Circuits
- Statistics
- Presentation Technologies

C.Programming	Digital.Circuits	Statistics	Presentation.Technologies
Min. :2.000	Min. : 2.000	Min. :2.000	Min. : 2.000
1st Qu.:7.000	1st Qu.: 6.000	1st Qu.:4.000	1st Qu.: 4.000
Median :7.000	Median : 8.000	Median :4.000	Median : 5.000
Mean :7.243	Mean : 7.297	Mean :4.676	Mean : 5.459
3rd Qu.:8.000	3rd Qu.: 9.000	3rd Qu.:5.000	3rd Qu.: 7.000
Max. :9.000	Max. :10.000	Max. :8.000	Max. :10.000

Figure 6.4: Descriptive Statistics of Performance in Quiz

```

Cluster sizes:
[1] "16 12 9"

Data means:
           C.Programming      Digital.Circuits      Statistics
Presentation.Technologies
           0.7490347           0.6621622           0.4459459
           0.4324324

Cluster centers:
           C.Programming      Digital.Circuits      Statistics      Presentation.Technologies
1      0.8035714           0.8593750      0.3333333           0.5937500
2      0.6190476           0.4687500      0.3055556           0.2083333
3      0.8253968           0.5694444      0.8333333           0.4444444
    
```

Figure 6.5: Cluster design for Semester I dataset

K-means algorithm resulted three clusters: Cluster 1, Cluster 2 and Cluster 3 relatively homogeneous, consisting of 16, 12, and 9 tuples respectively as shown in figure 6.5. The interpretations of the result based on cluster means are as follow:

- Performance of Cluster 1 is highest in C Programming and Digital Circuits, where as medium in Presentation Technologies and poor in Statistics.
- Cluster 2 performance is poor in all the subjects as compared to other clusters.

- Cluster 3 shows medium performance in Digital Circuits and Presentation Technologies.
- Students performance is excellent in C Programming where as poor in Statistics.

6.3.2 Programming Courses

Students' performances in Programming courses from first semester to fourth semester are analysed here. Table 6.5 gives the Programming courses selected for the study. The descriptive statistics of quiz performances in these courses shown in Figure 6.6.

C	CPP	Java	PHP
Min. :2.000	Min. : 3.000	Min. : 5.000	Min. : 3.000
1st Qu.:7.000	1st Qu.: 7.000	1st Qu.: 7.000	1st Qu.: 6.000
Median :7.000	Median : 8.000	Median : 8.000	Median : 7.000
Mean :7.243	Mean : 7.649	Mean : 8.189	Mean : 6.865
3rd Qu.:8.000	3rd Qu.: 9.000	3rd Qu.:10.000	3rd Qu.: 8.000
Max. :9.000	Max. :10.000	Max. :10.000	Max. :10.000

Figure 6.6: Descriptive Statistics for Programming Courses

Table 6.5: Programming Courses

Semester	Course
I	C Programming
II	CPP
III	Java
IV	PHP

```
Cluster sizes:
[1] "9 18 10"

Data means:
      C      CPP      Java      PHP
0.7490347 0.6640927 0.6378378 0.5521236

Cluster centers:
      C      CPP      Java      PHP
1 0.7460317 0.4920635 0.1777778 0.5238095
2 0.8174603 0.7539683 0.7444444 0.6904762
3 0.6285714 0.6571429 0.8600000 0.3285714
```

Figure 6.7: Cluster design for Programming Courses

K-means algorithm resulted three clusters: Cluster 1, Cluster 2 and Cluster 3 relatively homogeneous, consisting of 9, 18, and 10 tuples respectively as shown in Figure 6.7. The interpretations of the result based on cluster means are as follow:

- Performance of Cluster 1 is inconsistent in Programming, *i.e.*, they performed excellent in C Programming where as poor in Java, but later improved in PHP.
- **Cluster 2 maintained consistency at some extent throughout**
- Cluster 3 shows improvement from semester 1 to semester 3 and then declined in semester 4.
- Students performance is excellent in C Programming.

6.3.3 Core Computer Courses

Students’ performances in core computer courses from first, third and fourth semester are analysed here. Table 6.6 gives the core computer courses selected for the study. Digital Circuit and Computer Networking courses are taught by the same teacher. The descriptive statistics of quiz performances in these subjects is shown in figure 6.8.

Table 6.6: Core Computer Courses

Semester	Course
I	Digital Circuits
III	Operating System
IV	Computer Networking

Digital.Circuits	Operating.System	Network
Min. : 2.000	Min. : 5.000	Min. :2.000
1st Qu.: 6.000	1st Qu.: 7.000	1st Qu.:5.000
Median : 8.000	Median : 8.000	Median :6.000
Mean : 7.297	Mean : 8.216	Mean :5.973
3rd Qu.: 9.000	3rd Qu.:10.000	3rd Qu.:6.000
Max. :10.000	Max. :10.000	Max. :9.000

Figure 6.8: Descriptive Statistics of Quiz Performance in Core Computer Papers

```

Cluster sizes:

[1] "16 10 11"

Data means:

Digital.Circuits Operating.System      Network
          0.6621622          0.6432432          0.5675676

Cluster centers:

      Digital.Circuits Operating.System  Network
1      0.7812500          0.8500000 0.7500000
2      0.6375000          0.2000000 0.5285714
3      0.5113636          0.7454545 0.3376623

```

Figure 6.9: Cluster Design for Core Computer Subjects

K-means algorithm resulted three clusters: Cluster 1, Cluster 2 and Cluster 3 relatively homogeneous, consisting of 16, 10, and 11 tuples respectively. The interpretations of the result based on cluster means are as follow:

- Performance of Cluster 1 is consistent in all the three semesters with reference to the courses selected in this study.
- Cluster 2 performance declined in third semester but later improved.
- Cluster 3 shows improvement from semester 1 to semester 3 and then declined in semester 4.
- Consistency can be observed in cluster 1 and 2 performance in Digital Circuits and Computer Networking, since both the courses taught by same teacher.

6.4 Open Education Resource: Question Repository in MOODLE and Presentation Slides —

TCP/IP Reference Model

This open education resource is a collection of MOODLE Quizzes and presentation slides for the course TCP/IP Reference Model. TCP/IP Reference Model is the network architecture, the one which internet uses. It provides the way how network devices are communicate regardless their architecture. These online quizzes could be used for mid semester/unit evaluation in this course using Moodle. There are three quizzes for unit evaluation and one objective test conducted at the end of the term. The presentation slides can be used for in-class teaching.

- This OER is accessible from URL: <https://rskamath.gnomio.com/course/view.php?id=3>
- Target Audience: Second Year MCA Students (Any IT/Computer Science Students)
- Tags: Question Repository, MOODLE, Quiz, Objective Test, PowerPoint Presentation, Computer Network
- OER developed in MOODLE, <https://rskamath.gnomio.com/>
- This resource is licensed under CC-BYver 4.0. You are free to use, distribute and modify it, including commercial purposes provided you acknowledge the source. To see more details about the license visit <https://creativecommons.org/licenses/by/4.0/>



6.4.1 Learning Objective

This OER is Question Repository on TCP/IP Reference Model created in MOODLE, can be used to conduct online quizzes for the course Computer Networking. The presentation slides can be used for classroom teaching as well as learning resource for students.

After using this OER learner will be able to:

- Understand layered architecture of TCP/IP model.
- Present conceptual aspects of network applications such as web, file transfer, e-mail, and file sharing etc.
- Familiarise with design of network applications.
- Build understanding and problem-solving skills required for network design.

Helpful Document for Use:

1. Question Repository designed in MOOLE (an Open Source tool)
2. Presentations using PowerPoint package

6.4.2 Design Decisions

The design decisions involved in the creation of this OER were of broadly three types:

1. Content Decisions:
 - (a) Unit wise quizzes in MOODLE and also quiz for semester end objective test.
 - (b) Lessons in the form of PowerPoint Presentations —
URL: <https://rskamath.gnomio.com/course/view.php?id=3>

2. Pedagogic Decisions

(a) These online quizzes could be used for mid semester/ unit evaluation in this course using Moodle. There are three quizzes for unit evaluation and one objective test conducted at the end of the term.

(b) The PowerPoint presentation can be used for in-class teaching.

3. Technology Decisions:

(a) MOODLE, an Open Source tool is used for creating Question Repository.

(b) PowerPoint package is used for designing Presentation slides.

6.4.3 OER Description

For checking this active OER, access following URL,

<https://rskamath.gnomio.com/course/view.php?id=3>

- Provide the following user credentials to access this OER as an admin:

Username: admin

Password: &Admin123

- Provide the following user credentials to experience as a student:

Username: student

Password: Siber@123

For presentation slides, access following URL,

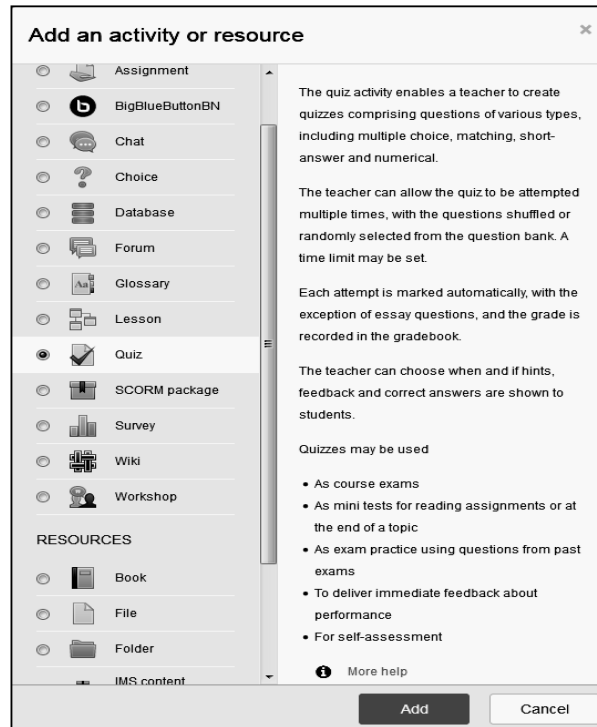
<https://rskamath.gnomio.com/mod/resource/view.php?id=20>

TCP/IP Reference Model is the network model used in the current internet architecture. It provides the way how network devices are communicate regardless their architecture.

Quiz Settings

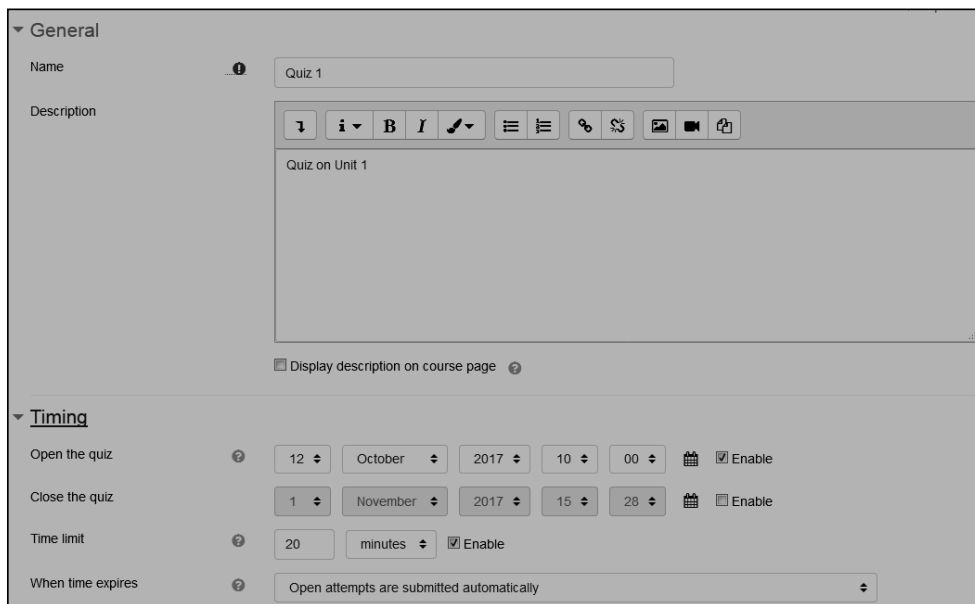
Screenshots 1-7 shows the general settings of a Quiz. This is same for all the Quizzes.

Screenshot 1: Adding Quiz Activity in MOODLE



Screenshot 2: General and Timing Setting in MOODLE

Schedule of Quiz such as open, close and time limit can be configured here.



Screenshot 3: Grade, Layout and Question Behaviour in MOODLE

Layout of questions, attempts allowed are set here.

Grade

Grade category ?

Grade to pass ?

Attempts allowed

Grading method ?

Layout

New page ? Repaginate now

Show more...

Question behaviour

Shuffle within questions ?

How questions behave ?

Screenshot 4: Review Options and Appearance Settings

Review options can be configured here.

Review options ?

<p>During the attempt</p> <p><input checked="" type="checkbox"/> The attempt ?</p> <p><input type="checkbox"/> Whether correct ?</p> <p><input type="checkbox"/> Marks ?</p> <p><input type="checkbox"/> Specific feedback ?</p> <p><input type="checkbox"/> General feedback ?</p> <p><input type="checkbox"/> Right answer ?</p> <p><input type="checkbox"/> Overall feedback ?</p>	<p>Immediately after the attempt</p> <p><input checked="" type="checkbox"/> The attempt</p> <p><input checked="" type="checkbox"/> Whether correct</p> <p><input checked="" type="checkbox"/> Marks</p> <p><input checked="" type="checkbox"/> Specific feedback</p> <p><input checked="" type="checkbox"/> General feedback</p> <p><input checked="" type="checkbox"/> Right answer</p> <p><input checked="" type="checkbox"/> Overall feedback</p>	<p>Later, while the quiz is still open</p> <p><input checked="" type="checkbox"/> The attempt</p> <p><input checked="" type="checkbox"/> Whether correct</p> <p><input checked="" type="checkbox"/> Marks</p> <p><input checked="" type="checkbox"/> Specific feedback</p> <p><input checked="" type="checkbox"/> General feedback</p> <p><input checked="" type="checkbox"/> Right answer</p> <p><input checked="" type="checkbox"/> Overall feedback</p>
---	---	---

After the quiz is closed

The attempt

Whether correct

Marks

Specific feedback

General feedback

Right answer

Overall feedback

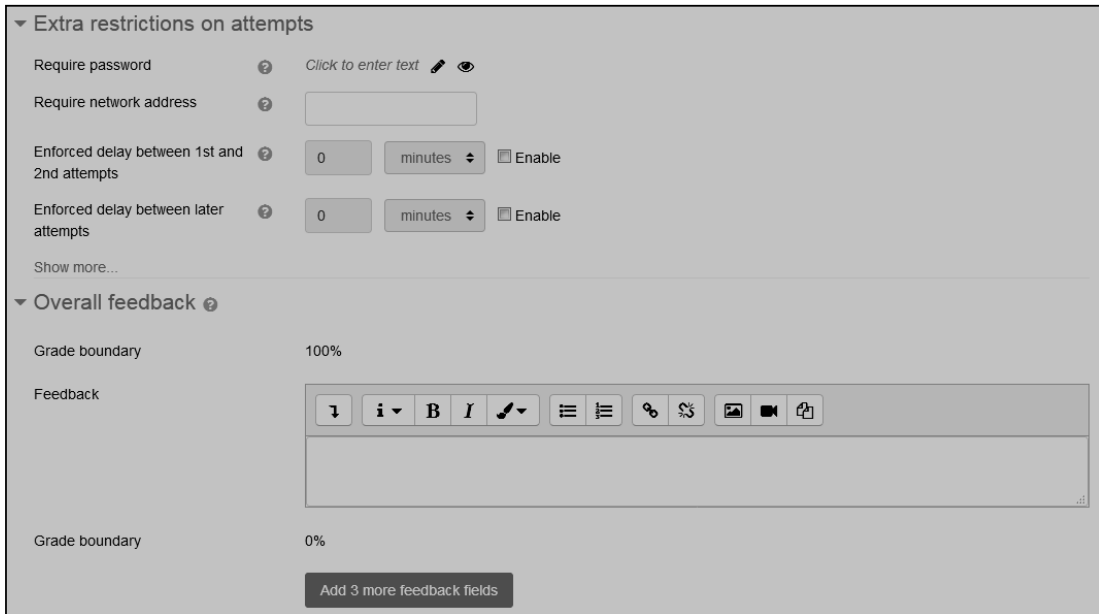
Appearance

Show the user's picture ?

