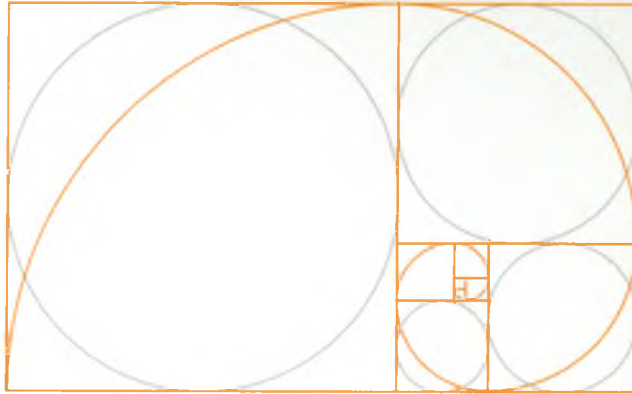


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# **EXPLORE YOURSELF AMONG WORLD-CLASS RESEARCHERS**

A COMPLETE GUIDEBOOK FOR BEGINNERS  
HOW TO DEVELOP A RESEARCH FROM START TO FINISH



# **Explore Yourself Among World – Class Researchers**

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**Tashkent - 2019**

**808.2:001.89**

**72**

**E 97**

Explore Yourself Among World - Class Researchers [Text] -  
Tashkent : Publishing House of Innovative Development, 2019.  
- 425 p.

**UDC 808.2:001.89**

**LBC 72**

This book presents a basic understanding of principles and issues in formulating the general knowledge and scale of the total problems during a research. Developers, including quality assurance professionals will find a variety of techniques with sufficient definition of research instruments and process issues to support adaptation to the particular demands of their field. All readers can obtain a clearer view of the interplay among scientific instruction issues in writing approach to quality research outcomes. In this book students, developers, and researchers with a basic background in research project in various fields will find the material as theory, methodology, hints, tips and templates as a sample in writing articles professionally.

This text-book has been developed in the framework of П3-20170928323 'Efficient use of investment programs and increase of export potential of the regions' practical project implemented at the Tashkent University of Economics.

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ISBN 978-9943-5900-5-2

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## PREFACE

This book addresses organize research and wiring article or research paper in the context of an overall effort to achieve quality final outcomes. It is designed for use as a primary researcher in specific fields for beginners how to develop a research from start to finish.

### **The main characteristics of this book are:**

- It assumes that the reader's goal is to achieve a suitable balance of Formulating the Research Problem, Extensive Literature Survey, Developing the Research Hypothesis, Preparing the Research Design , Determining the Research Design, Collecting the Research Data, Execution of the Project, Analysis of Data, Hypothesis Testing, Generalization and Interpretation, Preparing of the Report or Presentation of the Result .

- It presents a selection of techniques suitable for near-term application, with sufficient technical background to understand a statement of the objectives of the stud, the research instruments, information on sample size and sampling design, information on data processing procedures, an outline of the proposed chapters for the report, the study's problems and limitations, and proposed time-frame.

- It provides clear instructions about preparing for the research, Global University ranking, access to Scopus, visibility with Elsevier, publish with Science Direct, data collection and displaying, software applications, writing and publishing principles and tips and useful phrases.

### **Why This Book?**

Today quality assurance in higher education is part of the development reforms in Uzbekistan. Modern teaching methodologies and skills are integrated into global education system even in our

country. Memorandum between Uzbekistan and QS, THE, Scopus, Elsevier, BPexpress etc. is directed rising effectiveness in higher education and visibility among World Class Universities nowadays. From this point of view authors collected some methods and particular information for who would like to make research correctly under specific styles and formats recognized worldwide. This book provides students with a coherent view of the state of the research and practice, and provides academic beginners and scientific researchers with scientific and organizational approaches to push the state of paper work toward the state of the visibility among global scholars.

### **Who Is This Book For?**

Students who read of this book will gain a basic understanding of principles and issues in formulating the general knowledge and scale of the research problem. Developers, including quality assurance professionals, will find a variety of techniques with sufficient definition of research instruments and process issues to support adaptation to the particular demands of their field. All readers should obtain a clearer view of the interplay among scientific instruction issues in writing approach to quality research outcomes.

In these book students, developers, and researchers, with a basic background in research project in various fields will find the material as theoretical, methodological hints, tips and templates for self-study in direct research.

## **ACKNOWLEDGEMENTS**

The authors' grateful thanks go to Dr. Prabhat Pandey, Dr. Meenu Mishra Pandey for their professional work, and to Dr. John Morley, C.R. Kothari for kind scientific work. The authors are particularly grateful to Journal Prep.com group in detail information collecting data.

For best contribution the authors honored Sherzod Tashpulatov and Dilmurod Khojamkulov. Who gave idea and guidance on this project.

The authors would like to thank QS World University Rankings, Zoya Zaitseva Regional Director, Central Europe & Central Asia. The authors would also like to kindly acknowledge Elsevier, Regional Manager, Aliya Ospanova for their generous help and advice in this matter.

The next acknowledgment for the best support to M. Davis, J. Morley, 3.John Wrigglesworth, A. Hopkins, A. Dudley-Evans, A. Pawley, F.H. Syder, J. Sinclair, J.Swales, D.Bolinger for their marble work and methodology.

Especially great gratitude to assistants of Department of World Economy, Ulugbek Shagzatov and Kamol Komilov who contributed to keeping us motivated throughout the writing and editing of the book.

And, finally the authors would like to thank who dropped names and contribution in this concern. We hope this various collected approaches of world class scholars in their field will help our students and researchers to develop the academic and scientific ability to become professional experts in a particular field.

For the excellent support the authors' grateful to students of Faculty of Corporate Governance students, Mukhlisa Alimjanova, Anora Pashakulova, Begoyim Rakhimbayeva, and Iroda Aliyeva for preparation of diagrams and tables. The authors would also like to acknowledge the contribution made by the Wikipedia group for detail classification certain parts of the work.

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## CHAPTER I. SET UP FOR RESEARCH

---

**Education** plays a vital role in shaping successful people. It gives us the opportunity to become a productive member of a civilized society by acquiring all the necessary skills. Education expands our vision and creates awareness. It helps us develop a disciplined life and provides us with better earning opportunities.

Main purpose of education is to educate individuals within society, to prepare and qualify them for work in economy as well as to integrate people into society and teach those values and morals of society. Role of education is means of socializing individuals and to keep society smoothing and remain stable.

In 1960, UNESCO adopted the Convention against Discrimination in Education, which acknowledges the crucial role of education in ensuring equality of opportunity for members of all racial, national or ethnic groups. It was the very first time that a binding instrument in the United Nations system contained a detailed definition of the term **DISCRIMINATION**.

The Convention qualifies it as *“Any distinction, exclusion, limitation or preference based on race, color, sex, language, religion or political or other opinion, national or social origin, economic condition or birth”*. The Convention calls on States to adopt immediate measures in favor of equality in education and links the concept of Education directly to Human Rights.

### **EDUCATION**

According to the **Oxford dictionary** education is the process of receiving or giving systematic instruction, especially at a school or university. Education gives us knowledge of the world around us and changes it into something better. It develops in us a perspective of

looking at life. It helps us build opinions and have points of view on things in life. People debate over the subject of whether education is the only thing that gives knowledge.

According to the **Merriam-Webster dictionary** education is the action or process of educating or of being educated or the knowledge and development resulting from the process of being educated.

Straightforwardly, we can say, “education is the passage to progress”. It is additionally the way to our fate as achievements can only be accomplished when individuals have information, aptitudes, and frame of mind. In this way, education resembles a medium through which we can associate with various individuals and offer our thoughts<sup>1</sup>.

In fact, education is the process of learning, or the obtaining of knowledge, skills, values, beliefs, and habits.

### **Types of Education**

- Formal
- Informal
- Non-formal

**Formal Education** is corresponds to a systematic, organized education model, structured and administered according to a given set of laws and norms, presenting a rather rigid curriculum as regards objectives, content and methodology.

### **Specifics**

- School/Institutions involved
- Has hierarchical structure
- Uniform/full time and proper
- Subject oriented
- Certificate/degrees

### **Features**

- It is pre-determined and pre planned

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<sup>1</sup> <https://examplanning.com/types-education-formal-informal-non-formal/>

- It is time bound and regulated by routine
- It is space bound *i.e.*, institutional
- It is age bound
- It follows systematic curriculum
- It is imparted by qualified teachers
- It observes strict discipline
- It is methodical in nature

**Informal Education** happens outside the classroom, in after-school programs, community-based organizations, museums, libraries, or at home. There generally being no control over the performed activities, informal education does not of necessity regard the providing of degrees or diplomas; it merely supplements both formal and non-formal education<sup>2</sup>.

### **Specifics**

- Practical adult learning
- Diversity in methods and content
- Mobilize local resources
- Built on learner's participation
- Real life examples of learning

### **Features**

- It is incidental and spontaneous
- It is not pre planned and deliberate
- It is not confined to any institution
- There is no prescribed syllabus and time table
- It is not time bound and age bound
- There are many agencies of informal education
- It is also known as out of school education

**Non-Formal** education refers to education that occurs outside the formal school system. Non-formal education is often used interchangeably with terms such as community education,

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<sup>2</sup> <https://quora.com/What-are-the-various-types-of-education>

adult education, lifelong education and second-chance education<sup>3</sup>.

### **Specifics**

- Very long process
- Learning from experience
- Learning from home
- Learning from environment
- Learning from work

### **Features**

- Non-formal education is open ended and non-competitive.
- Non-formal education is structured and planned but outside the sphere of formal education.
  - It is consciously and deliberately organized and implemented.
  - It is programmed to serve the need of the homogeneous groups.
    - It possesses flexibility in design of the curriculum and process and evaluation.
    - In non-formal education teacher pupil relationship is much more intimate.
  - Attendance in non-formal education is voluntary.
  - In non-formal education many students are working persons.

### **Educational technology**

Physical hardware

Educational theoretic

- Learning theories
- Computer based learning
- Online learning
- Mobile technology learning

### **Learning objects content**

- Fact – unique data
- Concept-multiple examples

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<sup>3</sup> Claudio Zaki Dib Institute of Physics University of São Paulo, Brazil . formal, non-formal and informal education: concepts/applicability, "Interamerican Conference on Physics Education", Oaxtepec, Mexico, 1987. "Cooperative Networks in Physics Education - Conference Proceedings 173", American Institute of Physics, New York, 1988, p 3.

- Process-flow of events
- Procedure-step by step tasks

## **REASONS WHY EDUCATION IS THE KEY TO SUCCESS**

**Profession** – The vital part of an individual's life is to determine what he wants, in order to specialize in what he is eager to learn. Precisely knowing what you want, makes it easier to “plan” your life and what you want to become. Moreover, mastering a profession expands and unleashes our potential, which results into maximizing it.

**Education** – One of the biggest benefits of education is becoming educated.

The 21st century is ever changing, new inventions are coming up non-stop and without proper education, it's impossible to keep up with the flow, so if you don't want to be left back, being educated is a must. Moreover, education helps you become self-dependent.

**Confidence** – Yes, being educated leads to gaining confidence. Your degree is a proof of your knowledge, which, mostly, is taken seriously and makes your ideas/thoughts more valuable and important. Besides your degree, knowledge makes you persuasive and convincing. Also, your facial expressions become more “clever”.

**Being One Step Ahead** – One of the key factors of success is always being one step ahead in any business you do. Success doesn't come from overcoming every flaw and weakness we have.

**Dreams to Reality** – What's your dream? Goal? Do you want to be rich? Famous? Respected by everyone? No matter what's your aim, what truly matters is, how you're going to reach it. The key to all of the questions above is education. Your mind is the key that can open any door for you. Of course, there are some exceptions where knowledge isn't required<sup>4</sup>.

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<sup>4</sup> <http://inevitablesteps.com/success/education-is-the-key-to-success/>



## **EDUCATION SYSTEM**

The **education** sector or **education system** is a group of institutions (ministries of **education**, local **educational** authorities, teacher training institutions, schools, universities, etc.) whose primary purpose is to provide **education** to children and young people in **educational** settings.

The term **education system** generally refers to public schooling, not private schooling, and more commonly to kindergarten through high school programs. Schools or school districts are typically the smallest recognized form of “education system” and countries are the largest. States are also considered to have education systems.

Simply put, an education system comprises everything that goes into educating public-school students at the federal, state, or community levels<sup>5</sup>:

- Laws, policies, and regulations
- Public funding, resource allocations, and procedures for determining funding levels
  - State and district administrative offices, school facilities, and transportation vehicles
  - Human resources, staffing, contracts, compensation, and employee benefits
  - Books, computers, teaching resources, and other learning materials
  - And, of course, countless other contributing elements

## **CREDIT BASED SYSTEM IN EDUCATION**

A **credit system** is a systematic way of describing an **educational** program by attaching credits to its components. The definition of credits in higher **education systems** may be based on different parameters, such as student workload, learning outcomes and contact hours.

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<sup>5</sup> <https://www.edglossary.org/education-system/>

## **Definition to keywords**

**1.Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.

**2.Choice Based Credit System (CBCS):** The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses).

**3.Course:** Usually referred to, as 'papers' is a component of a program. All courses need not carry the same weight. The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.

**4.Credit Based Semester System (CBSS):** Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.

**5.Credit Point:** It is the product of grade point and number of credits for a course.

**6.Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week.

**7.Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

**8.Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale.

**9.Letter Grade:** It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

**10.Program:** An educational program leading to award of a Degree, diploma or certificate.

**11.Semester Grade Point Average (SGPA):**

It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

**12.Semester:** Each semester will consist of 15-18 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.

**13.Transcript or Grade Card or Certificate:** Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade certificate will display the course details (code, title, number of credits, grade secured) along with SGPA of that semester and CGPA earned till that semester.

**Types of Courses**

Courses in a program may be of three kinds: Core, Elective and Foundation.

**- Core Course**

There may be a Core Course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

**- Elective Course**

Elective course is a course which can be chosen from a pool of papers.

It may be:

- 1.Supportive to the discipline of study
- 2.Providing an expanded scope
- 3.Enabling an exposure to some other discipline/domain
- 4.Nurturing student's proficiency/skill.

An elective may be "Generic Elective" focusing on those courses

which add generic proficiency to the students. An elective may be “Discipline centric” or may be chosen from an unrelated discipline. It may be called an “Open Elective.”

- **Foundation Course**

The Foundation Courses may be of two kinds: Compulsory Foundation and Elective foundation. “Compulsory Foundation” courses are the courses based upon the content that leads to Knowledge enhancement. They are mandatory for all disciplines. Elective Foundation courses are value-based and are aimed at man-making education<sup>6</sup>.

## **MODULAR EDUCATIONAL SYSTEM**

In **education**, a “**module**” is a fractional part of a student’s **education** experience. In an entire degree program, each class represents a **module** focused on a given subject. In a single class, a **module** is a chapter, class meeting or lecture on a specific topic. In a science degree, **modules** include physics and chemistry.

A **module** is a single component, it can be a document, PDF, Powerpoint, SCORM presentation, Video, or Assessment you create and it can be distributed alone or as part of a **course**. A **course** is made of one or more **modules** packed together.

### **Modules mainly focus on**

Many alternatives are possible - here are just a few. Modules could be focused on.

*spheres of experience* : the family ... jobs ... school life ...

*macro functions* : describing ... narrating ... discussing ...

*communicative activities* : reading ... oral interaction ... mediating (e.g. interpreting, translating ...)

*topics* : racism ... advertising ... new technologies ...

*vocational competences* : giving instructions ... talking on the phone ... using the Internet ...

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<sup>6</sup> <http://vikaspedia.in/education/policies-and-schemes/choice-based-credit-system-cbcs>

*textual genres* : novels ... plays ... poetry ...

*areas of linguistic investigation* : lexis ... syntax ... verbal vs non-verbal language ... *or any combination of the above* <sup>7</sup>.

The point to make here is that purely linguistic choices (e.g. in terms of grammar, vocabulary, *microfunctions* like “asking for advice”) should come as a *consequence* of having chosen a particular *focus* – not as the starting point.

### **KNOWLEDGE**

According to the **Oxford dictionary** knowledge is facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

According to the **Merriam-Webster dictionary** knowledge is the fact or condition of knowing something with familiarity gained through experience or association. Sometimes acquaintance with or understanding of a science, art, or technique.

In fact knowledge is understanding of someone or something, such as facts, information, descriptions, or skills which is acquired through experience or education by perceiving, discovering, or learning.

#### **Stages of Knowledge**

- Story telling
- Discussion
- Learning
- Teaching
- Direct research

### **TYPES OF KNOWLEDGE**

#### **A Priori**

**Knowledge** that is independent of all particular experiences, as opposed to a posteriori **knowledge**, which derives from experience.

#### **A Posteriori**

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<sup>7</sup> <http://www.learningpaths.org/papers/modules.htm>

A **posteriori knowledge** is justified by means of experience, and depends therefore on experiential evidence or warrant.

### **Explicit Knowledge**

**Explicit knowledge** (also expressive **knowledge**) is **knowledge** that can be readily articulated, codified, accessed and verbalized. It can be easily transmitted to others. Most forms of **explicit knowledge** can be stored in certain media.

### **Tacit Knowledge**

**Tacit knowledge** is the kind of knowledge that is difficult to transfer to another person by means of writing it down or verbalizing it

### **Propositional Knowledge (also Descriptive or Declarative Knowledge)**

Declarative Knowledge refers to facts or information stored in the memory that is considered static in nature. Declarative Knowledge also referred to as conceptual, propositional or descriptive knowledge, describes things, events, or processes, their attributes, and their relation to each other.

### **Knowledge of taxonomy**

- Specifics
- Terminology
- Facts
- Ways and meaning deals with
- Conventions
- Trends and sequences
- Category and classification
- Criteria
- Methodology
- Universality
- Principles and generalization
- Theories and structures

## **TEACHING**

According to the **Oxford dictionary** teaching is the occupation, profession, or work of a teacher.

According to the **Merriam-Webster dictionary** teaching is the act, practice, or profession of a teacher.

## **TYPES OF TEACHING**

- Pedagogy
- Andragogy
- Heutagogy

## **TEACHING**

- Active
- Passive
- Student oriented
- Teacher oriented

## **FIELDS OF TEACHING**

- Literacy
- Numeracy
- Craftsman
- Vocational
- The Arts
- Civics
- Community Roles
- Life Skills

## **METHODS OF TEACHING**

- Verbal
- Visual
- Auditory
- Kinesthetic

# Teaching

Discipline

Pedagogy

Methodology

Topic

Object

Subject

## LEARNING

**Learning** is the process of acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences. The ability to learn is possessed by humans, animals, and some machines; there is also evidence for some kind of **learning** in some plants.

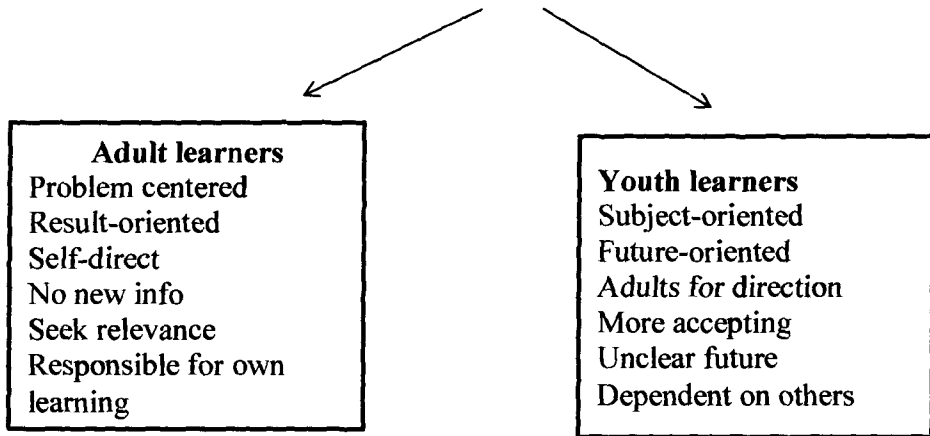
### Types of Learning

- Visual (Spatial)
- Aural (Auditory-Musical)
- Verbal (Linguistic)
- Physical (Kinesthetic)
- Logical (Mathematical)
- Social (Interpersonal)
- Solitary (Intrapersonal)

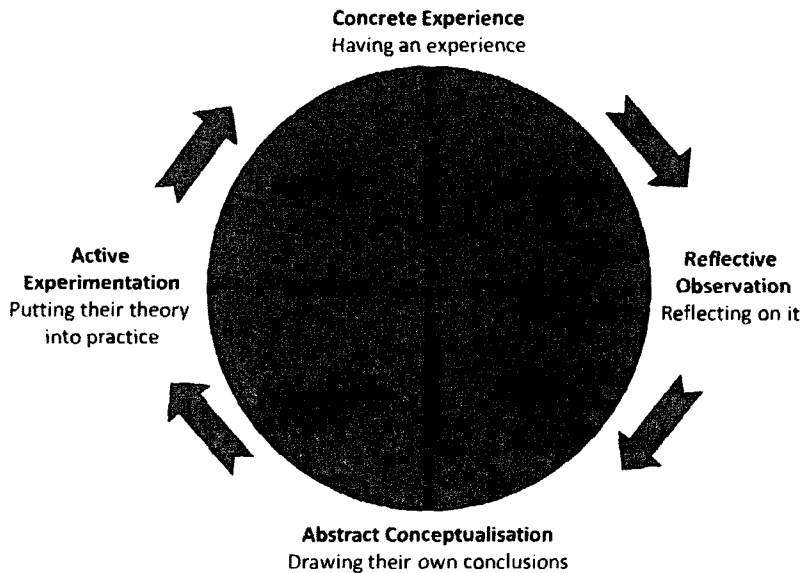


## CHARACTERISTICS OF LEARNER'S

### Learning



## LEARNING CYCLE



A **learning cycle** is a concept of how people **learn** from experience. A **learning cycle** will have a number of stages or phases, the last of which can be followed by the first.

## **FACTORS AFFECTING LEARNING**

### **Internal factor**

- Goals or purpose
- Motivational behavior
- Interest
- Attention
- Drill or practice
- Fatigue
  - ✓ Muscular
  - ✓ Sensory
  - ✓ Mental
- Aptitude (natural ability)
- Attitude (way of thinking)
- Emotional conditions
- Speed, accuracy and retention
- Learning activity
- Testing
- Guidance

### **External factors**

- Heredity
- Status of students: Physical and home conditions
- Physical environment: design, quality and setting of the learning spaces

## **QUESTION**

A **question** is something that you say or write in order to ask a person about something. Sometimes it is an interrogative expression often used to test knowledge.

### **ESSENTIAL TYPES OF QUESTIONS**

- **Asking Yes/No Questions.** Yes/No questions are the most basic type of question.
- **Asking “Five W” Questions.** The “five Ws” are the question words who, what, when, where and why.

- Using Indirect Questions for Polite English
- **Asking** Tag Questions
- **Asking** Negative Questions for Confirmation.

## TYPES OF QUESTIONS

▪ The Dichotomous Question. The dichotomous question is generally a "yes/no" close-ended question.

- Multiple Choice Questions
- Rank Order Scaling Question
- Text Slider Question
- Likert Scale Question
- Semantic Differential Scale
- Stapel Scale Question
- Constant Sum Question

### Types of Questions

• **Text-explicit or Literal Level:** This level involves "reading the lines." The reader gets the primary, explicit meaning of the text that the writer intended (given that the reader's background knowledge impinges to some degree on material read).

• **Text-implicit or Interpretive Level:** This level involves "reading between the lines." The reader supplies meanings to complete the text; i.e., supplies inferences, makes generalizations, discover relationships (e.g., cause and effect).

• **Critical Level:** This level involves "reading beyond the lines." The reader personally reacts to what the author wrote regarding its quality, value, significance, accuracy, or truthfulness.

• **Creative Level:** This level involves "reading outside the lines." The reader seeks out new ideas or gains additional insights by creatively analyzing, interpreting, and applying that information<sup>8</sup>.

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<sup>8</sup> <http://olms.ctc.jhu.edu/olms2/10750>

## **TYPES OF QUESTIONS**

- Knowledge - what, when, how, describe
- Comprehension – Retell
- Application- How is ... related to?
- Analyses - Classify in according to
- Syntheses- What solutions would you invite...
- Evaluation- Do you agree that...?

## **EXAMINATION**

Examination is a formal test of a person's knowledge or proficiency in a subject or skill. It is called a detailed inspection or study. Sometimes it is an examination is a formal test that you take to show your knowledge or ability in a particular subject, or to obtain a qualification.

## **MAIN TYPES OF EXAMS**

- Essay exams
- Multiple choice
- True/false answers
- Short answers
- Essays
- Practical
- Open book
- Problem solving
- Oral

## **TEST**

A **test** (evaluation) is an **assessment** intended to measure a **test-taker's** knowledge, skill, aptitude, physical fitness, or classification in many other topics.

### **Types of test**

- Diagnostic Testing
- Formative Testing

- Benchmark Testing
- Summative Testing

### **Types of test**

- Written tests
- Multiple choices
- Alternative response
- Matching type
- Completion type
- Essay
- Mathematical questions

### **PROOF**

**Proof** is evidence or argument establishing a fact or the truth of a statement.

### **Forms of proof**

- Structural proof theory
- Ordinal analyses
- Probability logic
- Reverse math
- Functional interpretations

### **SPOKEN WORD FORMATS**

- All news
- Children's
- Religious
- College
- Comedy
- Educational
- Ethnic
- Experimental
- Full service
- Old time
- Audio books

- Radio documentary
- Drama
- Sport
- Public talk
- Weather radio

## **DICTIONARY**

A dictionary, sometimes known as a wordbook, is a collection of words in one or more specific languages, often arranged alphabetically (or by radical and stroke for ideographic languages), which may include information on definitions, usage, etymologies, pronunciations, translation, etc. or a book of words.

### **TYPES OF DICTIONARY**

- general dictionaries
- translation dictionaries
- etymologic dictionaries
- specialized dictionaries
- defining dictionaries
- online dictionaries
- encyclopedia dictionary
- bilingual dictionary
- phonetic dictionary
- pronunciation dictionaries
- synonyms and antonyms
- electronic dictionary
- rhyming dictionary
- sound dictionaries
- visual dictionaries
- reverse dictionary

### **Common dictionary sources**

1. Oxford dictionary
2. Merriam-Webster dictionary

3. Vocabulary.com
4. Dictionary.com.
5. English Dictionary
6. Merriam-Webster.
7. Google Translate.
8. Concise English Dictionary and Thesaurus
9. Urban Dictionary
10. Wolfram Words

## **WRITING**

Writing is the activity or occupation of composing text for publication. "Writing" is the process of using symbols (letters of the alphabet, punctuation and spaces) to communicate thoughts and ideas in a readable form. Generally, we write using a pen/pencil (handwriting) or a keyboard (typing). With a pen/pencil we usually write on a surface such as paper or whiteboard.

### **Types of writing**

- Expository
- Descriptive
- Persuasive
- Narrative

## **FORMS AND STYLES**

- Cause and effect
- Classification and division
- Compare and contrast
- Dialectic
- Exemplification
- Familiar
- History
- Argumentative
- Economic

- Reflective

## **STYLES IN RESEARCH**

### **MLA**

The **MLA Style Manual**, titled the **MLA Style Manual and Guide to Scholarly Publishing** in its second (1998) and third edition (2008), was an academic style guide by the United States-based Modern Language Association of America (MLA) first published in 1985. MLA announced in April 2016 that the publication would be discontinued: the third edition would be the last and was to be “taken out of print”. The announcement also said that what began as an abridged version for students, the *MLA Handbook*, was to be thenceforth “the authoritative source for MLA style”, and that the organization was “in the process of developing additional publications to address the professional needs of scholars. “MLA style is the style for preparing scholarly manuscripts and student research papers. It concerns itself with the mechanics of writing, such as punctuation, quotation, and documentation of sources.

**APA Style** is a writing style and format for academic documents such as scholarly journal articles and books. It is commonly used for citing sources within the field of behavioral and social sciences. It is described in the style guide of the American Psychological Association (APA), which is titled the **Publication Manual of the American Psychological Association**. The guidelines were developed to aid reading comprehension in the social and behavioral sciences, for clarity of communication, and for “word choice that best reduces bias in language”.

APA Style is widely used, either entirely or with modifications, by hundreds of other scientific journals (including medical and other public health journals), in many textbooks, and in academia (for papers written in classes). Along with AMA style and CSE style, it is one of the major styles for such work.

**The Chicago Manual of Style** (abbreviated in writing as **CMOS**



or **CMS**, or sometimes as **Chicago**) is a style guide for American English published since 1906 by the University of Chicago Press. Its seventeen editions have prescribed writing and citation styles widely used in publishing. It is "one of the most widely used and respected style guides in the United States". The guide deals with aspects of editorial practice, from American English grammar and use to document preparation. It is available in print as a hardcover book, and by subscription as a searchable website as *The Chicago Manual of Style Online*, which also provides some free resources, primarily aimed at teachers, students, and libraries.

**Parenthetical referencing**, also known as **Harvard referencing**, is a citation style in which partial citations—for example, "(Smith 2010, p. 1)"—are enclosed within parentheses and embedded in the text, either within or after a sentence. They are accompanied by a full, alphabetized list of citations in an end section, usually titled "references", "reference list", "works cited", or "end-text citations". Parenthetical referencing can be used in lieu of footnote citations (the Vancouver system).

There are two styles of parenthetical referencing:

- **Author-date**: primarily used in the natural sciences and social sciences, and recommended by the American Chemical Society and the American Psychological Association (APA);
- **Author-title or author-page**: primarily used in the arts and the humanities, and recommended by the Modern Language Association (MLA).

### **Vancouver system**

The **Vancouver system**, also known as **Vancouver reference style** or the **author-number system**, is a citation style that uses numbers within the text that refer to numbered entries in the reference list. It is popular in the physical sciences and is one of two referencing systems normally used in medicine, the other being the

author–date, or "Harvard", system. Vancouver style is used by MEDLINE and PubMed.

There are two styles of parenthetical referencing:

- Author–date: primarily used in the natural sciences and social sciences, and recommended by the American Chemical Society and the American Psychological Association (APA);
- Author–title or author–page: primarily used in the arts and the humanities, and recommended by the Modern Language Association (MLA).

## **LIBRARY**

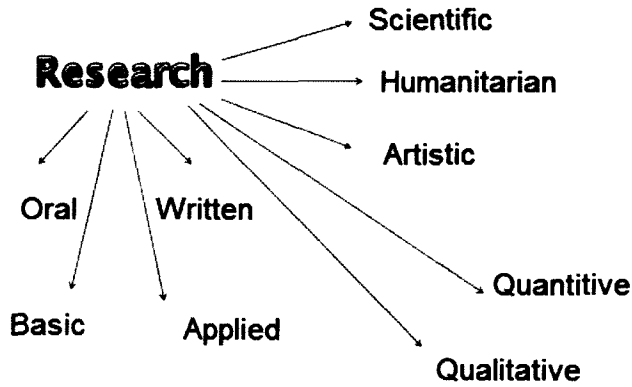
Library a building or room containing collections of books, periodicals, and sometimes films and recorded music for use or borrowing by the public or the members of an institution. A library is a collection of sources of information and similar resources, made accessible to a defined community for reference or borrowing.

### **Types of libraries**

1. **Academic libraries** serve colleges and universities.
2. **Public libraries** serve cities and towns of all types.
3. **School libraries** serve students from Kindergarten to grade 12.
4. **Special libraries** are in specialized environments, such as hospitals, corporations, museums, the military, private business, and the government.

## **RESEARCH**

According to the **Oxford dictionary** research is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.