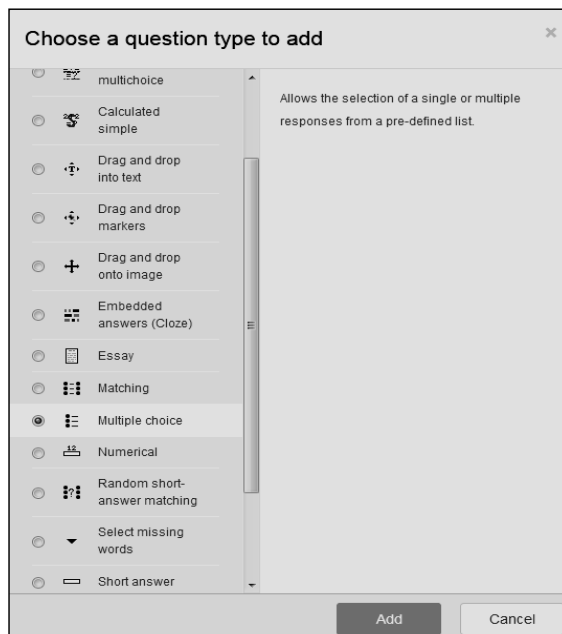
Decimal places in grades ?

Decimal places in question grades ?

Screenshot 5: Extra Restrictions and Overall feedback Settings



Screenshot 6: Adding Question to Quiz in MOODLE



Screenshot 7: Adding MCQ to Quiz in MOODLE

Adding a Multiple choice question ?

▶ Expand all

▼ General

Category

Question name ?

Question text ?

↓ **i** **B** **I**

The port number used by HTTP is

Default mark ?

General feedback ?

↓ **i** **B** **I**

One or multiple answers?

Shuffle the choices? ?

Admin User

▼ Answers

Choice 1

↓ **i** **B** **I**

20

Grade

Feedback ?

↓ **i** **B** **I**

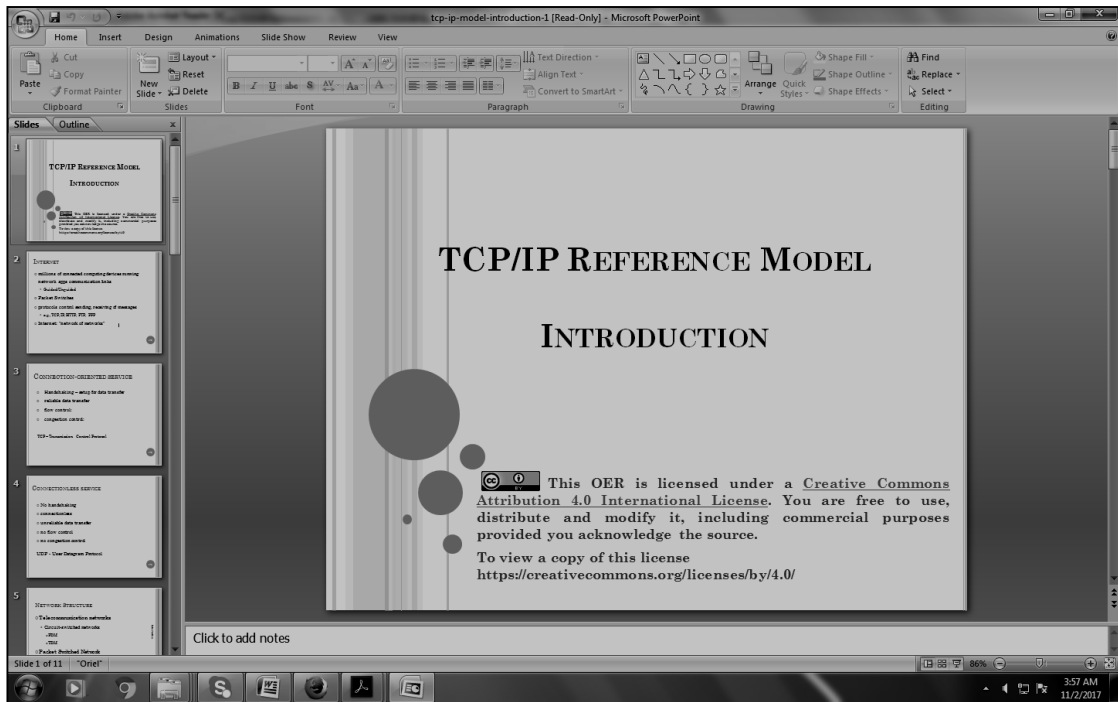
Choice 2

↓ **i** **B** **I**

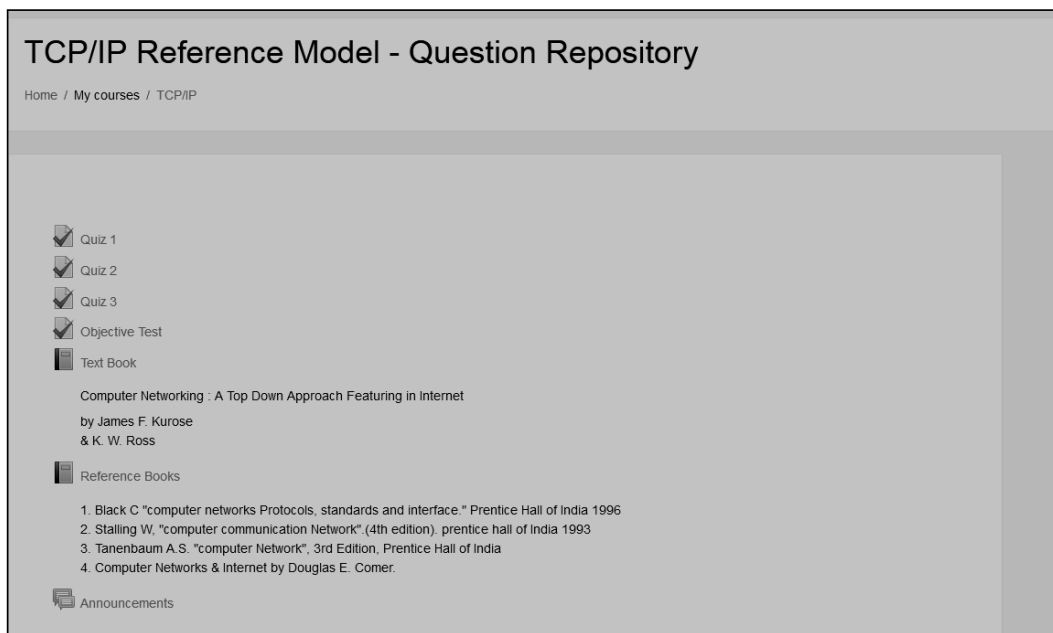
80

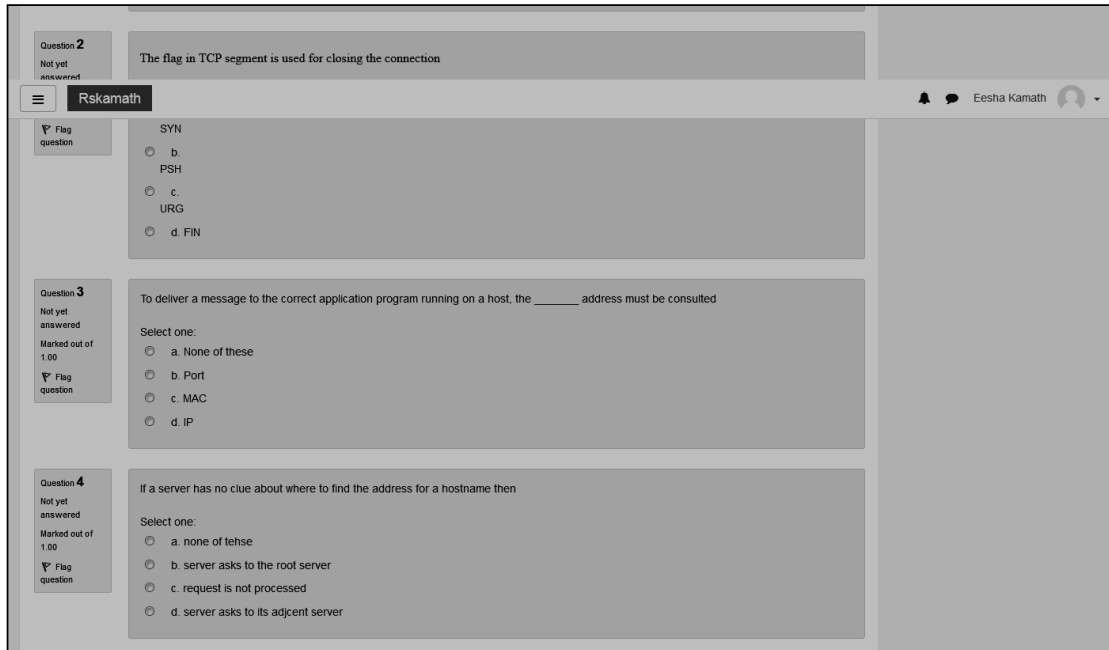
Grade

Screenshot 8: General Appearance of OER Lesson PPT in Microsoft PowerPoint



Screenshot 9: General Appearance of OER Quizzes in MOODLE



Screenshot 10: General Appearance of Attempting OER Quiz in MOODLE**6.4.4 How to use this OER**

For using this OER, please ensure that you have admin permission in your MOODLE course (needed for importing activities). Else ask your administrator to restore this backup in your course.

Step 1: For using this OER, access following URL,

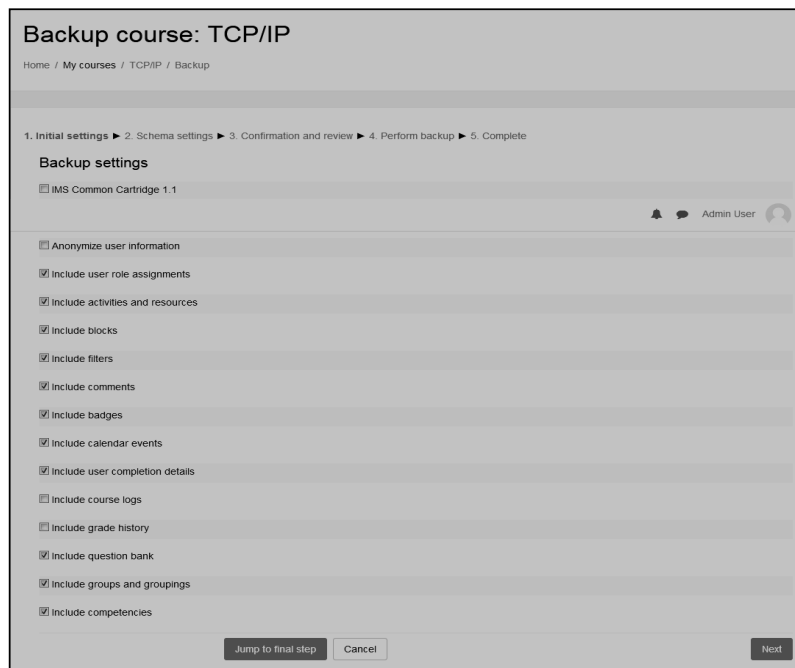
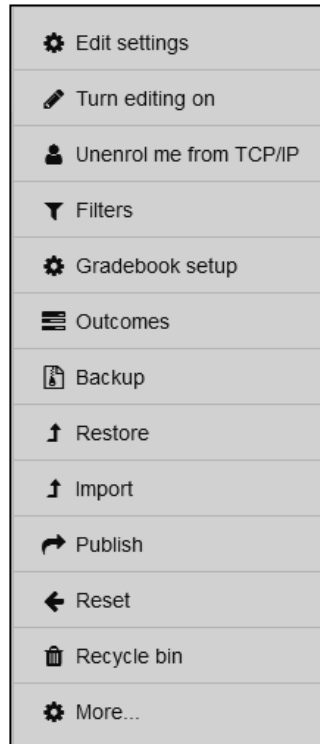
<https://rskamath.gnomio.com/course/view?id=3>

Provide the following user credentials to experience this course as a admin:

Username: admin

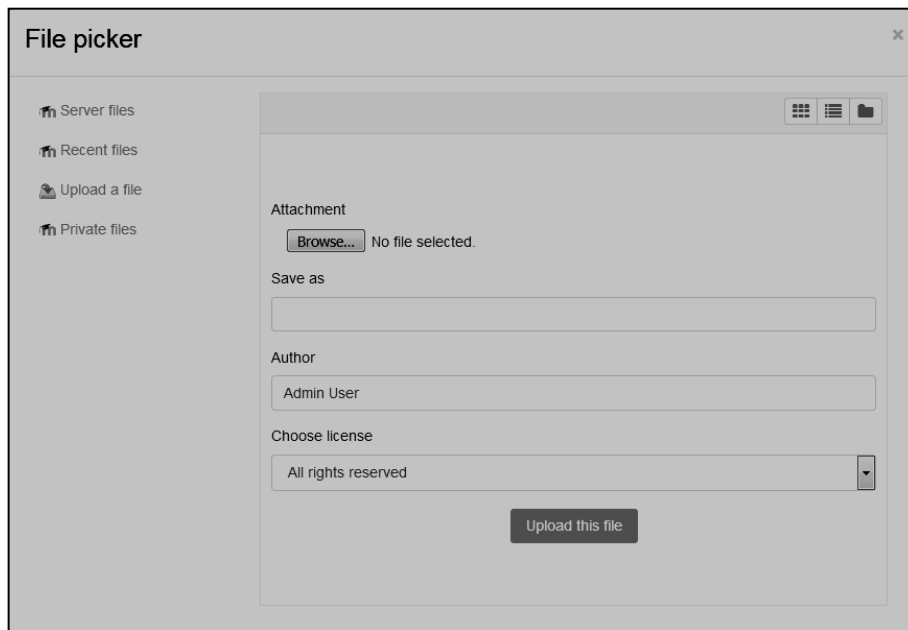
Password: &Admin123

Step 2: Go to the MOODLE course, in the Administration section click “Backup”.



Step 3: Go to the MOODLE course where you want to import these quiz. In the Administration section click “restore”

Step 4: Drag and drop the three files into the "Files" area and click restore



Step 5: Verify the contents of the restore by going back to the course

Step 6: After verifying, post the instructions to your students to complete the quiz activity before the next class using MOODLE forums.

Step 7: Before start of the next class please go and check the reports to see how students performed.

For course details access following URL,

<https://rskamath.gnomio.com/course/view.php?id=3>

Best Practices with Question Repository Activity

Here are some of the best practices from our experience on using this MOODLE Question Repository:

1. There are three quizzes designed unit wise and one Quiz given at the end of the semester.
2. Each quiz can be at the end of each unit.
3. Objective test given at the end of semester.

4. Provide minor incentive (marks) for completion of the activity.
5. Ensure that students attempt all quizzes.

6.4.5 Evaluating Effectiveness of OER

The OER effectiveness can be assessed at two levels:

1. **Effectiveness at the Student Level:** Effectiveness at the student level involves metrics related to student access of the resource and student learning. The MOODLE Quiz report can be used to evaluate this effectiveness, with the report showing the total number of students who accessed the reports (along with time) and their marks (based on their answers to MCQs). Additionally there is an option for teacher to grade essays and these marks also will be calculated if needed.
2. **Effectiveness at Consumer Level:** OER consumers are typically teachers who want their Question Repository in MOODLE for the course TCP/IP Reference Model.

Linking a survey on three main constructs — Ease of Use, Concept Coverage and Concept Complexity, can help in identifying the effectiveness of this OER at consumer level. This has to be done as a follow-up activity. Thus every user who downloads this resource will be asked their email address and as a follow up the survey will be sending to their email address.

Table 6.7: Survey Questions

Construct	Question	Scale
Ease of Use	I found it easy to download this Question Repository Activity.	Strongly Disagree to Strongly Agree (5-point Likert Scale)
	I found the instructions to setup the Question Repository Activity useful in setting the activity in my Course.	
	I was able to successfully create Question Repository in my own course.	
Concept Coverage	The Question Repository covers the required concepts related to TCP/IP Reference Model that I need for my course.	
Concept Complexity	The content inside the Question Repository is too complex for my students to solve.	

6.4.6 Building a Community of Question Repository in MOODLE Adopters

Some of the viable sources for building a community are:

- Teachers who are using MOODLE
- Teachers who plan to use online Quizzes in their courses

The resource is already available in the webpage <https://rskamath.gnomio.com/course/view.php?id=3> and its access is open to the users and queries can be posted through contact page or using email ID provided. Thus there will be a list of interested users whom we can follow up using email.

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FLIP THE CLASSROOM: BLOOM'S TAXONOMY TO MOOCs ...A PRAGMATIC APPROACH

Dr. R.S. Kamath

K.G. Kharade

Dr. R.K. Kamat



**Pandit Madan Mohan Malavya
National Mission on
Teachers and Teaching**



**SHIVAJI
UNIVERSITY KOLHAPUR**

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PREFACE

FLIP THE CLASSROOM: BLOOM'S TAXONOMY TO MOOCs ...A PRAGMATIC APPROACH

The innovation with Information and Communication Technology (ICT) has transformed many areas of societal endeavor and now is all set to penetrate pervasively in the higher education paradigm. Higher education has continued to grow and change since the inception of the ICT tools and techniques in this domain. However the institutes of higher learning are finding it difficult to keep up with the rapidly changing ICT landscape while dealing with the rapid rate of obsolescence of tools and techniques when it comes to the teaching-learning processes. On one hand these institutes are increasingly concerned about facilitation of the ICT tools for making their classrooms tech-savvy while on the other hand they are now facing increasingly with calls into question the relevance of much within traditional knowledge-based pedagogical techniques. In a world with easy access to huge stores of information, the teacher's skills of accessing, handling and using data and digital materials become more important than the ability to recall in detail ever greater amounts across many fields of knowledge for the benefit of the learners. The young learners who inhabit this technology-rich information society already question the relevance of the traditional teaching-learning approach. Aspects of existing pedagogical practice are called into question, as ICT both underlines a need for innovative change and affords the means whereby the desired change can be achieved. As a matter of fact, in the aforementioned backdrop, the present book has crafted the pedagogical re-engineering approach with the analytical marriage of the traditional pedagogical techniques blended with the ICT based methodology.