According to the **Merriam-Webster dictionary** research is careful or diligent search or the collecting of information about a particular subject.

In fact research is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.

### **RESEARCH METHODS**

- Field Study
- Laboratory Study
- Experimental Study
- Case Study
- Survey Study
- Archive Study
- Meta-Analysis Study (statistics)

### **SCIENCE**

According to the **Oxford dictionary** science is the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.

According to the **Merriam-Webster dictionary** science is the state of knowing: knowledge as distinguished from ignorance or misunderstanding.

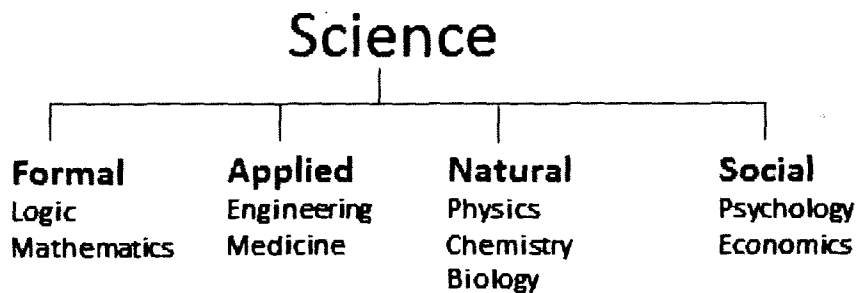
In fact science is a systematic enterprise that builds and

organizes knowledge in the form of testable explanations and predictions about the universe.

### **BRANCHES OF SCIENCE**

- Science as a Inquiry
- Physical Science (Motion& Force)
- Life Science
- Earth & Space Science
- Science & Technology
- Personal Science
- History & Natural Science

**Scientific** knowledge allows us to develop new technologies, solve practical problems, and make informed decisions - both individually and collectively. Because its products are so **useful**, the process of **science** is intertwined with those applications: New **scientific** knowledge may lead to new applications.



### **EFFECTIVE STUDENTS**

- |                       |                               |
|-----------------------|-------------------------------|
| Creativity            | Ability work with others      |
| Initiative            | Professional Competence       |
| Reaction to Criticism | Academic Ability or Potential |
| Senility to other     | Research Skills               |
| Leadership            | Verbal Skills                 |
| Motivation            | Written Skills                |

### **PRESENTATION**

**Presentation** is a speech or talk in which a new product, idea, or

piece of work is shown and explained to an audience. A presentation is the process of presenting a topic to an audience. It is typically a demonstration, introduction, lecture, or speech meant to inform, persuade, inspire, motivate, or to build good will or to present a new idea or product.

**Types of presentation**

- Informative Speeches
- Demonstrative Speeches
- Persuasive Speeches
- Inspirational Speeches

**Views for delivering and viewing a presentation**

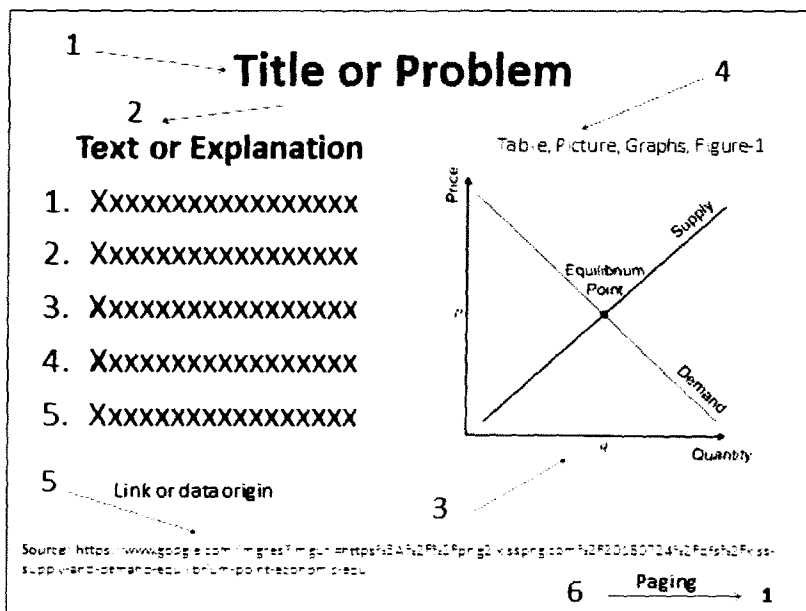
- **Slide Show view.** You can get to **SlideShow** view from the task bar at the bottom of the **slide** window.

- **Presenter view.** To get to **Presenter view**, in **Slide Show** view, in the lower left corner of the screen, click , and then click Show Presenter View

- **Reading view.**

**The 10/20/30 Rule of PowerPoint**

**Right displaying Power Point Slides**



• **Ten slides.** **Ten** is the optimal number of **slides** in a **Power Point presentation** because a normal human being cannot comprehend more than **ten** concepts in a meeting-and venture capitalists are very normal.

• **Twenty minutes.** You should give your **ten slides** in twenty minutes.

• **Thirty-point font.**

### **How to Structure a PowerPoint Presentation**

- Combine slides into sections
- Use the outline view
- Create a table of contents
- Take your presentation to another level

### **DATA**

According to the **Oxford dictionary** data is facts and statistics collected together for reference or analysis or quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media.

According to the **Merriam-Webster dictionary** data is factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation. Sometimes it is information in digital form that can be transmitted or processed.

In fact data is individual piece of information.

### **Types of data by measurement scales**

- Nominal
- Ordinal
- Interval
- Ratio

### **DATA**

- Measured
- Collected
- Reported

- Analyzed

## **DATA ANALYSIS**

Analyses of data is a process of inspecting, cleaning, transforming and modeling data with the goal of discovering useful information suggesting conclusions and supporting decision making.

### **Data mining**

- Data sets
- Artificial intelligence
- Machine learning
- Statistics
- Database system

## **FILE**

File is a folder or box for holding loose papers together and in order for easy reference. Computer **file** is a related collection of record. A computer file is a computer resource for recording data discretely in a computer storage device. Just as words can be written to paper, so can information be written to a computer file.

### **Operations**

The most basic operations that programs can perform on a file are:

- Create a new file
- Change the access permissions and attributes of a file
- Open a file, which makes the file contents available to the program
- Read data from a file
- Write data to a file
- Close a file, terminating the association between it and the program

### ▪ **MAJOR FILE FORMATS**

- **Documents file format**

txt- is a computer file that as a sequence of lines of electronic text.

- doc-Microsoft Word document
- docx- Office Open XML document
- HTML- HyperText Markup Language (.html, .htm)
- Pdf- Portable Document Format
- Rtf- Rich Text document
- XHTML(xhtml, xht) – eXtensible HyperText Markup Language
- XML- eXtensible Markup Language
- XPS- Open XML Paper Specification
- XLS- Microsoft Excel
- PPT- Microsoft Power point
- **Graphics file format summary**
- CDR – CorelDRAW
- PSD – Adobe Photoshop
- EPS- Encapsulated Postscript
- SVG- Scalable Vector Graphics
- GIF- Graphics Interchange Format
- PS- PostScript
- **Image file formats**
- BMP- Microsoft Windows Bitmap formatted image
- JPEG, JFIF (.jpg or .jpeg) – Joint Photographic Experts Group
- GIF- CompuServe's Graphics Interchange Format
- PNG- Portable Network Graphic
- TIFF (.tif or .tiff) – Tagged Image File Format
- **Audio file format**
- **Video file format**
- **Computer-aided Design (CAD)**
- **Electronic design automation (EDA)**
- **Desktop publishing**

## DOMAIN

**Domain**—a distinct subset of the Internet with addresses sharing



a common suffix or under the control of a particular organization or individual.

### **List of Internet top-level domains**

.com- commercial

.org- organization

.net- network

.edu- education

.gov- government

.uz - country

### **INFORMATION**

According to the **Oxford dictionary** information is facts provided or learned about something or someone. And, what is conveyed or represented by a particular arrangement or sequence of things.

According to the **Merriam-Webster dictionary** information is the communication or reception of knowledge or intelligence. Sometimes it is a knowledge obtained from investigation, study, or instruction.

In fact information is **Information** is associated with data and knowledge, as data is meaningful **information** and represents the values attributed to parameters, and knowledge signifies understanding of an abstract or concrete concept.

### **Types of information**

There are **three types of information** that we deal with every day<sup>9</sup>:

- Context – Big Picture
- Content – nuts and bolts
- Meaning – the impact.

### **CLASSIFICATION OF INFORMATION**

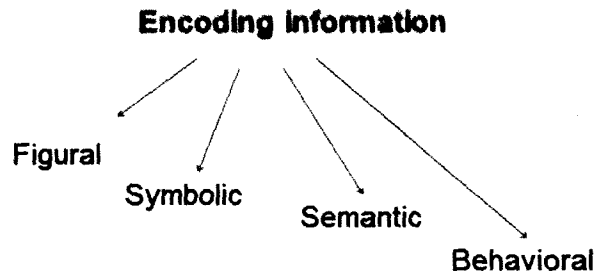
Buck (1983) provides a useful classification of types of information that can be displayed to users<sup>10</sup>.

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<sup>9</sup> <http://darrenfleming.com.au/2016/07/19/three-types-information/>

<sup>10</sup> [https://www.le.ac.uk/oerresources/psychology/ergonomics/page\\_07.htm](https://www.le.ac.uk/oerresources/psychology/ergonomics/page_07.htm)

- Instructions
- Command
- Advisory
- Answers
- Historical
- Predictive

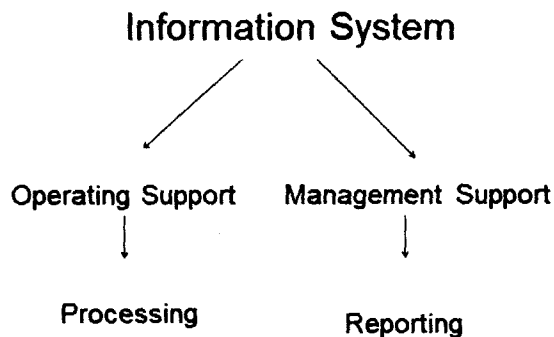


## **INFORMATION SYSTEM**

**Information System** is an academic study of systems with a specific reference to information and the complementary networks of hardware and software that people and organizations use to collect, filter, process, create and also distribute data..

## **INFORMATION SYSTEM**

- Transaction
- Decision
- Knowledge
- Learning
- Database



### **Common types of information systems**

- Executive Support Systems (ESS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Knowledge Management Systems (KMS)
- Transaction Processing Systems (TPS)
- Office Automation Systems (OAS)

### **SIX COMPONENT MUST COME TOGETHER**

- Hardware
- Software
- Data
- Procedure
- People
- Feedback

### **INFORMATION TECHNOLOGY**

According to the **Oxford dictionary** information technology is the study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information.

According to the **Merriam-Webster dictionary** information technology is the technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data.

In fact **information technology** is the study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information.

### **COMMUNICATION**

According to the **Oxford dictionary** communication is the imparting or exchanging of information by speaking, writing, or using some other medium. Sometimes it is Means of sending or receiving

information, such as telephone lines or computers.

According to the **Merriam-Webster dictionary** communication is a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior. Another definition for communication is information communicated: information transmitted or conveyed.

In fact communication is the act or process of using words, sounds, signs, or behaviors to express or exchange information or to express your ideas, thoughts, and feelings to someone else.

### **Verbal non verbal**

### **BARRIERS TO EFFECTIVE COMMUNICATION**

- Language
- Noise
- Distraction
- Lack of interest
- Disability
- Discomfort
- Distance
- Too many question
- Time

### **COMMUNICATION SYSTEM**

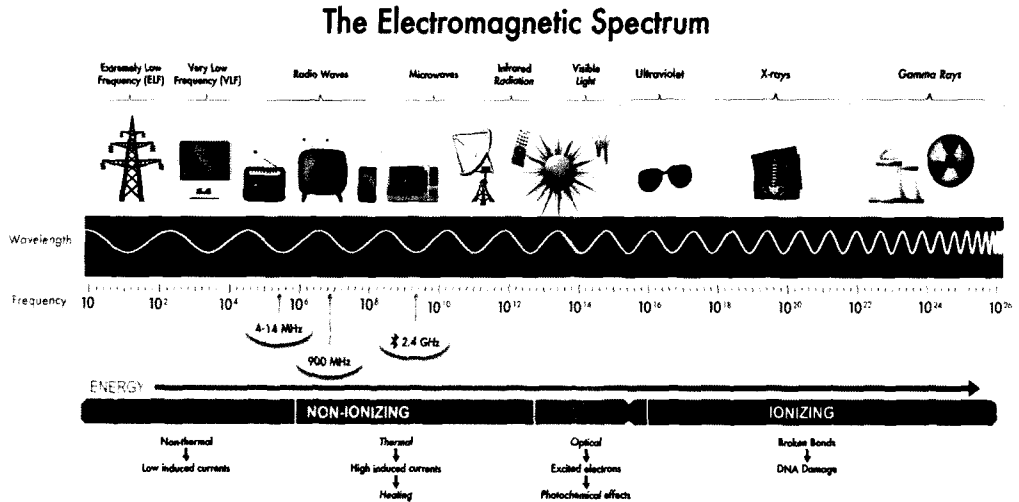
**Communication system** it is a collection of individual communication, networks, transmission system, relay stations, tributary stations and data terminal equipment.

### **Early communication system**

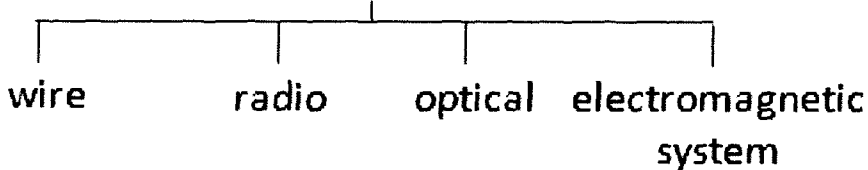
- Visual signal
- Beacon
- Smoke
- Semaphore telegraphs
- Signal flags
- Optical heliographs

# THE ELECTROMAGNETIC SPECTRUM

The **electromagnetic spectrum** is the range of frequencies (the **spectrum**) of **electromagnetic** radiation and their respective wavelengths and photon energies.



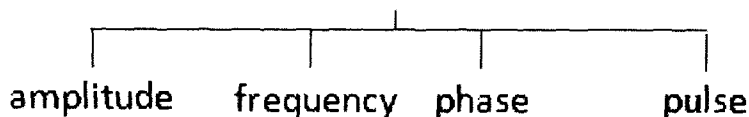
## Communication



### RADIO

**Radio**—is the technology of using radio waves to carry information, such as sound and images, by systematically modulating properties of electromagnetic energy waves transmitted through space, such as their amplitude, frequency, phase, or pulse width. Somehow it is a transmission and reception of electromagnetic waves of radio frequency, especially those carrying sound messages.

### Radio



Radio waves are a type of electromagnetic radiation with wavelengths in the electromagnetic spectrum longer than infrared light. Radio waves have the longest wavelengths in the electromagnetic spectrum.

### **Uses of Radio**

- Audio
  - One-way
  - Two-way (walkie-talkie)
- Telephony (GSM, CDMA)
- Video (NTSC)
- Navigation
- Radar (GPS/GLONAS)
- Data (digital radio)
- Heating
- Amateur radio service
- Unlicensed radio services
- Radio control (RC)



### **PSYCHOLOGY**

**Psychology** is the science of behavior and mind, including conscious and unconscious phenomena, as well as feeling and thought of human experiments. Sometimes it cures mentally illness problem.

### **CONFLICT**

**Conflict** is a serious disagreement or argument, typically a protracted one. Conflict is a difference of ideas or opinions. It is a natural and normal part of any activity.

- Withdrawing
- Smoothing
- Forcing

- Confronting
- Compromising

### **General cause of conflict**

- Poorly defined goals
- Divergent personal value
- Lack of cooperation trust
- Competition of scarce resources
- Unclear roles/ lack of job descriptions

### **Effects of conflict**

- Stress
- Absenteeism
- Staff turnover
- De-motivation
- Non-productivity

### **Conflict table**

- Competition (win-lose)
- Accommodation (win-win)
- Avoidance (lose-lose)
- Compromise (lose-lose)
- Collaboration (win-win)

### **Steps resolve the conflicts**

- Assure privacy
- Emphasize than sympathize
- Listen actively
- Maintain equity
- Focus on issue
- Avoid blame
- Identify key theme
- Encourage feedbacks
- Identify alternative solutions
- Give your positive feedback
- Agree on plans

## **Conflict events**

- Disagreements
- Debates
- Disputes
- Research

## **How to prevent conflicts**

- Frequent meeting of your team
- Allow your team to express openly
- Sharing objectively
- Having a clear and detail job description
- Distributing tasks fairly
- Never criticize team member publicly
- Always be fair and just with your team
- Being a role model

## **NEGOTIATION**

**Negotiation** is discussion aimed at reaching an agreement. It is a process by which compromise or agreement is reached while avoiding argument and dispute. Negotiations occur all the time in the business world, and they are often strategic in nature. In many cases, they require a good legal education and a good financial education so that the parties can understand each other, make sound decisions, and understand the potential consequences of those decisions<sup>11</sup>.

### **Types of negotiation**

- Professional negotiation
- Union negotiators
- Leverage buyout negotiators
- Peace negotiators
- Hostage negotiators
- Diplomats
- Legislators
- Brokers

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<sup>11</sup><https://investinganswers.com/financial-dictionary/businesses-corporations/negotiation-6040>



## **Negotiation styles**

- Accommodating
- Avoiding
- Collaborating
- Competing
- Compromising

## **Types of negotiation**

- Soft
- Hard
- Principled

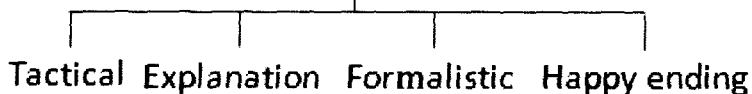
## **APOLOGY**

**Apology** is an act of saying that you are sorry for something wrong you have done or a regretful acknowledgement of an offence or failure.

### **Types of apology**

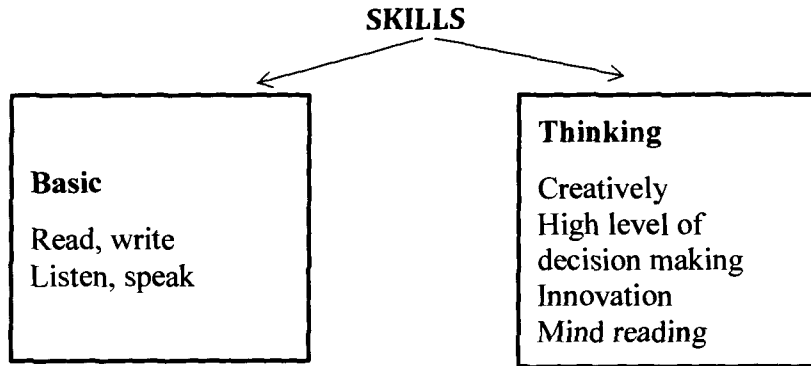
- I am sorry (exposing regret)
- I was wrong (accepting responsibility)
- What can I do to making it right (making restitution)
- I will try not to do that again (genuinely reporting)
- Will you forgive me (ask forgiveness)

## **Apology**



## **XXI Century Skills**

- Life skills & Career
- Digital literacy skills
- Learning & innovation skills



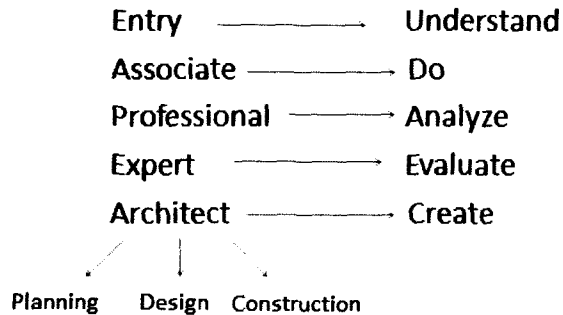
### **Features of Skills**

- Clever (intelligent)
- Conceptually skilled
- Creative
- Diplomatic and tactful
- Fluent in speaking
- Knowledgeable about group tasks
- Organized
- Persuasive
- Socially skilled
- Integrity
- Honesty
- Compassion
- Humility

### **PERSONAL PROFESSIONAL ABILITY**

**Personal professional ability** is a **skill** to do something well, a certain competence or proficiency. **Skills** are typically acquired or developed through direct experiences and training, and they can require sustained effort. Therefore, **personal skills** are simply those **skills** that you possess and consider your strengths.

## Personal Professional Ability



**Expert** is a someone widely recognized with reliable technique or skills at specific fields.

### **Expert by value of:**

- Credental
- Trainig
- Education
- Profession
- Publication
- Experience

## **BIOLOGICAL RHYTHMS**

Sleep is affected by biological rhythms or periodic physiological changes. Biological rhythms are regular, periodic changes in a body's functioning. There are three types of **biological rhythms**:

• **Circadian Rhythms**: biological cycles that occur about every twenty-four hours. Sleep follows a circadian rhythm. Hormone secretion, blood pressure, body temperature, and urine production also have circadian rhythms.

• **Infradian Rhythms**: biological cycles that take longer than twenty-four hours. For example, women's menstrual cycles occur about every twenty-eight days.

• **Ultradian Rhythms**: biological cycles that occur more than once a day. Sleep follows an ultradian rhythm of about ninety minutes

as well as a circadian rhythm. Alertness and hormone levels also follow ultradian rhythms.

**Circadian rhythms** are physical, mental and behavioral changes that follow a roughly 24-hour cycle, responding primarily to light and darkness in an organism's environment. Our biological clocks drive our circadian rhythms. These internal clocks are groupings of interacting molecules in cells throughout the body.

### **Features of Human Clock**

- 14:30** - Best coordination
- 15:30** - Fastest reaction time
- 17:00** - Greatest cardiovascular effect and muscle strength
- 18:00** - Highest blood pressure
- 19:00** - Highest body temperature
- 21:00** - Melatonin secretion starts
- 22:30** - Bowel movement suppressed
- 00:00** - Midnight
- 02:00** - Deepest sleep
- 04:30** - Lowest body temperature
- 06:45** - Sharpest risen blood pressure
- 07:30** - Melatonin secretion stops
- 08:30** - Bowel movement likely
- 09:00** - Highest testosterone secretion
- 10:00** - High alertness<sup>12</sup>

## **INTELLIGENCE**

Intelligence a very general mental capability or ability to reason, plan, solve problems think abstractly, comprehend complex ideas, learn quickly from experience.

### **Features of intelligence**

- one's capacity for logic

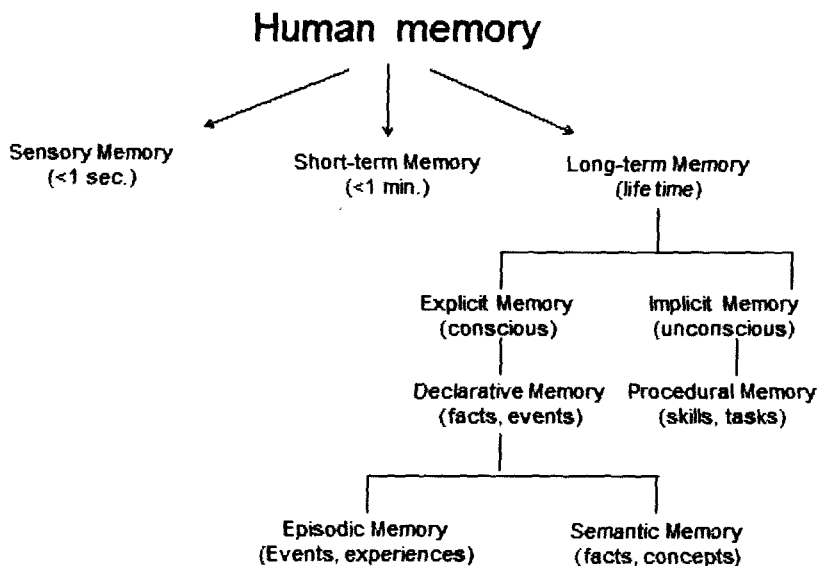
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<sup>12</sup><https://earthsky.org/human-world/cool-facts-about-your-biological-clock>

- abstract thought
- understanding
- self-awareness
- learning
- emotional knowledge
- memory
- planning
- creative solving

## MEMORY

According to the **Oxford dictionary** memory is the faculty by which the mind stores and remembers information.



Source: <http://www.human-memory.net/types.html>

According to the **Merriam-Webster dictionary** memory is the power or process of reproducing or recalling what has been learned and retained especially through associative mechanisms.

In fact memory is the faculty of the brain by which information is

encoded, stored, and retrieved when needed. Memory is vital to experiences; it is the retention of information over time for the purpose of influencing future action.

## **COGNITION**

According to the **Oxford dictionary** cognition is the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.

According to the **Merriam-Webster dictionary** cognition is cognitive mental processes.

In fact cognition is the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.

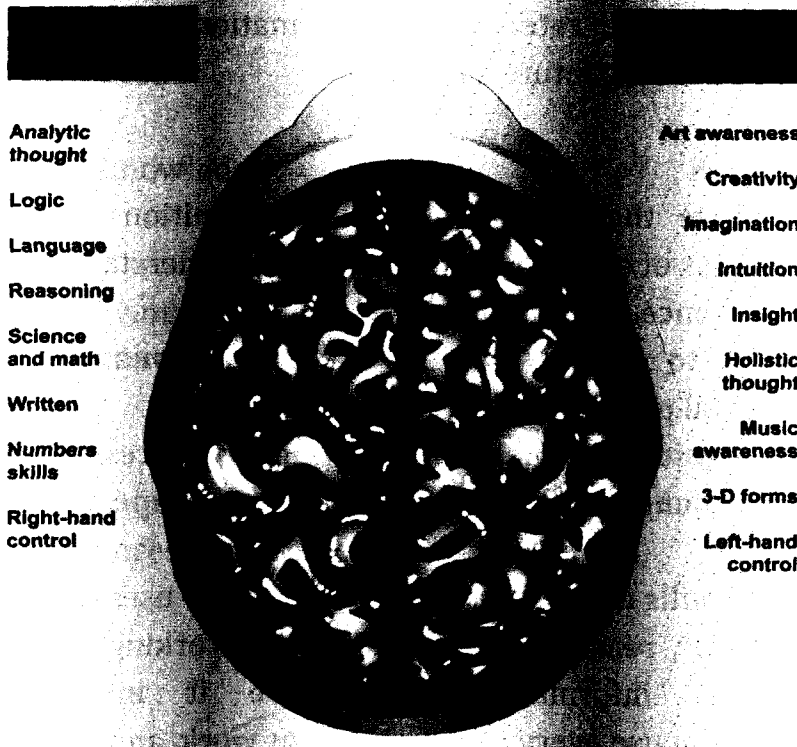
Cognitive skills are the core skills your brain uses to think, read, learn, remember, reason, and pay attention. Working together, they take incoming information and move it into the bank of knowledge you use every day at school, at work, and in life.

## **BRAIN**

The **human brain** is the central organ of the human nervous system, and with the spinal cord makes up the central nervous system.

It assembles the messages in a way that has meaning for us, and can store that information in our memory. The brain controls our thoughts, memory and speech, movement of the arms and legs, and the function of many organs within our body. The central nervous system (CNS) is composed of the brain and spinal cord.

## Left and Right Brain Functioning



*Source: <https://burningsoul.in/blog/Left-and-Right-Brain-Functioning.html>*

### MIND

According to the **Oxford dictionary** mind is the element of a person that enables them to be aware of the world and their experiences, to think, and to feel; the faculty of consciousness and thought.

According to the **Merriam-Webster dictionary** mind is the element or complex of elements in an individual that feels, perceives, thinks, wills, and especially reasons.

In fact mind is a set of cognitive faculties including consciousness, perception, thinking, judgment, language and memory.

# Human Mind

**Consciousness**

**Judgment**

**Perception**

**Thinking**

**Memory**

## **MNEMONIC**

According to the **Oxford dictionary** mnemonic is a system such as a pattern of letters, ideas, or associations which assists in remembering something.

According to the **Merriam-Webster dictionary** mnemonic is assisting or intended to assist memory.

In fact mnemonic is a memory device, is any learning technique that aids information retention or retrieval (remembering) in the human memory.

### **Examples of order mnemonics**

- Keyword Mnemonics
- Chunking as a Mnemonic Strategy
- Musical Mnemonics
- Letter and Word Mnemonic Strategies
- Rhymes as Mnemonic Strategies
- Making Connections as a Mnemonic Method
- Method of Loci Mnemonic Strategy
- Peg Method Mnemonics
- The Mnemonic Linking System (Stories or Images)

## **MIND MAPPING**

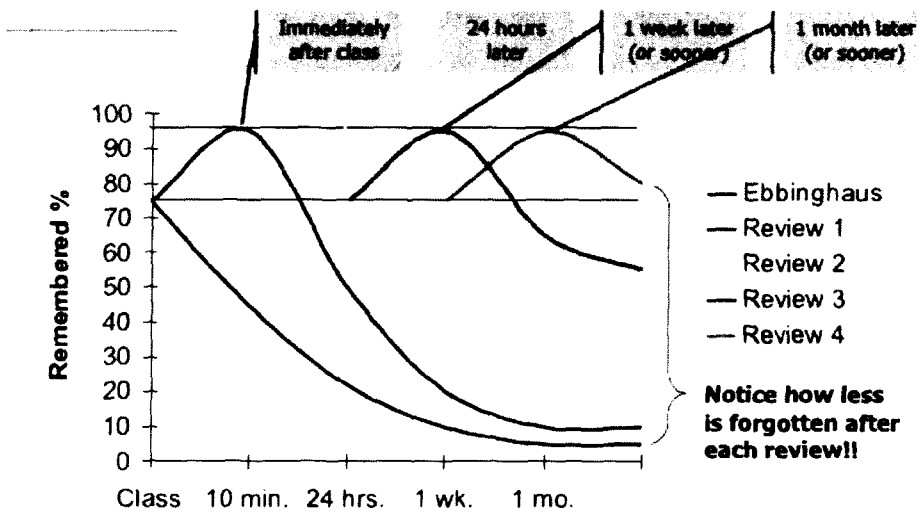
A **mind map** is a diagram used to visually organize information. A **mind map** is hierarchical and shows relationships among pieces of the whole. It is a visual thinking tool that can be applied to all cognitive functions, especially memory, learning, creativity and



analysis. Mind Mapping is a process that involves a distinct combination of imagery, color and visual-spatial arrangement. The technique maps out your thoughts using keywords that trigger associations in the brain to spark further ideas.

**Mind mapping** is a tool for the brain that captures the thinking that goes on inside your head. Mind mapping helps you think, collect knowledge, remember and create ideas. Most likely it will make you a better thinker.

### Essential Tips For Remembering And Revision



Source: <http://www.studyingwithdyslexiablog.co.uk/2018/01/essential-tips-for-remembering-and.html>

## TONY BUZAN MIND MAPPING LAWS

### Central theme

A central theme is placed in the center of a blank page. This is the title, the subject, a problem or just a thought. When thinking of something images automatically take form in your head. For example the image of a “colorful bunch of balloons” when thinking of “birthday”.

### Associations

From the central theme associations radiate out. Associations

directly from the central theme are called first level associations. Then second level associations are created, third level and so on. The brain thinks by imagination and association. When associations are created, connections are made. These connections are essential for remembering and thinking.

### **Curved lines**

Associations are often drawn as curved lines. They are curved rather than straight, because the brain likes curves.

### **Keywords**

Mind maps summarize information. Instead of sentences, ideally only single keywords are used. A single word per association gives more freedom, creativity and clarity.

### **Proximity**

The length of a word ideally matches the length of a curved line. That causes associated words to be in close proximity.

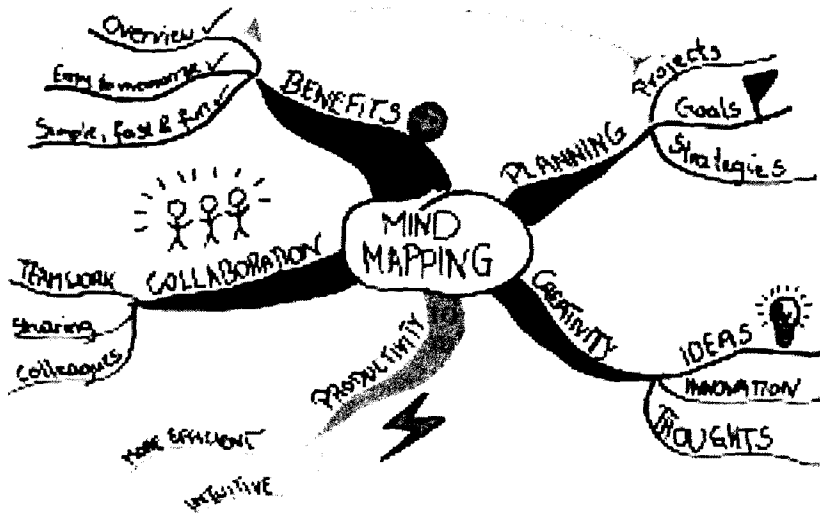
### **7 associations**

A mind map can have many first level associations, but the mind can only grasp about a maximum of 7.

### **Color & images**

The use of color is important in the mind map. Research shows that people who use color and images in their imagination, when they are learning, are better in remembering than those who don't.

## Mind Mapping Tony Buzan Cozy Ideas



Source:<http://dykesdodigital.org/what-is-mind-mapping/mind-mapping-tony-buzan-cozy-ideas/>

### FEATURES OF MIND MAPPING

- Mind Mapping = Digital Fasting Vs. Digital Amnesia;
- Mind Mapping is the Most Powerful Thinking Tool in the Universe;
- Mind Maps Mimic the Organic Brain Better Than Any Software.

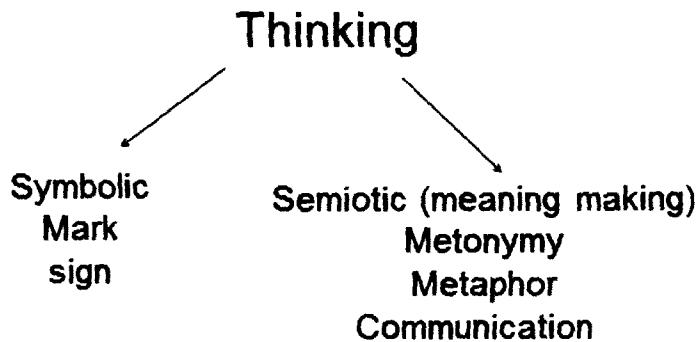
### THINKING

**Thought** encompasses an "aim-oriented flow of ideas and associations that can lead to a reality-oriented conclusion". Although thinking is an activity of an existential value for humans, there is no consensus as to how it is defined or understood. Thinking allows humans to make sense of, interpret, represent or model the world they experience, and to make predictions about that world. It is therefore helpful to an organism with needs, objectives, and desires as it makes plans or otherwise attempts to accomplish those goals.

## **RADIANT THINKING**

Like the brain when it is operating at its full power, "Radiant Thinking" through Mindmapping is:

- Multi-faceted
- Colorful
- Associative
- Multidimensional
- Verbal and Pictorial
- Imaginative and Analytical



### **Types of thinking**

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

**Types of thinking can be divided into several opposing categories**

- Concrete Thinking vs. Abstract Thinking
- Convergent Thinking vs. Divergent Thinking
- Creative Thinking vs. Analytical Thinking
- Sequential (linear) Thinking vs. Holistic Thinking

## **SEMIOTICS**

Semiotics (also called semiotic studies) is the study of sign process (semiosis). The semiotic tradition explores the study of signs and symbols as a significant part of communications. Different from linguistics, semiotics also studies non-linguistic sign systems. It is a branch of study meaning-making.

### **Branches of semiotics**

- Pragmatic
- Semantic
- Syntax
- Empiric
- Sign metonymy
- Indication metaphor
- Designationsymbolism
- Likeness signification
- Analogy communication

## **SQRRR**

SQRRR or SQ3R is a reading comprehension method named for its five steps: **survey, question, read, recite, and review**. The method was introduced by Francis P. Robinson, an American education philosopher in his 1946 book *Effective Study*. SQ3R will help you build a framework to understand your reading assignment.

### **Before you read, Survey the chapter**

- the title, headings, and subheadings
- captions under pictures, charts, graphs or maps
- review questions or teacher-made study guides
- introductory and concluding paragraphs
- summary

### **Question while you are surveying**

- Turn the title, headings, and/or subheadings into questions
- Read questions at the end of the chapters or after each

subheading

- Ask yourself, "What did my instructor say about this chapter or subject when it was assigned?"

- Ask yourself, "What do I already know about this subject?"

**Note:** If it is helpful to you, write out these questions for consideration.

This variation is called SQW3R

### **When you begin to Read**

- Look for answers to the questions you first raised
- Answer questions at the beginning or end of chapters or study guides

- Reread captions under pictures, graphs, etc.
- Note all the underlined, italicized, bold printed words or phrases

- Study graphic aids
- Reduce your speed for difficult passages
- Stop and reread parts which are not clear
- Read only a section at a time and recite after each section

### **Recite after you've read a section:**

- Orally ask yourself questions about what you have just read, or summarize, in your own words, what you read

- Take notes from the text but write the information in your own words

- Underline or highlight important points you've just read

- Reciting:

The more senses you use the more likely you are to remember what you read triple strength learning: Seeing, saying, hearing.

- Quadruple strength learning: Seeing, saying, hearing, writing!

### **Review: an ongoing process**

#### **Day One**

- After you have read and recited the entire chapter, write questions in the margins for those points you have highlighted or

underlined.

- If you took notes while reciting, write questions for the notes you have taken in the left hand margins of your notebook.

- Complete the form for a *critical reading review*

### **Day Two**

- Page through the text and/or your notebook to re-acquaint yourself with the important points.

- Cover the right hand column of your text/note-book and orally ask yourself the questions in the left hand margins.

- Orally recite or write the answers from memory.

- Develop mnemonic devices for material which need to be memorized.

Make flash cards for those questions which give you difficulty.

### **Days Three, Four and Five**

- Alternate between your flash cards and notes and test yourself (orally or in writing) on the questions you formulated.

- Make additional flash cards if necessary.

### **Weekend**

- Using the text and notebook, make a Table of Contents - list all the topics and sub-topics you need to know from the chapter.

- From the Table of Contents, make a Study Sheet/ Spatial Map.

- Recite the information orally and in your own words as you put the Study Sheet/Map together.

- As you have consolidated all the information you need for this chapter, periodically review the Sheet/Map so that at test time you will not have to cram.

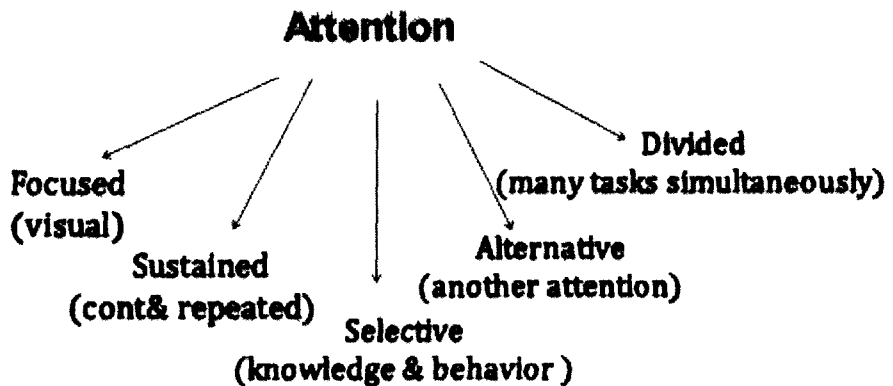
### **ATTENTION**

According to the **Oxford dictionary** attention is notice taken of someone or something; the regarding of someone or something as interesting or important. Another definition is the action of dealing with

or taking special care of someone or something.

According to the **Merriam-Webster dictionary** attention is the act or state of applying the mind to something. Another definition is a position assumed by a soldier with heels together, body erect, arms at the sides, and eyes to the front.

In fact attention is the action of dealing with or taking special care of someone or something.



## INTERPRETATION

According to the **Oxford dictionary** interpretation is the action of explaining the meaning of something or a stylistic representation of a creative work or dramatic role.

According to the **Merriam-Webster dictionary** interpretation is a particular adaptation or version of a work, method, or style. Sometimes it is a teaching technique that combines factual with stimulating explanatory information.

In fact interpretation is the act of explaining, reframing, or otherwise showing your own understanding of something.

## TYPES OF INTERPRETING

**Simultaneous Interpreting** is convert what is said in real-time. interpreter must translate the sentence into the target language while



simultaneously listening to and comprehending the next sentence.

**Consecutive Interpreting**, the speaker stops every 1–5 minutes (usually at the end of every “paragraph” or complete thought), and the interpreter then steps in to render what was said into the target language.

**Escort/travel interpreters** can behave almost as an assistant, helping clients to navigate while they are traveling around on (business) trips. These interpreters may accompany clients to a meeting or to a handful of meetings.

**Whisper interpreting** is similar to simultaneous interpreting but the interpreter does not use a headset or microphone, rather the interpreter sits next to the person (or group of people) who require interpreting and whispers or speaks softly while interpreting in the target language. This form of interpreting is much harder on the interpreter’s voice.

**Scheduled telephone interpreting** (also called OPI or Over-the-Phone Interpretation) can be either simultaneous or consecutive. This form of interpreting is performed during an established appointment where the interpreter does not see both parties in person, but executes the interpreting via telephone.

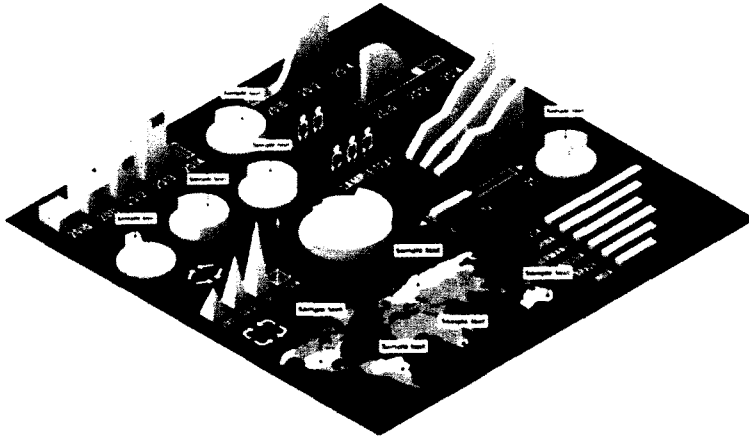
**On-Demand Phone Interpreting** is for individuals or organizations that need to communicate across language barriers immediately. This form of interpreting is performed when a party calls a service, selects the required language pair and is connected to an interpreter. The interpreter then comes on the line and interprets the conversation<sup>13</sup>.

## VISUALIZATION

According to the **Oxford dictionary** visualization is the representation of an object, situation, or set of information as a chart or other image. The formation of a mental image of something.

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<sup>13</sup> <http://www.languagescientific.com/6-major-types-of-interpreting/>



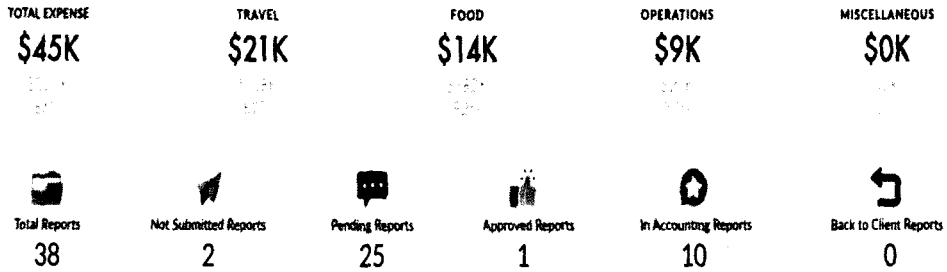
According to the **Merriam-Webster dictionary** interpretation is the act or process of interpreting in visual terms or of putting into visible form. Moreover it is the process of making an internal organ or part visible by the introduction (as by swallowing) of a radiopaque substance followed by radiography.

In fact visualization or visualization is any technique for creating images, diagrams, or animations to communicate a message. Visualization through visual imagery has been an effective way to communicate both abstract and concrete ideas since the dawn of humanity.

**Data visualization** refers to **the techniques** used to communicate **data** or information by encoding it as visual objects (e.g., points, lines or bars) contained in graphics. The goal is to communicate information clearly and efficiently to users. It is one of the steps in data analysis or data science.

## **STATISTICS**

**Statistics** is a branch of mathematics dealing with data collection, organization, analysis, interpretation and presentation. In applying **statistics** to, for example, a scientific, industrial, or social problem, it is conventional to begin with a **statistical** population or a **statistical** model process to be studied.



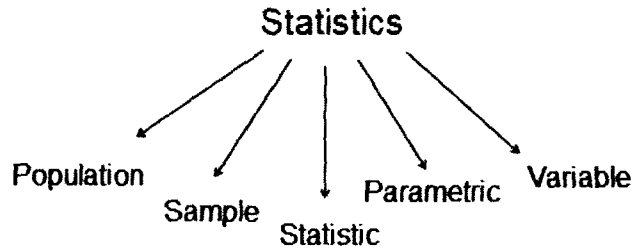
Expense-Rolling 12 Months



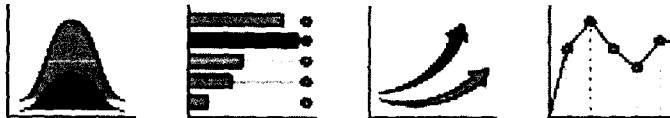
Recent Expense

Date	Expense category	Expenses
10/05/2016	Airline Fees	\$1,000
09/18/2016	Meal	\$50
09/13/2016	Gas	\$456
09/03/2016	Ground Transportation	\$1,600
09/02/2016	Shipping	\$6,700
08/24/2016	Airfare	\$2,000
08/24/2016	Entertainment	\$1,000

Employee Expenses - This Year



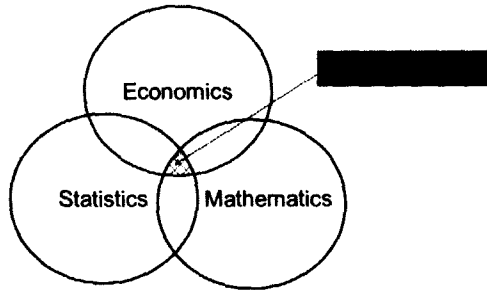
**Statistics** is a term used to summarize a process that an analyst uses to characterize a data set. If the data set depends on a sample of a larger population, then the analyst can develop interpretations about the population primarily based on the **statistical** outcomes from the sample.



## STATISTICS FOR DATA SCIENCE



# ECONOMETRICS

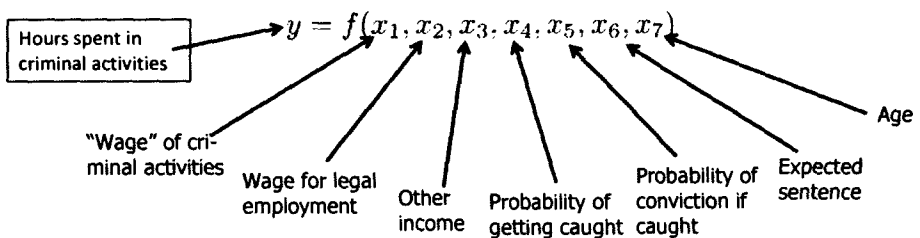


**Econometrics** is the application of statistical methods to economic data in order to give empirical content to economic relationships. More precisely, it is "the quantitative analysis of actual economic phenomena based on the concurrent development of theory and observation, related by appropriate methods of inference.

**Econometrics** may use standard statistical models to **study** economic questions, but most often they are with observational data, rather than in controlled experiments.

## THE NATURE OF ECONOMETRICS AND ECONOMIC DATA

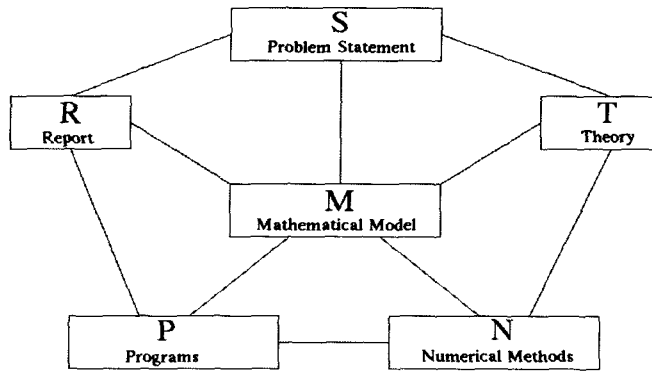
- Economic model of crime (Becker (1968))
  - Derives equation for criminal activity based on utility maximization



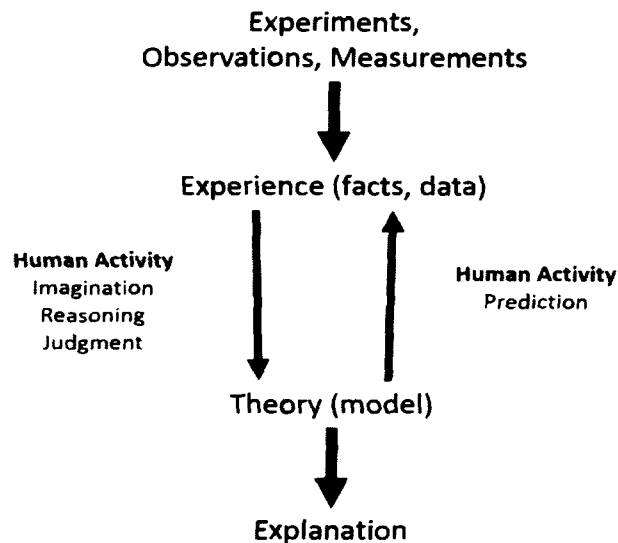
- Functional form of relationship not specified
- Equation could have been postulated without economic modeling

## MATHEMATICAL MODELING

**Mathematical modeling** is the art of translating problems from an application area into tractable mathematical formulations whose theoretical and numerical.



The model formulation **process** clarifies assumptions, variables, and **parameters**. The behavior of precise mathematical models can be analyzed using mathematical methods and computer simulations. Modeling is an experimental tool for testing theories and assessing quantities conjectures.

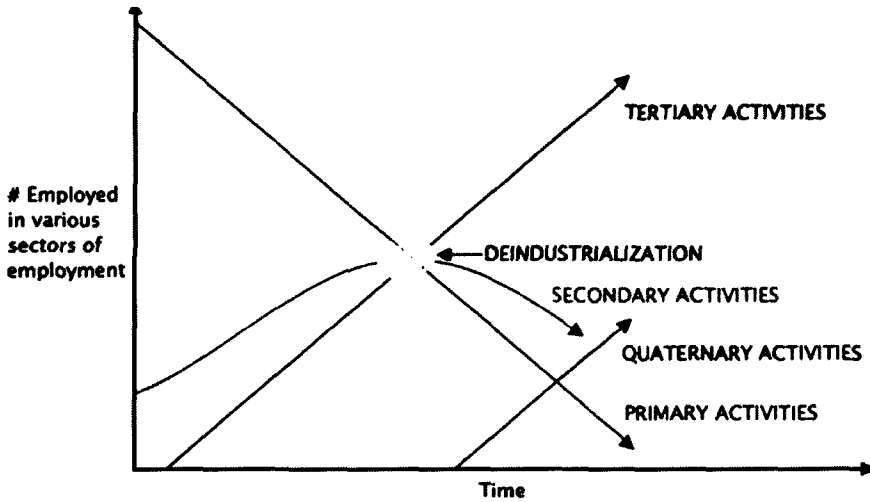


## EMPIRICAL ANALYSIS

**Empirical analysis** is an evidence-based approach to the **study** and interpretation of information. The **empirical** approach relies on real-world **data**, metrics and results rather than theories and concepts. Empiricism is the idea that knowledge is primarily received through experience and attained through the five senses.

## SECTORS OF ECONOMIC

A nation's economy can be divided into various sectors to define the proportion of the population engaged in different activities. This categorization represents a continuum of distance from the natural environment. The continuum starts with primary economic activity, which concerns itself with the utilization of raw materials from the earth, such as agriculture and mining. From there, the distance from natural resources increases. Many economists recognize the following five economic sectors.

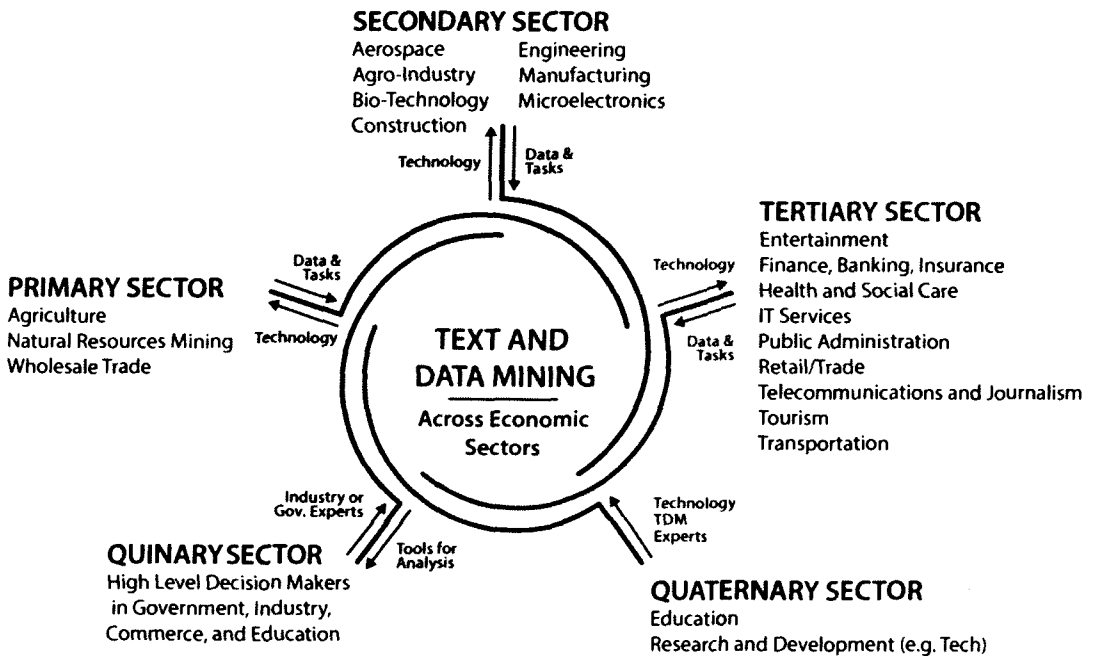


**Primary Activity Sector.** The primary sector of the economy extracts or harvests products from the earth. The primary sector includes the production of raw material and basic foods. Activities associated with the primary sector include agriculture (both subsistence and commercial), mining, forestry, farming, grazing, hunting and gathering, fishing, and quarrying. The packaging and processing of the raw material associated with this sector is also considered to be part of this sector.

**Secondary Activity Sector.** The secondary sector of the economy manufactures finished goods. All of manufacturing, processing, and construction lies within the secondary sector. Activities associated with the secondary sector include metal working

and smelting, automobile production, textile production, chemical and engineering industries, aerospace manufacturing, energy utilities, engineering, breweries and bottlers, construction, and shipbuilding.

**Tertiary Activity Sector.** The tertiary sector of the economy is the service industry. This sector provides services to the general population and to businesses. Activities associated with this sector include retail and wholesale sales, transportation and distribution, entertainment (movies, television, radio, music, theater, etc.), restaurants, clerical services, media, tourism, insurance, banking, healthcare, and law.



**Quaternary Activity Sector.** The quaternary sector of the economy consists of intellectual activities. Activities associated with this sector include government, culture, libraries, scientific research, education, and information technology. It includes the demand for the information-based services like taking the consultancy from tax managers, statisticians and software developers. The services involved in this type of economy are outsourced in varied forms as

the doctor' services, elementary schools and university classrooms, theaters, and brokerage firms. It also includes intellectual activities and services as research and development (R&D), media, culture, and information and communications technology (ICT). The workforce who is readily involved in this sector is typically well-educated, and people are often seen earning well through their participation in this industry.

**Quinary Activity Sector.** Some economists further subdivide the quaternary sector into the quinary sector, which includes the highest levels of decision making in a society or economy. This sector includes top executives or officials in such fields as government, science, universities, nonprofits, health care, culture, and the media. It may also include police and fire departments, which are public services as opposed to for-profit enterprises.

## **ENGINEERING**

**Engineering** the branch of science and technology concerned with the design, building, and use of engines, machines, and structures. One more definition for engineering is the application of knowledge in the form of science, mathematics, and empirical evidence, to the innovation, design, construction, operation and a discipline dedicated to problem solving.

Engineering

Mathematics

Science

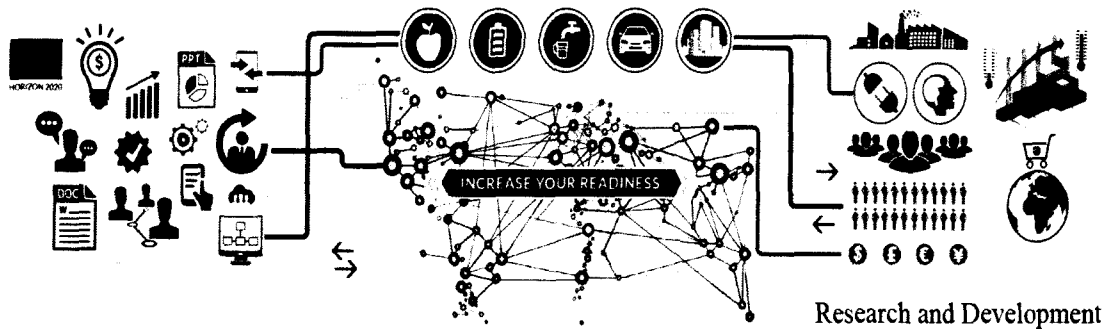
Economics

## **Research and Development**

Research and development (R&D) refers to the work a business



conducts for the innovation, introduction and improvement of its products and procedures. It is a series of investigative activities to improve existing products and procedures or to lead to the development of new products and procedures.



**Research and development (R&D)** aims to create new technology or information that can improve the effectiveness of products or make the production of products more efficient.

## GEOGRAPHY

**Geography** is the study of the shape and features of the Earth's surface, including countries, vegetation, climates and how humans use the world's resources.

### Types of geography

**1. Physical geography** is the branch of natural science which deals with the study of processes and patterns in the natural environment.

- Biogeography
- Climatology and meteorology
- Coastal geography
- Environmental geography
- Geodesy
- Geomorphology
- Glaciology
- Hydrography
- Landscape ecology

- Oceanography
- Pedology
- Palaeogeography

**2. Human geography** is the branch of geography that deals with the study of people and their communities, cultures, economies, and interactions with the environment by studying their relations with and across space and place.

- Cultural geography
- Development geography
- Economic geography
- Health geography
- Historical and time geography
- Political geography and Geopolitics
- Population geography and Demography
- Religion geography
- Social geography
- Transportation geography
- Tourism geography
- Urban geography

**3. Regional geography** is a major branch of geography. It focuses on the interaction of different cultural and natural geofactors in a specific land or landscape, while its counterpart, systematic geography, concentrates on a specific geofactor at the global level.

- Kiosk
- Newswagents
- Mall kiosk
- Newspapers
- Magazines
- Lighters
- Street maps
- Cigarettes
- Live and frozen bait

- Confections
- Paynet

## **MAP**

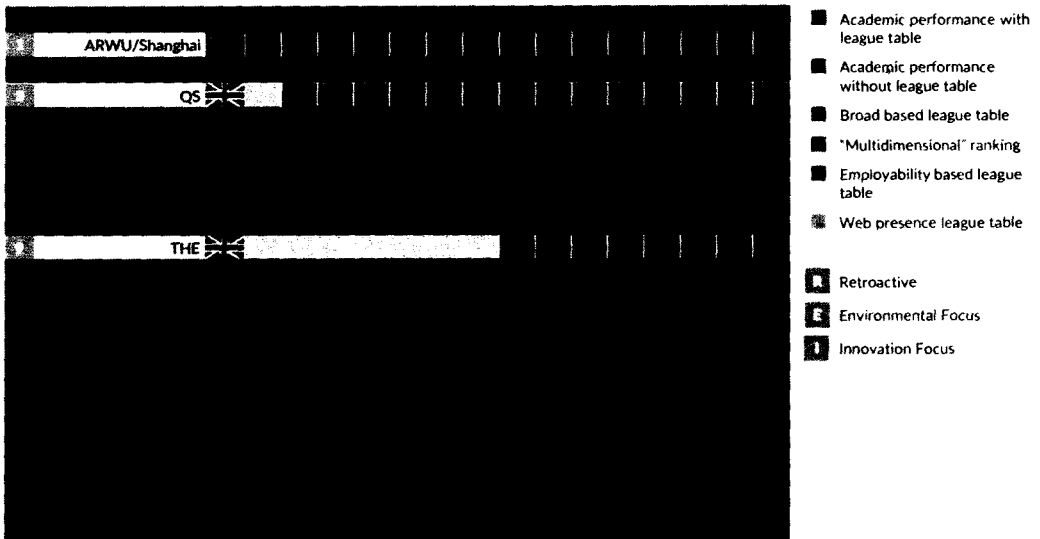
Map is a diagrammatic representation of an area of land or sea showing physical features, cities, roads, etc. A **map** is a symbolic depiction emphasizing relationships between elements of some space, such as objects, regions, or themes.

### **Types of map**

- Atlas
- Climate
- Physical
- Political
- Street
- Thematic
- Weather
- Relief
- World
- Mind

## CHAPTER II. GLOBAL UNIVERSITY RANKING

International university rankings evaluate the amount and impact of research conducted at institutions of higher education, the quality of teaching, the reputation of the institutions in question among researchers and employers as well as the extent of their international outlook. In a university ranking the evaluation is often condensed to one or a few scores. When evaluating research, the rankings typically measure only the number and citations of English-language publications, making it difficult for universities from non-English-speaking countries to reach the top positions. Despite their shortcomings, rankings have a significant impact on the international reputation and public image of universities. The University of Helsinki also monitors its performance in different rankings and seeks to improve it.



*Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-3.*

### PERFORMANCE INDICATOR AREAS

#### 1. Teaching (the learning environment)

- Reputation Survey – Teaching

- Academic Staff-to-Student Ratio
- Doctorates Awarded / Undergraduate Degrees Awarded
- Doctorates Awarded / Academic Staff
- Institutional Income / Academic Staff

## **2. Research (volume, income and reputation)**

▪ Reputation Survey – Research o Research Income / Academic Staff

- Publications / Staff (Academic Staff + Research Staff)

## **3. Citations (research influence)**

- Field Weighted Citation Impact

## **4. International outlook (staff, students and research)**

- Proportion of International Students
- Proportion of International Academic Staff
- International co-authorship (International Publications / Publications Total)

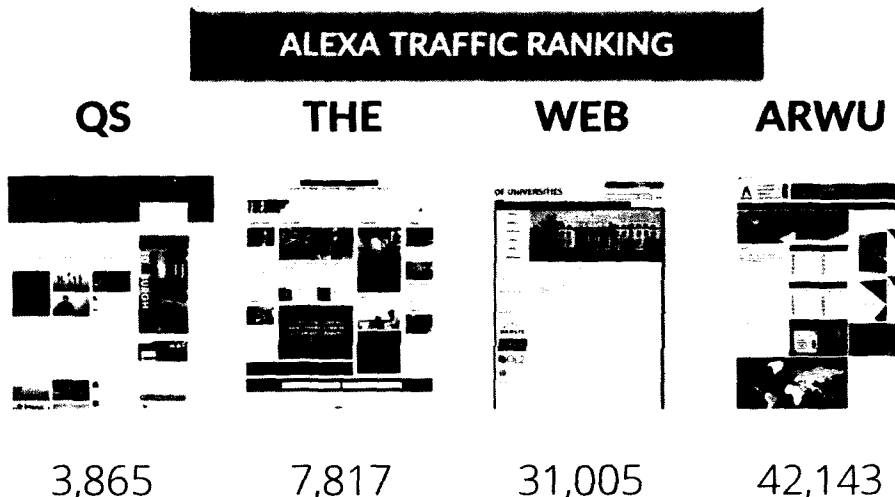
## **5. Industry income (knowledge transfer)**

- Research income from industry & commerce / Academic Staff

Alexa is a global ranking system that utilizes web traffic data to compile a list of the most popular websites, the Alexa Rank. The lower your Alexa rank, the more popular (for example, a site with the rank of 1 has the most visitors on the internet). Alexa itself has been around since 1996, but was shortly thereafter acquired by Amazon in 1999.

Initially, Alexa was a toolbar that needed to be installed in a web browser. Once the toolbar was installed Alexa had access to browsing history, and that data would be used to compile a list of the highest trafficked sites on the web. While some claimed this was the be-all end-all of ranking systems, there was criticism that the data being compiled was inaccurate due to the fact that it only compiled information from those who have installed the toolbar.

In response to this, in 2008 Alexa announced new practices in which they would not only use data from their toolbar, but thousands of other widgets, plug-ins and services.



Source: QS Intelligence Unit, *QS World University Rankings: Indicators & Processes*, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-6.

**QS World University Rankings** is an annual publication of university rankings by Quacquarelli Symonds (QS). Previously known as *Times Higher Education-QS World University Rankings*, the publisher had collaborated with *Times Higher Education magazine (THE)* to publish its international league tables from 2004 to 2009 before both started to announce their own versions. QS then chose to continue using the pre-existing methodology while *Times Higher Education* adopted a new methodology to create their rankings.

Previously published through Times Higher Education, the QS ranking is now independent and carries the name of its founding organisation, Quacquarelli Symonds. The indicators used in the QS ranking and their impact on the score are as follows:

- The university's reputation among academic researchers, 40%
- The university's reputation among employers, 10%
- Ratio of citations to academic staff, 20%
- Ratio of teachers to students, 20%
- Proportion of International students, 5 %

- Proportion of International staff , 5 %

The University of Helsinki has received its highest evaluations for the ratio of teachers to students and lowest for the number of international students. The new calculation method for the citation index, adopted in 2015, was unfavorable with respect to the University of Helsinki's strengths and caused the University's evaluation to dip. The QS ranking displays more annual fluctuation than the other rankings, since it places the main emphasis on subjective reputation surveys. The group of respondents in the reputation survey changes every year.

**Times Higher Education World University Rankings** is an annual publication of university rankings by *Times Higher Education (THE)* magazine. The publisher had collaborated with Quacquarelli Symonds(QS) to publish the joint *THE-QS World University Rankings* from 2004 to 2009 before it turned to Thomson Reuters for a new ranking system. The publication now comprises the world's overall, subject, and reputation rankings, alongside three regional league tables, *Asia*, *Latin America*, and *BRICS & Emerging Economies* which are generated by different weightings.

In its current iteration, the Times Higher Education ranking has been published since 2010. The ranking factors and their impact on the score are as follows:

**Teaching, 30%**

- Teaching Reputation survey: 15%
- Staff-to-student ratio: 4.5%
- Doctorate-to-bachelor's ration: 2.25%
- Doctorates-awarded-to-academic-staff ratio: 6%
- Institutional income per academic staff: 2.25%

**Research (volume, income and reputation): 30%**

- Reputation survey: 18%
- Research income per academic staff: 6%
- Research productivity (publication per academic staff): 6%

**Citations, 30%**

**Industry income per academic staff, 2.5%**

**International outlook (students, staff, article int. collaboration), 7.5%**

- Proportion of international students: 2.5%
- Proportion of international staff: 2.5%
- International collaboration: 2.5

Of the above indicators, the University of Helsinki has received its highest evaluations for citations and lowest for industry connections. THE ranking has been fairly stable. In 2015, the ranking switched from using the **Web of Science** publication database to the **Scopus** database, which was reflected in the results.

### **Web of Science**

**Web of Science** (previously known as **Web of Knowledge**) is an online subscription-based scientific citation indexing service originally produced by the Institute for Scientific Information (ISI), later maintained by Clarivate Analytics (previously the Intellectual Property and Science business of Thomson Reuters), that provides a comprehensive citation search. It gives access to multiple databases that reference cross-disciplinary research, which allows for in-depth exploration of specialized sub-fields within an academic or scientific discipline.

**Academic Ranking of World Universities (ARWU)**, also known as **Shanghai Rankin**, is one of the annual publications of world university rankings. The league table was originally compiled and issued by Shanghai Jiao Tong University in 2003, making it the first global university ranking with multifarious indicators. Published by **Shanghai Jiao Tong University**, the **Academic Ranking of World Universities** is based on indicators measuring the universities' research and historical reputations. The indicators and their impact on the score are as follows:

An alumnus or alumna of the university is a **Nobel** or **Fields**



laureate, 10%

- A researcher has received a Nobel prize or a Fields Medal while working at the university, 20%
- Citation indices of articles, 20%
- Articles in the journals Nature or Science, 20%
- Highly cited (top 1%) scientists, 20%
- Ratio of the above achievements to number of academic staff, 10%

The University of Helsinki has had the most success in the citation indices and the least in indicators related to the Nobel Prize and Fields Medal. This ranking is fairly stable, and the positions of universities tend not to change rapidly. Area- and field-specific versions also exist.

The **Webometrics Ranking of World Universities**, also known as **Ranking Web of Universities**, is a ranking system for the world's universities based on a composite indicator that takes into account both the volume of the Web contents (number of web pages and files) and the visibility and impact of these web publications according to the number of external in links (site citations) they received. The ranking is published by the Cybermetrics Lab, a research group of the Spanish National Research Council (CSIC) located in Madrid.

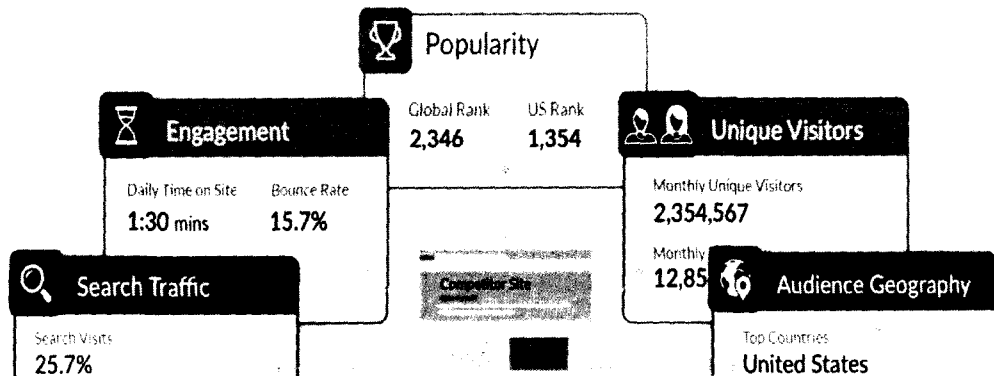
#### **US News Best Global Universities Ranking**

The **US News Best Global Universities Ranking** is the newest of important global rankings.

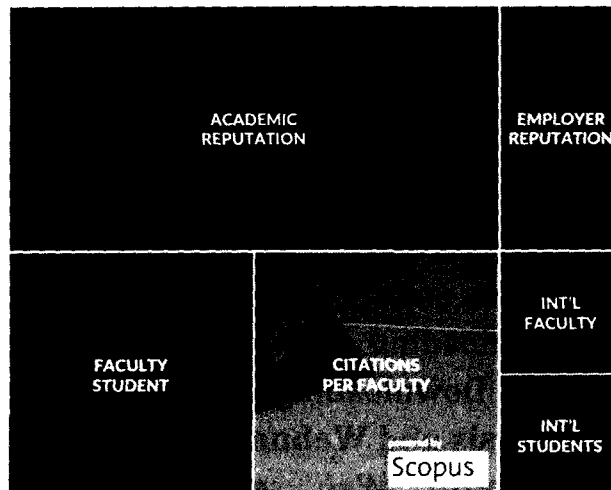
#### **US News: Indicators and Weights:**

- Global research reputation 12.5%
- Regional research reputation 12.5%
- Publications 10%
- Books 2.5%
- Conferences 2.5%
- Normalized citation impact 10%
- Total citations 7.5%

- Number of publications that are among the 10 percent most cited 12.5%
- Percentage of total publications that are among the 10 percent most cited 10%
- International collaboration 5 %
- Percentage of total publications with international collaboration 5%
- Number of highly cited papers that are among the top 1 percent most cited in their respective field 5%
- Percentage of total publications that are among the top 1 percent most highly cited papers 5%



- Consistent, simple methodology
- Stable results
- Discipline independent
- Language independent
- Low dependence on self-reporting



Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-7.

Webometric Analyst is a free Windows-based program for altmetrics, citation analysis, social web analysis and webometrics, including link analysis. It downloads data from the web through APIs or direct downloading and includes a wide range of processing options. This website contains brief usage instructions for the most popular features but many more options are available in the menus.

### **Altmetrics and Citation Analysis**

-**Altmetric / alternative indicator data sources:** Get data from **Mendeley** (reference manager), **Altmetric.com** (a range of altmetrics), Google Books, and WorldCat.

-**Web indicators:** syllabus mention searches, patent citation searches, presentation citation searches, grey literature searches, web citation and URL citation searches from the general web.

-**Indicator formulae:** Citation, web, Mendeley, Altmetric.com and alternative indicator calculations for research evaluation.

-**Free citation databases:** Dimensions API queries; Microsoft Academic searches and Microsoft Academic API key sign up instructions.

### **Social Web Analysis**

▪ **Social web data sources:** YouTube [see also network example], Twitter [see also networks, Twitter **images**, Tumblr

▪ **images** and timelines]and **Flickr**.

▪ Downloading and counting **tweeted images** or Tumblr images. Downloading Google Image Search images.

### **Link Analysis and Webometrics**

*For automatic Web searches in Webometric Analyst, please sign up for a Bing Cognitive Services v7 key first.*

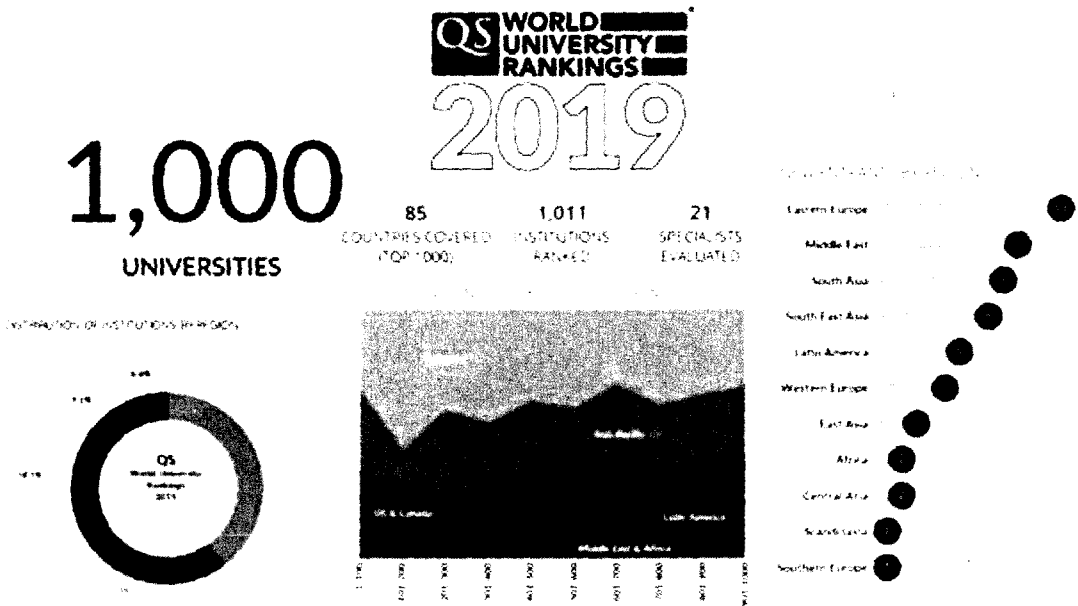
Webometric Analyst uses URL citations or title mentions instead of hyperlink searches for network diagrams, link impact reports, and web environment networks. See also the discussion of link analysis in Webometric Analyst.

- **Web Impact Reports** of the number of times each of a set of words, phrases or documents have been mentioned online.

- **Link (cite) Impact Reports** of the number of web pages and web sites that cite one or more web sites or pages.

- **Network diagrams** of the (cite) links between a collection of web sites.

- **Web Environment Networks** of an individual web site [Google custom search sign up].

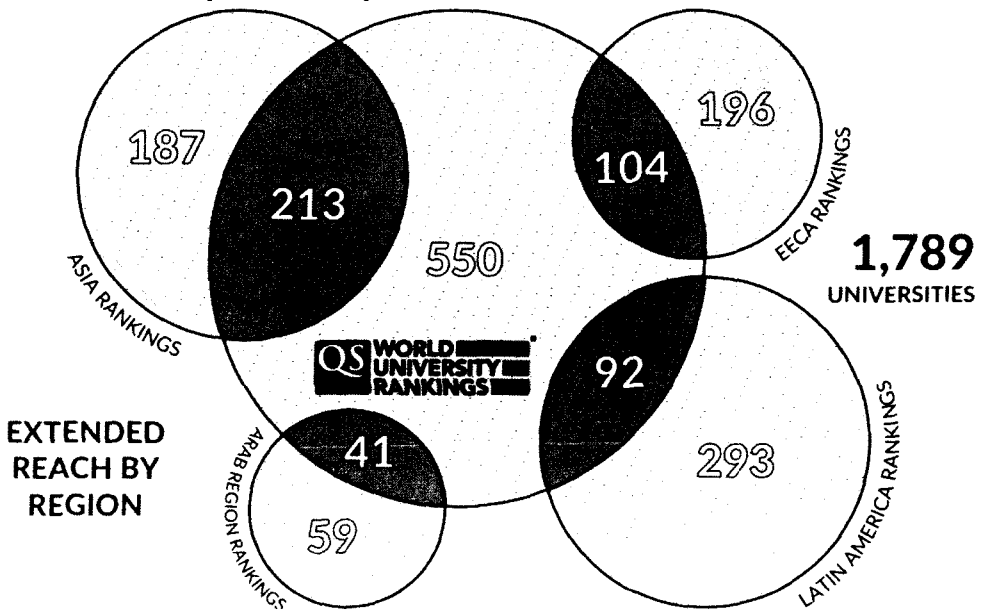


Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-7.

This year's list is led by two UK universities for the first time. The University of Oxford has achieved the first place for the second year in a row, while the University of Cambridge has jumped from fourth to second place. The California Institute of Technology and Stanford University are tied for the third place while the MIT is placed in the number 5 spot this year.

**THE World University Rankings 2018 Top 10**

1. University of Oxford
2. University of Cambridge
3. California Institute of Technology
4. Stanford University
5. Massachusetts Institute of Technology
6. Harvard University
7. Princeton University
8. Imperial College London
9. University of Chicago
10. ETH Zurich – Swiss Federal Institute of Technology Zurich
11. University of Pennsylvania



Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-10

RECEIVED ACADEMIC NOMINATIONS: DISTRIBUTION BY COUNTRY

**QS** WORLD UNIVERSITY RANKINGS

**2019**

**1,258,811**

ACADEMIC  
NOMINATIONS  
FROM

**83,877**

RESPONDENTS  
NOMINATING

**4,764**

UNIVERSITIES



## UZBEK UNIVERSITIES PROFILES IN QS-HUB

**Tashkent University of Information Technologies**

**Tashkent State Technical University**

**Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME)**

**National University of Uzbekistan**

**Gulistan State University**

**Uzbek State World Languages University**

**Tashkent State University of Uzbek Language and Literature named after Alisher Nava'i**

**Westminster International University in Tashkent**

**Samarkand Agricultural Institute**

**Tashkent Islamic University**

**Karakalpak State University**

**Tashkent Medical Academy**

**Tashkent State University of Economics**

**Tashkent Institute of Textile and Light Industry**

**Samarkand State University**

*Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-8.*

**Bibliometrics** is statistical analysis of written publications, such as books or articles. Bibliometric methods are frequently used in the field of library and information science, including scientometrics. For instance, bibliometrics are used to provide quantitative analysis of academic literature or for evaluating budgetary spending. Citation analysis is a commonly used bibliometric method which is based on constructing the citation graph, a network or graph representation of the citations between documents. Many research fields use bibliometric methods to explore the impact of their field, the impact of a set of researchers, the impact of a particular paper, or to identify particularly impactful papers within a specific field of research.

## Regional Scenario

COUNTRY	TOP 100	TOP 202	TOP 500	TOP 1000	TOP 5001	TOP 10006	WEBOMETRICS
Russian Federation			2	8	122	277	1172
Estonia			1	2	5	10	29
Belarus			1	1	9	27	57
Lithuania				1	12	14	43
Ukraine					31	115	326
Latvia					5	12	52
Kazakhstan					3	16	122
Georgia					3	8	62
Armenia					2	6	35
Moldova					2	6	26
Uzbekistan					1	4	71
Azerbaijan					1	4	48
Kyrgyzstan						3	38
Tajikistan							27
Turkmenistan							0
<b>TOTAL</b>	<b>100</b>	<b>202</b>	<b>500</b>	<b>1000</b>	<b>5001</b>	<b>10006</b>	<b>28077</b>

## RANKING WEB OF UNIVERSITIES UZBEKISTAN

### LEADING INFORMATION BANK

## How to Improve Your Institution's Academic Reputation

### 1. Invest in research

Research is crucial if a university or business school want to improve their reputation. You can work out what prospective perceive as your strengths and weaknesses. Based on these insights, you will be able to refine your brand message in an attempt to differentiate yourself from your competitors. To be a reputable institution in every field and have no flaws is impossible, so channel your unique qualities and niche areas through extensive research and utilization of key data.

## **2. Listen to the students**

It is important to get student opinion to improve reputation. Surveys are a great option. You want to ask plentiful questions that offer a wealth of useful data. It would help to have respondents rate other institutions they are considering on the same attributes for a meta-analysis. The repeat functionality of surveys represent an easy and efficient way to gather student opinion and facilitate the improvement of your institution's reputation.

## **3. Have an adaptable brand strategy**

Priorities student experience and academic offerings. You want to fulfill a higher educational 'brand promise' if you like. Don't fall behind. Keep your curricula updated to reflect the changing marketplace and dynamics in higher education.

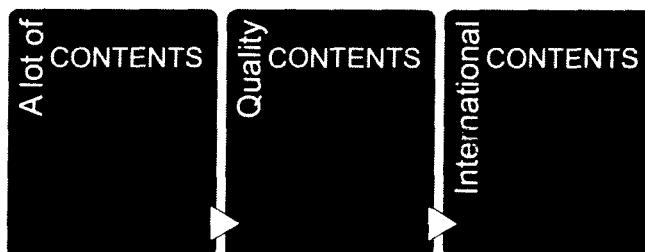
It is worth considering the growing impact of globalization. Not only has this brought about new academic subjects but institutions must accommodate for nontraditional students and an older student population. In order to strengthen brand positioning and reputation, your business school or university must attempt to successfully manage these changes.

## **4. Engagement**

Your brand strategy should also include improving your engagement levels. In higher education, creating a sense of belonging is vital for students. Do not neglect the necessity that is developing relationships with staff and administrators – not just with their peers.



This study from Stanford University backs this up, going as far as suggesting “satisfaction with the undergraduate experience is the single most essential pre-condition. Those who are not satisfied are, without exception, nondonors”. Students willing to donate would hold that specific institution in high accord.



## **TOP 20 WAYS TO IMPROVE YOUR WORLD UNIVERSITY RANKING**

### **1. To change a university, you need to change people's incentives**

The average academic or administrator in a university is completely unaware of your university's strategy document. If they have seen it, they think it is waffle. So if your strategy is supposed to change behavior, you have to provide new incentives for your staff, and monitor performance from the top.

### **2. To attract the best faculty, you need the best leaders**

If raising or maintaining research quality is part of the strategy, hire the best scholars you can and put them in positions of power - pro vice-chancellor for research, dean or head of department.

The best universities and business schools have been shown to hire the best scholars as their heads. The probable reason is that other great scholars will choose to be there because the culture and values of the place will likely be more amenable under a fellow researcher.

### **3. Control quality through hiring panels**

The vice-chancellor is the standard bearer, and, therefore, he or she should set the quality threshold in the institution. If you want good hires to be made, then control the process yourself. A head will, and should, delegate, but only after those receiving the delegated powers have proved themselves. Make sure the very best researchers are on

#### **4. Hire the best**

Again, the vice-chancellor should create and drive this process, and be available to talk to potential hires personally, as should the pro vice-chancellor for research and the head of the recruiting department.

As mentioned earlier, the vice-chancellor should sit on major hiring panels or, at the very least, review the candidates. If the university head isn't able or prepared to control the people who join and leave, then the game is lost.

#### **5. Know the talent list and congratulate people**

It is inconceivable that a successful commercial organization would not be fully aware of its most talented staff. Find out who they are in your university - researchers, teachers and administrators.

Make sure that people on the ground let the vice-chancellor know when someone does something commendable. Then send a congratulatory note.

#### **6. No pain, no gain**

If you want to change an organization, it is going to hurt. If you just want an easy ride for a few years before you get a pension, then don't bother with a strategy for change. The leader, board members, junior faculty and some of the top people may think that moving up in the rankings is a great idea. But it is unlikely that everyone else will. We all tend to prefer the status quo.

#### **7. Too much change, no gain**

Too much organizational change drives people mad. University strategy is usually initiated and led by the vice-chancellor. Leaders

should have control of the strategy and the concomitant powers to make it happen. But a head may stay in post for only a few years. So to avoid the institution's strategy flip-flopping each time a new leader arrives, the board should attempt to bear overall responsibility for it.

### **8. Pay a top salary if you want the right department head**

There aren't many more important posts in a university than the position of head of department. Pulling teeth from an angry dog is easier than hiring good heads of department. A university should be prepared to pay a decent salary for the privilege of a top-notch department head. Offer a lot more than one term's sabbatical leave, often spent in rehab!

### **9. Incentivize raising research money**

All new vice-chancellors or presidents do the rounds of departments when they arrive. It is a rare thing when "we want to raise more research money" is not top of their list. What doesn't get said, however, is why members of a department should do it when there is rarely any mention of incentives. If you want more research money raised in the university, offer to give something back in return.

### **10. Cut the red tape and reduce the number of committees**

How often have we heard this said, and how often does it happen?

Red tape really does cause a lot of damage in our universities. It slows everything down, affects innovation, weakens motivation, reduces research time and, therefore, quality. Bureaucracy can also be a deterrent when trying to keep good staff. Administrative processes have ballooned. We have got to stop the tail wagging the dog.

### **11. As a leader, be accessible**

Not just to your top team. Have a policy of hearing what others are trying to say.

Be able to take bad news, too. You have made it to the top and that is quite something. Now you can have a little humility and make

others feel good about themselves. There's nothing better than being told that what you do makes a contribution. So what if Professor X has a massive ego?

## **12. Clarify the relationship between administrative and academic staff**

How many times have we heard academics and administrators moan about each other - even registrars make jokes about academics in large administrative meetings? The core business of a university - research and teaching - does not exist without academics. This should be explained. It rarely is.

## **13. Start to train scholars in management when they are young**

If, as I have argued, good scholars make the best leaders in universities, then potential scholar-leaders need to be trained early in their careers.

Much management education is viewed as overly long-winded and not tailored to the needs of academics. Young scholars have almost no incentive to go on these types of courses, because they are viewed as being detrimental to their research careers.

## **14. Pick your board or council members because - and only because - they are good for the university, and then educate them**

The former head of one of America's most famous universities once told me: "Private universities are much better at selecting boards. They only choose people who are deemed to be good for the university."

Is that true of your board or council members?

A second important question is: do your board members really understand the business of universities? Do they know what your university does best?

## **15. Tell Government 'No!'**

University leaders are the vanguard of the sector. If they lie

down, the tanks roll in. There is no other protection. Being a vice-chancellor is without a doubt the hardest job in higher education. But it is depressing when we hear that universities will have to pay for the mess caused by the City.

#### **16. Give staff food for their tummies as well as thought**

The importance of good food cannot be overestimated. How often do we hear the words “we want to encourage interdisciplinary”? Where are these disciplines supposed to meet each other? Rarely are there good-quality restaurants in UK universities - places that openly encourage academics to meet with each other (or with academic-related staff). Usually they are embarrassing!

#### **17. Hire a scholar as leader**

The evidence from my research shows that the best universities are led by outstanding scholars and also that better scholars improve the future performance of universities. Of course leaders must be good managers with experience of leadership, but that should be assumed.

#### **18. Make sure the leader stays at least five years - and preferably more**

A university leader who is in post for much less than five years is unlikely to have the institution’s best interests at heart. In my research, those universities that performed the best in the research assessment exercise were led by scholars whose tenure was between seven and ten years.

#### **19. Give the leader plenty of power (or don’t bother hiring one)**

Leaders need power if they are to be effective. Don’t force them to go through loads of committees before a decision can be made. Give a leader power and his or her own modest pot of money, but ensure that you have a decent chair of the board or council acting as overseer.

#### **20. Let the leader pick his or her own top team**

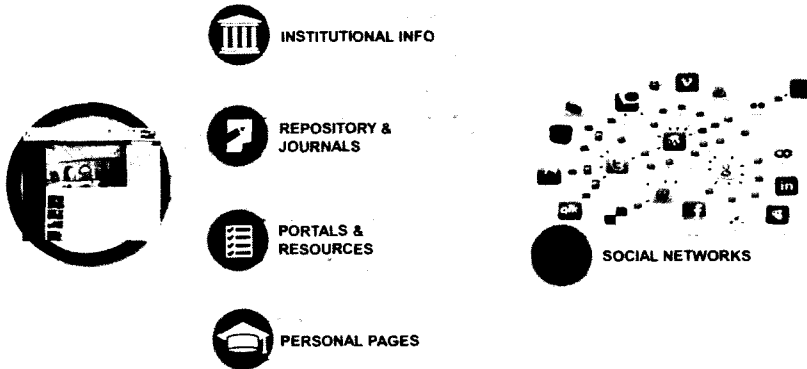
A university head must have the power to pick his top management team.

The vice-chancellor should, if possible, select the top team within the first few months of being in post.

## DEFINING STRATEGY

UNIVERSITY WEBDOMAIN

EXTERNAL WEBSITES



## FINAL COMMENTS ON SHAPING YOUR UNIVERSITY IN THE WEB

### STRATEGY OF IMPROVING UNIVERSITY RANKING

**Publish high quality content:** with Elsevier's rigorous peer review process and publishing expertise, the quality of the content will be maximized, just like with an original research paper. Publishing in a society journal or a high impact publication further strengthens the perceived quality.

**Increase visibility:** the Supplements published on ScienceDirect are available to millions of visitors. With cutting-edge search and recommendation technology, the content will be discoverable to new audiences. It will also be indexed in major databases and, for many journals, included in an open archive after a specified period.

**Publish content:** Supplements are a vehicle for education, giving you the chance to share information under an established journal brand, in association with your own brand.

**Track your impact:** Elsevier provides metrics at the article level,

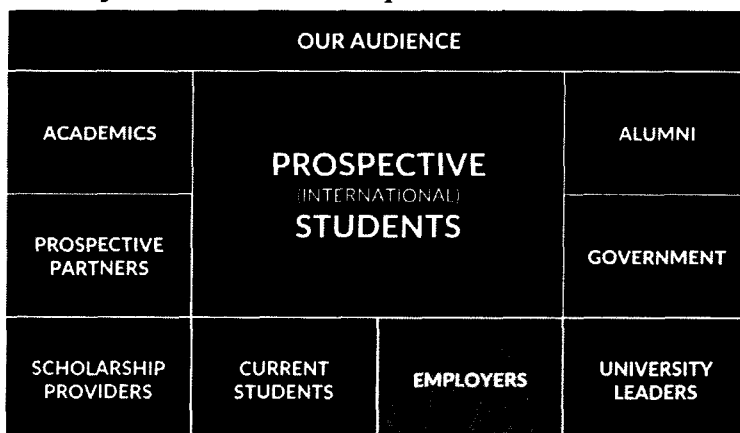
so you can see how your Supplement is being used.