... Dr. R.S. Kamath, K.G. Kharade and Dr. R.K. Kamat

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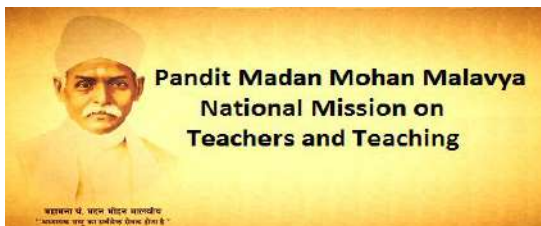
Data Analytics in R: A Case Study based Approach

Dr. R.S. Kamath • S.S. Jamsandekar • K.G. Kharade • Dr. R.K. Kamat



DATA ANALYTICS IN R: A CASE STUDY BASED APPROACH

**R.S. Kamath,
S.S. Jamsandekar
K.G. Kharade
R.K. Kamat**



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FOREWORD

In the era of ubiquitous computerization, generation of abundance of data is experienced in day to day life. Today's world has therefore transformed into data driven and customer laid. Brand value of the businesses has now been decided by the data. Extracting valid, novel, useful and understandable patterns from these data is still posing challenges thereby creating a huge gap between the data storage and knowledge discovery. Due to the interwoven nature of application domains, the Data Analytics discipline is emerging as a multi-disciplinary one requiring expertise from allied domains such as Statistics, Machine learning, Databases, Information retrieval and Visualization.

Case studies are important tool for active learning and student participation. Present book features a collection of selected case studies illustrating Data Analytics in R. Routine description of algorithms are avoided. This is assumed as prerequisite for the intended audience. This book is an excursion for its audience in the areas in particular but not necessarily limited to data pre-processing, association rule mining, classification and clustering. The post processing of the analytics results to device useful patterns are exemplified. The scripting is done through the open source tool R and the scripts are provided for learners to practice. Results will be put forth through systematic visualization techniques.

We have used valid data warehouses available on the web. One such platform for example is UCI Machine Learning repository which provides data-driven content on various topics.

... R.S. Kamath, S.S. Jamsandekar, K.G. Kharade and R.K. Kamat

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Chatbot Response Mining using Sentiment Analysis

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Abstract

This paper reports sentiment analysis approach to deal with unstructured responses received by ChatBot during conversation. The dataset for the present study is retrieved from Kaggle, an online community of data scientist and machine learners. This analysis aimed at emotional classification and polarity of flagged and not flagged responses. The said sentiment analysis is carried out in R. It's noted from the analysis that there is no much difference between positive and negative emotions in flagged responses. Whereas the polarity classification reveals that the positive response are more in number than the negative response for not flagged responses.

Introduction

Robotic Process Automation (RPA) are gradually becoming an cohesive part of our lives, Many are flagship AI assisted software's like Siri, Alexa, Cortana, Google assistant which have simplified the human interaction with technology, but also simple ChatBots have been increasingly used by most companies due to cost effectiveness, 24x7 availability.

The existing Chatbots or bot assistants are mainly voice based yet faces hitches in understanding the intentions of the user and hence become difficult to handle situations. Also these chatbots are unable to keep track of the context and suffer in long-ranging conversations, problem now is that the algorithms powering them are not sensitive enough to handle any situation, thus understanding context and sentiments are essential.

Sentiment analysis also known as opinion mining or emotion AI utilizes the natural language processing, text mining and computational linguistic to extract significant data to help in the decision

making process [2]. The outflow of anguish, and in addition happiness, can go about as a measure of affirmation or rejection of specific choices. The areas of application of sentiment analysis are interconnected, they are all about improving performance via analysis of user opinion. Indeed, ever since the inception of AI, designing and building a good chatbot remains one of the field's hardest challenges. While chatbots can be used for various field of applications, in general they have to apprehend users' emotions/expressions and provide responses that are relevant to the problem at hand.

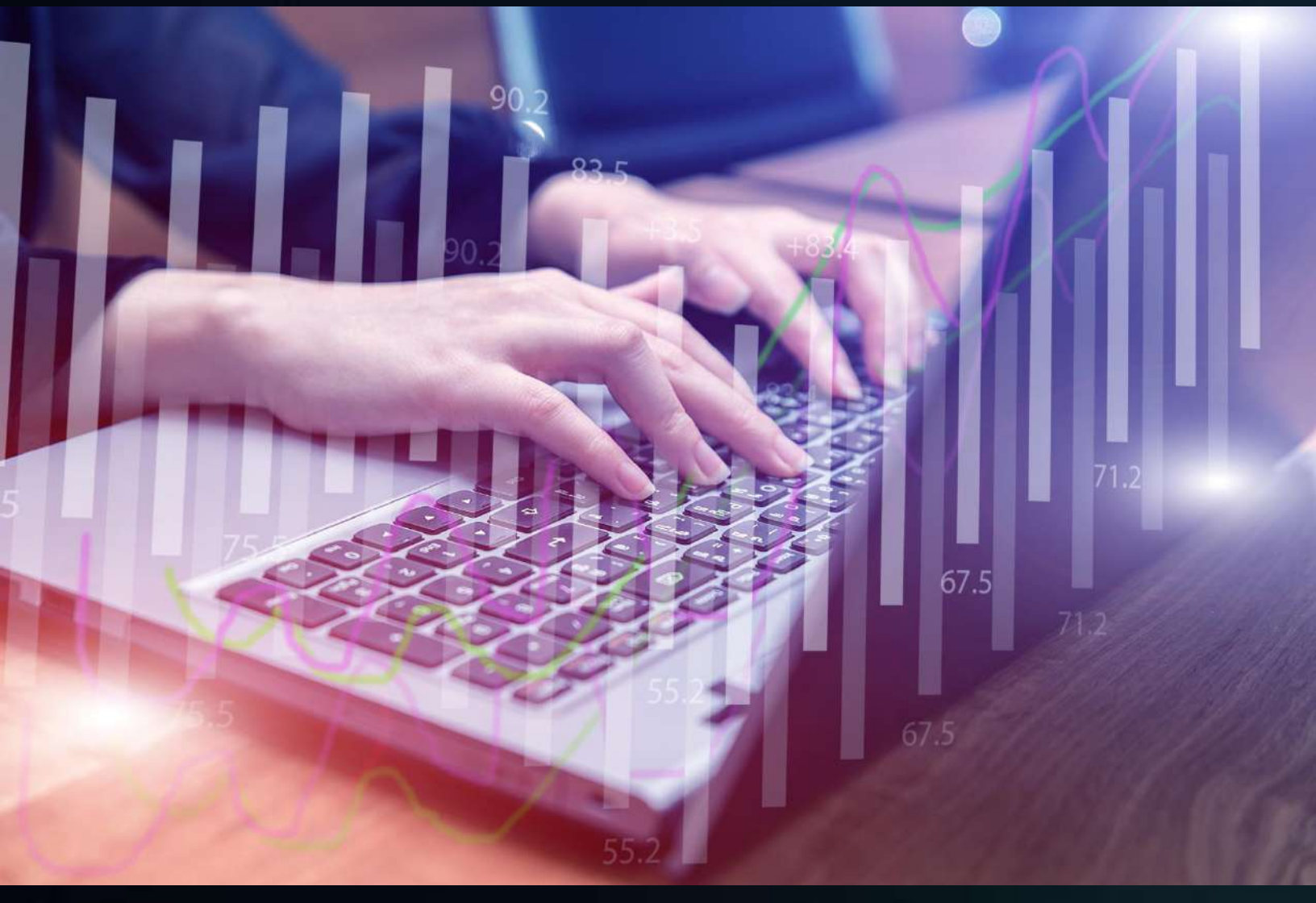
With the rise of deep learning in machine learning domain it is been observed in many research articles [5] [6] [7] [10] that AI powered deep learning with sentiment analysis could significantly improve performance of chatbots with quality user experience. Thus Sentiment analysis of chatbot responses to user questions can contribute significantly to the design of effective successful chatbots for quality user experience or improvement of existing solution.

Review of literature:

Vyas in [6] built a hybrid model for chatbots by combining the control of a retrieval-based system with the context retention capabilities of Long Short Term Memory, to build a life-like chatbot. H.N. lo in [5] has analysed different chatbots and conversational agents found that deep learning technology is potential research area in effective chatbot design. Csaky, Richard [7] has proposed recurrent encoder-decoder model using retrieval-based or generative-based approaches for response generation conversational modelling. Authors in [8] has presents a surveyed and compared different techniques used to design Chatbots. Xu et.al[9] has designed conversational system to automatically generate responses for users requests

Working in Collaboration with Git

A Practical Approach



Dr. Poornima G. Naik Dr. Girish R. Naik



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Working in Collaboration with Git – A Practical Approach

By

Dr. Poornima G. Naik

Dr. Girish R. Naik

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Many individuals share credit for this book's preparation. We extend our sincere thanks to Late Prof. A.D.Shinde, the Founder Director and Managing Trustee who has been a constant source of inspiration for us throughout our career. His support is really a driving force for us. Also, we would like to thank Dr.R.A.Shinde, Hon'ble Secretary, CSIBER, Kolhapur for his whole hearted support and continuous encouragement. We are grateful to Dr. M.M.Ali, Director CSIBER, Kolhapur for his invaluable guidance. We take this opportunity to thank Dr.V.M.Hilage, Former Director and Trustee Member, CSIBER, Kolhapur, Mr. Bharat Patil, Chairman, Mr. Sunil Kulkarni, Vice Chairman, and Deepak Chougule, Secretary, KIT, Kolhapur, Dr. R.V.Kulkarni, H.O.D., Department of Computer Studies, CSIBER, Kolhapur for showing a keen interest in the matter of this book and extending all support facilities for the in-timely completion of this book. Last but not the least we thank all faculty members and non-teaching staff of department of computer studies, CSIBER, Kolhapur and Production Engineering department, KIT's College of Engineering, Kolhapur who have made contribution to this book either directly or indirectly.

Dr. Girish R. Naik

Dr. Poornima G. Naik

Working in Collaboration with Git – A Practical Approach

Preface

It gives us an immense pleasure to bring out a book entitled ‘**Working in Collaboration with Git – A Practical Approach**’. *Version Control System (hence forth referred to as VCS)* keeps track of minutest change made to a file in large projects, enables complete retracing of all versions of a file revealing details such as name of the author performing the revisions, date and time when the revision was made and enables complete rollback of work from the current state to the beginning state. VCS plays a prominent role in the development of large projects where large no. of members contribute towards development of a project. For a project team comprising of large number of members, where each member contributes constantly and significantly in terms of development of new modules, altering the files in the project, deleting some parts of a project either intentionally or accidentally etc., it is difficult to keep track of who made the changes and when. Further, conflict resolution is another major issue which creeps in large projects where the changes made by one member may be overwritten by another member of the team. Ignoring these facts results in increase in development time and cost. All these issues are exactly addressed by VCS. In order to cater the needs of project development team we decided to come up with a book which can be used by large number of developers independent of language and the platform they are working on. Without a VCS in place, the teams members work with a shared folder on the same set of files. Using version control system you can do any of the following:

- Isolating and storing different versions of a single project in the same location
- Tracking changes made to a single file
- Tracking changes made to a single version
- Restoring deleted files
- Restoring previous versions of the software
- Viewing the changes carried out by team members
- Working with the new modules without disturbing the main project through branching and then merging with the main branch once the module is tested satisfactorily
- Backing up and restoring repository with its complete history etc.

to mention a few.

Working in Collaboration with Git – A Practical Approach

Further a *Decentralized Version Control System (DVCS)* offers an added advantage by creating a clone of a repository on the local machine and syncing the remote and local repositories by pushing and committing the changes as and when required which means,

and committing the changes as and when required which means the team collaborator can still work with the local copy during server down time or network failure. The network connection is only required during the following two cases, for pulling latest changes to the client and for publishing changes on the central server. During rest of the time, the user can work offline employing a dedicated machine. This book is intended for a novice who is keen in getting first hand information about working of version control system and ins and outs of operation of commands. Git is a free and open source distributed version control system with highest market share. Hence it is a VCS of choice for the authors for demonstrating the features listed above.

How this book is organized

Chapter 1 focuses on overview of version control system and familiarizes the reader with DVCS working Environment along with the VCS vocabulary. The salient features of VCS are discussed. The relative comparison between the centralized and distributed version control system is presented, emphasizing on the drawbacks of centralized version control system. The chapter concludes with the formal introduction to Git, Git data structure, Git components, advantages offered by Git and Git life cycle. **Chapter 2** deals with installation of Git on two prominent operating systems, Ubuntu and Windows. Git offers two interfaces to end users, graphical and command-line based. All the assignments in this book are solved using Git command-line interface which is referred to as '*Git Bash*'. The highlight of the chapter is customizing Git environment by setting up local and global configuration parameters.

Chapter 3 explores the local Git repository. The basic Git commands for converting a folder into a Git repository and setting identity to Git are presented. The highlight of the chapter is introduction of the reader to Git folder structure. The Git folder structure is explored at depth, revealing the content and location of different files making up a Git repository. Content of different subfolders making up a Git folder structure are unleashed. **Chapter 4** provides an overview of basic Git commands. All the commands participating in a Git workflow from the moment it appears in a local Git repository (work tree) till it ends up in a shared remote repository commands are discussed at length along with examples in each case. The salient feature of a chapter is the execution of a single command in numerous ways using different options available for execution supported by working example in each case. **Chapter 5** discusses advanced Git commands focusing mainly on branching, tagging, stashing, rebasing and backing up local repository. The chapter also focuses on creating and applying patches for a specific commit.

Working in Collaboration with Git – A Practical Approach

Chapter 6 presents hosting Git repositories online. There are many web-based hosting services available where you can import your Git repositories free of cost. They provide a centralized location for sharing your repository so that many people can collaborate on a project easily. In the current work GitHub is used for the purpose. Finally **Chapter 7** offers a hands-on-experience with GitHub where the reader is provided a practical exposure to ‘**git clone**’ and ‘**git push**’ commands. Granting access permissions to the user is also discussed to enable multiple members to work collaboratively in a single project.

The content of this book is derived from different sources which are listed at the end in a ‘references’ section. Appendix A summarizes different Git commands for quick reference and Appendix B enlists assignments based on different topics covered in a book for developing familiarity with Git environment.

Dr. Girish R. Naik

Dr. Poornima G. Naik

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Shivaji University
Kolhapur, Maharashtra

Centre For Distance Education



B. Com. Part-I
(Semester I & II)
Financial Accounting

(Academic Year 2019-20)

Preface

Accounting is a process of recording transactions and preparing financial statements. However, this process is made for the use of accounting information by internal users and external users. Hence, accounting is nothing but information system according one approach when it collects data, store data and avail it whenever required. On the other hand, accounting is a language of business according to another approach where accounting serves purpose of communication as main function of language.

This book is written for the purpose of students on distance mode. It is contemplated here that the students will read the book, they will make exercise and come to the contact sessions with their queries which can be solved in it. This book is for their basic preparation for their study however they can make supplementary and extensive learning by using reference books.

This book is divided into eight chapters of 'Financial Accounting' for B. Com. Part-I (covering Semester-I and Semester-II). The book is divided for the convenience of the students into two parts, semester-wise. In the first section of the book, four units are on the topic of 'Introduction to Accounting', 'Amalgamation of Partnership Firms', 'Consignment Accounts' and 'Accounts of Professionals'. In the second section of the book, other four units are on the topic of 'Single Entry System', 'Conversion of Partnership firm into Limited Company', 'Branch Accounts' and 'Computerized Accounting System'.

Along with the theoretical components illustration are given in every unit to understand and learn every concept clearly. The model accounting entries are stated wherever necessary. At every regular interval, objective type questions are given to check the progress of the student. At the end of each unit, exercise is available which will be useful to students to make preparation according to the syllabus stipulated.

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CUSTOMER OPINION OF RETAIL SERVICES IN SELECTED CITIES

Dr. C. S. Dalvi

Associate Professor, CSIBER, Kolhapur

1) Introduction

Retail market In India is estimated to grow by 60% to reach US\$ 1.1 trillion by 2020, factors considering rising income & lifestyle changes by the middle class and increasing connectivity through the internet. The growth of the overall retail market is 12% per annum. Organised trade would expand twice as fast at 20% per annum and traditional trade at 10%. The e-commerce market in India is a fast-growing market in the world. The primary cause is growing no. of internet users. E-commerce sales in 2017 were \$39 billion. By 2026, Sales through the internet is expected to cross \$ 200 billion by 2026. Estimated shoppers to the tune of 530 million by 2025, reliable telecom networks growth in India, customers can cope up with changing technology. Jio mobile service provider is an accelerating factor for internet usage in India in the last three years. Luxury retail market of India is expected to grow the US \$ 30 billion by the end of 2018 from the US \$ 23.8 billion in 2017. (2, IBEF 2018). Retail shop industry is an upcoming industry in India. The growth of the retail industry is because of changes in lifestyles, tastes and preferences of the customers. Some other factors like changes in awareness about brand & various services offered are responsible for the growth of the retail sector. Indian customers' expectations are increasing day-by-day than ever before. The middle class is growing

4) Data Analysis and Interpretation

Table No. 4.1: Provision of Hassle Free Complaint Handling

City	Kolhapur		Solapur		Satara		Sangli		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Strongly agree	13	5.2	45	18	69	27.6	45	18	172	17.2
Agree	89	35.6	108	43.2	59	23.6	126	50.4	382	38.2
Undecided	125	50	83	33.2	112	44.8	68	27.2	388	38.8
Disagree	23	9.2	10	4	7	2.8	8	3.2	48	4.8

in new India, and hence they demand a quality product and looking for a change. They are in a transition state of lifestyle. As a result, the customers are shifting from traditional shops to organised retail shops. They not only afford to spend money but also have a strong desire for uplifting their lifestyle. The article discusses about the various services provided by the retail stores in the selected cities, i.e. Kolhapur, Satara, Solapur and Sangli. The services such as billing procedure, customer care, help desk, grievance only are considered in the present article.

2) Objectives of Study

- 1) To understand the Indian market of the organised retail industry.
- 2) To study the various service aspects of Organised retail stores in selected cities of western Maharashtra.
- 3) To assess customer attitude and opinion about organised retail stores in selected cities.

6. Research Methodology of the Study

3) Collection of Data

Primary data was collected from the shoppers of the organised retail stores from Kolhapur, Solapur, Satara and Sangli cities. They were contacted at the retail stores and information was sought from them. One thousand customers of the retail stores were contacted at different times. 1000 customers were contacted by using stratified disproportionate sampling method.



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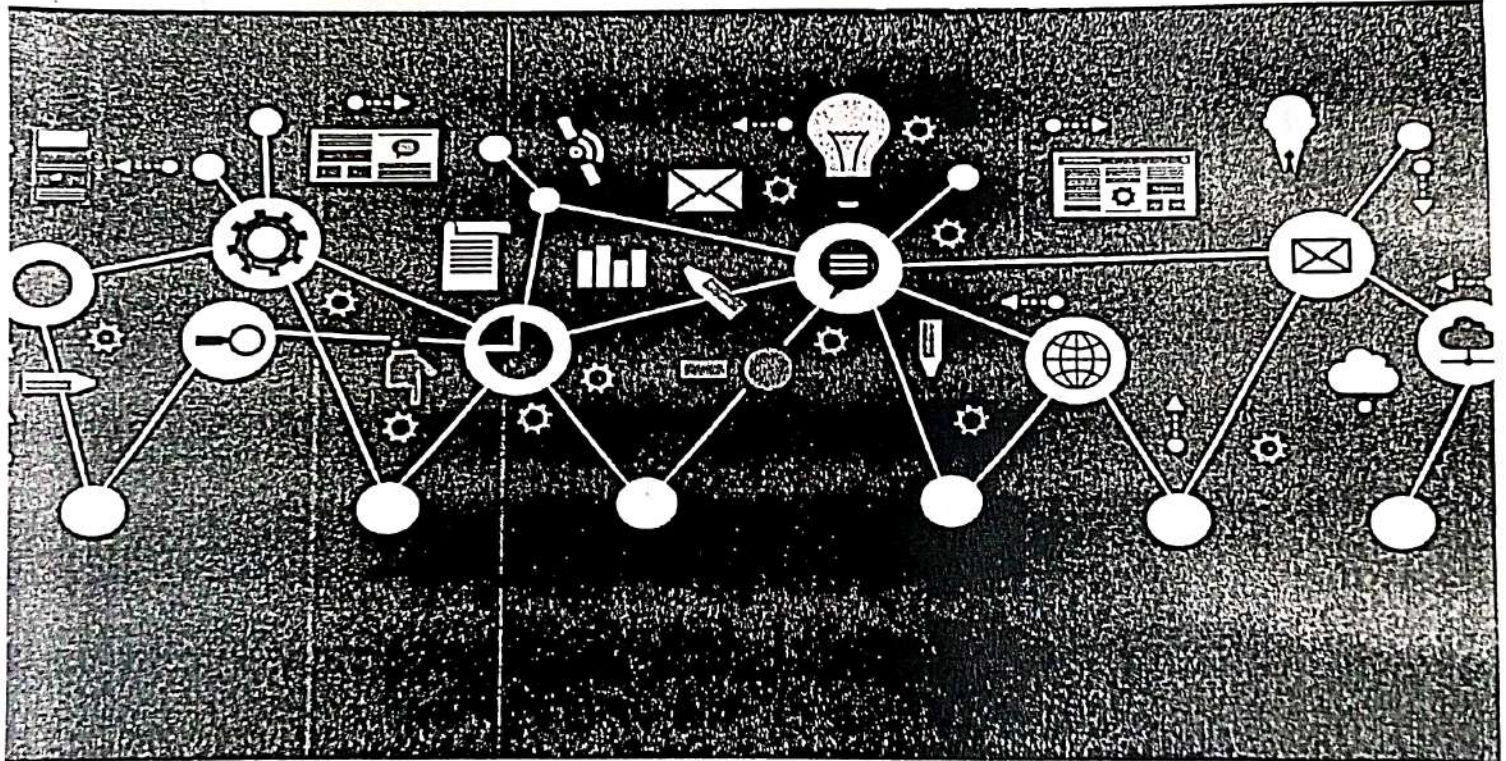
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ABSTRACT

Retail Industry India is expected to grow at 10 per cent a Compound Annual Growth Rate (CAGR) of to \$ 1.6 trillion by 2026 from \$ 641 billion in 2016. Overall retail market of consumer is likely to grow at the rate of 12 per cent per annum, retail though organized retail industry may grow at the rate of 20 per cent per annum as compared to the traditional retail or unorganized retail market which is likely to grow at the rate of 10 per cent.

Lifestyle in India is changing and the concept of 'value for money' is picking up local companies and local-foreign joint ventures are expected to more advantageously position than the purely foreign ones. Up and coming modern retail channels such as hypermarkets, supermarkets, convenience stores and discounters were unable to make a significant mark in grocery retailers' value due to a limited geographical spread in consumer reach. Department stores within mixed retailers were the forerunner in growth, being boosted by the introduction of lifestyle concept stores. The average Indian deserves consumption of good quality of products at prices he can afford. In a developing country like India, a major chunk of a consumer's expenditure is on retail products.

Keywords: Retailing, modern retails, service, FDI, Unorganized retail, Customer. Facility

1. Introduction

The term 'retailing' refers to any activity that involves a sale to an individual customer. Currently, Retailing is the buzzword in Indian Industry. The Indian retail industry has emerged as one of the most dynamic and fast-paced industries due to the entry of several new players. It accounts for over 10 per cent of the country's Gross Domestic Product (GDP) and around 8 per cent of the employment. India is the world's fifth-largest global destination in the retail space. Retail Industry in India is expected to grow at 10 per cent a Compound Annual Growth Rate (CAGR) of to \$ 1.6 trillion by 2026 from \$ 641 billion in 2016. Overall retail market of consumer is likely to grow at the rate of 12 per cent per annum, even though organized retail industry may grow at the rate of 20 per cent per annum as compared to the traditional retail or unorganised retail market which is likely to grow at the rate of 10 per cent. (India Brand Equity Foundation, 2018)

India's Business to Business (B2B) e-commerce market is expected to reach US\$ 700 billion by 2020. India has replaced China as the most promising markets for retail expansion, supported by expanding economy, coupled with booming consumption rates, urbanizing population and growing middle class. India is expected to become the world's fastest growing e-commerce market, driven by robust investment in the sector and rapid increase in the number of internet users. Various agencies have high expectations about growth of Indian e-commerce markets. Indian e-commerce sales are expected to reach US\$ 120 billion by 2020 from US\$ 30 billion in FY2016. Further, India's e-commerce market is expected to reach US\$ 220 billion in terms of gross merchandise value (GMV) and 530 million shoppers by 2025, led by faster speeds on reliable telecom networks, faster adoption of online services and better variety as well as convenience. The size of modern retail in India is expected to double to Rs 171,800 crore (US\$ 25.7 billion) from Rs 87,100 crore (US\$ 13 billion) in three years driven by Omni-channel retail. (India Brand Equity Foundation, 2018)

Lifestyle in India is changing and the concept of 'value for money' is picking up local companies and local-foreign joint ventures are expected to more advantageously position than the purely foreign ones. Up and coming modern retail channels such as hypermarkets, supermarkets, convenience stores and discounters were unable to make a significant mark in grocery retailers' value due to a limited geographical spread in consumer reach. Department stores within mixed retailers were the forerunner in growth, being boosted by the introduction of lifestyle concept stores.

2. Objectives of Study

1. To study opinion about organized retail stores in selected cities in western Maharashtra.
2. To know customer satisfaction level about the services provided by the retail stores.
3. To put forth suggestions.

4G Wave of Mobile Services in India

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IJTSRD23087

Telecommunication industry is one of the most rising industry which evolved at faster rate in last 10-15 years. Recently, India is the world's second largest telecommunication market and still growing. Mobile economy in India is increasing very fast and will add significantly to India's GDP. 4G technology is originated through 1G, 2G as well as 3G technology. 4G technology is the indicator of brisk growth of wireless communication technologies. The growth of 4G technology generates new services which are useful for the customers for various purposes like internet accessing, with high data rate, global roaming, videos anywhere, any time and at any place with full grown support for all other multimedia. 4G technology is a very encouraging generation of wireless communication that will change the people life to wireless world in coming days.

This paper deals with the current scenario of 4G mobile services. There are various competitors in the telecommunication market such as Bharati Airtel, Vodafone, Idea Cellular, Reliance Jio and BSNL. The current scenario of 4G mobile services which includes current market share of different companies, different schemes and offers provided to their customers in terms of mobile data, pricing, call rates, the growth of the companies and their marketing strategies. It also throws light on competitive edge over other service providers. Entry of reliance jio has made great turbulence in the telecommunication market by providing schemes like free internet, free calling, 4G network provide a serious threat to other competitor.

Due to this, Reliance Jio is preferable choice for all the customers. Other service providers are facing challenges and find difficulty to cope up with the new game in the communication market. Reliance Jio marketing strategies have captured the more market share as compared to other competitors. It is very difficult for others to survive in the market. The other competitors are trying to survive in the market by changing their marketing strategies, satisfy their customers demand and retain their customers and refrain to switch to Reliance Jio or any other competitor.

KEYWORDS: 4G, Internet, Data, Talk-time, SMS, calling, Volte

1. INTRODUCTION

Mobile communication systems regenerated the way people communicate, joining together communications and movability. Wireless connectivity is almost everywhere as well as getting highly cheap even for people who are in the bottom of the pyramid. Capable and compact wireless technologies have not only risen but also evolved in order to fulfill the expectations of businesses as well as end users. The ability to communicate with people on the move has derived vigorously and was accepted by the people throughout the world. The number of mobile subscribers has increased excessively during the last decade. More than one million new subscribers per day have been added globally.

In the mid of 1980's the initial wireless telephone technology is referred to as 'First Generation' and it supports only voice services. The second generation is not only totally digital but also supports additional services like SMS (Short Message Services). The third generation of mobile technology came into picture acquire higher data rate and supports services such as mobile T.V., video calls, etc. The rapid growth of the wireless technology as well as internet created a new wireless communication channel named as 4G or fourth generation technology with characteristics as interactive multimedia, personalized services, high definition mobile tv interactive games and high speed broadband internet.

A Study on Retailing in India: Growth and Challenges

Supriya Udaykumar Mogale¹, Dr. C. S. Dalvi²

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Retailing in India has several outstanding achievements as well as impressive growth during last few decades. Indian retail market is one of the top five retail markets in the world by economic value and also it is considered as one of the fastest growing retail markets in the world. Retailing in India is the most important pillar of its economy and accounts of about 10% of its GDP. Indian retail industry is classified into organized and unorganized sectors. There is a rapid development of retailing which leads to shifting of customers from unorganized to organized sectors and it is mainly because of changing behavior and preferences of consumers. This changing behavior of consumers is due to increased income and changed life styles. Now the customer is very much aware about the product and services. He is becoming very specific and conscious about getting services by the retailers. His expectations are increasing day-by-day. Customers want everything under one roof i.e. shopping, food and entertainment and hence retailing in India is developing very fast. This is paper fully based on secondary data. This paper provides information about role of organized and unorganized sectors in India. It also includes various formats of retailing, current scenario, growth and challenges of retail industry and the future prospects of retailing in India.

INTRODUCTION

The Indian Retail Industry is the fifth largest in the world and it is one of the fastest growing sectors in India. Retailing in India has several outstanding achievements as well as impressive growth during last few decades and it is one of the pillars of its economy. This is only because of rising income, changing life styles by middle class, and increasing digital connectivity. Each of the retail companies has their own unique strategies and offering in order to sustain and grow the business. Development of mega malls in India is also one of the most important aspects to the booming retail sector. No. of big players are entering in this field and competing to survive in the market but it is not very easy to stand in the competition and so only few managed to survive and taste the success.

Research Methodology

This paper is based on secondary data

Indian Retail Sector: Current scenario

Indian Retail Sector is experiencing exponential growth with retail development taking not only in major cities and metros but also in tier II and tier III cities. There are various factors affect the growth in the retail market like changing demographic profile, increasing income, urbanization and changing tastes and preferences of the consumers. According to AT Kearney (2017), Global Retail Development Index (GRDI), India is at top position and got first rank among 3 developing countries in Retail Sector. Indian Retail is the fastest growing market in the world only because of its economic growth with 1.2 billion people. It accounts of abo

The main reason behind this is a Customer. He is the king of the market. Customers are now very much aware about getting some products, brands or services provided by the companies. He is becoming more specific and conscious about getting proper services and his expectations are increasing day-by-day. Hence it is very much important to identify their actual expectations. There must be a gap between services provided by the company and actual expectations of the customers. That gap is to be identified and retailers have to minimize that gap. This will lead to increase the level of satisfaction of the customers.

Objectives

- To understand the concept of retailing in India
- To study the growth trends of Indian retail sector
- To identify the challenges faced by Indian Retail Industry

720 Degree Performance Appraisal Systems

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Human resource (HR), the most important asset in any organization and its significance to any company is very well known accordingly. The picture in present scenario tells us that the overall performance of the company depends on its ability to observe the performance of its members. The specific measure on which an organization's performance depends, by using the same measure we can improve and optimize the employee's performance. The performance appraisal system plays a very important role in human resource framework. This concept has stated in 20th century. It is the process of obtaining, analyzing and recording information about an employee to evaluate and improve their performance. This appraisal system has started from 90 degree to the 720 degree till date. Before the 720 degree appraisal system, the companies are using 360 degree system. But in modern management, the 720 degree appraisal system is about to work efficiently. It is an integrated method where the employee's performance is evaluated from 360 degree (Management, Colleagues, Self and Customers) and timely feedback is given. The performance is evaluated against the set targets. Therefore, we can state 720 degree appraisal as twice 360 degree appraisal. As the name suggests, the 720 degree performance appraisal is one of the recently introduced concept and the evaluation of the performance from all the aspects and gives timely feedback. In this paper, we are going to analyze and study the 720 degree performance appraisal system on various aspects.

1. INTRODUCTION

Performance appraisal conjointly call worker appraisal could be an methodology by which the job performance of an employee is evaluated in terms of quality, quantity, price and time. It is part of career development. Performance appraisals are regular reviews of employee performance within organizations. Any performance appraisal processes in following manner. Review the performance, judging the gap between actual and desired performance, strengthen the relationship and communication between superior - subordinates and management - employees, diagnose the strengths and weaknesses of the people therefore on determine the coaching and development wants of the longer term, provide feedback to the employees regarding their past performance and provide clarity of the expectations.