### WHAT IS NECESSARY?

- Presence of a profile in Scopus
- Correction of Scopus authors profiles
- Regular monitoring of citations and publications.
- Control of international cooperation

### BIBLIOMETRIC AUDIT

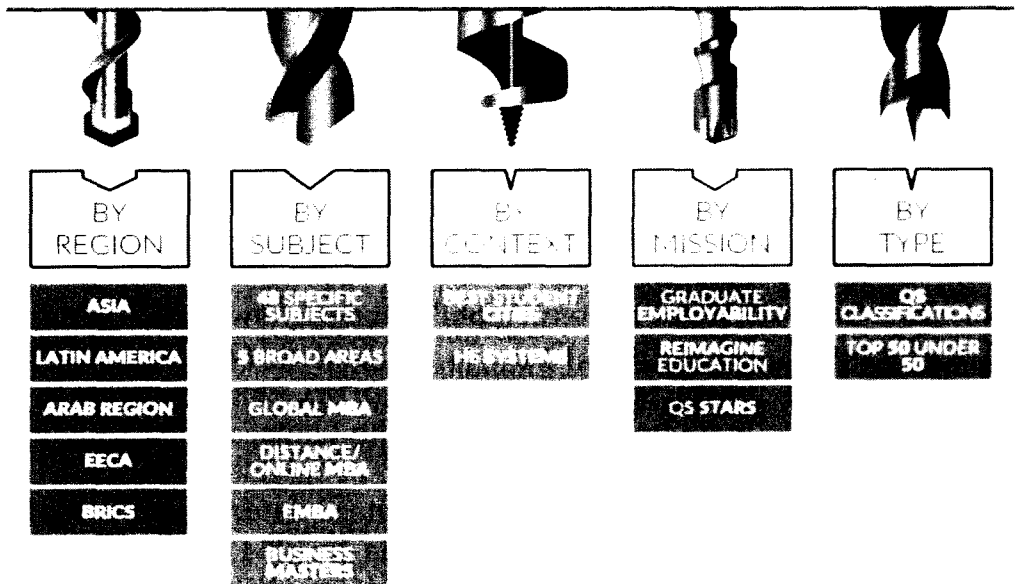
- Collection and audit of publications
- compiling a register of teachers
- Search and add to organization profile
- Control of subsequent publications.
- Availability of a dedicated department



### QS-Part of Solutions

*Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-2*

-  #1 player in Higher Education Rankings – only rankings used by Chinese Government in their World Class University Assessment Audit as well as Ministry of HCD India
-  #1 player in Higher Education Student Recruitment events - >350 events in 57 countries & over 250,000 candidates per annum
-  #1 player in Higher Education Online Portals – over 65million visitors in 2017
-  #1 Outsource Enrolment Solutions provider supported by 2 million International Students in our global database
-  #1 dedicated higher education research house - QSIU
-  Regional Conferences and branding solutions, including Wharton-QS Reimagine Education Awards
-  Mobility, Partnership and Application Management Software
-  1200 Higher Education clients and 94% re-booking rate in 2017



Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-9



## Summary of future higher education opportunities for global engagement (2020)

<b>International tertiary education opportunity</b>	<b>Future opportunities</b>
International student mobility	<ul style="list-style-type: none"> <li>• Largest outbound mobile student flows by origin (2020): China (585k), India (296k), South Korea (134k), Germany (100k), Turkey (84k), Malaysia (82k), Nigeria (67k)</li> <li>• Fastest growing (absolute) outbound mobile student flows (next decade): India (71k), Nigeria (30k), Malaysia (22k), Nepal (17k), Pakistan (17k), Saudi Arabia (16k), Turkey (13k)</li> <li>• Largest inbound mobile student flows by destination (2020): US (582k), UK (331k), Australia (277k), Canada (176k), Germany (155k) – China and Malaysia are also likely to feature here</li> <li>• Fastest growing (absolute) inbound mobile student flows (next decade): Australia (51k), UK (28k), US (27k), Canada (23k) – again China will surely feature here</li> <li>• Major bilateral mobile student flows (2020): India to US (118k), China to US (101k), China to Australia (93k), South Korea to US (81k), China to Japan (64k), India to UK (59k) – flows to China, and possibly India also</li> <li>• Fastest growing (absolute) bilateral mobile student flows (next decade): India to UK (20k), India to US (19k), China to Australia (17k), Nigeria to UK (14k), India to Australia (11k) – flows to China, and possibly India also</li> <li>• Fastest declining (absolute) bilateral mobile student flows (next decade): China to Japan (-14k), Japan to US (-8k), China to US (-8k), China to UK (-7k), Kazakhstan to Russia (-5k), Greece to UK (-4k) – the impact of China's aggress</li> </ul>

<p>Size and growth of domestic tertiary education systems</p>	<ul style="list-style-type: none"> <li>• Largest tertiary enrolment levels (2020): China (37.4m), India (27.8m), US (20.0m), Brazil (9.2m), Indonesia (7.7m), Russia (6.3m), Japan (3.8m), Turkey (3.8m), Iran (3.8m), Nigeria (3.6m)</li> <li>• Fastest growing (absolute) tertiary enrolment growth (next decade): India (7.1m), China (5.1m), Brazil (2.6m), Indonesia (2.3m), Nigeria (1.4m), Philippines (0.7m), Bangladesh (0.7m), Turkey (0.7m), Ethiopia (0.6m) – growth in certain markets could be larger still if ambitious international student recruitment targets are met</li> <li>• Largest falls in outbound mobile students (next decade): Japan (-10k), Greece (-10k), Poland (-8k), Singapore (-6k), Russia (-6k), Germany (-2k) – China is one to watch here given its demographic outlook and ambitious domestic tertiary sector expansion plans</li> </ul>
<p>TNE</p>	<ul style="list-style-type: none"> <li>• Dual and joint degrees: China, US, France, India, Germany</li> <li>• Franchising and validation: Asia, Latin America, possibly Africa (Nigeria)</li> <li>• Branch campuses: Far East, possibly Middle East</li> <li>• Online: Gulf countries, Asia, possibly Scandinavia</li> </ul>
<p>Academic international research collaboration</p>	<ul style="list-style-type: none"> <li>• Largest growth in research output: Volume growth to be driven by collaborations involving US and Chinese institutions</li> <li>• Highest collaboration rates: Research collaboration rates are higher in many smaller countries, such as Switzerland and Belgium (50–70%); they are lower in China (around 15%). Overall opportunity for collaboration depends on both the volume of research and propensity to collaborate</li> <li>• Highest average citation impacts: Switzerland, Netherlands, Denmark and US – collaborating with these countries in theory should help to maintain and increase research average citation impacts</li> <li>• Three core opportunity groups: Specifically for the UK, future growth in collaborations likely to be with (i) the US and other established high volume research</li> </ul>

	<p>leaders (Germany, France, Italy, Canada, Australia); (ii) high average citation impact leaders (also Switzerland, Netherlands, Denmark) and niche opportunities in smaller, technology-intensive countries such as the Nordic countries, Switzerland and Israel; and (iii) a chance to tap into rapid research output growth in key emerging markets, most notably China but also Malaysia, Iran, Saudi Arabia, India and Qatar</p>
<p>Business international research collaboration</p>	<ul style="list-style-type: none"> <li>• Large companies: Growth in collaboration opportunities with multinationals; large US, European, Chinese, Indian and Latin American companies; niche opportunities in research and technology-intensive countries e.g. Israel, Switzerland, learn from approach in Nordic countries, Netherlands. Opportunities in countries with high tertiary sector-large firm innovation collaboration rates (e.g. Finland, Sweden) and unexploited opportunities in countries with low tertiary sector-large firm innovation collaboration rates (e.g. Brazil, UK, Spain, Italy)</li> <li>• Smaller companies: Further growth opportunities in small and medium enterprises (SME) collaboration rates for research and development (R and D), focused on niche, high-value technology areas and/or links to multinational supply chains. Opportunities in countries with high tertiary sector-SME innovation collaboration rates (e.g. Finland, Belgium, UK) and unexploited opportunities in countries with low tertiary sector-SME innovation collaboration rates (e.g. Brazil, Italy)</li> <li>• Leading countries in internationally-filed patent application: Japan, US, South Korea and in volume terms, China and India</li> <li>• Innovation: Continuing promotion of open innovation models, with fluid collaboration between business and the higher education sector</li> </ul>

## FUTURE HIGHER EDUCATION OPPORTUNITIES FOR GLOBAL ENGAGEMENT – TOP COUNTRY LISTINGS (2020)

Rank	Domestic tertiary education system		International student mobility – outbound		International student mobility – inbound	
	Size	Growth	Size	Growth	Size	Growth
	2020	Next decade	2020	Next decade	2020	Next decade
1	China	India	China	India	US	Australia
2	India	China	India	Nigeria	UK	UK
3	US	Brazil	South Korea	Malaysia	Australia	US
4	Brazil	Indonesia	Germany	Nepal	Canada	Canada
5	Indonesia	Nigeria	Turkey	Pakistan	Germany	
6	Russia	Philippines	Malaysia	Saudi Arabia	France	
7	Japan	Bangladesh	Nigeria	Turkey	Japan	
8	Turkey	Turkey	Kazakhstan	Iran	Russia	
9	Iran	Ethiopia	France	Zimbabwe	See point a	
10	Nigeria	Mexico	US	Angola		

### Global higher education sector today – key facts.

**Tertiary enrolments**– 170 million globally in 2009, with just four countries (China, India, US and Russia) accounting for 45 per cent of the total; growth has averaged five per cent per annum (the world’s 18–22 age population over the same period grew by one per cent per annum, implying a significant rise in the global gross tertiary enrolment ratio).

**International student mobility**– 3.5 million mobile students in 2009, up from 800,000 in the mid-1970s; global tertiary mobility rate stable at two per cent since early 1990s; major countries where inbound mobile students exceed outbound mobile students are the US, UK, Australia, France, Germany, Japan, Russia, South Africa and Canada; major countries where outbound mobile students exceed inbound mobile students are China, India, South Korea, Kazakhstan, Turkey, Morocco and Vietnam.

**TNE** – globally some 200 branch campuses now exist around the world, serving around 120,000 students, with 37 more set to open by 2013; UAE remains the most popular host country (with 37 campuses), and the US by far the most popular source (accounting for

78 campuses worldwide); more than 500,000 students in 2010–11 studying entirely overseas for a degree delivered in full or in part by a UK institution.

**Academic international research collaboration**– largest producers of collaborative research articles in 2010 are the US (143,000 in 2010), UK (62,000), Germany (58,000) and China (47,000); international collaboration rate is highest in Switzerland (62 per cent). Business international research collaboration – rates of joint-working on research and development (R and D) between large companies and universities are highest in Finland, at 70 per cent (compared to 25 per cent in the UK)

### **GLOBAL HIGHER EDUCATION SECTOR TO 2020 – KEY FACTS**

**Tertiary enrolments**– forecast to rise across most countries to 2020, but at a slower rate than previous decades (1.4 per cent per annum compared to 5–6 per cent per annum); 21 million additional tertiary enrolments by 2020; Chinese growth significantly down but still second largest absolute increase behind India; other emerging economies with significant forecast growth in tertiary enrolments over the next decade include: Brazil (+2.6 million), Indonesia (+2.3 million), Nigeria (+1.4 million), Philippines (+0.7 million), Bangladesh (+0.7 million), Turkey (+0.7 million) and Ethiopia (+0.6 million).

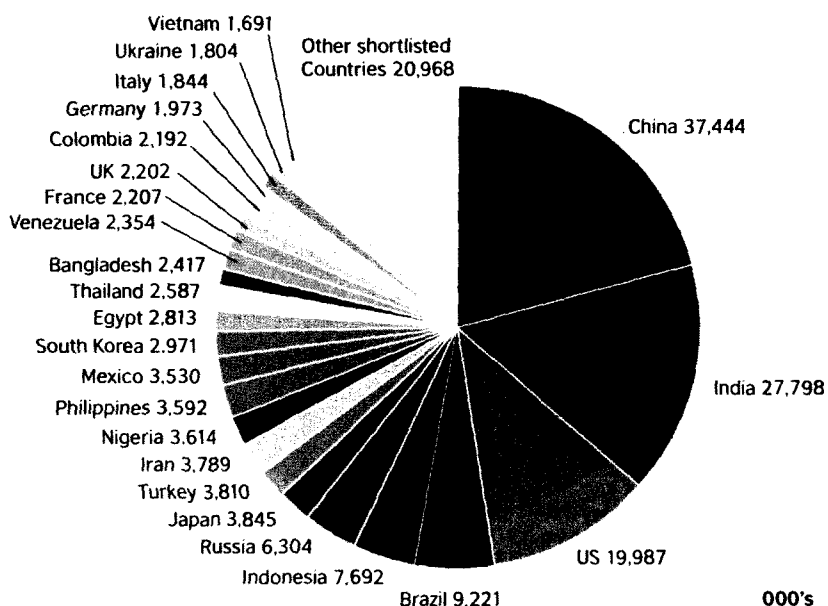
**International student mobility**– largest numbers of mobile students in 2020 expected to be from China (585,000), India (296,000), South Korea (134,000), Germany (100,000), Turkey (84,000), Malaysia (82,000) and Nigeria (67,000); largest increase from India (+71,000 from 2011), followed by Nigeria, Malaysia, Nepal, Pakistan, Saudi Arabia and Turkey.

**TNE – Asia and Middle East** to continue to offer strongest growth opportunities; legal, political and institutional frameworks in host countries a key driver, alongside tertiary enrolment demand.

**Academic international research collaboration**– largest recent growth in collaborative articles in the US (+78,000 since 2000)

and China (+40,000); growth to 2020 expected to be driven by high volume markets, with China matching the US by the end of the decade.

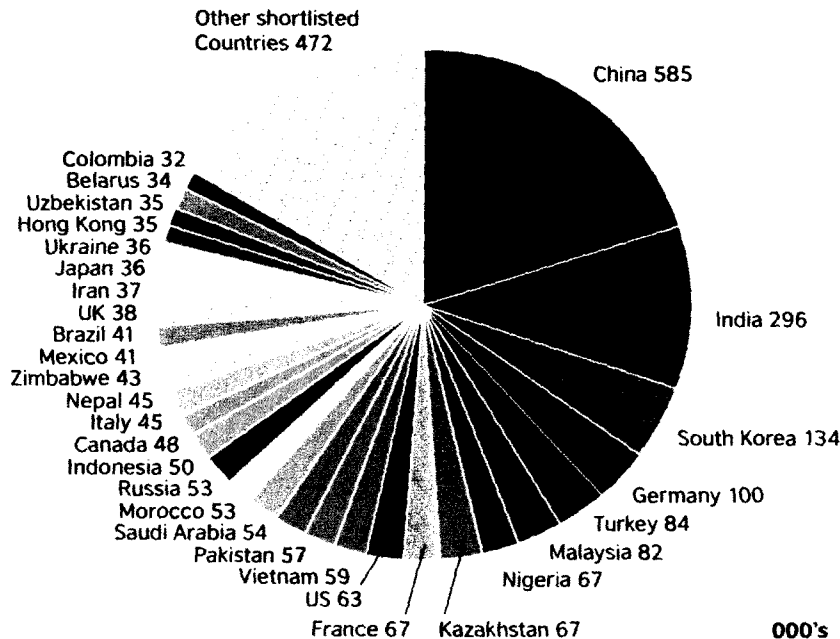
### GLOBAL TERTIARY ENROLMENTS (2020)



**Source:** Oxford Economics.

Tertiary enrolment levels are forecast to fall in Russia and Ukraine for demographic reasons outlined earlier, and noteworthy also, in both Germany and South Korea by approximately 0.3 million by 2020. By 2020, four countries – China, India, US and Brazil (replacing Russia) – are forecast to account for more than half of total shortlisted country tertiary enrolments. In addition to Brazil, Indonesia, Turkey and Nigeria will become increasingly important players in the global tertiary education sector, while Russia, Japan and South Korea’s market shares are forecast to fall.

## GLOBAL OUTBOUND MOBILE TERTIARY STUDENTS BY ORIGIN MARKET (2020)



*Source: Oxford Economics*

The forecast on outbound mobile students is the product of forecasts for tertiary enrolment and outbound mobility ratios. In absolute level terms, China, India and South Korea are still forecast to be the largest outbound tertiary student markets. Turkey, Malaysia and Nigeria also feature in the 2020 'top ten' outbound markets.

### DISTANCE LEARNING

- The term distance learning is used differently depending on the context in which it is used.
- Traditionally distance learning is used to describe a learning experience which has little or no face-to-face contact. Students are able to study at their own pace and have limited interaction with other students or tutors on their course.

▪ In recent years, many distance learning programs have developed to incorporate face-to-face teaching support. These programs are often described as 'supported distance learning'. International students often see these programs as 'part-time study' rather than distance learning. The teaching may be delivered by UK academics travelling overseas to teach part of the course; or through local tutors/academics; or a mix of the two.

### **IN-COUNTRY DELIVERY/ COLLABORATIVE PROVISION/ PARTNERSHIPS**

▪ In-country delivery is used to describe programs where the delivery mode is predominantly face-to-face (for the whole of a course or part of it).

▪ Teaching is usually delivered through a local partner institution or through a branch campus. Most of the teaching will be delivered through locally based tutors. The level of input into the program and delivery from origin institutions can vary. Models of in-country delivery include:

▪ **Branch Campus:** The origin institution creates a campus on another site. Staff may be recruited locally or brought from the origin institution, but they are staff of the provider. The origin institution is solely responsible for course delivery and all academic matters. The costs involved in the development and management of branch campuses is prohibitive to the majority of institutions.

▪ **Twinning program:** This is where the origin institution has a local partner. The local partner teaches part of the origin institution's course, using their own staff. Students transfer to the origin institution's own campus to complete the course.

#### **Typical combinations are:**

▪ 1+2 – the first year of the degree program is delivered overseas followed by two years in the origin institution.

▪ 2+2 – foundation and first year degree is delivered overseas



and the final two years of the program in the origin institution.

- **3+0** – are delivered entirely by the partner institution and do not involve any period of study in the origin country.

The origin institution will provide the course material to the local partner, or agree to accept the partner's own course as an alternative. The local partner is responsible for course delivery. The origin institution is responsible for monitoring academic standards.

- **Dual/joint award:** The origin institution and local partner provide programs leading to separate awards of both or all of them (dual award) or to a single award made jointly by both (joint award).

- **Franchising:** The origin institution licenses a local institution to teach some or its entire course, so that students can receive the award of the origin institution without attending the origin campus. The local institution is responsible for delivery of the course. The origin institution makes the final award and has overall responsibility for content, delivery, assessment and quality assurance.

- **Validation:** The course is developed and delivered by the local institution. The origin institution judges whether it is of appropriate quality to lead to its award. The origin institution determines the extent to which it exerts direct control over quality assurance aspects.

- **Articulation:** A transfer arrangement between an origin and local institution. The origin institution agrees to recognize and grant specific credit and advanced standing to applicants from a named program of study pursued in the local institution.

## **EDUCATION INTELLIGENCE**

Education Intelligence provides reliable and accurate research, forecasting, analysis and data to higher education institutions. Market intelligence is essential in order to locate effective partnerships, create solid collaborations and make strategic decisions regarding marketing and student recruitment. This service supports clients in

forming individual international strategies by offering appropriate and timely information on student mobility flows, student decision-making and current national policies regarding higher education. Our extensive network of resources allows us to produce robust and cutting-edge trends analysis that can help shape the global debate in the education sector.

**Student Insight:** why students decide to study overseas

- informs marketing strategies aimed at international students
- focuses recruitment efforts
- allows better understanding of international student bodies

**Country Briefs:** concise country profiles

- provides broad economic country-specific profile
- highlights major education trends
- creates better understanding of potential geographic focus

**Students In Motion:** where students go globally to study

- helps anticipate student mobility flows
- provides information on education-influencing economic factors

- analyses mobility trends

**Partnership Access:** where to locate fruitful collaborations

- provides “needs and wants” analysis as to where opportunities lie

- offers higher education profile of a given country

- outlines limitations of what domestic and overseas institutions can do

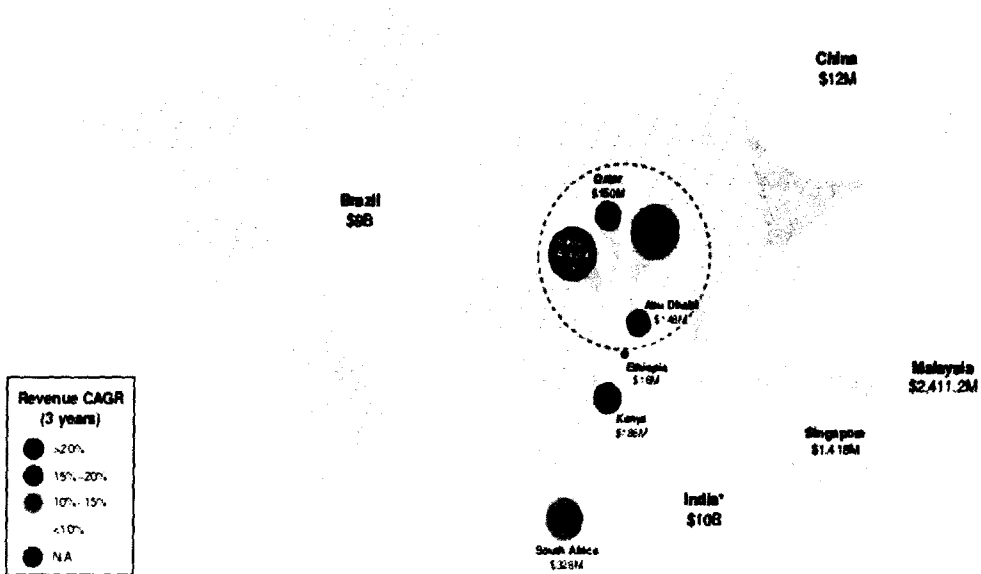
**Global Gauge:** a comparison of international education activity

- delivers big picture analysis of global “openness”
- offers context when measuring a given country’s education profile

- provides empirical evidence of international trends regarding

**China, India and Brazil are the largest higher education markets in the developing world. However, Middle East market is growing the fastest**

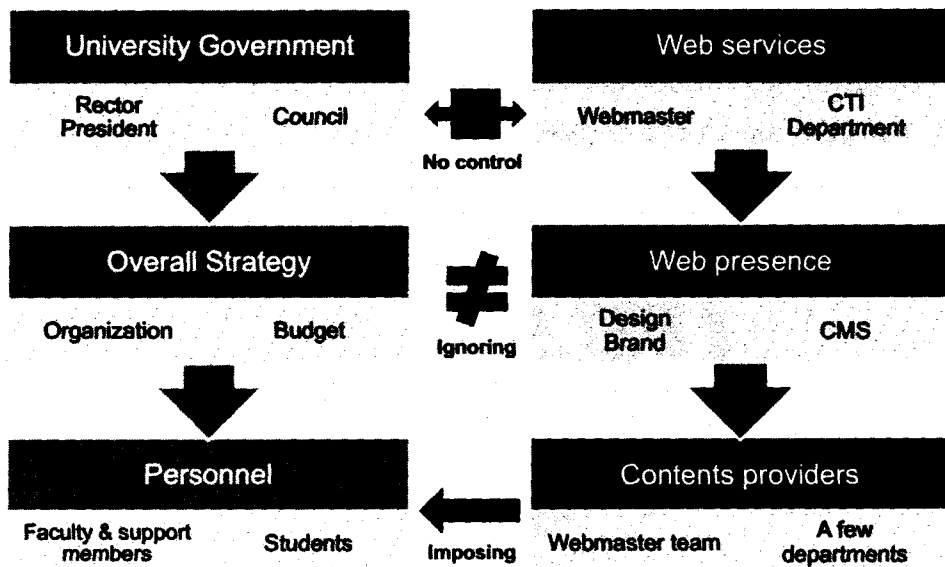
Higher Education, Market Revenue by Country, 2014



\*Referring to Non-Profit and Corporate Universities

*Source: QS Intelligence Unit, QS World University Rankings: Indicators & Processes, International conference by Zoya Zaitseva, Regional Director, Tashkent, January 2019, page-9*

<sup>14</sup>The shape of things to come: higher education global trends and emerging opportunities to 2020. Dr Jo Beall, Director Education and Society, British Council



## ENDOWMENT FUNDS

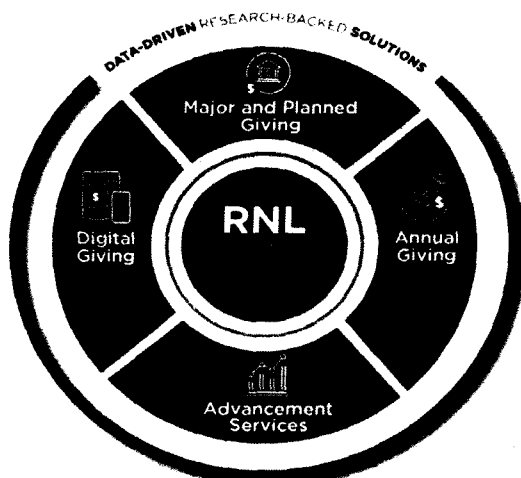
Endowments represent money or other financial assets that are donated to universities or colleges and are meant to be invested to grow the principal and provide additional income for future investing and expenditures. Typically, endowment funds follow a fairly strict set of long-term guidelines dictating the asset allocation that will yield the targeted return without taking on too much risk. Most endowments have guidelines stating how much of each year's investment income can be spent. For many universities, this amount is about 5% of the endowment's total asset value. Because some of the more coveted schools, such as Harvard, have endowments worth billions of dollars, this 5% can equal a large sum of money.

## FUNDRAISING

1. University crowd funding campaigns
2. Peer-to-peer university fundraising

3. Text-to-give university fundraising
4. Alumni mixer fundraising event
5. Mobile credit card swipes

### **RNL Complete Fundraising**



**Source:** [www.ruffalonl.com/higher-education-fundraising-management](http://www.ruffalonl.com/higher-education-fundraising-management)

#### **1. University Crowdfunding Campaigns**

Due to crowdfunding’s overwhelming success with other fundraising organizations like healthcare and churches, it only makes sense for universities to get a piece of the action too.

Crowdfunding involves an individual or team raising money for a specific cause with an eye-catching online fundraising campaign. Crowdfunders also rely on their inspiring cause to gain viral virtual support from people they know as well as strangers.

These platforms make it easy to coordinate a variety of crowdfunding operations from one convenient source including:

- Uploading emotional images and videos to engage your audience with visual storytelling
- Sharing your campaign goal and details across multiple social channels
- Showing donor gratitude with thank-you emails and social media
- Sharing updates on your campaign’s progress via social media

- Measuring crowdfunding metrics to continually improve your campaign

## **2. Peer-to-Peer University Fundraising**

If nothing else, a university is a tight-knit community made up of students, faculty, parents, and, of course, alumni. So why not rally together this extended college family with peer-to-peer fundraising?

**Unlike crowdfunding, peer-to-peer fundraising calls upon friends and family to raise money for your university through personalized online donation pages.**

Essentially, peer-to-peer fundraising can be broken down into these steps:

1. Develop a main donation page on social media for your university fundraising goal

2. Enlist college supporters to create their own online donation pages that showcase their personal investment in your university's fundraising cause

3. Peer-to-peer fundraisers connect with friends and family to invest in university fundraising on behalf of the alumnus

There are also loads of proven P2P best practices your university can incorporate to ensure online donation triumph like:

- Promoting your peer-to-peer campaign on and offline
- Using gamification tools to spark competition among your fundraising team
- Offering peer-to-peer fundraising training workshops in-person
- Providing P2P downloadable resources for fundraising team to reference
- Combining your peer-to-peer campaign with a killer fundraising event

## **3. Text-to-Give University Fundraising**

While not everyone carries cash, you'd be hard pressed to find anyone — teachers, staff, students, parents, etc. — walking around

your college campus without their phone in reach.

**That's why text-to-give provides an accessible and efficient fundraising solution for universities to collect donations from college community members on-the-go.**

As opposed to making a donation in-person or tracking down your university's fundraising webpage, text-to-give allows donors to give in the moment from the comfort and ease of their own phone in four steps or less:

1. Text the fundraising keyword to the text-to-give phone number
2. Receive a link to an online donation form that can be filled out in minutes

3. Complete the online donation form and submit it electronically

4. Receive a donation receipt and thank-you note via text message

#### **4. Alumni Mixer Fundraising Event**

When organizing a killer university fundraising event, it's always a good idea to include your college's alumni community in the fun. In fact, an alumni mixer accomplishes just that by treating your past graduates to a fundraising event in their honor that financially benefits their alma mater.

To begin with, your college's fundraising development team must first track down devoted alumni to invite to your fundraising event. Prospect research tools, like your university's alumni database or professional wealth screening services, can make this search easier by filtering through ideal donor factors.

For instance, prospect research tools can identify wealth markers and giving factors like past giving to your college, philanthropic support, and political giving to name a few.

**These resources can also help you determine the current state of an alumni's relationship, which can be broken down into categories like:**

- **Dedicated prospects** — This crowd has demonstrated commitment to your university's growth by regularly attending

public campus events, going to alumni events, or enrolling their child in your college. In short, these dedicated alumni are your go-to invites.

- **Timely prospects** — This group includes the current class of college graduates and alumni classes with reunions that year. While these prospects may not give normally, a large event may provide the incentive they need to donate.

### 5. Mobile Credit Card Swipers

Fact: most university fundraising is done online or by collecting money at a designated event. While these donation methods are effective, many prospects can still be easily turned off if donating requires them to search for your college’s fundraising webpage or if they don’t carry cash.

### Fundraising planning process

Figure 2: Fundraising planning process





**Mobile credit card swipers seek to fix these donation issues by providing university donors with a simple and efficient way to collect debit and credit card gifts on the spot.**

1. Attach the MobileCause credit card swiper to your phone
2. Login to your Mobilecause credit card swiper account via mobile app
3. Enter a donation amount on the number pad
4. Swipe the donor's credit or debit card
5. Collect the donor's funds and contact information
6. Confirm the transaction by having the donor sign their name on the screen

In addition, your university's development team should always double check if your mobile credit card swiper offers these game-changing features:

- Compatibility with Apple and Android mobile devices
- PCI-compliant payment card security
- Donor tax receipts and the ability to set up recurring gifts
- Little to no credit or debit card transaction fees

### **BENEFITS OF FUNDRAISING**

- Philanthropy provides flexible income to support the projects and activities that core funding often cannot finance.
- Philanthropy enables universities to build on their strengths, enhance student experience, extend research programmes and create the best possible environments within which people can excel.
- Philanthropy builds networks of friends and supporters who contribute to the long-term wellbeing of the university in ways beyond their financial contribution.

### **WHAT CAN ALUMNI RELATIONS OFFER?**

Often alumni relations is treated as a stand-alone activity, divorced from other institutional advancement endeavors. Whereas an integrated, strategic approach can reap significant financial and non-financial dividends:

## **FINANCIAL**

- Sustaining an institution through donations and volunteering
- Sponsoring research, student projects or courses
- Commissioning consultancy
- Leaving legacies
- Participating in peer-to-peer fundraising

## **PARTNERSHIPS**

▪ Brokering introductions to create new partnerships for the university with their employers, governments and other affiliated organizations

▪ Guidance and support when entering new markets or territories

▪ Supporting student recruitment both at home and overseas  
You can do alumni relations without fundraising but you can't do fundraising without alumni relations.' Megan Bruns, Head of Alumni & Supporter Relations, King's College London

## **EXPERTISE**

▪ Providing expert advice and guidance to the university's leadership

▪ Providing case study material or guest lectures to enhance teaching

▪ Providing careers advice, mentoring or internships to current students

▪ Playing a key role in governance structures

▪ Taking part in focus groups for new communications materials, fundraising activities or alumni services

## **BRAND AWARENESS**

▪ Helping to build and shape an institution's brand

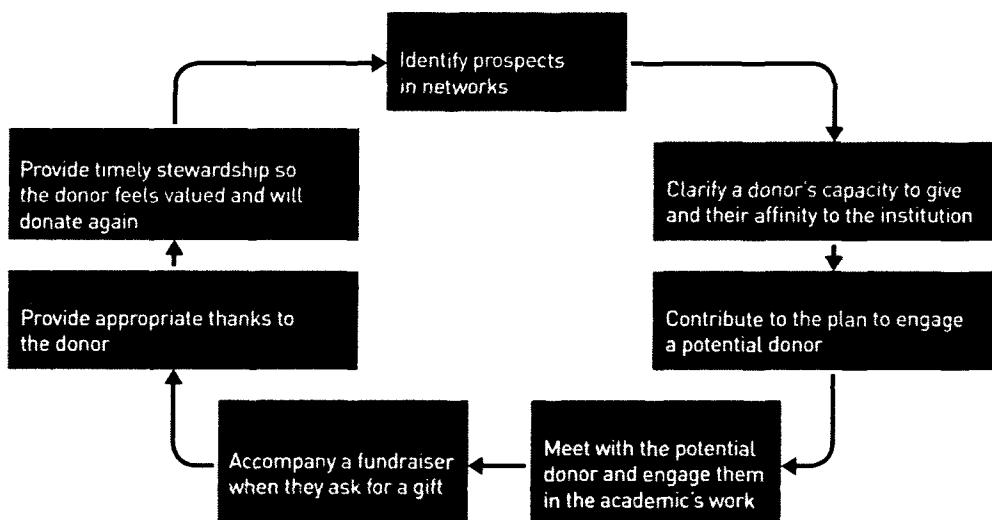
▪ Contributing to the positive international public profile of the university

▪ Contributing to the positive online profile of the university

▪ Challenges and opportunities to develop once the basic functions are in position, the office structure can expand to embrace specialists in the different donor categories. These may include:

- Events
- Annual fund
- Trusts and foundations
- Corporations
- Major gifts
- Statutory or government and lottery funding
- Legacies
- Volunteer programmers

### THE SEVEN STEPS IN SECURING A DONATION



**Source:** strategic fundraising, professor sir Christopher Snowden, vice-chancellor, university of surrey and president, universities UK.