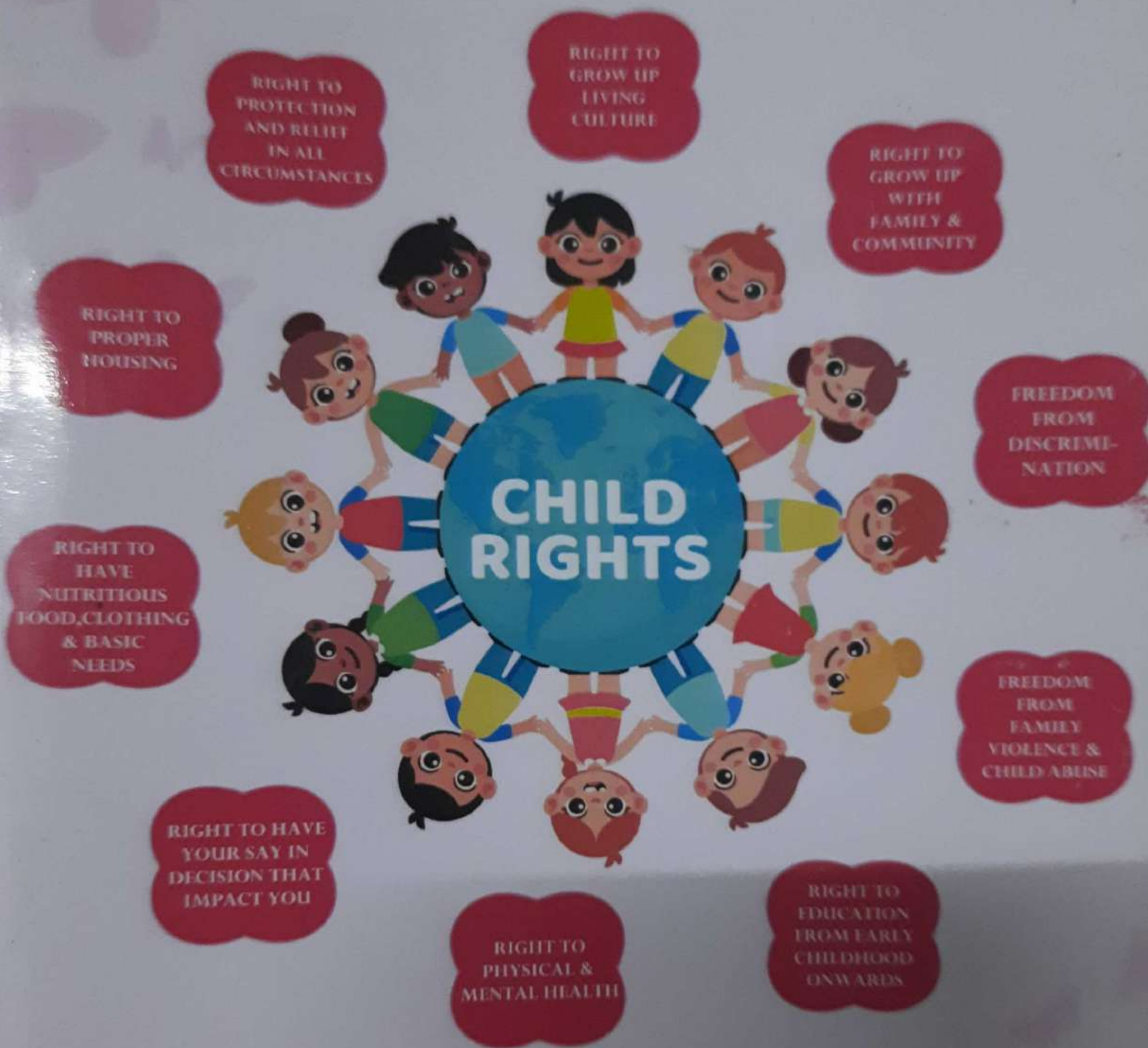
Any organization firstly thinks about its goals and aims at the effective solutions to achieve these goals. Therefore, in order to do this, an organization must monitor or measure

performance review on the basis of pre-determined standards and timely recognition of the accomplishments that motivates the worker to perform higher on a daily basis. While 360 degree performance appraisal can be a far framed performance appraisal system observe in several organizations, recently in the modern management, 720 degree performance appraisal system is also gaining popularity. In 720 degree system, we provide a feedback after the original 360 degree appraisal.

The 720 degree analysis is rising as attainable different appraisal technique. Organizations are slowly however steadily realizing the requirement for this new system which is better than the existing 360 degree evaluation especially in terms of the focus of the evaluation and the involvement of the evaluators in the process. Now, recently Cadbury introduces '720-degree' feedback. This study is targeting the requirement and significance of 720 degree Performance appraisal within the fashionable business

Child Rights

Issues and Concerns




- Edited by -

Dr. Deepak M. Bhosale & Dr. Sonia P. Rajput

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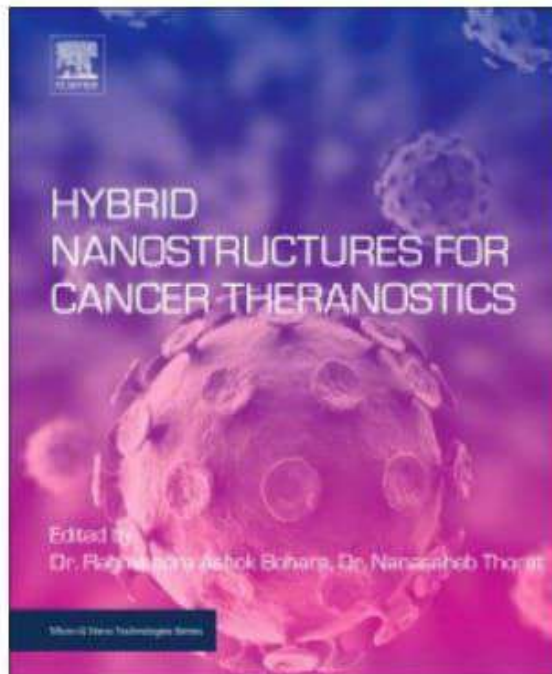
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CURRENT CANCER THERAPIES: FOCUS ON HYPERTHERMIA AND IMMUNOTHERAPY

3

Poonam A. Bedge^{1,*}, Raghvendra A. Bohara^{1,2,*,*}, Pooja M. Patil¹, Meghnad G. Joshi¹ and
Deepak A. Bohara³

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3.1 INTRODUCTION

Noncommunicable diseases (NCDs) are a huge cause of death worldwide, mainly due to cardiovascular diseases, chronic respiratory diseases, cancers, and diabetes. Due to NCDs more than 36 million die annually (63% of global deaths), before the age of 70 including 14 million individuals who die too young. In low- and middle-income countries more than 90% of these preventable premature deaths due to NCDs occur. The common risk factors include unhealthy diet, tobacco use, harmful use of alcohol, and physical inactivity, which lead to premature deaths. In 2015, 8.8 million deaths were due to cancer and globally it is second leading cause of death. In men the most common kinds of cancer are prostate, breast, colorectal, lung, colorectal, lung, stomach, and liver, while in women the most common cancers are lung, cervix, breast, colorectal, lung, and stomach [1]. Cancer refers to malignant neoplasms or tumors. Tumors are cells in a tissue that grow out of control. The tumor cells can be classified into two types: malignant and benign. In malignant tumors the tumor cells spreads to neighboring tissue and interfere with the normal function of tissue and often have undesirable effects. In the case of benign tumors there is an increase in cell growth due to continuous division, but they remain in the tissue.

Due to mutation or abnormal activation of cellular genes cancer is caused, and these genes are responsible for cell control, growth, and mitosis. These genes are called oncogenes. These genes are controlled by specialized genes called tumor suppressor genes. The normal function of these genes is to control this transformation of normal cells into cancer cells. There are numerous factors that activate the oncogenes and cause the transformation of normal cells to cancer cells. Fig. 3.1 depicts a flow chart suggesting the simplified scheme of cancer pathogenesis. Cancer can be classified into different types dependent on whether the tissue or cells are involved.

Table 3.1 deals with the classification of cancer, describing some common examples. The fundamental factor which also plays a vital role in the development of cancer is aging. With age the

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*First Author equal contribution: both RAB AND PAB Equally contribute to the chapter.

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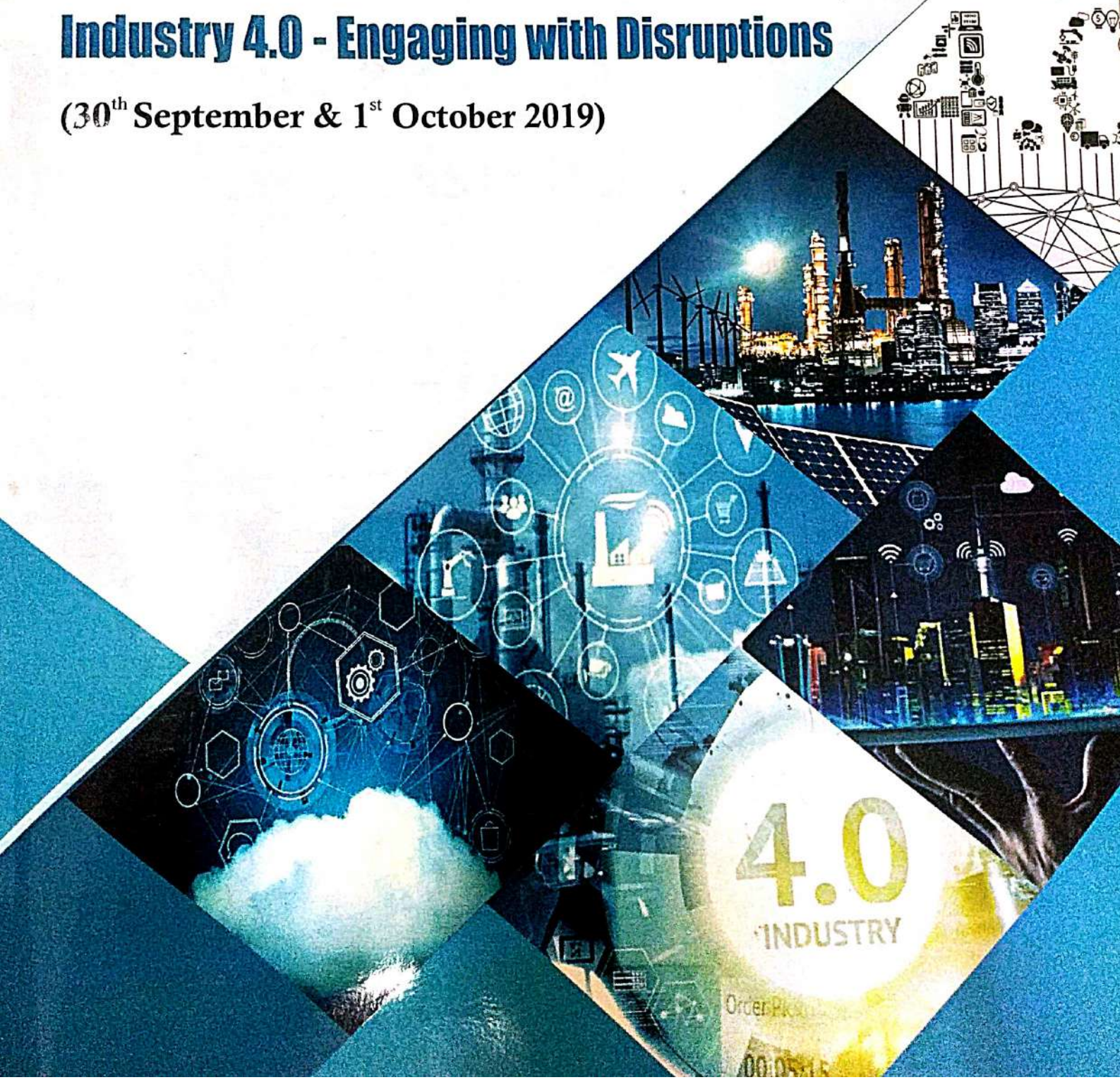
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Important Components for Increasing Financial Literacy among People

Dr. Amardeep D. Jadhav

Chhatrapati Shahu Institute of Business Education and Research, Kolhapur

Abstract:

Financial literacy is the education and understanding of various financial areas including topics related to managing personal finance, money and investing. This topic focuses on the ability to manage personal finance matters in an efficient manner, and it includes the knowledge of making appropriate decisions about personal finance such as investing, insurance, real estate, paying for college, budgeting, retirement and tax planning. The growth of the development of any country depends on its financial system. For achieving the goal of the financial system, there is one accurate solution which is financial literacy. The association between financial literacy and financial inclusion is interrelated. In a broader viewpoint, financial literacy can be stated as "understanding of economics and how economic conditions and circumstances affect household decisions" (Worthington, 2006) and these decision directly and indirectly affect the financial system so this paper try to focus on the solution for increasing financial literacy among people.

The conclusion of this paper is that if we add the basic topic in school level curriculum then this will automatically enhance the investment behavior of people and will ultimately results in financial wellbeing of individuals.

Keyword: Financial Literacy, Financial Regulators, School level Curriculum, personal management of finances.

1. Introduction

The growth of the development of any country depends on its financial system. For achieving the goal of the financial system, there is one accurate solution which is financial literacy. The relationship between financial literacy and financial inclusion is interrelated. Financial literacy is an mechanism that will assist achieving extensive financial inclusion and hence financial freedom .Financial literacy is nothing but knowledge about personal management of finances. It gives you the twin benefit of protecting you from financial frauds as well as planning for financially secure future.

2. Objective of the study

1. To Study the initiative taken by Financial Regulators in India.
2. To provide future plan for increasing financial literacy among people through proposed School level Curriculum.
3. To analyze the impact of proposed School level Curriculum on Financial Literacy among people.

3. Review of literature

(Kumari Sweta) As financial literacy is increased financial inclusion is decreased so for increasing financial literacy ,the basic knowledge of financial term should be introduced at the school level, if from the school level people aware regarding financial literacy then they will be able to take appropriate decisions regarding saving and investment, budget, pension funds etc. now it is the need of the hour that financial education should start at school as early as possible as students are the future citizens , they should be educated about financial matters.

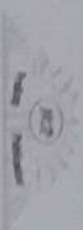
(Albreedy & Gharlegghi, 2015) found empirical results which depicted that there is a significant relationship between independent variables of education, and money attitude toward the dependent variable of financial literacy, while no relationship was found between financial socialization agents and financial literacy. Another study analyses the level of financial literacy among the college students and to determine the need for financial literacy programs on college campus. and current student's desires for these programs. This

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Preface

According to the Census of India 2011 Children represent nearly 40% of total population of India. The Constitution of India and National Policy for Children, 2013, are committed to protect, promote and safeguard the rights of children and ending all forms of violence against children, ensuring their safety and protection as well as reiterating their rights to access justice and information.

But it is alarming to note that the Crimes against children reported a 24% increase and also an increase in the number of child labors. Similarly access to education to all is still a big query.

Violence against girls and boys in all its forms leaves not only long-lasting scars on children's lives but also weakens their social and economic progress.

Good child rights laws and their effective implementation play a crucial role in meeting these aims and targets.

Realizing every child's right to freedom from violence and to participation is a fundamental element of the Rights of the Child are the issues which needs urgent attention.

In view of the above a National Seminar on Child Rights : Challenges and concerns was organized To Provide a common platform to bring key stakeholders, to exchange the issues to improve policies, and practices for the benefit of children, particularly those who are vulnerable.

To discuss about the present challenges and concerns with regards to protection of rights of children.

To identify strategies to strengthen different networks and promote the improvement of child rights laws and policies on following themes:

1. Child Rights and Protection
2. Violence & children

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1 to 4

BIG DATA TOOLS

WHICH, WHEN AND HOW?

(VOLUME-IV) (Hands on Sessions with Basic MongoDB)

Dr Poornima G. Naik bears twenty-two years of teaching and research experience in the field of Computer Science. She has been associated with teaching in thrust areas of computer science such as Big Data Analytics, Mobile Computing, Information System Security and Cryptography and her current research areas are Cyber Security, Machine Learning, Soft Computing and Big Data Analytics. She has guided three M Phil. Students. She has published more than 50 research papers in different national and international journals and presented more than 30 papers in different international and national conferences. She has authored 18 books on various cutting edge technologies in information technology. She is the recipient of prestigious Dr. APJ Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications awarded by International Institute for Social and Economic Reforms, Bangalore. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solution

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Big Data Tools – Which, When and How? (Volume– IV)

(Hands-on Sessions with Basic MongoDB)

By

Dr. Poornima G. Naik

Dr. Girish R. Naik

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Preface

It gives us an immense pleasure to bring out a book entitled '**Big Data Tools – Which, When and How? (Volume - IV) (Hands-on Sessions with Basic MongoDB)**'. Data is indispensable in today's business and technology-driven world. Big data technology is emerging to analyze the data to gain more insight into the hidden information for making in timely strategic decisions. Big data analytics emerged as a revolution in the field of information technology. It is the ability of the organization to stay agile which gives it a competitive edge over its competitors. Data harvesting and data analytics enable the organization identify new opportunities which in turn results in efficient operations, leads to smarter business moves and higher business turnovers. All these issues are addressed by big data analytics and its initiatives. The objectives set for the reader are:

- To understand big data platform and its use cases.
- To understand MapReduce jobs and interfacing with HDFS.
- Exposure to different tools in Hadoop ecosystem
- Applying data analytics on structured, semi-structured, unstructured and streaming data.