### ALUMNI DONATIONS

- Regular annual donations
- Sponsorship of research and student projects
- Order consulting services from teachers
- Inheritance of property and money
- Assistance in organizing concerts, exhibitions, sports days, lotteries
- Contribution to creating a positive university reputation throughout the world (conferences, media, social networks, contests, prizes, competitions)

## CHAPTER III. SCIENTIFIC RESEARCH SOURCES

**Scopus** is Elsevier's abstract and citation database launched in 2004. Scopus covers nearly 36,377 titles (22,794 active titles and 13,583 inactive titles) from approximately 11,678 publishers, of which 34,346 are peer-reviewed journals in top-level subject fields: life sciences, social sciences, physical sciences and health sciences. It covers three types of sources: book series, journals, and trade journals. All journals covered in the Scopus database, regardless of who they are published under, are reviewed each year to ensure high quality standards are maintained. The complete list is on the SCImago Journal Rank website. Searches in Scopus also incorporate searches of patent databases. Scopus gives four types of quality measure for each title; those are *h*-Index, CiteScore, SJR (SCImago Journal Rank) and SNIP (Source Normalized Impact per Paper).

**Web of Science** (previously known as **Web of Knowledge**) is an online subscription-based scientific citation indexing service originally produced by the Institute for Scientific Information (ISI), later maintained by Clarivate Analytics (previously the Intellectual Property and Science business of Thomson Reuters<sup>[1]</sup>), that provides a comprehensive citation search. It gives access to multiple databases that reference cross-disciplinary research, which allows for in-depth exploration of specialized sub-fields within an academic or scientific discipline

**Taylor & Francis Group** is an international company originating in England that publishes books and academic journals. It is a division of Informa plc, a United Kingdom-based publisher and conference company. The company was founded in 1852 when William Francis joined Richard Taylor in his publishing business. Taylor initially

founded his company in 1798. Their subjects covered agriculture, chemistry, education, engineering, geography, law, mathematics, medicine, and social sciences.

**John Wiley & Sons, Inc.**, branded primarily as simply **Wiley** in recent years is a global publishing company that specializes in academic publishing and instructional materials. The company produces books, journals, and encyclopedias, in print and electronically, as well as online products and services,<sup>[3]</sup> training materials, and educational materials for undergraduate, graduate, and continuing education students.

**Springer Science+Business Media** or **Springer**, part of Springer Nature since 2015, is a global publishing company that publishes books, e-books and peer-reviewed journals in science, humanities, technical and medical (STM) publishing. Springer also hosts a number of scientific databases, including Springer Link, and Springer Images. Book publications include major reference works, textbooks, monographs and book series; more than 168,000 titles are available as e-books in 24 subject collections. Springer has major offices in Berlin, Heidelberg, Dordrecht, and New York City.

**Science Direct** is a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books. The journals are grouped into four main sections: *Physical Sciences and Engineering*, *Life Sciences*, *Health Sciences*, and *Social Sciences and Humanities*. Article abstracts are freely available, but access to their full texts (in PDF and, for newer publications, also HTML) generally requires a subscription or pay-per-view purchase.

**The top four largest publishers:**

- 1. Elsevier**
- 2. Springer-Nature**
- 3. Wiley**

#### **4. Taylor & Francis**

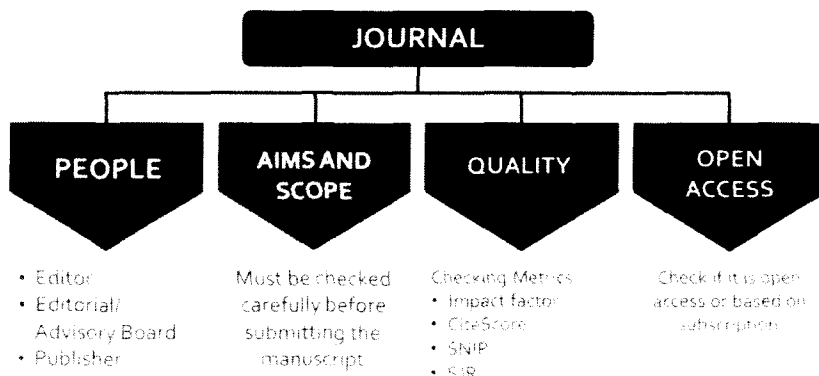
Together they publish 40% of all journals, only Elsevier publishes 25% of all scientific publications.

**SciVal** is an online tool that offers quick, easy access to the research performance of 7,000 research institutions and 220 nations worldwide using bibliometrics. It enables you to visualize research performance, benchmark relative to peers, develop collaborative partnerships and analyze research trends. The data source for SciVal metrics is the Scopus database. Refer to Elsevier's SciVal Metrics Guidebook for more detailed information on the metrics covered.

#### **EASY STEPS SCIVAL ENABLES YOU TO**

- Search for your Scopus profile
- Find your aspirational peers
- Select the metrics
- Benchmark yourself to demonstrate research excellence

## CHAPTER IV. PUBLISHING FEATURES OF TOP SCIENTIFIC JOURNAL



*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 6.*

### **1. PEOPLE - Who are the people in a journal?**

#### **Editor in Chief**

- Responsible for scientific quality
- Checks papers and decides which papers get published
- Coordinates the peer-review process
- Communicates with authors and reviewers
- Defines aim & scope of journal (with publisher)
- Advises on strategy and direction of journal
- Usually professor at esteemed university
- Often a team of editors

#### **Editorial Members**

- Appointed by publisher and editors
- Experts in a subfield of the journal
- Can be consulted when needed
- sometimes involved in review process

## **Advisory Board**

- Advises on topics for special issues and reviewpapers
- Advises on strategy and future direction ofjournal
- Represent authors and readers of the journal

## **Publisher**

- Overall management of journal
- Providing the editorial infrastructure (peer-review process)
- Arranging the publication of accepted manuscripts
- Distribution and promotion of journal to readers/libraries
- Tagging and archiving of all published articles
- Dealing with ethical and copyright issues
- Appointing editors and editorial board

## **2. AIMS & SCOPE**

A journal always has an Aims & Scope, a text that describes the goalof the journal:

- Subject
- Audience
- Type of articles
- Quality or coverage of field
- Association with group

## **3. QUALITY**

▪ Several indicators are available to measure the quality of the journal, which assumethat the importance of a paper can be assessed by number of citations:

✓ **Impact Factor**

✓ **CiteScore**

✓ **SJR**

✓ **SNIP**

▪ Always check if the journal is accredited by databases and covered by respected sources such as Scopus.

## **4.OPEN ACCESS**

- Most journals are subscription journals, they are purchased by



university/library and are only accessible to subscribers.

- Currently also 'open access' journals are available. Authors (or their funders) pay 'article process charges' (APC) and the article is freely available.

- ✓ Gold open access: author pays to publish in journal

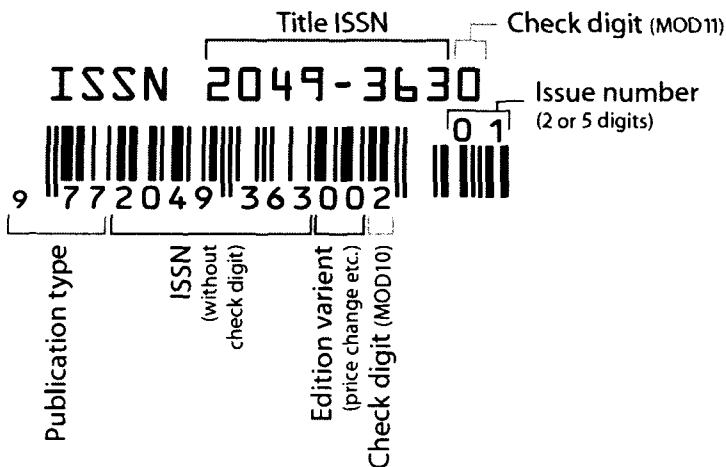
- ✓ Green open access: manuscripts is available through institutional repository

- Most subscription journals offer option to make an article 'open access'. These are so-called 'hybrid' journals.



## ISSN

An **International Standard Serial Number (ISSN)** is an eight-digit serial number used to uniquely identify a serial publication. The ISSN is especially helpful in distinguishing between serials with the same title. ISSN are used in ordering, cataloging, interlibrary loans, and other practices in connection with serial literature. The ISSN system was first drafted as an International Organization for Standardization (ISO) international standard in 1971 and published as ISO 3297 in 1975. ISO subcommittee TC 46/SC 9 is responsible for maintaining the standard.



**Journal ranking** is widely used in academic circles in the evaluation of an academic journal's impact and quality. Journal rankings are intended to reflect the place of a journal within its field, the relative difficulty of being published in that journal, and the prestige associated with it. They have been introduced as official research evaluation tools in several countries.

• Traditionally, journal ranking "measures" or evaluations have been provided simply through institutional lists established by academic leaders or through committee vote. These approaches have been notoriously politicized and inaccurate reflections of actual prestige and quality, as they would often reflect the biases and personal career objectives of those involved in ranking the journals; also causing the problem of highly disparate evaluations across institutions. Consequently, many institutions have required external sources of evaluation of journal quality. The traditional approach here has been through surveys of leading academics in a given field, but this approach too has potential for bias, though not as profound as that seen with institution-generated lists. Consequently, governments, institutions, and leaders in scientometric research have turned to a litany of observed bibliometric measures on the journal-level that can be used as surrogates for quality and thus eliminate the need for subjective assessment.

• Consequently, several journal-level metrics have been proposed, most citation-based:

• The **impact factor (IF)** or **journal impact factor (JIF)** of an academic journal is a measure reflecting the yearly average number of citations to recent articles published in that journal. It is frequently used as a proxy for the relative importance of a journal within its field; journals with higher impact factors are often deemed to be more important than those with lower ones. The impact factor was devised by Eugene Garfield, the founder of the Institute for

Scientific Information. Impact factors are calculated yearly starting from 1975 for journals listed in the *Journal Citation Reports*. **Impact factor** – Reflecting the average number of citations to articles published in science and social science journals.

- **Eigenfactor** – A rating of the total importance of a scientific journal according to the number of incoming citations, with citations from highly ranked journals weighted to make a larger contribution to the eigenvector than those from poorly ranked journals.

- **SCImago Journal Rank** – A measure of scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from.

- **h-index** – Usually used as a measure of scientific productivity and the scientific impact of an individual scientist, but can also be used to rank journals.

- **Expert survey**– A score reflecting the overall quality or contribution of a journal is based on the results of the survey of active field researchers, practitioners and students (i.e., actual journal contributors or readers), who rank each journal based on specific criteria.

- **Publication power approach (PPA)**– The ranking position of each journal is based on the actual publishing behavior of leading tenured academics over an extended time period. As such, the journal's ranking position reflects the frequency at which these scholars published their articles in this journal.

- **Altmetrics** – Rate journals based on scholarly references added to academic social media sites.

- **diamScore**– A measure of scientific influence of academic journals based on recursive citation weighting and the pairwise comparisons between journals.

- **Source normalized impact per paper (SNIP)**– a factor released in 2012 by Elsevier based on Scopus to estimate

impact.<sup>[9]</sup> The measure is calculated as  $SNIP=RIP/(R/M)$ , where  $RIP$ =raw impact per paper,  $R$  = citation potential and  $M$  = median database citation potential.

- **PageRank**– In 1976 a recursive impact factor that gives citations from journals with high impact greater weight than citations from low-impact journals was proposed. Such a recursive impact factor resembles Google's PageRank algorithm, though the original Pinski and Narin paper uses a "trade balance" approach in which journals score highest when they are often cited but rarely cite other journals; several scholars have proposed related approaches. In 2006, Johan Bollen, Marko A. Rodriguez, and Herbert Van de Sompel also proposed replacing impact factors with the PageRank algorithm. The Eigenfactor is another PageRank-type measure of journal influence, with rankings freely available online, along with SCImago.

- **JRank**– JournalsRanking (JRank) is the digital portal developed by iMaQ Technologies Pvt. Ltd in 2015 containing list of all international journals indexed in ISI-JCR and Scopus-SJR based on the current impact factor (IF) and Quartiles (Q) given by Thomson Reuters and Scopus, respectively. The JRank also gives detailed information about the journal such as country of journal publishing, impact factor history, frequency of journal publishing, active web link etc. All lists of journals based on subjects can also be viewed using JRank portal

- **h5-index**– This metric, calculated and released by Google Scholar, is based on the h-index of all articles published in a given journal in the last five years

- **Jel Classification Code** Articles in economics journals are usually classified according to the **JEL classification codes**, a system originated by the *Journal of Economic Literature*. The *JEL* is published quarterly by the American Economic Association (AEA) and contains survey articles and information on recently published books and dissertations. The AEA maintains EconLit, a searchable data base of

citations for articles, books, reviews, dissertations, and working papers classified by JEL codes for the years from 1969. A recent addition to EconLit is indexing of economics-journal articles from 1886 to 1968 parallel to the print series *Index of Economic Articles*.

Several national and international rankings of journals exist, e.g.:

- ERA Australia journal lists
- Brazil's Qualis
- Colombia's Publindex
- Denmark
- Finland's Julkaisuforummi (JUF0)
- Norwegian Scientific Index
- Germany VHB Index; Link:(economics)
- France CNRS ranking; Link:(economics)
- Italian ANVUR ranking
- The Chartered Association of Business Schools' Academic

Journal Guide

- List of HEC-Pakistan Recognized Journals
- Indian National Academy of Agricultural Sciences

They have been introduced as official research evaluation tools

- DHET List of Approved South African Journals
- International: Scimago

Electronic publishing (also referred to as **e-publishing** or **digital publishing** or **online publishing**) includes the digital publication of e-books, digital magazines, and the development of digital libraries and catalogues. It also includes an editorial aspect that consists of editing books, journals or magazines that are mostly destined to be read on a screen (computer, e-reader, tablet,

smartphone).

The first digitization projects were transferring physical content into digital content. Electronic publishing is aiming to integrate the whole process of editing and publishing (production, layout, publication) in the digital world.

Alain Mille, in the book *Pratiques de l'édition numérique* (edited by Michael E. Sinatra and Marcello Vitali-Rosati), says that the beginnings of Internet and the Web are the very core of electronic publishing, since they pretty much determined the biggest changes in the production and diffusion patterns. Internet has a direct effect on the publishing questions, letting creators and users go further in the traditional process (writer-editor-publishing house).

The traditional publishing, and especially the creation part, were first revolutionized by new desktop publishing software's appearing in the 1980's, and by the text databases created for the encyclopedias and directories. At the same time the multimedia was developing quickly, combining book, audiovisual and computer science characteristics. CDs and DVDs appear, permitting the visualization of these dictionaries and encyclopedias on computers

### **Doi (Digital Object Identifier)**

In computing, a **Digital Object Identifier or DOI** is a persistent identifier or handle used to uniquely identify objects, standardized by the International Organization for Standardization (ISO). An implementation of the Handle System, DOIs are in wide use mainly to identify academic, professional, and government information, such as journal articles, research reports and data sets, and official publications though they also have been used to identify other types of information resources, such as commercial videos.

A DOI aims to be "resolvable", usually to some form of access to the information object to which the DOI refers. This is achieved by binding the DOI to metadata about the object, such as a URL, indicating where the object can be found. Thus, by being actionable

and interoperable, a DOI differs from identifiers such as ISBNs and ISRC which aim only to uniquely identify their referents. The DOI system uses the indecs Content Model for representing metadata.

### **Crossref**

Formerly styled **CrossRef** is an official Digital Object Identifier (DOI) Registration Agency of the International DOI Foundation. It is run by the Publishers International Linking Association Inc. (PILA) and was launched in early 2000 as a cooperative effort among publishers to enable persistent cross-publisher citation linking in online academic journals. Crossref is a not-for-profit association of about 2000 voting member publishers who represent 4300 societies and publishers, including both commercial and not-for-profit organizations. Crossref includes publishers with varied business models, including those with both open access and subscription policies. Crossref does not provide a database of fulltext scientific content. Rather, it facilitates the links between distributed content hosted at other sites.

### **Digitization**

The first digitization initiative was in 1971 in the United States, by Michael S. Hart. He was a student at the University of Illinois, and decided to launch the Project Gutenberg. The project was about making literature more accessible to everyone, through internet. It took a while to develop, and in 1989 there were only 10 texts that were manually recopied on computer by Michael S. Hart himself and some volunteers. But with the appearance of the Web 1.0 in 1991 and its ability to connect documents together through static pages, the project moved quickly forward. Many more volunteers helped in developing the project by giving access to public domain classics

### **Mass-scale digitization**

In 1974, Raymond Kurzweil developed a scanner that was equipped with an Omnifont software that enabled optical character recognition for numeric inputs. The digitization projects could then

be a lot more ambitious since the time needed for digitization decreased considerably, and digital libraries are be on the rise. All over the world, e-libraries start to emerge.

### **Online edition**

Based on new communications practices of the web 2.0 and the new architecture of participation, online edition opens the door to a collaboration of a community to elaborate and improve contents on Internet, while also enriching reading through collective reading practices. The web 2.0 not only links documents together, as did the web 1.0, it also links people together through social media: that's why it's called the Participative (or participatory) Web.

Many tools were put in place to foster sharing and creative collective contents. One of the many is the Wikipedia encyclopedia, since it is edited, corrected and enhanced by millions of contributors. Open Street Map is also based on the same principle. Blogs and comment systems are also now renown as online edition and publishing, since it is possible through new interactions between the author and its readers, and can be an important method for inspiration but also for visibility



## CHAPTER V. INTELLECTUAL PROPERTY PROTECTION

After an article is submitted to an academic journal for consideration, there can be a delay ranging from several months to more than two years before it is published in a journal, rendering journals a less than ideal format for disseminating current research. In some fields such as astronomy and some areas of physics, the role of the journal in disseminating the latest research has largely been replaced by preprint repositories such as arXiv.org. However, scholarly journals still play an important role in quality control and establishing scientific credit. In many instances, the electronic materials uploaded to preprint repositories are still intended for eventual publication in a peer-reviewed journal. There is statistical evidence that electronic publishing provides wider dissemination, because when a journal is available online, a larger number of researchers can access the journal. Even if a professor is working in a university that does not have a certain journal in its library, she may still be able to access the journal online. A number of journals have, while retaining their longstanding peer review process to ensure that the research is done properly, established electronic versions or even moved entirely to electronic publication.

### **Copyright**

In the early 2000s, many of the existing copyright laws were designed around printed books, magazines and newspapers. For example, copyright laws often set limits on how much of a book can be mechanically reproduced or copied. Electronic publishing raises new questions in relation to copyright, because if an e-book or e-journal is available online, millions of Internet users may be able to view a single electronic copy of the document, without any "copies" being made.

Emerging evidence suggests that e-publishing may be more collaborative than traditional paper-based publishing; e-publishing often involves more than one author, and the resulting works are more accessible, since they are published online. At the same time, the availability of published material online opens more doors for plagiarism, unauthorized use, or re-use of the material. Some publishers are trying to address these concerns. For example, in 2011, HarperCollins limited the number of times that one of its e-books could be lent in a public library. Other publishers, such as Penguin, are attempting to incorporate e-book elements into their regular paper publications.

### **Exclusive rights**

Several exclusive rights typically attach to the holder of a copyright:

- protection of the work
- to determine and decide how, and under what conditions, the work may be marketed, publicly displayed, reproduced, distributed etc.
- to produce copies or reproductions of the work and to sell those copies (including, typically, electronic copies)
  - to import or export the work
  - to create derivative works (works that adapt the original work)
- to perform or display the work publicly
- to sell or cede these rights to others
- to transmit or display by radio, video or internet

### **Limitations and exceptions**

There are some exceptions to copyright will not protect:

- Names of products
- Names of businesses, organizations, or groups
- Pseudonyms of individuals
- Titles of works

- Catchwords, catchphrases, mottoes, slogans, or short advertising expressions
- Listings of ingredients in recipes, labels, and formulas, though the directions can be copyrighted

### **Internet Archive**

The **Internet Archive** is a San Francisco-based nonprofit digital library with the stated mission of "universal access to all knowledge. It provides free public access to collections of digitized materials, including websites, software applications/games, music, movies/videos, moving images, and nearly three million public-domain books. As of October 2016, its collection topped 15 petabytes. In addition to its archiving function, the Archive is an activist organization, advocating for a free and open Internet.

The Internet Archive allows the public to upload and download digital material to its data cluster, but the bulk of its data is collected automatically by its web crawlers, which work to preserve as much of the public web as possible. Its web archive, the Wayback Machine, contains more than 308 billion web captures. The Archive also oversees one of the world's largest book digitization projects.

### **Google Scholar**

**Google Scholar** is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. Released in beta in November 2004, the Google Scholar index includes most peer-reviewed online academic journals and books, conference papers, theses and dissertations, preprints, abstracts, technical reports, and other scholarly literature, including court opinions and patents. While Google does not publish the size of Google Scholar's database, scientometric researchers estimated it to contain roughly 389 million documents including articles, citations and patents making it the world's largest academic search engine in January 2018. Previously, the size was estimated at 160 million documents as of May 2014. Earlier statistical estimate published in PLOS ONE using a Mark and recapture method estimated approximately 80–90% coverage of all articles published in English with an estimate of 100 million. This estimate also determined how many documents were freely available on the web.

### **Google Drive**

**Google Drive** is a file storage and synchronization service developed by Google. Launched on April 24, 2012, Google Drive allows users to store files on their servers, synchronize files across devices, and share files. In addition to a website, Google Drive offers apps with offline capabilities for Windows and mac OS computers, and Android and iOS smartphones and tablets. Google Drive encompasses Google Docs, Sheets, and Slides, an office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. Files created and edited through the office suite are saved in Google

Drive. Google Drive offers users with 15 gigabytes of free storage through Google One.

### **Google Forms**

**Google Forms** is a tool that allows collecting information from users via a personalized survey or quiz. The information is then collected and automatically connected to a spreadsheet. The spreadsheet is populated with the survey and quiz responses. The Forms service has undergone several updates over the years. New features include, but are not limited to, menu search, shuffle of questions for randomized order, limiting responses to once per person, shorter URLs, custom themes, automatically generating answer suggestions when creating forms, and an "Upload file" option for users answering questions that require them to share content or files from their computer or Google Drive. The upload feature is only available through G Suite. In October 2014, Google introduced add-ons for Google Forms that enable third-party developers to make new tools for more features in surveys.



### **Microsoft Excel**

**Microsoft Excel** is a spreadsheet developed by Microsoft for Windows, macOS, Android and iOS. It features calculation, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications. It has been a very widely applied spreadsheet for these platforms, especially since version 5 in 1993, and it has replaced Lotus 1-2-3 as the industry standard for spreadsheets. Excel forms part of Microsoft Office.

Microsoft Excel has the basic features of all spreadsheets, using a grid of *cells* arranged in numbered *rows* and letter-named *columns* to organize data manipulations like arithmetic operations. It has a battery of supplied functions to answer statistical, engineering and

financial needs. In addition, it can display data as line graphs, histograms and charts, and with a very limited three-dimensional graphical display. It allows sectioning of data to view its dependencies on various factors for different perspectives (using *pivot tables* and the *scenario manager*). It has a programming aspect, *Visual Basic for Applications*, allowing the user to employ a wide variety of numerical methods, for example, for solving differential equations of mathematics.

### **EViews**

**(Econometric Views)** is a statistical package for Windows, used mainly for time-series oriented econometric analysis. It is developed by Quantitative Micro Software (QMS), now a part of IHS. Version 1.0 was released in March 1994, and replaced MicroTSP. The TSP software and programming language had been originally developed by Robert Hall in 1965. The current version of EViews is 10, released in June 2017. EViews can be used for general statistical analysis and econometric analyses, such as cross-section and panel data analysis and time series estimation and forecasting.

### **LaTeX**

It is a shortening of L<sup>A</sup>T<sub>E</sub>X) is a document preparation system. When writing, the writer uses plain text as opposed to the formatted text found in WYSIWYG ("what you see is what you get") word processors like Microsoft Word, LibreOffice Writer and Apple Pages. The writer uses markup tagging conventions to define the general structure of a document (such as article, book, and letter), to stylise text throughout a document (such as bold and italics), and to add citations and cross-references. A TeXdistribution such as TeX Live or MikTeX is used to produce an output file (such as PDF or DVI) suitable for printing or digital distribution. Within the typesetting system, its name is stylised as L<sup>A</sup>T<sub>E</sub>X.

LaTeX is widely used in academia for the communication and publication of scientific documents in many fields, including

mathematics, statistics, computer science, engineering, chemistry, physics, economics, linguistics, quantitative psychology, philosophy, and political science. It also has a prominent role in the preparation and publication of books and articles that contain complex multilingual materials, such as Tamil, Sanskrit and Greek. LaTeX uses the TeX typesetting program for formatting its output, and is itself written in the TeX macro language.

### **Stata**

**Stata** is a general-purpose statistical software package created in 1985 by StataCorp. Most of its users work in research, especially in the fields of economics, sociology, political science, biomedicine and epidemiology. Stata's capabilities include data management, statistical analysis, graphics, simulations, regression, and custom programming. It also has a system to disseminate user-written programs that lets it grow continuously. The name *Stata* is a syllabic abbreviation of the words *statistics* and *data*.

### **SPSS**

**SPSS Statistics** is a software package used for interactive, or batched, statistical analysis. Long produced by SPSS Inc., it was acquired by IBM in 2009. The current versions (2015) are named **IBM SPSS Statistics**. The software name originally stood for **Statistical Package for the Social Sciences (SPSS)**, reflecting the original market, although the software is now popular in other fields as well, including the health sciences and marketing.

### **SurveyMonkey**

**SurveyMonkey** is an online survey development cloud-based software as a service company. It was founded in 1999 by Ryan Finley and Chris Finley. The company provides free, customizable surveys, as well as a suite of paid back-end programs that include data analysis, sample selection, bias elimination, and data representation tools. In addition to providing free and paid plans for individual users, SurveyMonkey also offers more large-scale

enterprise options for companies interested in data analysis, brand management, customer / employee feedback, and consumer-focused marketing.. SurveyMonkey has over 600,000 users in 190+ countries.

### **Mendeley**

**Mendeley** is a desktop and web program produced by Elsevier for managing and sharing research papers, discovering research data and collaborating online. It combines Mendeley Desktop, a PDF and reference management application available for Windows, macOS (Sierra and High Sierra no longer supported) and Linux. It also provides Mendeley for Android and iOS, with Mendeley Web, an online social network for researchers. Mendeley requires the user to store all basic citation data on its servers—storing copies of documents is at the user's discretion. Upon registration, Mendeley provides the user with 2 GB of free web storage space, which is upgradeable at a cost.

### **R-Project**

**R** is a programming language and free software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis. Polls, data mining surveys, and studies of scholarly literature databases show substantial increases in popularity in recent years. As of January 2019, R ranks 12th in the TIOBE index, a measure of popularity of programming languages.



Usually data processing in four ways:

- text;
- tables;
- graphs;
- statistical measures.

### TYPES OF CHARTS AND FIGURES

- Table
- Frequency Distributions
- Cumulative frequency distribution
- Histogram
- Bar chart
- Pie chart
- Line chart
- Flowchart
- Graphical function
- Area chart
- Spline chart
- Candlestick chart
- Treemapping
- Spider Charts or Radar chart
- Pareto chart
- Scatter plot
- Pictographs
- Time plot
- Stock carts
- Gantt Charts
- Control Charts
- Waterfall Charts




- Multi-Line Graphs
- Scatter-Line Combo

### DISPLAYING DATA IN FORMS OF

A **table** is a set of facts and figures arranged in columns and rows and is a very useful way of organizing numerical information or data.

Student	Study time (hours)	Grade
Bob	2	84
Cindy	4	91
Kim	5	92

**Pictographs** are similar to a bar chart but use pictures to symbolize a countable unit of items

Favorite Pets	
Cat	
Dog	
Hamster	

Each  stands for 2 votes.

**Frequency distribution** is a list, table or graph that displays the frequency of various outcomes in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of values in the sample.

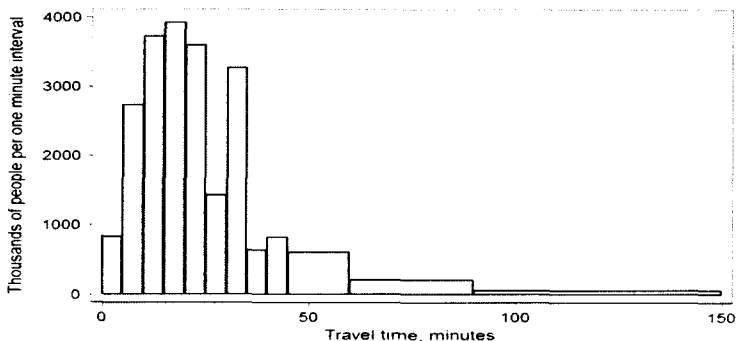
Method	Number
Abstinence	14
Pane	47
Injectable	1
Norplant	35
Pill	307
None	
<b>Total</b>	<b>405</b>

**Cumulative frequency distribution** is the sum of the class and all classes below it in a frequency distribution. All that means is

you're adding up a value and all of the values that came before it. Here's a simple example: You get paid \$250 for a week of work. The second week you get paid \$300 and the third week, \$350. **Your cumulative amount for week 2** is \$550 (\$300 for week 2 and \$250 for week 1). **Your cumulative amount for week 3** is \$900 (\$350 for week 3, \$300 for week 2 and \$250 for week 1). Cumulative frequency distributions can be summarized in a table.

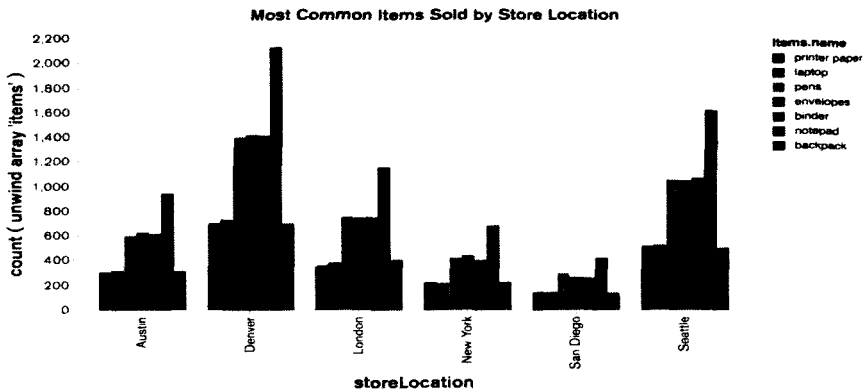
Type	Frequency	Cumulative Frequency
Brown	15	15
Black	10	25
Blond	16	?
Red	2	

**Histogram** is an accurate representation of the distribution of numerical data. It is an estimate of the probability distribution of a (quantitative variable) and was first introduced by Karl Pearson. It differs from a bar graph, in the sense that a bar graph relates two variables, but a histogram relates only one. To construct a histogram, the first step is to "bin" (or "bucket") the range of values—that is, divide the entire range of values into a series of intervals—and then count how many values fall into each interval. The bins are usually specified as consecutive, non-overlapping intervals of a variable. The bins (intervals) must be adjacent, and are often (but are not required to be) of equal size



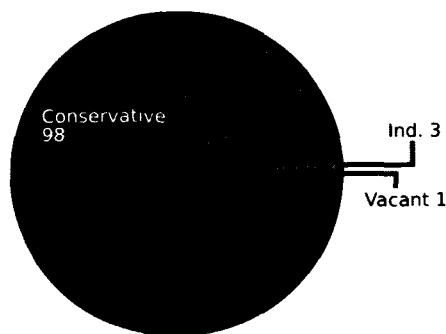
**Bar chart or bar graph** is a chart or graph that presents

categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. A vertical bar chart is sometimes called a **line graph**. A bar graph shows comparisons among discrete categories. One axis of the chart shows the specific categories being compared, and the other axis represents a measured value. Some bar graphs present bars clustered in groups of more than one, showing the values of more than one measured variable.