MongoDB is one of the NOSQL database management tools having wide acceptance in industry for analyzing big data. The components of MongoDB are tailored to deal with the issues and the requirements posed by big data where the data is growing at exponential rate. Migrating from RDBMS systems to NoSQL systems such as MongoDB is a new ball game which requires a change in mind set inculcated in data modeling, data transactions and data querying. Few noteworthy migrations include

- moving from SQL-based to JSON-based systems
- moving from schema-based models to schema-less models
- moving from static schema to dynamic schema
- moving from relational model to flat model
- moving from ACID to BASE transactions systems.

MongoDB is an open source cross platform document-oriented NoSQL (Not Only SQL) database management system that provides high performance and availability and easy scalability. It is particularly employed for high volume of data storage. Two key features of MongoDB which have made it popular are auto sharding for horizontal scalability and in-built replication mechanism for high availability both of which are inevitable for big data analytics MongoDB came into existence to address the large data size and unstructuredness of data which could not be handled by the traditional database management systems. Volume IV of '**Big Data Tools - Which, When and**

How (Hands on Sessions with MongoDB Basics)’ is intended for learners who have just migrated from SQL systems to NoSQL systems and keen in exploring the differences between the two. The book covers the basics of MongoDB such as MongoDB architecture, installation of MongoDB, modeling relationship between the documents, and managing collections.

How this book is organized

The key features of the books are in-depth coverage of structural differences between RDBMS systems, installation of MongoDB on Windows and Ubuntu operating systems, exposure to MongoDB complex structures, cursors in MongoDB. MongoDB has a rich set of database management tools. Few prominent tools are focused with in-depth discussion on two MongoDB GUI tools having wide acceptance in industry viz. MongoDB Compass and RockMongo. Difficult to comprehend topics such as GridFS for storing multimedia content in MongoDB database, custom auto-increment field, data validation and bulk API are illustrated with suitable examples. The salient feature of the book is mapping of SQL Statements to MongoDB statements which enables the reader coming from SQL background to comprehend the alterations to be made for querying JSON-based systems.

The advanced features of MongoDB such as projections, querying nested relations, data replication, sharding, security, indexing, interfacing MongoDB with Java and PHP will be dealt with in Volume V of the *‘Big Data Tools – Which, When and How?’* book series.

The content of this book is derived from different sources which are listed at the end in a *‘references’* section.

Dr. Poornima G. Naik

Dr. Girish R. Naik

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Chapter 9

Hands on Sessions with Basic MongoDB

9.1 Introduction

MongoDB is an open source cross platform document-oriented NoSQL (Not Only SQL) database management system that provides high performance and availability and easy scalability. It is particularly employed for high volume of data storage. MongoDB is written in C++ which accounts for its high performance. MongoDB operates on the concept of document and collection.

MongoDB came into existence to address the large data size and unstructuredness of data which could not be handled by the traditional database management systems. Unlike relational database management system which stores data in database and tables, MongoDB employs documents and collections for data persistence. The document in MongoDB stores key/value pairs which are the basic units of data.

Two key features of MongoDB which have made it popular are auto sharding for horizontal scalability and in-built replication mechanism for high availability both of which are inevitable for big data analytics. Further, MongoDB employs internal memory for storing working data set which accounts for its high speed.

MongoDB belongs to the family of NoSQL databases (which is used for managing large sets of unstructured data) with the following features:

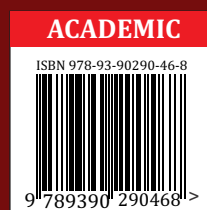
- Flexible schema
- Support for JavaScript and JSON data models with dynamic schemas.
- No expensive joins owing to support for arrays and embedded documents.
- Scalability (Autoscaling). Scaling from a single server deployment to complex large multi-cluster architectures.
- Distributed data storage.

BIG DATA TOOLS WHICH, WHEN AND HOW?

(Volume V) (Hands-on Sessions with Advanced MongoDB Concepts)

Dr Poornima G. Naik bears twenty-two years of teaching and research experience in the field of Computer Science. She has been associated with teaching in thrust areas of computer science such as Big Data Analytics, Mobile Computing, Information System Security and Cryptography and her current research areas are Cyber Security, Machine Learning, Soft Computing and Big Data Analytics. She has guided three M Phil. Students. She has published more than 50 research papers in different national and international journals and presented more than 30 papers in different international and national conferences. She has authored 18 books on various cutting edge technologies in information technology. She is the recipient of prestigious Dr. APJ Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications awarded by International Institute for Social and Economic Reforms, Bangalore. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solutions.

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Preface

It gives us an immense pleasure to bring out a book entitled ‘**Big Data Tools – Which, When and How? (Volume - V) (Hands-on Sessions with Advanced MongoDB)**’. Data is indispensable in today’s business and technology-driven world. Big data technology is emerging to analyze the data to gain more insight into the hidden information for making in timely strategic decisions. Big data analytics emerged as a revolution in the field of information technology. It is the ability of the organization to stay agile which gives it a competitive edge over its competitors. Data harvesting and data analytics enable the organization identify new opportunities which in turn results in efficient operations, leads to smarter business moves and higher business turnovers. All these issues are addressed by big data analytics and its initiatives. The objectives set for the reader are :

- To understand big data platform and its use cases.
- To understand MapReduce jobs and interfacing with HDFS.
- Exposure to different tools in Hadoop ecosystem
- Applying data analytics on structured, semi-structured, unstructured and streaming data.

How this book is organized.

The book is intended for serious learners of MongoDB which provides exposure to pretty advanced concepts in MongoDB such as different approaches for modeling relationships in MongoDB, querying MongoDB relationships containing documents, covered queries, analyzing queries using \$explain and \$hint operators, data backup and restoration, security control mechanism in MongoDB, data replication, sharding, advanced indexing and text searching based on regular expressions. The book provides in-depth understanding of embedded and referenced relationships between documents in MongoDB with selection criteria and appropriate examples in each case. The salient feature of relationships conforms to dynamic lookup in the collection employing DBRefs. MongoDB supports atomicity at document-level and not at collection-level i.e. MongoDB does not support multi-document atomic transactions which dictates a design policy for placing all related information in a single document employing embedded approach which is demonstrated with a suitable example. Data backup is one of the vital

and highly required task for any database management system. MongoDB supports different mechanisms for taking data backup using '*mongodump*', '*mongoexport*' tools which are discussed at length along with their counterparts for restoring data, '*mongorestore*' and '*mongoimport*'. It is very important to implement security in databases to ensure that the data in the database is kept safe against data misuse. MongoDB has the ability to define security mechanisms to databases. The highlights of security mechanism are enabling authorization in '*mongod.cfg*' configuration file, role-based database administration. Data replication and sharding play a key role in load balancing and fault tolerance. A step-by-step approach to simulating replication and sharding on local machines is given to appreciate their role in setting up robust distributed environment so that even the reader without adequate infrastructure in place, can explore and comprehend these concepts. Indexing in DBMS play a prominent role in improving the efficiency of a search query execution. The advanced indexing on JSON arrays and sub-documents are covered. In order to consolidate versatile open source technologies in a single working application, *Appendix A* and *B* deal with interfacing MongoDB with java and PHP. The concepts covered in these two appendices are put to practice in *Appendix C* and *Appendix D* by designing CRUD Application in PHP and J2EE using MongoDB as backend. Finally, *Appendix E* deals with performance monitoring issues in MongoDB introducing the reader to '*mongostat*' and '*mongotop*' tools.

The content of this book is derived from different sources which are listed at the end in a '*references*' section.

Dr. Poornima G. Naik

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DR POORNIMA G. NAIK bears twenty-two years of teaching and research experience in the field of Computer Science. She has been associated with teaching in thrust areas of computer science such as Big Data Analytics, Mobile Computing, Information System Security and Cryptography and her current research areas are Cyber Security, Machine Learning, Soft Computing and Big Data Analytics. She has guided three M Phil. Students. She has published more than 50 research papers in different national and international journals and presented more than 30 papers in different international and national conferences. She has authored 18 books on various cutting edge technologies in information technology. She is the recipient of prestigious Dr. APJ Abdul Kalam Life Time Achievement National Award for remarkable achievements in the field of Teaching, Research & Publications awarded by International Institute for Social and Economic Reforms, Bangalore. She has immense experience in guiding academic projects with computer aided tools. She has guided many industrial projects in project management, core banking solutions and e-Learning solutions. She has conducted and organized seminars and workshops on various cutting-edge technologies in computer science at university level. She is a prolific technical writer with excellent communication, analytical and technical skills. She has worked in different committees of Shivaji University.

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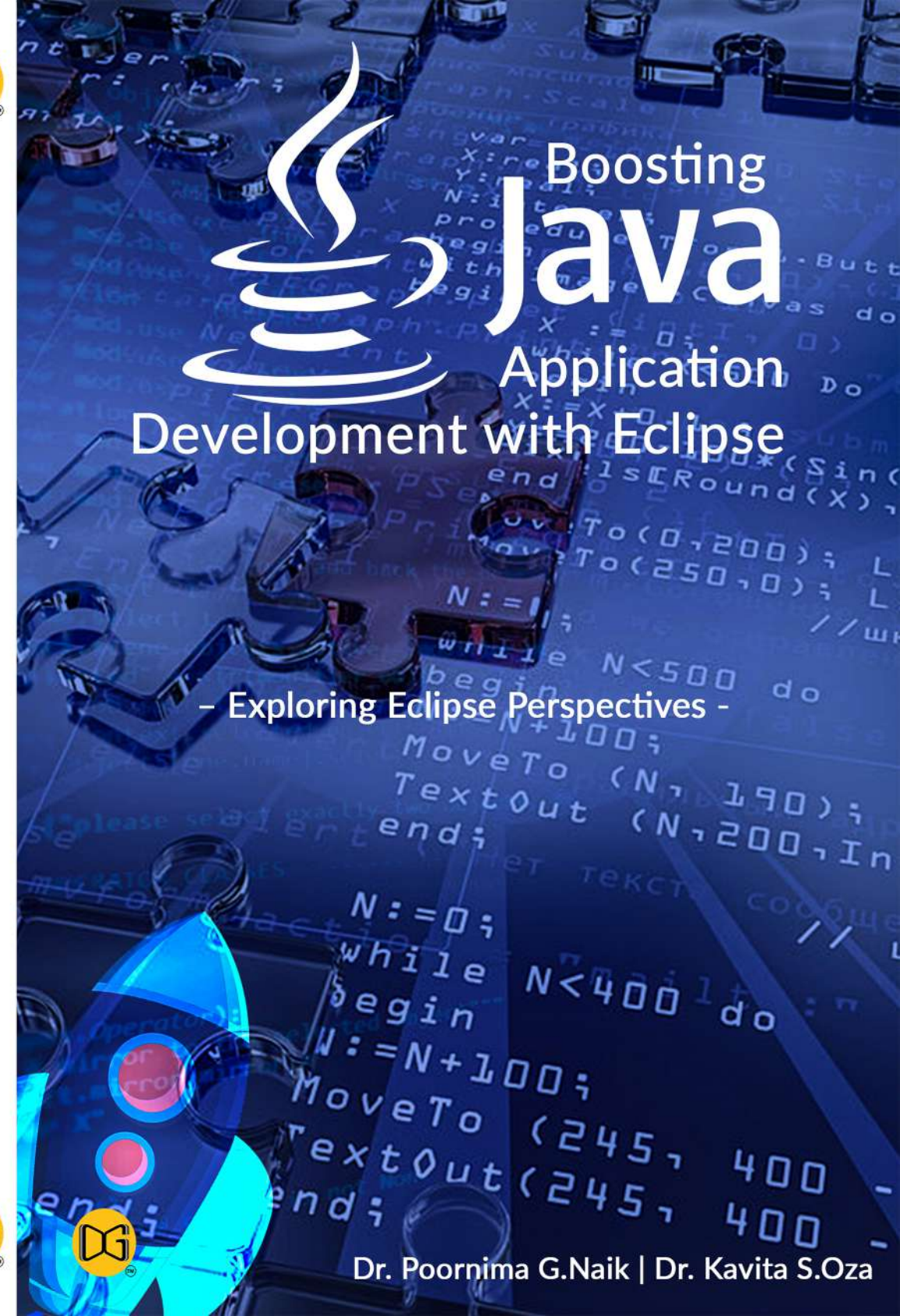
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Boosting JAVA Application Development with Eclipse

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Boosting Java Application Development with Eclipse

- Exploring Eclipse Perspectives -

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Boosting Java Application Development with Eclipse - Exploring Eclipse Perspectives

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Boosting Java Application Development with Eclipse

- Exploring Eclipse Perspectives

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Boosting Java Application Development with Eclipse - Exploring Eclipse Perspectives

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Dr.Poornima G.Naik

Dr. Kavita S.Oza

Boosting Java Application Development with Eclipse - Exploring Eclipse Perspectives

Preface

Java is one of the complex and multifaceted languages. As it is no longer a simple client server language but is part of enterprise application servers to mobile application development. It is one of the most popular platforms for software development and one of the sturdiest languages competing successfully with newly emerging development platforms and languages.

This book *Boosting Java Application Development with Eclipse*, is the outcome of years of teaching and software development experience in Java on Eclipse platform. Eclipse is extensible Integrated Development Environment (IDE). The purpose of this book is to provide easy way to carry out software development using Java on Eclipse platform. Its intent is to make students familiar with creation of Java project, Executing RMI Application, JDBC Applications and Web application etc. using Eclipse. It aims to provide comprehensive material on Java programming on Eclipse platform to undergraduate and graduate students as well software developers. The book has been written keeping in mind the syllabi designed for courses on Java Programming and Advanced Java Programming in various technical Institutions and Universities in India and abroad. This book can serve as textbook for undergraduates and reference for graduates. It will also provide easy reference for Computer Professionals who wants to enhance their skills in Java software development.

Each chapter of this book has been carefully developed with the help of several implemented programs. Dedicated efforts have been put in to ensure that every concept of java programming discussed in this book is explained with help of relevant programs and screenshots of the output programs have been included.

This book is meticulously developed into five chapters. *Chapter-1* includes details of Eclipse IDE platform with emphasis on creation of Java Project in Eclipse, Configuring Servers in Eclipse, Eclipse for Automatic Code Generation, Exception handling etc. *Chapter-2* Exploring Java Perspective in Eclipse dedicated towards Creating an Applet in Eclipse, Creating a JAR file in Eclipse, Refactoring in Eclipse, Package Hierarchy in Eclipse etc. *Chapter-3* talks about Advanced Java Application Development in Eclipse with Client/Server application and RMI applications in Eclipse. *Chapter-4* explores Database Perspective in Eclipse with MySQL databases. *Chapter-5* the last chapter of the book entitled '*Exploring Web Perspective in Eclipse*', includes Configuration of Tomcat, Web Applications development using

Boosting Java Application Development with Eclipse - Exploring Eclipse Perspectives

Eclipse and a case study on Implementation of CRUD Application using Java Server Pages Standard Tag Library (JSTL).

The part of the content of this book is derived from different sources which are listed at the end in a ‘references’ section.

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Conceptualizing Python in Google COLAB

Dr. Poornima G. Naik
Dr. Girish R. Naik
Mr. M. B. Patil

Conceptualizing Python in Google

COLAB

By

Dr. Poornima G. Naik

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Mr. M.B.Patil

Preface

It gives us an immense pleasure to bring out a book entitled ‘*Conceptualizing Python in Google COLAB*’. The goal of this book is to introduce you to the topic and get you started on your journey to application development using Python. There are many books, websites, online courses, tutorials etc. on Python. The current book is different in that it does not provide a lengthy tutorial introduction to a particular aspect Python, but gives the practical inputs for learning Python in a simple and effective way. The book offers first hand acquaintance with the Python language and the new constructs added to the language in order to render it safe, clean and robust. It aims to provide comprehensive material on Python

How is this Book Organized:

This book can serve as textbook for post graduates and reference for any computer graduate. It will also provide easy reference for Computer Professionals who wants to begin their career in Machine Learning using Python. This book is precisely organized into twelve chapters. Each chapter has been carefully developed with the help of several implemented concepts. Dedicated efforts have been put in to ensure that every concept of Python discussed in this book is explained with help of relevant commands and screenshots of the outputs have been included. **Chapter 1** focuses on development environment offered by Google COLAB. **Chapters 2 through 4** cover the Python language fundamentals focusing on control and iterative statements, operators along with their applications in basic programs. Python employs blended programming paradigm in which it is procedural, object-oriented and functional. The best part of all programming languages reside in a single platform. **Chapter 5** focuses on functions in Python with a special emphasis on Lambda functions. Advanced Python programming concepts such as iterators, closures, decorators, generators are covered at depth in **Chapter 6 and 7**. A good and in-depth knowledge of exception handling enables in writing a reliable and robust code. To cater to this need **Chapter 8** unleashes the salient features of exception handling in Python. Data persistence through file handling is covered in **Chapter 9**. Due to the wide application of Regular expressions in pattern matching, **Chapter 10** is fully devoted to understanding of regular expression in Python. Different types of common errors that might creep in during the execution of a Python program are summarized in **Chapter 11**. Final **Chapter 12** is devoted to implementation of object oriented concepts in Python. The case study based on object oriented concept is discussed at depth and implemented in **Appendix A**.