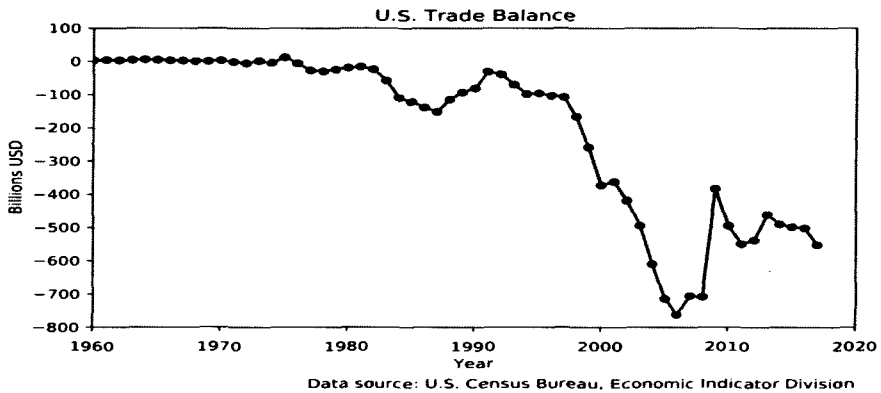
**Circle graph or Piechart** is a graphical representation of data, in which "the data is represented by symbols, such as bars in a bar chart, lines in a line chart, or slices in a pie chart". A chart can represent tabular numeric data, functions or some kinds of qualitative structure and provides different info.

**Composition of 38th Parliament of Canada as of May 19, 2005**

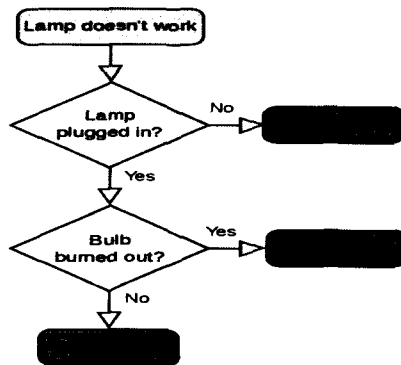


**Line graph** is a long and narrow field. In contrast to lines in

geometry (which have no or negligible width), lines in graphics generally have enough width to be visible. In practice, graphical lines are used to represent geometrical lines in pictures and graphs. Also, in contrast to the strict meaning geometric lines, which by definition are completely straight, graphical lines may be "curved lines".

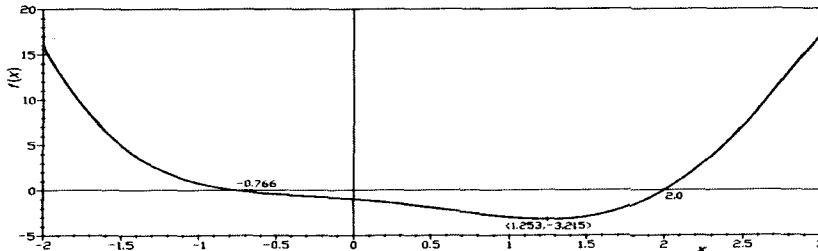


**Flowchart** is a type of diagram that represents an algorithm, workflow or process. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields

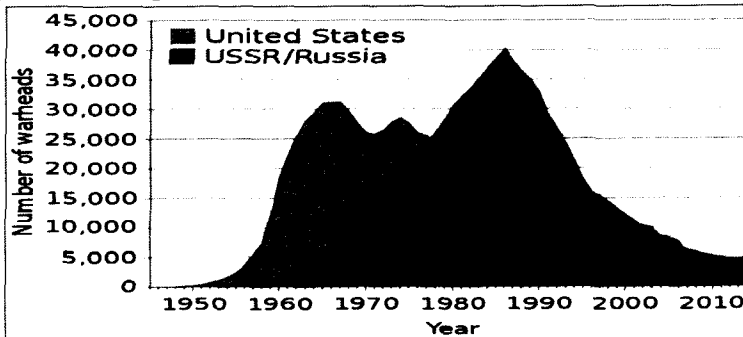


**Graphical function  $f$**  is, formally, the set of all ordered pairs  $(x, f(x))$ , such that  $x$  is in the domain of the function  $f$ , and, in practice, the graphical representation of this set. If the function input  $x$ , and the values  $f(x)$ , are real numbers, the graph is a two-

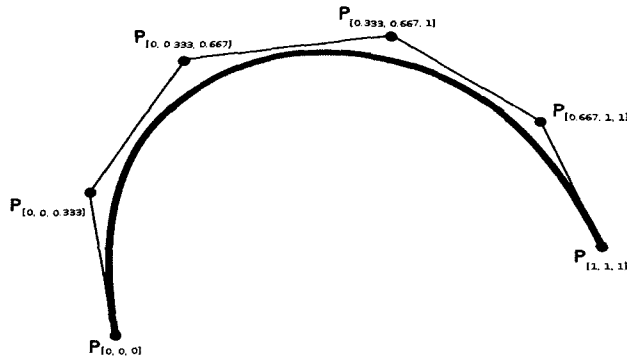
dimensional graph, and, for a continuous function, is a curve. If the function input  $x$  is an ordered pair  $(x_1, x_2)$  of real numbers, the graph is the collection of all pairs  $((x_1, x_2), f(x_1, x_2))$ . These pairs can be identified with the ordered triples  $(x_1, x_2, f(x_1, x_2))$ . For a continuous function the graph of such a function is a surface.



**Area chart or area graph** displays graphically quantitative data. It is based on the line chart. The area between axis and line are commonly emphasized with colors, textures and hatchings. Commonly one compares two or more quantities with an area chart.

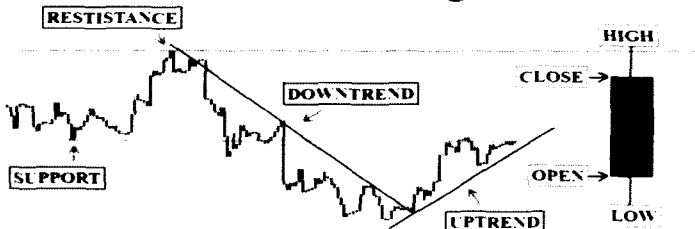


**Spline** is a function defined piecewise by polynomials. In interpolating problems, spline interpolation is often preferred to polynomial interpolation because it yields similar results, even when using low degree polynomials, while avoiding Runge's phenomenon for higher degrees.

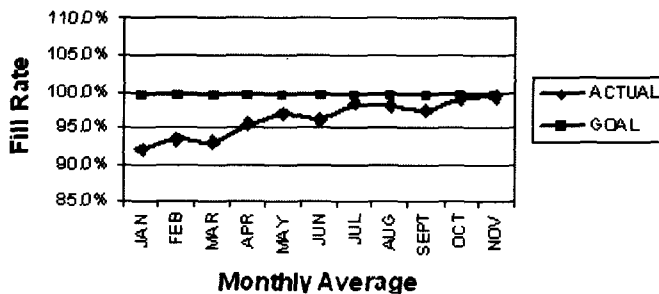


**Candlestick chart** (also called **Japanese candlestick chart**) is a style of financial chart used to describe price movements of a security, derivative, or currency. Each "candlestick" typically shows one day, thus a one-month chart may show the 20 trading days as 20 "candlesticks".<sup>[1]</sup> Shorter intervals than one day are common on computer charts, longer are possible.

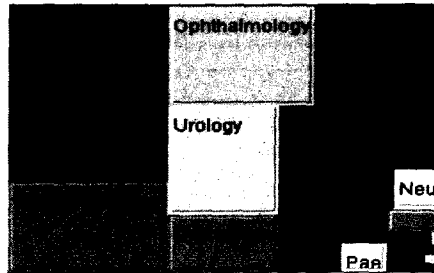
### How to READ candlestick charts The ULTIMATE guide



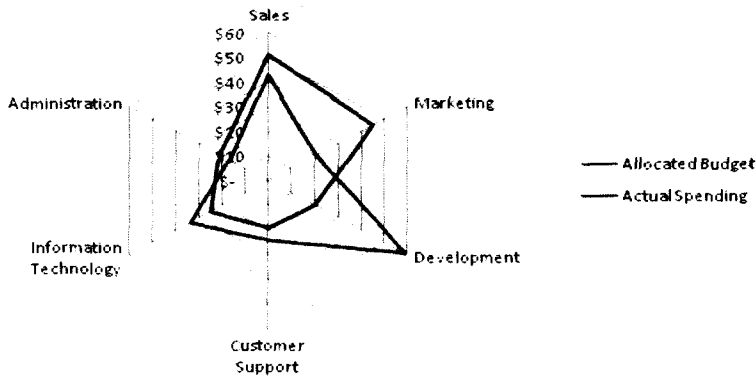
**Graphical representation** of time series data (information in sequence over time) showing the trend line or curve that reveals a general pattern of change.



**Tree mapping** is information visualization and computing methods for displaying hierarchical data using nested figures, usually rectangles.



**Spider Charts** or **Radar charts** is a graphical method of displaying multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point. The relative position and angle of the axes is typically uninformative.

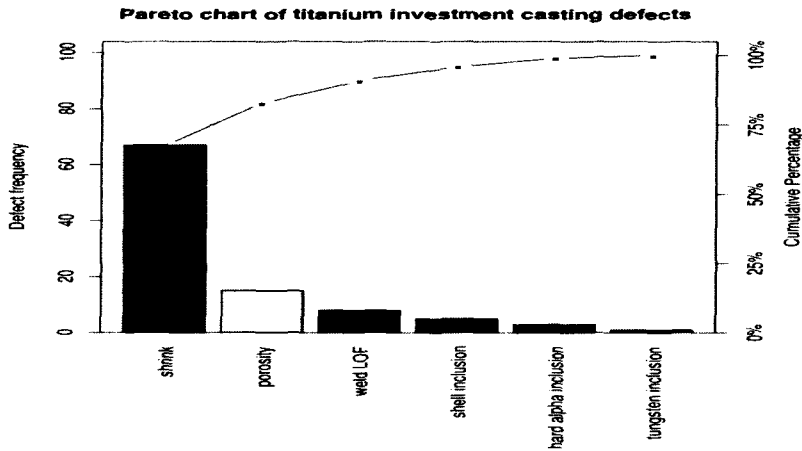


**Pareto chart**, named after Vilfredo Pareto, is a type of chart that contains both bars and a line graph, where individual values are represented in descending order by bars, and the cumulative total is represented by the line.

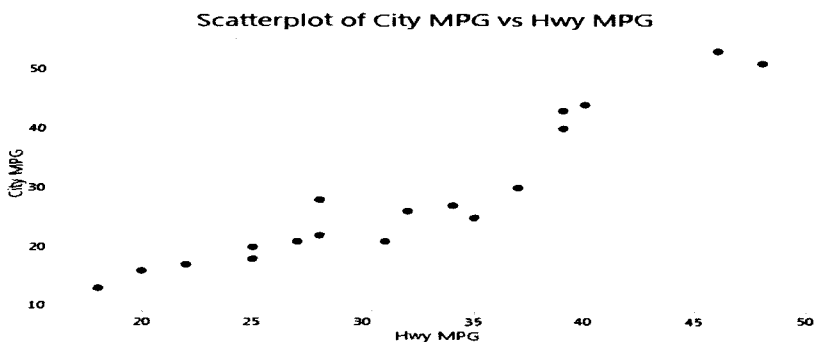
The left vertical axis is the frequency of occurrence, but it can alternatively represent cost or another important unit of measure. The right vertical axis is the cumulative percentage of the total number of occurrences, total cost, or total of the particular unit of measure. Because the values are in decreasing order, the cumulative



function is a concave function. To take the example below, in order to lower the amount of late arrivals by 78%, it is sufficient to solve the first three issues.

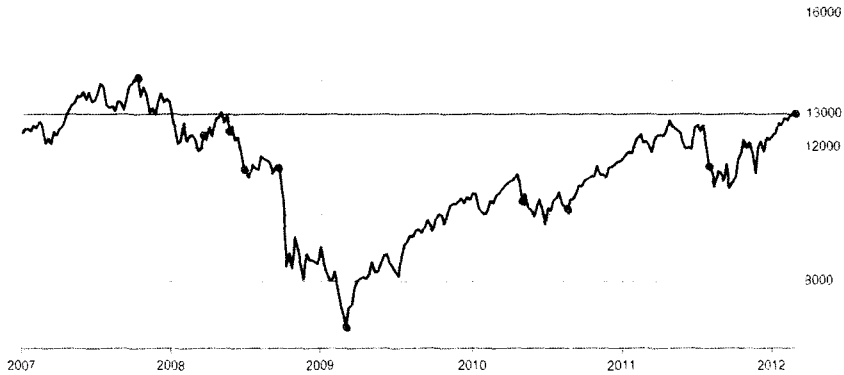


**Scatter plot** is a graph representing a set of data and showing a relationship or connection between the two quantities given. The graph is typically placed in one part of a coordinate plane (the upper right quarter, called Quadrant I). When the data is placed on the scatter plot, usually a relationship can be seen. If the points appear to form a line, a linear relationship is suggested.

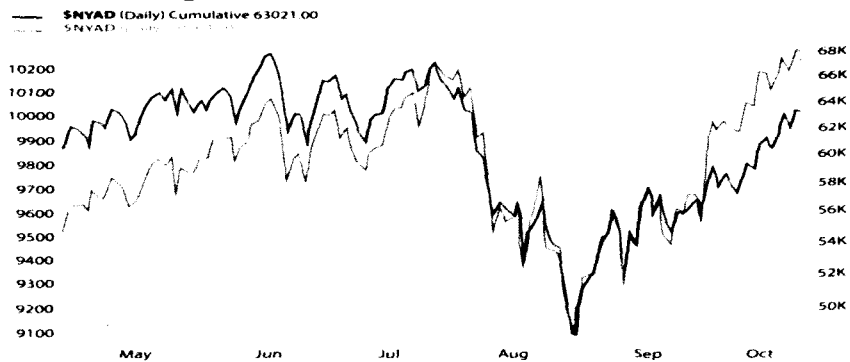


**Timeplot** (sometimes called a time series graph) displays **values against time**. They are similar to x-y graphs, but while an x-y graph can plot a variety of “x” variables (for example, height, weight, age), timeplots can *only* display time on the x-axis. Unlike pie charts and bar charts, these plots do not have categories. Timeplots

are good for showing how data changes over time. For example, this type of chart would work well if you were sampling data at random times.

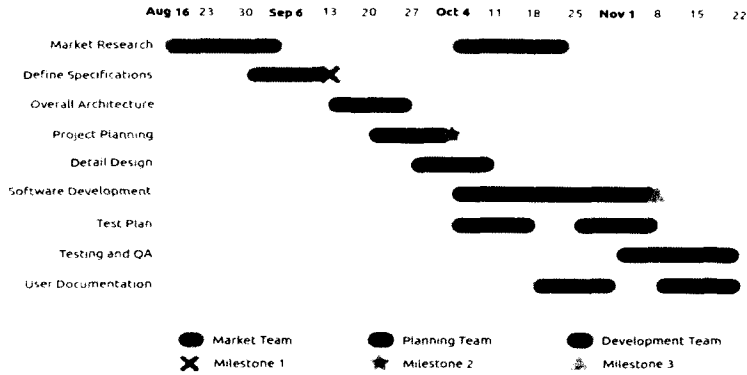


**Stock charts** is one of the most vital of all financial graphs, help investors track the markets to determine profits and loss, as well as make buying and selling decisions. While a variety of graphs are used to represent market changes, the most common is likely the basic line graph turned histogram.

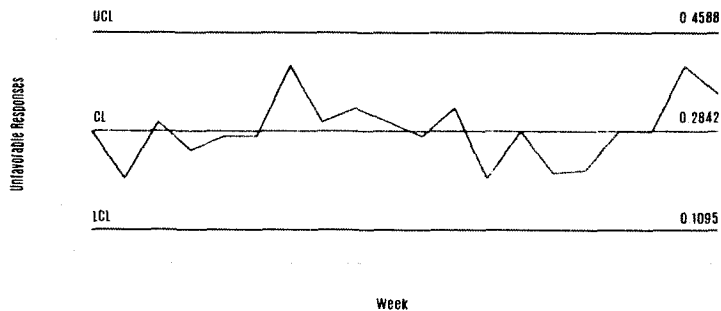


**Gantt charts** are special types of bar graphs used to diagram projects and schedules. The use of colored bars of varying lengths reflect not only a project's start and end dates, but also important events, tasks, milestones and their timeframes. Modern Gantt charts can also illustrate activities' dependency relationships. If Team 3's completion of task C, for example, is dependent upon the prior completion of task B by Team 2, the chart can not only reflect that

relationship, but the scheduled dates and deadlines for each.



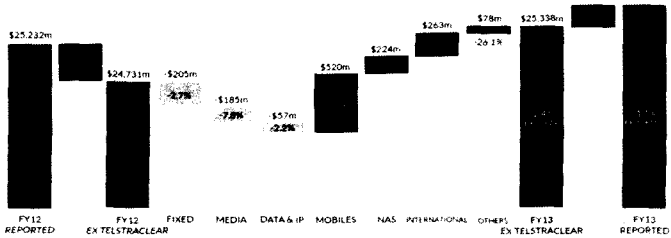
**Control chart** is commonly known as a process-behavior chart determine if a data set falls within a mean or predetermined control range. Frequently used in quality control processes, a typical control chart consists of points plotted on two axes, representing sample measurements. The mean of each point is calculated, and a center line across the graph at the mean value. Then, a standard deviation from the mean is calculated using each sample. Finally, upper and lower control limits are determined and diagrammed to reflect the points at which deviation is beyond the expected standard.



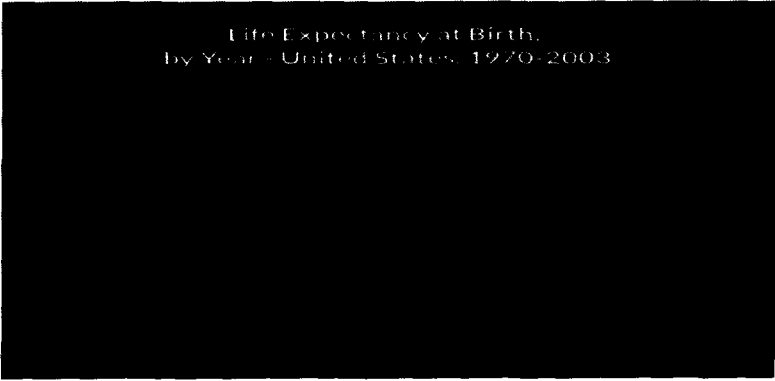
**Waterfall chart** is useful in accounting and qualitative analysis, illustrate how an initial value is affected positively and negatively by various factors. For example, a waterfall chart could clearly and efficiently communicate how an opening balance changes month by month over the course of a year. Because they often appear as though

bars are floating throughout the graph, waterfall charts are sometimes referred to as floating bricks or Mario charts.

PRODUCT PERFORMANCE  
SALES REVENUE GROWTH

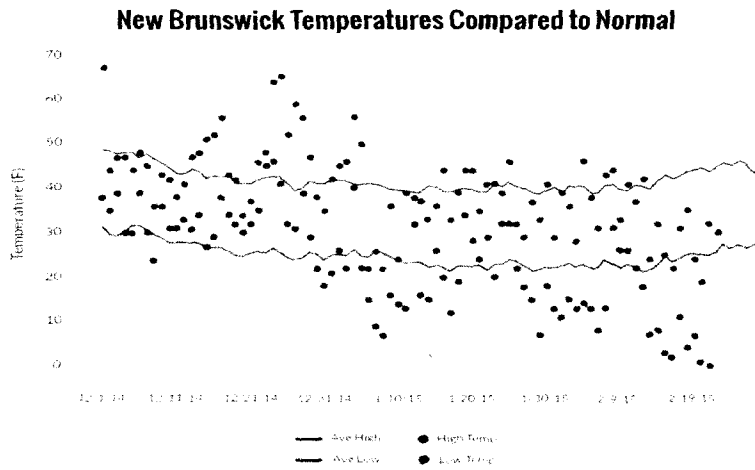


**Multi-Line Graph** is commonly used to display change over time as a series of data points connected by straight line segments on two axes. The line graph therefore helps to determine the relationship between two sets of values, with one data set always being dependent on the other set.



**Scatter-Line Combo** is combining a line graph with a scatter plot, meteorologists and other statisticians can illustrate the relationship between two data sets. For example, the high and low temperatures of each day in a month can be displayed in a scatter plot, then a line graph can be added to plot the historic average high and low temperatures over the same period. The resulting combination graph clearly displays how the temperature range each day compares to the historic average, and it even indicates how those

measurements trend over the examined time period.



## CHAPTER VIII. VARIABLES IN RESEARCH

Variable is a concept which can take on different quantitative values. For example; height, weight, income, age etc. The main focus of the scientific study is to analyse the functional relationship of the variables. A variable is a quantity which can vary from one individual to another. The quantity which can vary from person to person. "Variable is a property that taken on different value".

### ***Kerlinger***

It is any feature or aspect of an event, function or process that, by its presence and nature, affects some other event or process, which is being studied.

#### **1. Continuous Variable**

It is that which can assume any numerical value within a specific range.

#### **2. Discrete Variable**

A variable for which the individual values fall on the scale only with distinct gaps is called a discrete variable.

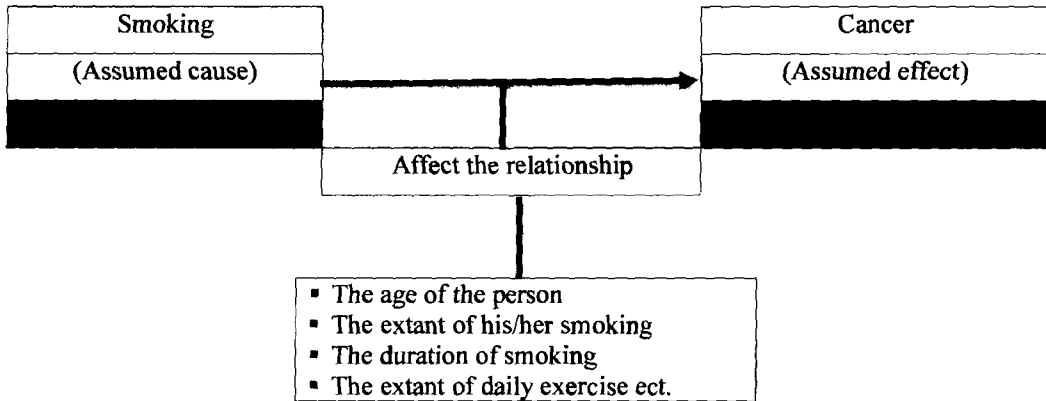
#### **3. Dependent Variable or Criterion variable**

If one variable depends or is a consequence of other, it is termed as dependent variable. Criterion variable is the basis on which the effectiveness of the experimental variable is studied. The outcome or change(s) brought about by introduction of an independent variable

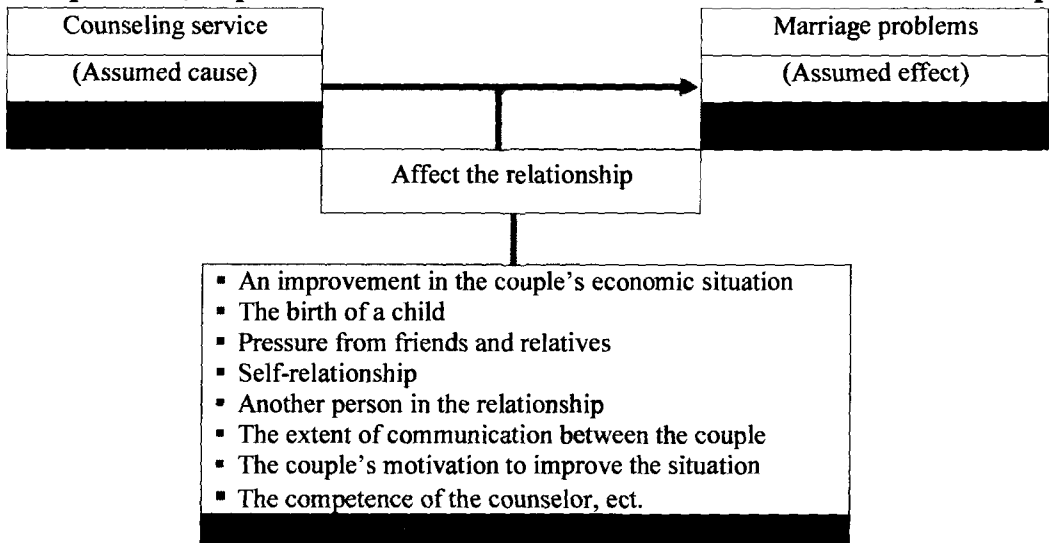
#### **4. Independent Variable or Experimental Variable**

The variable that is antecedent to the dependent variable is termed as an independent variable. The variable whose effect is going to be known is known as experimental variable. Cause supposed to be responsible for bringing about change(s) in a phenomenon or situation.

## Formulation of Hypothesis



## Independent, dependent and extraneous variables in a causal relationship



## Sets of variables in counseling and marriage problems

### 5. Controlled Variable

The effectiveness of an experimental variable is examined by comparing with other variable, known as controlled variable.

### 6. Confounding Variable

Those aspects of study or sample, that might influence the dependent variable (outcome measures), and whose effect may be confused with the effects of the independent variable. They are of two

types; Intervening and extraneous variable.

### **7. Intervening Variable**

There are a number of abstract variables in educational/social experiments, which intervene the effect of experimental or criterion variable. For controlling intervening variable appropriate research design should be used. Intervening variables are hard if not impossible, to observe because they usually have to do with an individual's feelings like boredom, stress, fatigue, excitement etc. Extraneous variable on the other hand, are more readily observed or measured and thus are more easily controlled.

Sometimes called the confounding variable (Grinnell 1988: 203), it links the independent and dependent variables. In certain situations the relationship between an independent and a dependent variable cannot be established without the intervention of another variable. The cause, or independent, variable will have the assumed effect only in the presence of an intervening variable.

### **8. Extraneous Variable**

Independent variables that are not related to the purpose of the study, but may affect the dependent variable are termed as extraneous variables. Suppose the researcher wants to test the hypothesis that there is a relationship between children's gain in social studies achievement and their self-concept. Here self-concept is independent variable and achievement in social study is dependent variable. Intelligence may as well affect the social studies achievement; but since it is not related to the purpose of the study undertaken by the researcher, it will be termed as extraneous variable. Whatever effect is noticed on dependent variable as a result of extraneous variable(s) is technically described as an 'experimental error.'

A study must always be so designed that the effect upon the dependent variable is attributed entirely to the independent variables 31 and not to some extraneous variable(s).When the



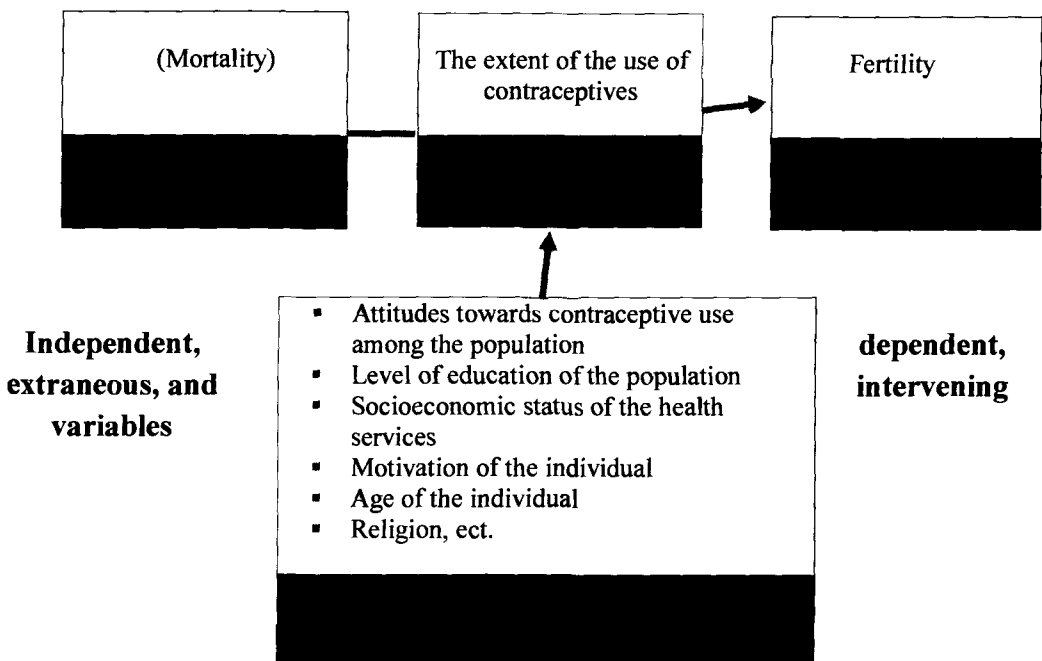
dependent variable is not free from the influence of extraneous variable(s), the relationship between the dependent and independent variable is said to be confounded by an extraneous variable(s).

Extraneous variable can be controlled by removing the variable causing distraction. It may be eliminated by selecting cases with uniform characteristics and through randomization.

Several other factors operating in a real-life situation may affect changes in the dependent variable. These factors, not measured in the study, may increase or decrease the magnitude or strength of the relationship between independent and dependent variables.

### 9. Organismic Variable

There are some variables which cannot be manipulated. They are accepted by the researcher as they are. They are levels of intelligence, sex, class levels, and the like. The researcher can classify the subjects by sex but he cannot modify to suit his research condition. If a researcher attempts to compare boys and girls on some learning task, any differences might be attributed to sex differences but not necessarily so.



<p><b>Study intervention</b></p> <ul style="list-style-type: none"> <li>▪ Different teaching models</li> <li>▪ Experimental intervention</li> <li>▪ Programme service, ect.</li> </ul> <hr style="border: 2px solid black;"/> <p>A researcher can manipulate, control or measure</p>	<p><b>Study population</b></p> <ul style="list-style-type: none"> <li>▪ Age</li> <li>▪ Gender</li> <li>▪ Level of motivation</li> <li>▪ Attitudes</li> <li>▪ Religion, ect.</li> </ul> <hr style="border: 2px solid black;"/> <p>A researcher cannot manipulate, control or measure</p>
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### **Active and attribute variable**

#### **CAUSAL RELATIONSHIP**

- a) Change variables, which are responsible for bringing about change in a phenomenon, situation or circumstance;
- b) Outcome variables, which are the effects, impacts or consequences of a change variable;
- c) Variables which affect or influence the link between cause-and-effect variables;
- d) Connecting or linking variables, which in certain situations are necessary to complete the relationship between cause-and-effect variables.

#### **The Study Design**

A study that examines association or causation may be a controlled/contrived experiment, a quasi-experiment or an ex post facto or non-experimental study. In controlled experiments the independent (cause) variable may be introduced or manipulated either by the researcher or by someone else who is providing the service:

- a) **Active variables**– those variables that can be manipulated, changed or controlled.
- b) **Attribute variables**– those variables that cannot be manipulated, changed or controlled, and that reflect the characteristics of the study population, for example age, gender, education and income.

## **THE UNIT OF MEASUREMENT**

-whether the unit of measurement is categorical (as in nominal and ordinal scales) or continuous in nature (as in interval and ratio scales);

-whether it is qualitative (as in nominal and ordinal scales) or quantitative in nature (as in interval and ratio scales).