The part of the content of this book is derived from different sources which are listed at the end in a ‘*references*’ section.

Dr. Poornima G. Naik

Dr. Girish R. Naik

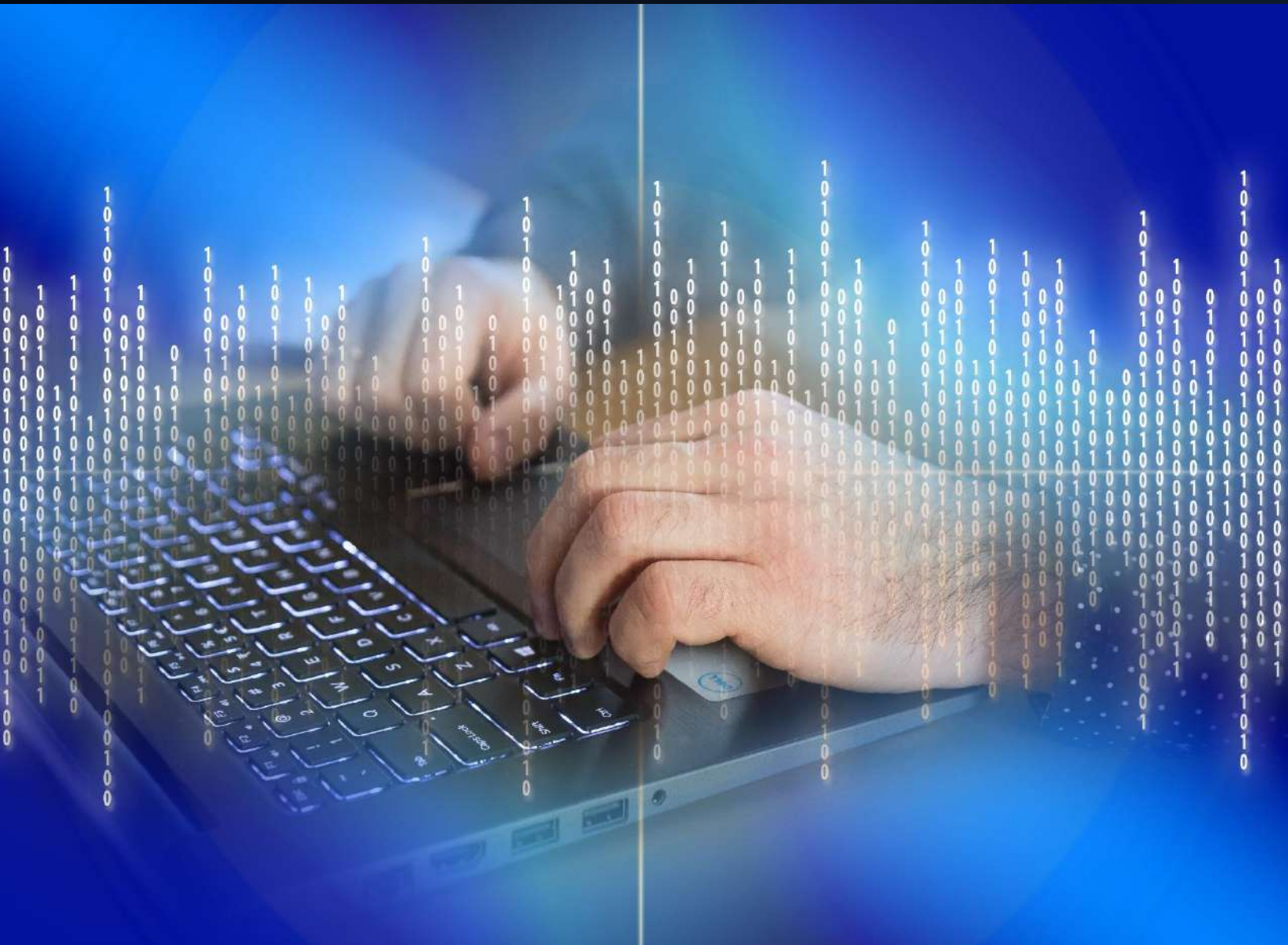
Mr. M.B.Patil

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Diving Deep into Spring Framework

Vol - I



Dr. Poornima G. Naik, Dr. Kavita S. Oza



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Diving Deep into Spring Framework – Vol I

By

Dr. Poornima G. Naik

Dr. Kavita S. Oza

Acknowledgements

Many individuals share credit for this book's preparation. We extend our sincere thanks to Late Prof. A.D.Shinde, the Founder Director and Managing Trustee who has been a constant source of inspiration for us throughout our career. His support is really a driving force for us. Also, we would like to thank Dr.R.A.Shinde, Hon'ble Secretary, SIBER for his whole hearted support and continuous encouragement. We are grateful to Dr. C.S.Dalvi, Director SIBER for his invaluable guidance. We take this opportunity to thank Dr.V.M.Hilage, Former Director and Academic Advisor, SIBER, Dr. R.V.Kulkarni, H.O.D., Department of Computer Studies, for showing a keen interest in the matter of this book and extending all support facilities for the in-timely completion of this book. The material covered in this book is a systematic effort taken towards solving the various queries which we received from our students time to time, during our 20+ years tenure of teaching Java at PG level. Last but not the least we thank all faculty members and non-teaching staff of department of computer studies, CSIBER, Kolhapur and department of Computer Science, Shivaji University, Kolhapur who have made contribution to this book either directly or indirectly.

Dr. Poornima G. Naik

Dr. Kavita S. Oza

Preface

Java supports various platforms to implement enterprise applications, but most of them are heavy weight, difficult to handle during development cycle. The Spring Framework is lightweight and provides a comprehensive programming and configuration model for Java-based enterprise applications on any kind of deployment platform. It is multi-tier open source framework providing infrastructural support at the application level.

This book *Diving Deep into Spring Framework – Vol I*, is written to equip readers to build wonderful applications using the Spring Framework. It is an ideal book for beginners to learn the concepts of the Spring Framework along with its implementation. It is a good option for readers looking for a book covering important concepts in Spring along with various implemented examples. All the applications are designed on Eclipse platform. The theoretical concepts are supported by codes and program-snippets which will facilitate self-learning and developing Java enterprise applications with Spring Framework. It begins with Introduction to Spring Framework, Aspect Oriented Programming, database-backed Java applications with Spring and ends with Spring MVC. The book has been written keeping in mind the syllabi designed for courses on Advanced Java Programming in various technical Institutions and Universities in India and abroad. This book can serve as textbook for undergraduates and reference for post graduates. It will also provide easy reference for Computer Professionals who wants to enhance their skills in Enterprise application development.

Each chapter of this book has been precisely developed with the help of several implemented programs. Dedicated efforts have been put in to ensure that every concept of Spring framework application development discussed in this book is explained with help of relevant programs and screenshots of the output of the programs.

This book is thoroughly developed into four chapters. *Chapter-1* includes Introduction to Spring Framework, Types of IoC Containers, Steps in Designing a Spring Application in Eclipse, Dependency Injection and Inversion of Control (IoC) in Spring Framework and Autowiring in Spring Framework. *Chapter-2* Exploring Aspect Oriented Programming in Spring Framework with Introduction to Aspect Oriented Programming, AOP Concepts and Terminology and AOP Implementations. *Chapter-3* talks about using

JdbcTemplate in Spring Framework, CRUD Application Using JdbcTemplate, Using Simple JdbcTemplate Class in Spring Framework etc. **Chapter-4** the last chapter of the book entitled *Inside Spring MVC*, includes Workflow in a Spring MVC Application, Steps in Designing a Spring MVC Application in Eclipse, Handling Multiple Controllers in Spring MVC, Spring MVC CRUD Application etc.

The part of the content of this book is derived from different internet sources which are listed at the end in a 'references' section.

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Diving into ECLIPSE WEB PERSPECTIVE

DR. POORNIMA G. NAIK
DR. KAVITA S. OZA



- CASE STUDY APPROACH -

Diving into ECLIPSE WEB PERSPECTIVE



DR. POORNIMA G. NAIK | DR. KAVITA S. OZA

Diving into Eclipse Web Perspective – Case Study Approach

By

Dr. Poornima G. Naik

Dr. Kavita S. Oza





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Dr. Poornima G. Naik

Dr. Kavita S. Oza

Diving into Eclipse Web Perspective – Case Study Approach

Preface

Java is a versatile programming language which provides cross-platform development. Web developers can design their web applications as WAR i.e. Web Application Archive and install this WAR file on various servers hosted by different operating systems. Java web components are independent of operating systems and web related software technologies.

The popularity of servlets and server-side Java platform has great impact on software development. Servlet support is standard feature offered by Web server vendors. Servlets have become the basis for Java Server Pages (JSP) and other frameworks, and servlet technology now supports high-traffic websites. Keeping in pace with the demand and popularity of java-based web development this book Diving into Eclipse Web Perspective – Case Study Approach is framed carefully to give, in-depth inputs for the novice developers to develop web applications easily. This book is dedicated to carry out web applications on eclipse platform. Its aim is to make students acquainted with JSP and Struts development in Eclipse. The main beauty of the book is one whole chapter is dedicated to Case studies of web application development with eight case studies presented in detail. It provides complete material on Web application development for graduate and postgraduate students as well as Web developers across India and Abroad. It can also serve as a text book for graduates and reference book for web developers.

Each chapter of this book has been carefully developed with the help of several implemented programs. Dedicated efforts have been put in to ensure that every concept of Web application development discussed in this book is explained with help of relevant programs and screenshots of the output programs have been included.

This book is carefully developed into three chapters. Chapter-1 includes details of, JSP constructs in Eclipse, Creating Attributes with Different Scopes in Servlet, Session Tracking in Servlets, and Using JNDI in Eclipse. Chapter-2 explores Case Studies on Web Application Development in Java with Developing Java Web Application in MVC Architecture - Using Bean, Servlet and JSP, and Beer Selection & Super Book marks Projects. The last chapter is dedicated to Struts 2.0 Framework focusing on Developing Strut Application in Eclipse, Validation in Struts Framework, Developing Authentication Application in Struts Framework etc. It also talks about EJB Application and Java Server Faces Application creation in Eclipse. Learning Resources in the form of Web Links are provided at the end of the book for further reading.

The part of the content of this book is derived from different sources which are listed at the end in a ‘references’ section and resources available on internet.

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EXPLORING HADOOP TOOLS ON WINDOWS 10 PLATFORM

Covers Hadoop, Pig, Sqoop, HBase and Hive



Dr. Poornima G. Naik
Dr. Kavita.S.Oza



Exploring Hadoop Tools on Windows 10 Platform

(Covers Hadoop, Pig, Sqoop, HBase and Hive)

By

Dr. Poornima G. Naik

Dr. Kavita S. Oza

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Dr. Kavita S. Oza

Preface

Hadoop is the most common single platform for storing and analyzing big data. It's a software framework that is optimized for the distributed processing of very large datasets. Most of the companies are working with big data and there is huge demand for distributed systems experts to build the infrastructure to handle this big data. If you are planning your future in big data then this book is the most suited one to start with.

It gives us an immense pleasure to bring out a book entitled '*Exploring Hadoop Tools on Windows 10 Platform (Covers Hadoop, Pig, Sqoop, HBase and Hive)*'. The goal of this book is to introduce you to the topic and get you started on your journey to big data with Hadoop. There are many books, websites, online courses, tutorials etc. on Hadoop and related technologies. This one is different. It does not provide a lengthy tutorial introduction to a particular aspect of Hadoop or to any of the many components of the Hadoop ecosystem, but gives the practical inputs for learning Hadoop tools in a simple and effective way. It aims to provide comprehensive material on Hadoop tools along with installation of each tool on windows 10. The book has been written keeping in mind the syllabi designed for courses on Big data analytics and Distributed systems with Hadoop, taught at various technical Institutions and Universities in India and abroad. This book can serve as textbook for undergraduates and reference for graduates. It will also provide easy reference for Computer Professionals who wants to begin their career in Big Data.

This book is precisely organized into five chapters. Each chapter has been carefully developed with the help of several implemented commands. Dedicated efforts have been put in to ensure that every concept of Hadoop tools discussed in this book is explained with help of relevant commands and screenshots of the outputs have been included. **Chapter-1** includes details of Installing Hadoop on Windows 10, with prerequisites required. A step by step detail process of downloading is explained along with Configuring Hadoop Cluster, HDFS Site Configuration, Hadoop Web UI, HDFS Commands etc . **Chapter-2** describes Installation Pig on Windows 10. Apache Pig is a platform build on the top of Hadoop. It explores Hands on Sessions with Apache Pig focusing on Loading Data into Pig Relation and Operators in Pig. **Chapter-3** talks about Installing Sqoop on Windows 10. It also demonstrates Installing MySQL Workbench, Exporting and importing Data Using Sqoop. **Chapter-4** explores Installation of HBase on Windows 10 along with Testing HBase Installation and different HBase Commands. **Chapter-5** the last chapter of the book entitled 'Installing Hive On Windows 10', includes Installing Apache Derby, Cygwin Tool, downloading Apache Hive binaries, Initializing Hive Metastore etc.

The part of the content of this book is derived from different sources which are listed at the end in a '*references*' section.

Dr. Poornima G. Naik

Dr. Kavita S. Oza

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Insight into Information Security and Cryptography Essentials

(Covers Security Threats and Measures,
Classical Cryptography and Hashing)

Dr. Poornima G. Naik | Dr. Girish R. Naik



Insight into Information Security and Cryptography Essentials

**(Covers Security Threats and Measures, Classical
Cryptography and Hashing)**

By

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Dr. Girish R. Naik



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Dr. Girish R. Naik

Preface

It gives us an immense pleasure to bring out a book entitled '*Insight into Information Security and Cryptography Essentials (Covers Security Threats and Measures, Classical Cryptography and Hashing)*'. Cyber intrusion and attacks have increased dramatically over the last decade exposing sensitive personal and business information disrupting critical operations and imposing high costs on the economy. Cyber security is protecting cyber space from attack, damage, misuse and economic espionage. As the cyber space is the connected internet eco system, it has inherent vulnerabilities which cannot be removed. Cyber crime damage is costing the world six trillion dollars annual. Also, 156 million phishing emails are sent globally every day. Ransomware attacks were increased by 42% in 2020. Hence bottom line is as volume of threats is increasing cyber security must be a top priority for all organizations. Hence it becomes essential for every individual to keep himself abreast of the new happening in this area and safeguard himself against such attacks. Insight into various security threats and measures is the first step towards preventing an individual from becoming a victim to such attacks. The objective of this book is to throw a light on different types of security threats, attacks and different measures for overcoming them.

How this book is organized.

The book is intended for serious learners of Cyber Security and Cryptography which provides more insight into working of different cryptographic algorithms. **Chapter 1** deals with different security threats and measures, specific attacks on crypto systems, different types of cryptography are discussed at length and demonstrated with the help of different case studies which are implemented in java using Java Cryptography Architecture (JCA). The salient of features of this chapter are demonstration of working of digital signature, digital certificate and discussion on various digital certificate file formats. Chapter 2 focuses on classical cryptography algorithms based primarily on transposition and substitution. Both keyed and keyless algorithms such as Rail Fence Cipher, Vigenere monoalphabetic and polyalphabetic ciphers, Playfair Cipher to name a few, are discussed in detail. Few algorithms from modern cryptography, Hill Cipher, RSA, ElGamal, Merkle–Hellman Knapsack are explored as well. All the algorithms are modelled in Excel and implemented in java. The chapter concludes with the exploration of modern cryptography algorithms using Cryp Tool. The final chapter Chapter 3 explores hashing which is central to working of MAC and digital signature. Properties of hash functions and popular hash functions are dealt with.

Various applications of hash functions are mentioned. The chapter concludes with some selected case studies on hashing.

The authors are pretty sure that the book will serve as a valuable learning resource for aspirants of Cyber Security and Cryptography and will help in providing more insight into the working of different cryptographic algorithms. The content of this book is derived from different sources available on internet and from the resources which are listed at the end in a '*references*' section.

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Migrating from Java to Kotlin



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Preface

It gives us an immense pleasure to bring out a book entitled '*Migrating From Java to Kotlin*'. The goal of this book is to introduce you to the topic and get you started on your journey to application development using Kotlin. There are many books, websites, online courses, tutorials etc. on Kotlin. This one is different. It does not provide a lengthy tutorial introduction to a particular aspect Kotlin, but gives the practical inputs for learning Kotlin in a simple and effective way. The book offers first hand acquaintance with the Kotlin language and the new constructs added to the language in order to render it safe, clean and robust. It aims to provide comprehensive material on Kotlin.

How is this Book Organized:

The book has been written keeping in mind the syllabi designed for courses on '*Android Development with Kotlin*' at various technical Institutions and Universities in India and abroad. This book can serve as textbook for post graduates and reference for any computer graduate. It will also provide easy reference for Computer Professionals who wants to begin their career Android App development using Kotlin.

This book is precisely organized into three chapters. Each chapter has been carefully developed with the help of several implemented concepts. Dedicated efforts have been put in to ensure that every concept of Kotlin discussed in this book is explained with help of relevant commands and screenshots of the outputs have been included. **Chapter 1** focuses on Kotlin Language Fundamentals, the basic building blocks of the languages such as variable declaration issues, control and iterative statements, intricacies involved in dealing with operators and arrays. **Chapter 2** highlights some advanced concepts introduced in the language, the motive with which Kotlin emerged. The concepts such as null safety, lambda functions, lazy initialization, late init etc. to name few score well on deciding the strength of the language. **Chapter 3** provides in-depth knowledge on implementation of object oriented concepts in Kotlin which includes constructors, nested and inner classes, operator overloading, interfaces, abstract classes. The highlight of the chapter is new additions to the language such as extensions, companion objects, data classes, sealed classes, singleton classes, coroutines etc. which are demonstrated with suitable examples.

Migrating From Java to Kotlin

Kotlin online compiler is employed for demonstrating the concepts. The book does not assume any pre-requisites on the part of the user. But migrating from java to Kotlin provides an additional benefit. Appendix A and Appendix B are dedicated for such reader base which focuses in syntactical differences between Java and Kotlin and code compaction enabled in Kotlin compared to its counterpart in Java. It has been estimated empirically that the code written in Kotlin is on the average 40% lean compared to the corresponding code written in java.

The part of the content of this book is derived from different sources which are listed at the end in a '*references*' section.

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MUST KNOW STUFF FOR
JAVA DEVELOPERS

DR. POORNIMA G. NAIK
DR. KAVITA S. OZA



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By

Dr. Poornima G. Naik

Dr. Kavita S. Oza





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Dr. Poornima G. Naik

Dr. Kavita S. Oza

Must Know Stuff for Java Developers

Preface

Core Java is easy to learn and implement but to become good Java developer's one need to know advanced features and concepts of java language. For example most of the software developers work with the enterprise information system, which requires sharing of information between many users in multiple physical locations. But different business houses uses different formats of data storage, to handle such type of situations one need to know emerging advanced concepts of Java which are addressed in this book.

This book "Must Know Stuff for Java Developers" is intended to create good java developers by providing more advanced concepts in the form of theory as well as implementations. This book is an outcome of years of dedicated efforts, put in teaching and learning advanced concepts of Java. It's a source of many complex implementations made easy. So the purpose of this book is to motivate students as well as novice developers to dig into advanced concepts of software development using eclipse IDE of Java. It addresses the syllabi of graduate as well postgraduate programmes offered at Indian as well as overseas universities. It gives insight of XML Parsers, Struts and Hibernate application development and integration. It's a handy reference for advanced software developers as well as corporate trainers.

Each chapter of this book has been designed using simple and easily understandable examples. Years of experience have been put in, to ensure that every concept of XML, Hibernate, and Struts reaches students in an interesting way. All concepts explained in this book re supported with screen shots of implementations.

This book is carefully designed into four chapters with two additional appendixes. Chapter-1 covers XML Parsers, XSL and XALAN in detail, with in-depth coverage of DOM, SAX and JDOM Parser. Chapter-2 talks about developing Struts Application in Eclipse with Struts Validation Framework and Interfacing with Database. Chapter-3 explores Hibernate Application development in Eclipse with Database operations and CRUD application. Chapter-4 focuses on Struts2 and Hibernate Integration in Eclipse. It also covers Workflow in Struts2 and Hibernate Integration, Integration for Authentication Application and Integration

Must Know Stuff for Java Developers

for Product Management Application. Appendix A – Explores Project Management and Dependency Management Using Apache Maven in depth and Appendix B Introduces to NetBeans IDE in detail.

The part of the content of this book is derived from different sources which are listed at the end in a ‘references’ section.

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Quick Glance At Some Prominent Tools for

J2EE DEVELOPERS

(Covers ANT, Gradle and Docker)



Dr. Poornima G. Naik

Dr. Girish R. Naik



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Quick Glance At Some Prominent Tools for J2EE Developers

(Covers ANT, Gradle and Docker)

By

Dr. Poornima G. Naik

Dr. Girish R. Naik

Quick Glance At Some Prominent Tools for J2EE Developers.

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Dr. Poornima G. Naik

Dr. Girish R. Naik

Quick Glance At Some Prominent Tools for J2EE Developers.

Preface

It gives us an immense pleasure to bring out a book entitled '*Quick Glance At Some Prominent Tools for J2EE Developers (Covers ANT, Gradle and Docker)*'. In the current scenario of paradigm shift in IT technologies enterprise applications play a key role which enable the companies address shifts in the market, management issues, supply chain disruption etc. from a single user interface. Business process Reengineering has introduced a radical change in corresponding IT processes by rendering them manageable and cost effective. It has become inevitable for J2EE developers to learn build automation tools to simplify and automate the process of software deployment. Android Studio employs gradle tool for building Android application. The buzz word in IT is '*DevOps*' which is a set of practices that combines software development (Dev) and IT operations (Ops). It aims to shorten the systems development life cycle and provide continuous delivery with high software quality. Docker, when used with DevOps, simplifies the process of creating application topology embodying various interconnected components. It makes the process of load balancing configuration easier with Ingress and built-in service concepts. Considering the importance of these tools the book focuses on basic concepts and internals of these tools which enable the reader to use them effectively in enterprise application development thereby reducing the development cost and time. These are must know tools for any J2EE developer which he/she cannot afford to ignore.

How this book is organized.

The book is intended for serious learners of J2EE application development which covers three prominent tools, ANT, Gradle and Docker. **Chapter 1** explores Apache ANT tool at greater depth. The chapter lays focus on significance of ANT, installing ANT on Windows platform, structure of ANT build file. The chapter also discusses ANT properties and ANT targets. The use cases for compiling servlet using ANT, developing CRUD application, developing web application in MVC architecture are dealt with at depth. Gradle is yet another build tool which was designed to overcome the limitations posed by ANT tool. **Chapter 2** focuses in significance of Gradle, installing Gradle on Windows, The salient features of the chapter include gradle tasks, dependency management in Gradle, and using plugins in gradle. The chapter concludes with integration of gradle with Eclipse, an editor of choice for java developers. Chapter 3 explores prominent features

Quick Glance At Some Prominent Tools for J2EE Developers.

of Docker container. Different docker terminologies and installing Docker on Windows 10 and Ubuntu operating systems are covered. The chapter lays insight into docker architecture and basic docker commands. Docker hub is a public docker repository which hosts plethora of docker images for public access. As of now 100000+ images are hosted on docker hub and the count continues. Considering the importance of docker hub repository, the chapter describes downloading and executing images residing on docker hub. Execution of java. PHP and python applications in Docker container are highlighted. Few noteworthy features of chapter include managing ports in docker, linking containers, setting up of docker network, uploading a file in public docker repository, persisting docker data using volumes. Description of Docker instruction host commands required for setting up of Dockerfile is given. The chapter concludes with a note of right way of exiting docker and uninstalling a docker toolbox.

The authors are pretty sure that the book will serve as a valuable learning resource for aspirants of J2EE application development and will help in providing more insight into the working of these tools. The content of this book is derived from different sources which are listed at the end in a '*references*' section.

Dr. Poornima G. Naik

Dr. Girish R. Naik

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Usage of Unique Key for Improvement of Performance in Table Scanning

S. K. Kharade^{1*}, K. G. Kharade², R. S. Kamath³ and R. K. Kamat⁴

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ABSTRACT

Database efficiency is a common topic of focus when dealing with data bases in business environments. There is a prerequisite that the database is accessible and function well as corporate systems rely on back-end resources to support them. Moreover, Query optimization is where a client, or the database engine, adjusts a query in such a way that SQL Server can more effectively return the same results. Thinking about the output of systems using the common principles of supply and demand may be helpful. Users are demanding the DBMS details. The DBMS supplies the information to those who need it. The pace at which the DBMS supplies the demand for information can be described broadly as "database efficiency." Knowing what the performance of the database is must be a requirement for properly ensuring the database environment is effective. The maintenance of data base output is an feasible job with a clear concept in hand.

Keywords: DBMS; database efficiency; logical reads; table scan; SQL; unique key.

1. INTRODUCTION

Database management Server is the foundation of every enterprise and operates on ETL, that is to say. i.e. Extract, Transform and Load principal.. But those steps require specific decision taking processes. Effective decision-making is more about science than an art, which is why research is of considerable importance. Decisions are highly analytical based. Function analyzes contribute to tuning [1]. The workload in the DBMS calls for determines the market. This is a mixture of electronic transactions, batch work, ad hoc requests, business analysis and analytics requests, services, and device commands driven at any given time via the DBMS. Workload will dramatically fluctuate from day to day, from hour to hour, from minute to minute. The maintenance of database output is a feasible job with a clear concept in hand [2]. Professional IT administration is a key element in ensuring productive implementation of knowledge technology. It may affects the performance during data retrieval. There are few technological models that can control, sustain and increase the performance of the database and access application and other IT professionals. Nonetheless, it is very essential to assess data base efficiency so that you can decide on the basis of your need to work in databases [3]. A database management system (DBMS) is a computer software package which controls the development, maintenance, and usage of a database. It enables organizations to easily build repositories through data base administrators (DBAs) and other professionals for different applications. Knowledge retrieval originated from the mainstream information management system more than a decade ago as an independent research field [4].

2. UNIQUE KEY

A unique key is the set of a table that uniquely recognizes a record inside one or more fields in a row. You can assume that it is a key, just like the main except it will recognize just one null value where

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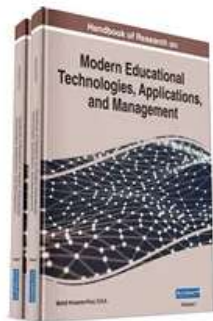
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R. S. Kamath (Chhatrapati Shahu Institute of Business Education and Research, India) and R. K. Kamat (Shivaji University, India)

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Abstract

Throughout the progression of the pedagogy, educators are striving hard to bring up the systems centering on effective learning. This omnipresent trend has led to the ontogeny of innovative and culmination of many congregation technologies such as virtual reality (VR), artificial intelligence (AI), and natural language processing (NLP) ensuing as intelligent virtual learning environment (IVLE). Technology-enhanced encyclopedism can facilitate pupils with influential and high-quality learning experiences as compared to the traditional learning approach. This chapter portrays learning in intelligent virtual environment as an effective pedagogy approach. The pedagogic tool developed by the authors captures text written in English as an input and creates the envisioned virtual setting. The

Chapter 51

An Effective Pedagogy Toolkit for Learning in an Intelligent Virtual Environment

R. S. Kamath

Chhatrapati Shahu Institute of Business Education and Research, India

R. K. Kamat

Shivaji University, India

ABSTRACT

Throughout the progression of the pedagogy, educators are striving hard to bring up the systems centering on effective learning. This omnipresent trend has led to the ontogeny of innovative and culmination of many congregation technologies such as virtual reality (VR), artificial intelligence (AI), and natural language processing (NLP) ensuing as intelligent virtual learning environment (IVLE). Technology-enhanced encyclopedism can facilitate pupils with influential and high-quality learning experiences as compared to the traditional learning approach. This chapter portrays learning in intelligent virtual environment as an effective pedagogy approach. The pedagogic tool developed by the authors captures text written in English as an input and creates the envisioned virtual setting. The ability of natural language interface (NLI) for VR-based learning systems is the most significant attainment of the present work, which brings a novel perspective in the field pedagogy.

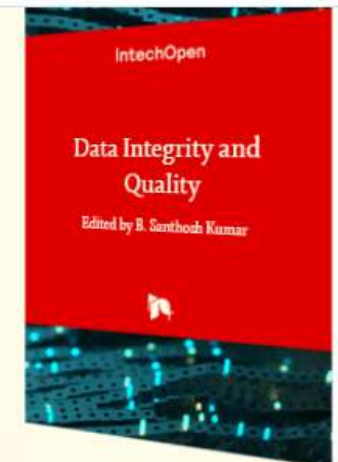
INTRODUCTION: INTELLIGENT VIRTUAL LEARNING ENVIRONMENT

The formal notion of the Intelligent Virtual Learning Environment (IVLE) as per the reported research divulges the uniting of Artificial Intelligence and Virtual Reality for technology enhanced learning. Technology-enhanced learning which has become a reality with the pervasive penetration of Information and Communication Technology (ICT) in almost all the walks of higher learning is by now not a new concept, but is still quite new in many educational institutions and settings. The simulation itself is not sufficient to ensure effectiveness in pedagogy. This explores the need for more advanced technologies

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Data integrity is the quality, reliability, trustworthiness, and completeness of a data set, providing accuracy, consistency, and context. Data quality refers to the state of qualitative or quantitative pieces of information. Over five sections, this book discusses data integrity and data quality as well as their applications in various fields.



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Big Data Integration Solutions in Organizations: A Domain-Specific Analysis

WRITTEN BY

Sreekantha Desai Karanam, Rajani Sudhir Kamath, Raja Vittal Rao Kulkarni and Bantwal Hebbal Sinakatte Karthik Pai

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Chapter

Big Data Integration Solutions in Organizations: A Domain-Specific Analysis

*Sreekantha Desai Karanam,
Rajani Sudhir Kamath, Raja Vittal Rao Kulkarni and
Bantwal Hebbal Sinakatte Karthik Pai*

Abstract

Big Data Integration (BDI) process integrates the big data arising from many diverse data sources, data formats presents a unified, valuable, customized, holistic view of data. BDI process is essential to build confidence, facilitate high-quality insights and trends for intelligent decision making in organizations. Integration of big data is a very complex process with many challenges. The data sources for BDI are traditional data warehouses, social networks, Internet of Things (IoT) and online transactions. BDI solutions are deployed on Master Data Management (MDM) systems to support collecting, aggregating and delivering reliable information across the organization. This chapter has conducted an exhaustive review of BDI literature and classified BDI applications based on their domain. The methods, applications, advantages and disadvantage of the research in each paper are tabulated. Taxonomy of concepts, table of acronyms and the organization of the chapter are presented. The number of papers reviewed industry-wise is depicted as a pie chart. A comparative analysis of curated survey papers with specific parameters to discover the research gaps were also tabulated. The research issues, implementation challenges and future trends are highlighted. A case study of BDI solutions implemented in various organizations was also discussed. This chapter concludes with a holistic view of BDI concepts and solutions implemented in organizations.

Keywords: master data management (MDM), internet of things (IoT), business intelligence (BI), software as a service (SAAS), machine learning (ML), artificial intelligence (AI)

1. Introduction

Accenture company has conducted a survey on the implementation of BDI solutions in organizations. The survey outcome revealed that 92% of managers are happy with the results obtained from BDI solutions and 89% of managers agree that big data integration and analytics is very vital for their business planning to leverage competition. The Internet Trends Report from KPCB's by Mary Meeker discovered the decreasing trends in the cost of hardware technology in the past twenty years, the cost of computing has been reduced by 33%, 38% storage cost reduction

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Role of National Education Policy - 2020 in Transforming Higher Education



By
Abhishek Shukla

Role of National Education Policy-2020 in Transforming Higher Education

**By:
Abhishek Shukla**

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Reinventing Innovative Higher Education Paradigm: A NEP-2020 Perspective

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Abstract

Purpose: A complete sea change in the higher education paradigm is perceived by launching the National Education Policy (NEP-2020) on 29 July 2020. NEP-2020 has more incredible reforms that strive to fulfil stakeholders' aspirations by the hopeful sweeping revitalization in higher education and research by creating new opportunities for making India's education system more innovation-oriented, emphasizing creating and entrepreneurship. The vision envisaged by NEP-2020 is to advance the quality of education and give equal space to creativity and innovation to transform India into a dynamic knowledge-based society. This book chapter put forth a thorough analysis of the NEP2020 from the window of innovation, entrepreneurship, skilling and up-skilling. Moreover, it outlines the revelation for the dynamic knowledge society in the backdrop of educational policy frameworks adopted by other countries.

Approach: Without any doubt, the National Education Policy (NEP) 2020 is a progressive, ambitious framework that was long-awaited. It has undoubtedly got the potential to advance the innovation skill set of the young minds despite the challenges of translating the policy into action. Therefore the implementation plan has paramount importance to realize the policy framework in practice. 'Benchmarking' and learning from the countries where education policy frameworks have proved to be a significant change agent will help solve the implementation bottlenecks as innovation, skilling, up-skilling, and re-skilling are concerned. This approach of comparative analysis and benchmarking is espoused throughout this chapter. Thus, through the text, the authors have had a

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