Categorical variables are measured on nominal or ordinal measurement scales, whereas for continuous variables the measurements are made on either an interval or a ratio scale.

### **Categorical variables**

▪ **constant variable**- has only one category or value, for example taxi, tree.

▪ **dichotomous variable**- has only two categories, as in male/female, yes/no, good/bad, head/tail, up/down and rich/poor;

▪ **polytomous variable**- can be divided into more than two categories, (Christian, Muslim, Hindu); political parties (Labor, Liberal, Democrat); and attitudes (strongly favourable, favourable, uncertain, unfavourable,).

## **MEASUREMENT SCALES**

### **1. Nominal or classificatory scale;**

A nominal scale enables the classification of individuals, objects or responses based on a common/shared property or characteristic. For example, 'water' and 'taxi' have only one subgroup, whereas the variable 'gender' can be classified into two subcategories: male and female.

### **2. Ordinal or ranking scale;**

An ordinal scale has all the properties of a nominal scale - categorizing individuals, objects, responses or a property into subgroups on the basis of a common characteristic - but also ranks the subgroups in a certain order. For example, income can be measured either quantitatively (in dollars and cents)

### 3. Interval scale;

An interval scale has all the characteristics of an ordinal scale; that is, individuals or responses belonging to a subcategory have a common characteristic and the subcategories are arranged in an ascending or descending order, Celsius and Fahrenheit scales are examples.

### 4. Ratio scale.

A ratio scale has all the properties of nominal, ordinal and interval scales and it also has a starting point fixed at zero. Therefore, it is an absolute scale – the difference between the intervals is always measured from a zero point.

### Characteristics and examples of the four measurement scales

Measurement scale	Examples	Characteristics of the scale
Nominal or classificatory	A Tree, house, taxi, etc. B Gender: male/female Attitude: Favorable/unfavorable C Political parties <ul style="list-style-type: none"><li>• Labor</li><li>• Liberal</li><li>• Democrat</li><li>• Green</li></ul> Psychiatric disorders <ul style="list-style-type: none"><li>• Schizophrenic</li><li>• Paranoid</li><li>• Manic-depressive, etc.</li></ul> Religions <ul style="list-style-type: none"><li>• Christian</li><li>• Islam</li></ul> Hindu, etc.	Each subgroup has a characteristic / property which is common to all classified within that subgroup.

Ordinal ranking	<p>or</p> <p>Income</p> <ul style="list-style-type: none"> <li>• Above average</li> <li>• Average</li> <li>• Below average</li> </ul> <p>Socioeconomic status</p> <ul style="list-style-type: none"> <li>• Upper</li> <li>• Middle</li> <li>• Low</li> </ul> <p>Attitudes</p> <ul style="list-style-type: none"> <li>• Strongly favorable</li> <li>• Favorable</li> <li>• Uncertain</li> <li>• Unfavorable</li> <li>• Strongly favorable</li> <li>• Strongly unfavorable</li> </ul> <p>Attitudinal scale (Likert scale- these are numerical categories)</p> <ul style="list-style-type: none"> <li>• 0-30</li> <li>• 31-40</li> <li>41-50,etc.</li> </ul>	<p>It has the characteristics of a nominal scale, e.g. individuals, groups, characteristics classified under a subgroup have a common characteristic</p> <p>Plus Subgroups have a relationship to one another. They are arranged in ascending or descending order.</p>
Interval	<p>Temperature</p> <ul style="list-style-type: none"> <li>• Celsius-0 @ C</li> <li>• Fahrenheit 32 @ F</li> </ul> <p>Attitudinal scale(Thurs tone scale)</p> <ul style="list-style-type: none"> <li>• 10-20</li> <li>• 21-30</li> <li>• 31-40</li> <li>41-50,etc.</li> </ul>	<p>It has all the characteristics of an ordinal scale(which also includes a nominal scale)</p> <p>PLUS</p> <p>It has a unit of measurement with an arbitrary starting and terminating point.</p>
Numerical	<p>Height: cm</p> <p>Income: \$</p> <p>Age: years/moths</p> <p>Weight: kg</p> <p>Attitudinal score:</p> <p>Guttman scale:</p>	<p>It has all properties of an interval scale</p> <p>PLUS</p> <p>It has a fixed starting point, e.g. a zero point.</p>

## CHAPTER IX. HOW TO WRITE AND PUBLISH RESEARCH PAPER

### **Reasons for Writing:**

The following are the main reasons on account of which the researcher should write the research report.

- It is a logical conclusion of doing the research.
- It enriches the curriculum vitae of the researcher which helps him in appointment and promotion.
- Writing of the research report is an easy task and it is not that difficult as understood.

### **What to publish:**

New and original results or methods

Reviews or summaries of particular subject

### **What NOT to publish:**

- Reports of no scientific interest
- Out of date work
- Duplications of previously published work
- Incorrect/unacceptable conclusions

### **JOURNAL SELECTION**

#### **Evaluate which journal is right for your article**

- Impact Factor
  - Subject Specific Impact Factor
- (<http://tinyurl.com/scopusimpact>)
- SCImago Journal & Country Ranking (<http://scimagojr.com/>)
  - Journal Analyzer
  - SNIP (using Scopus)
  - h-Index

## **TIPS FOR JOURNAL SELECTION**

1. The most common mistake to be made is not knowing the body of research in which an article fits. Wrong choice of journal for publishing spells outright rejection. Even if the article is very encouraging with sound and rigorous scholarly work, it will not stand the test.

2. Look at journals that have published articles on your topic previously. This is an encouraging sign that your work may appeal to the journal editors.

3. Look at journal impact factors. This will give you an idea of the quality of the journal and how difficult it will be to get your paper accepted.

4. Look at journal acceptance/rejection rates. These are sometimes, but not always, inversely correlated with impact factor values.

5. Look at average time to publication as well as average time to acceptance/rejection notification. If you want your work published fast then make sure you choose a journal that offers rapid processing. Some journals will highlight their rapid processing times as an impetus for authors to submit their work to those particular journals.

6. Some journals charge fees for manuscript processing or color figure reproduction for accepted manuscripts. Make sure you are familiar with the costs associated with publication before you submit your work.

## **MANUSCRIPT SUBMISSION**

Manuscripts that advance the knowledge and understanding in a certain scientific field.

**What type of manuscript?**

Full articles/Original articles;

- ✓ Letters/Rapid Communications/Short communications;
- ✓ Review papers/perspectives;
- ✓ Poster to present at conference – special case

### **TIPS FOR MANUSCRIPT SUBMISSION**

1. Look at papers recently published in your journal of interest. Ask yourself if your paper is of equal or higher caliber. If not, submit your work to a different journal.

2. Identify the journals related to your field of study and their individual focuses, and then select a journal with a focus similar to the content of your manuscript. Many journals will clearly describe their focus and scope on their website.

3. Consider your field of study. Every field of study has several different journals publishing information pertaining to that field. Knowing the names of those journals narrows your prospective playing field.

4. Select two or three journals with a focus similar to the content of your manuscript. While you are only going to be published in one, preparing multiple choices keeps you from having to duplicate the selection process immediately following your possible rejection.

5. Locate the contact information for each journal and any information pertaining to submissions. Make sure you get the most recent information, as the names of editors and submission policies can change over time and without warning.

6. Go over your manuscript to ensure it is formatted according to the submission guidelines, paying special attention to the references/bibliography, text formatting, and citation style.

7. Create your cover letter. This should include the name of the editor to whom you are sending your work, if available. While you want to be personable, you should avoid being too personal. This is a



business communication, not a letter to your friend. Be sure to keep it professional. Include contact information for the editor in case he or she should wish to speak with you about your work. 80. Get your cover letter professionally edited. Cover letters are often the first thing that a journal editor will read. Your letter needs to be strong and impressive, as it can set the tone for the subsequent review process.

8. Submit your work. This could be done physically or electronically, depending on the submission guidelines of your selected journal. In the case of electronic submissions, some journals will accept attachments; others will not. Be sure to send your work in the correct format. If you are sending it physically, include a self-addressed, stamped envelope, either large enough to return your work in or just large enough for them to send you a letter.

9. Aim high but not too high. Aiming for top tier journals with research findings that are not groundbreaking will leave you with a lot of rejections.

10. Do NOT submit your article to more than one journal at a time. This is unethical and you will eventually get caught.

11. When uploading text, table and image files electronically, many submission systems will dynamically assemble your files into a single PDF document for easier handling. Be sure to review your PDF after it is generated to ensure that it looks correct and that all information has been included.

12. Respect word length. Many journals have specific requirements for word length for different document types (original articles, short reports, case reports, review papers, etc). If the journal says the word limit is 6000 then do not send a paper with 6100 words.

13. If a journal allows you to suggest reviewers for your manuscript, do so. This can work to your advantage. Suggest

reviewers who know your field well and who might be interested in the results presented in your paper.

14. If a journal allows you to suggest reviewers who you do not want to review your paper, take advantage of this to make sure your work is not sent to someone in your field who may not see eye to eye with you, your supervisor, your lab, or your research in general.


15. If you definitely do not want your paper reviewed by specific individuals in your field, do not submit a paper to a journal where these individuals have published recently. Editors often look to people who have recently published on a similar topic in their journal to serve as reviewers.

16. If you think specific reviewers may look favorably upon your work, look to journals where they have recently published and submit your work there, if it is within scope. In doing so, be sure to reference these individuals in your manuscript whenever credit is due. There is nothing that angers peer reviewers more than reviewing an article in which their own work should be cited and is not.

17. Read the mission statement for the journal to which you will submit your work. If your paper is highly theoretical and the journal clearly states that it does not publish purely theoretical work, find a new journal.

18. Email the editor to see if your manuscript topic is appropriate. Most will happily direct you elsewhere if it is inappropriate for their journal.

19. Look for journals that have issued calls for papers. They are more likely to look upon any work favorably.



1. When you get initial peer reviews, consider them carefully. In your resubmission cover letter, respond to each point made by each reviewer. Highlight the points you followed and the ones you did not (and indicate why).

2. When you are asked to perform additional studies, do them quickly and resubmit your manuscript as soon as possible.

3. If reviewers suggest changes/additional studies before the article can be published, respond to the editor indicating that you will address these suggestions so that they know your intentions.

4. Do not respond to reviewer comments in an argumentative tone. Be polite but straightforward. Feel free to disagree but be sure to have hard evidence to support your claims.

5. If accepted, be sure to carefully check page proofs and do so quickly. A 24-48 hour turnaround request is typical.

6. In responding to reviewer comments, it is a good idea to copy and paste the reviewers' comments verbatim in one color (e.g. black) and add your responses in another color (e.g. blue). You should also copy and paste any relevant sections from your revised manuscript into your cover letter. Ideally, a reviewer should be able to tell how adequately you have addressed their comments without having to read your revised manuscript.

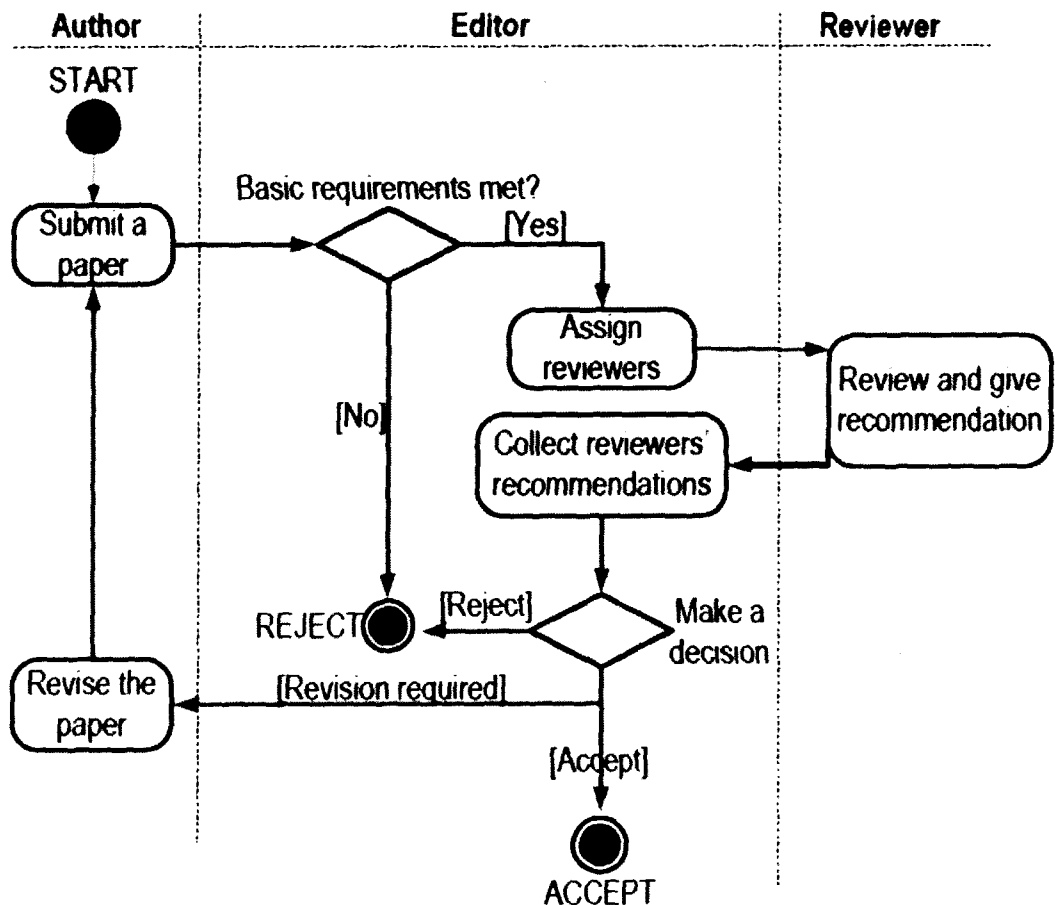
7. Well-organized, well-written response letters can help a manuscript circumvent re-review. The editor will see the changes that you have made and may accept it outright.

8. Remember to select as many "Key Words" as possible. Many people do key word searches when performing literature reviews. This will increase the likelihood of your manuscript being read.

9. We want you, the reader, to send us your tips. If we like what

you send us, it might just occupy position 101 on our list.

### EDITORIAL PROCESS



*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 14.*

Essential filter to separate science from speculation and to determine scientific quality

▪ **Peer review helps**

✓ determine the validity, significance and originality of research,

✓ improve the quality of papers,

✓ Protect the author's work and claim to authorship

- Publishers have ensured the sustainability of journals and the peer-review system for over 300 years. They stand outside the academic process and are not prone to prejudice or favor.

- Generally editors do a first check (topic, language, completeness,...). They are allowed to desk-reject.

- After initial check, they will send out for review, usually to a few referees. Review process takes several weeks. Many invited reviewers decline invitation, adding to review times.

- Editor receives referee-reports and takes a decision based on them.

- In case of doubt, they may consult another referee or review themselves.

- Editor informs the author about the decision

## **FINDING THE RIGHT JOURNAL**

Select the right journal by considering:

- Aims & Scope (check journal websites and recent articles)

- Types of articles (full paper, letter, review paper)

- Audience (specialists, multidisciplinary, general)

- Recently published papers

- Choose only one journal, as simultaneous submissions are prohibited

- Supervisors and colleagues can provide good suggestions

- Articles in your reference list will usually lead you directly to the right journals

- better to begin with a checklist:

- Is this journal the right fit for my work?

- Do you or your colleagues know the journal?

- Is the journal accredited by relevant databases? Scopus, PubMed etc

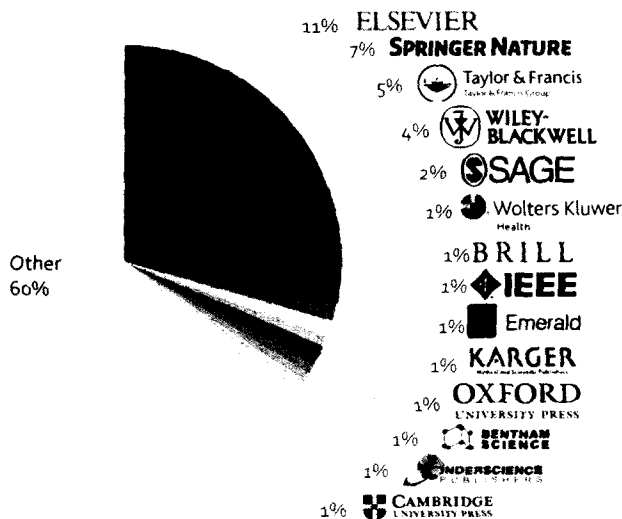
- Can you easily identify and contact the publisher?

- Do you recognize the editorial board?

### Use Scopus Compare Sources Tool

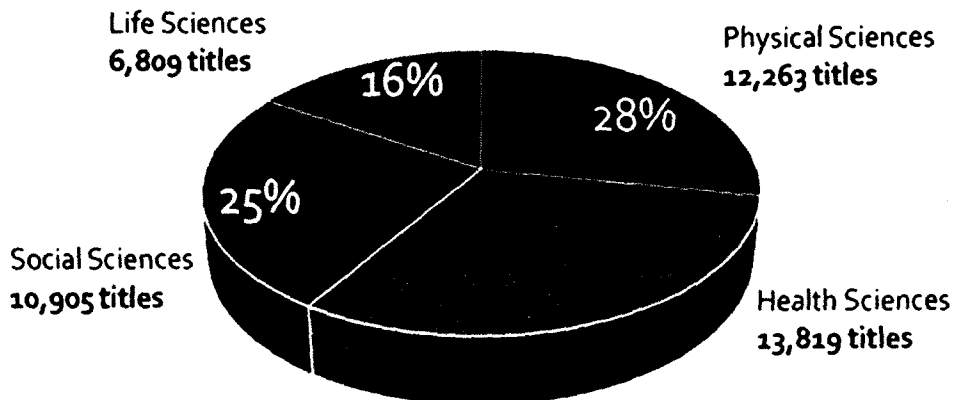
- Type your subject area and list all related journals among 23,507 journals in Scopus database from more than 6000 publishers.
- Compare journals based on different metrics
- Evaluate shortlisted journals more in a detail

### PUBLISHERS COVERAGE SCOPUS



*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 15.*

Titles on Scopus are classified under 4 subject clusters and indexed into 27 main subject areas:



## **DEVELOPING A MANUSCRIPT**

### **What Editors want?**

- Originality
- Significant advances in field
- Clear context and relations to previous work
- Appropriate methods and conclusions
- Readability
- Studies that meet ethical standards

### **Remember:**

1. All editors and reviewers hate wasting time on poorly prepared manuscripts and will reject!

2. You want to get published, but editors want original and attractive papers for their journal. So, focus on what the reader wants to read.

### **1. Think before Writing**

Follow the guide for authors!

▪ All journals have a detailed guide-for-authors which contains precise instructions how to prepare a manuscript

- Read carefully and follow the instructions
- Pay attention to
- Layout and section lengths (stick to word limits)
- Nomenclature, abbreviations and spelling
- Reference format
- Number/type of figures and tables
- Statistics
- Guidelines to submission

### **2. Use the right process to write paper**

Collect elements of paper:

- Prepare an outline to start writing a first draft:

- Determine the central message, the research questions
- Prepare draft versions of plots, figures, tables, images (get help from Science Direct & Mendeley data)
- Summarize main findings and group in a logical way
- Select references (Check Scopus & Science Direct to see how your peers did )
- Prepare a first draft:
- Write a first draft with outline, figures and tables as your guides
  - Write in your own style, quickly and without editing
  - Do not care about language quality
  - Read your first draft and add notes
  - Read it as a critical reader (not as the author)
  - Is the main message clear to new readers?
  - Rewrite / improve:
  - Revise the text
  - Improve the order and logic of the scientific content
  - Identify gaps and improve unclear parts
  - Optimize the readability (clear, concise, short sentences)
  - Correct language errors
  - Is the text consistent and coherent? (important when multiple authors write the text)
- Get feedback from co-workers and colleagues

#### **4. Language**

- Journal editors and in particular reviewers may reject a manuscript simply because of frequent language mistakes.
  - Publishers do not language edit manuscripts
  - If English is not your mother -tongue:
  - Find a native-English speaker to read and correct your manuscript
- Use a paid-for editing service. More information at
- <http://webshop.elsevier.com/languageediting/>



- DO NOT copy complete phrases from other papers, it may be considered plagiarism!

- REMEMBER: All editors and reviewers hate wasting time on poorly prepared manuscripts and will reject!!

### **TIPS**

- Write short and direct sentences
- Convey one piece of information per sentence and avoid multiple statements in one sentence

- The average length of sentences in scientific writing is about 12-17 words

- Double-check unfamiliar words or phrases

- Clearly explain abbreviations

- Use 'present tense' for known facts and hypotheses

- Use 'past tense' for conducted experiments and results

### **4. Ensure paper is up-to-date and in right context**

- Editors want to:

- ✓ Understand how your work is related to previous research

- ✓ Be sure that your work builds upon the most recent insights

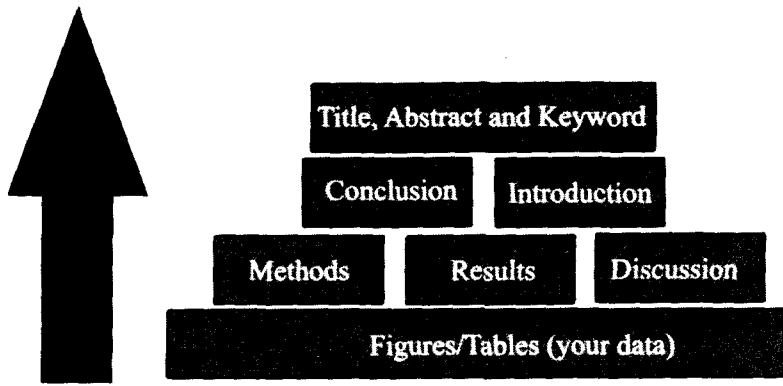
- ✓ Be sure all relevant (international) work has been taken into account

- For that purpose they will take a close look at:

- ✓ Introduction

- ✓ List of references

### **5. Use the correct article structure**



*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 37.*

## **EFFECTIVE MANUSCRIPT TITLES**

- Attract reader's attention
- Contain fewest possible words
- Adequately describe the content
- Informative but concise
- Identify the main issue
- Do not use technical jargon & rarely-used abbreviations

## **AUTHORS**

### **First Author:**

- Conducts and/or supervises the data analysis and the proper presentation and interpretation of the results
- Puts paper together and prepares final version

### **Corresponding Author:**

- Best person to contact regarding paper, leader of research team.

### **Co-Author(s):**

- Makes intellectual contributions to data analysis and interpretation
- Reviews each paper draft and approves submission
- Must be able to present, understand and defend the complete

work.

## **6. Be prepared for common questions to reviewers**

- Editors want to know if a certain paper is worth publishing

They want to know if:

- Paper is scientifically correct
- If it reports something new
- If it reports something significant
- If the paper is of interest to the readers

### **Common questions include:**

- Does the topic of the paper fit within the journal?
- Are title and abstract in line with content?
- Is the introduction clear, balanced and well organized?
- Are experiments correct? Can they be repeated based on description?
- Comment on need and quality of tables/figures/images.
- Are the results well-presented and analyzed?
- Is research put in appropriate context?
- Are references accurate, up-to-date, balanced, accessible?
- Comment on importance, validity, generality of conclusions

## **SUBMITTING YOUR MANUSCRIPT**

### **First stage**

Check completeness of manuscript, including supplementary material (guide-for-authors)

- Check style of references stated in Guide for Authors Use Mendeley to easily convert to different styles!

### **Second stage**

- Prepare graphical abstracts / research highlights
- Check Science Direct –See how your peers use it!

### **Third stage**

- Write cover letter

#### **Writing a good cover paper:**

- This is your opportunity to convince the journal editor that they should publish your study. Take that opportunity!
- Briefly describe:
  - ✓ Yourself: your background, expertise research area, track record
  - ✓ Describe the research field, main developments, key-players
  - ✓ The main findings of this research and what is new
  - ✓ The significance of this research
  - ✓ The significance and relevance for journal
- Refer to previous papers on same topic in the journal.
- Keep it brief, but convey the particular importance of your manuscript to the journal
  - Suggest reviewers from different institutes/countries, describe why you suggest them (e.g. their specific expertise), also mention who should not review your paper and explain why.

#### **EDITOR'S DECISION**

- Carefully study there viewers' comments, adjust your manuscript and prepare a detailed letter of response
  - Respond to all points; even if you disagree with a reviewer. Provide a scientifically solid rebuttal, not ignore their comment.
  - State specifically what changes you have made to address there viewers' comments, mention page and line numbers where changes have been made
  - Perform additional experiments, calculations or computations, if required; these usually serve to make the final paper stronger.
  - **Golden Rule: Be polite, be thorough, answer with evidence**

## PUBLISHING ETHICS

- Submitting a paper implies that you are familiar with and have accepted publishing ethics, see
  - Guide for Authors
  - [www.elsevier.com/publishingethics](http://www.elsevier.com/publishingethics)

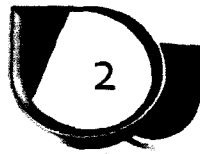
Also, during the submission process, you are asked to confirm a few declarations. Editors will reject papers if they observe any misconduct. They will make a note. Journals can retract published papers and state in public why a paper was retracted. They may also inform the institute management.

**3 most common forms of ethical misconduct that the research community is challenged with:**



**FABRICATION**

Making up the research data



**FALSIFICATION**

Manipulation of existing research data



**PLAGIARISM**

Previous work taken and passed off as one's own



destroyed academic and professional reputation, there can be legal and monetary repercussions, retractions

Words, ideas, findings, writings, graphic representations, diagrams, graphs, illustrations, printed & electronic material, any other original work can be plagiarised

*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 191.*

## **CORRECT CITATION IS THE KEY!**

Crediting the work of others (including your own previous work) by citation is important for at least 3 reasons:

- To place your own work in context
- To acknowledge the findings of others on which you have built your research

- To maintain the credibility and accuracy of the scientific literature

### **PARAPHRASING**

Restating someone else's ideas while not copying their actual words verbatim.

#### **UNACCEPTABLE:**

- Using exact phrases from the original source without enclosing them in quotation marks
- Emulating sentence structure even when using different words
- Emulating paragraph organization even when using different wording or sentence structure

### **Publishing Ethics –Conflict of Interest**

- **Financial relationships:** employment, stockownership, grants, patents, honoraria, consultancies to sponsoring organizations, mutual fund ownership, paid expert testimony.

- **Personal relationships:** a relative who works at the company whose product the researcher is evaluating.

- **Academic competition and intellectual passion:** A self-servings take in the research results for potential promotion or career advancement based on outcomes.

- **Personal beliefs:** beliefs that are indirect conflict with the topic searching.

- *Undeclared conflicts may seriously undermine the credibility of the journal, the authors, and the science itself.*

- *Transparency and disclosure is the proper way to avoid potential conflicts becoming an issue. Authors should therefore disclose any potential conflicts to the journal editor when they submit their cover letter with their manuscript.*

### **Publishing Ethics –Authorship**

- An “**author**” is generally considered to be someone who has

made substantive intellectual contributions to a published study

- Decisions about who will be an author and the order of authors should be made before starting to write up the project
- Policies can vary widely between fields and journals. If in doubt, check with the journal Editor in advance
- **Avoid ghost authorship:** excluding authors who participated in the work
- **Avoid gift authorship:** including authors who did not contribute to the work
- All authors should be aware that they are being included!

### Publishing Ethics -WHY IMPORTANT?



#### Ensures scientific progress

Truth is the foundation of science and the progress of ideas. The scientific community thrives only when each participant publishes with integrity.

#### Protects life and planet

Publishing ethically ensures that we have trusted information on which to build future therapies, technologies, and policies, meaning don't wasting resources.



#### Promotes ethical behaviour

Doing the right thing sets an example and reinforces our responsibility to our peers and society at large

#### Essential for reputation

There's nothing like getting published and being able to accept credit and accolades for a job well done. Do it the right way. A published paper is a permanent record of your work that represents not only you but the research institution, the funding body, and other researchers.



*Source: Author Workshop for Early Researchers, Introduction to Scholarly Publishing Prepared for ELSEVIER DAY in KAZNU, 2018, page 53.*

### Being Critical

As an academic writer, you are expected to be critical of the sources that you use. This essentially means questioning what you read and not necessarily agreeing with it just because the information

has been published. Being critical can also mean looking for reasons why we should not just accept something as being correct or true. This can require you to identify problems with a writer's arguments or methods, or perhaps to refer to other people's criticisms of these. Constructive criticism goes beyond this by suggesting ways in which a piece of research or writing could be improved.

### **Requirement for the writing**

- clarity
- objectivity
- accuracy
- brevity

### **Successful scientific writing**

- Sentence construction
- Incorrect tenses
- Inaccurate grammar
- Not using English

### **Scientific Language –Sentences**

- Write direct and short sentences
- One idea or piece of information per sentence is sufficient
- Avoid multiple statements in one sentence

### **General principles for who is listed first**

#### *First Author*

▪ Conducts and/or supervises the data generation and analysis and the proper presentation and interpretation of the results

- Puts paper together and submits the paper to journal

#### *Corresponding author*

▪ The first author or a senior author from the institution  
▪ Particularly when the first author is a PhD student or postdoc, and may move to another institution soon.

#### *Abuses to be avoided*

- Ghost Authors: leaving out authors who should be included
- Gift Authors: including authors who did not contribute



significantly.

### **Acknowledged Individuals**

- Include individuals who have assisted you in your study
- Advisors
- Financial supporters
- Proofreaders
- Typists
- Suppliers who may have given materials

### **Motivation in research**

- Desire to get a research degree along with its consequential benefits;
- Desire to face the challenge in solving the unsolved problems, i.e., concern over practical problems initiates research;
- Desire to get intellectual joy of doing some creative work;
- Desire to be of service to society;

**Logical analysis of the subject matter:** It is the first step which is primarily concerned with the development of a subject. There are two ways in which to develop a subject

- logically
- chronologically

The logical development is made on the basis of mental connections and associations between the one thing and another by means of analysis.

**Preparation of the final outline:** It is the next step in writing the research report "Outlines are the framework upon which long written works are constructed. They are an aid to the logical organization of the material and a reminder of the points to be stressed in the report.

**Preparation of the rough draft:** This follows the logical analysis

of the subject and the preparation of the final outline. Such a step is of utmost importance for the researcher now sits to write down what he has done in the context of his research study.

**Rewriting and polishing of the rough draft:** This step happens to be most difficult part of all formal writing. Usually this step requires more time than the writing of the rough draft. The careful revision makes the difference between a mediocre and a good piece of writing. While rewriting and polishing, one should check the report for weaknesses in logical development or presentation

**Preparation of the final bibliography:** Next in order comes the task of the reparation of the final bibliography. The bibliography, which is generally appended to the research report, is a list of books in some way pertinent to the research which has been done. It should contain all those works which researcher has consulted. The bibliography should be arranged alphabetically and may be divided into two parts; the first part may contain the names of books and pamphlets, and the second part may contain the names of magazine and newspaper articles. Generally, this pattern of bibliography is considered convenient and satisfactory from the point of view of reader, though it is not the only way of presenting bibliography. The entries in bibliography should be made adopting the following order:

**Order for the books and pamphlets**

1. Name of author, last name first.
2. Title, underlined to indicate italics.
3. Place, publisher, and date of publication.
4. Number of volumes.

**Example**

Kothari, C.R., *Quantitative Techniques*, New Delhi, Vikas Publishing House Pvt. Ltd., 1978.

**Order for the magazines and newspapers**

1. Name of the author, last name first.
2. Title of article, in quotation marks.

3. Name of periodical, underlined to indicate italics.
4. The volume or volume and number.
5. The date of the issue.
6. The pagination.

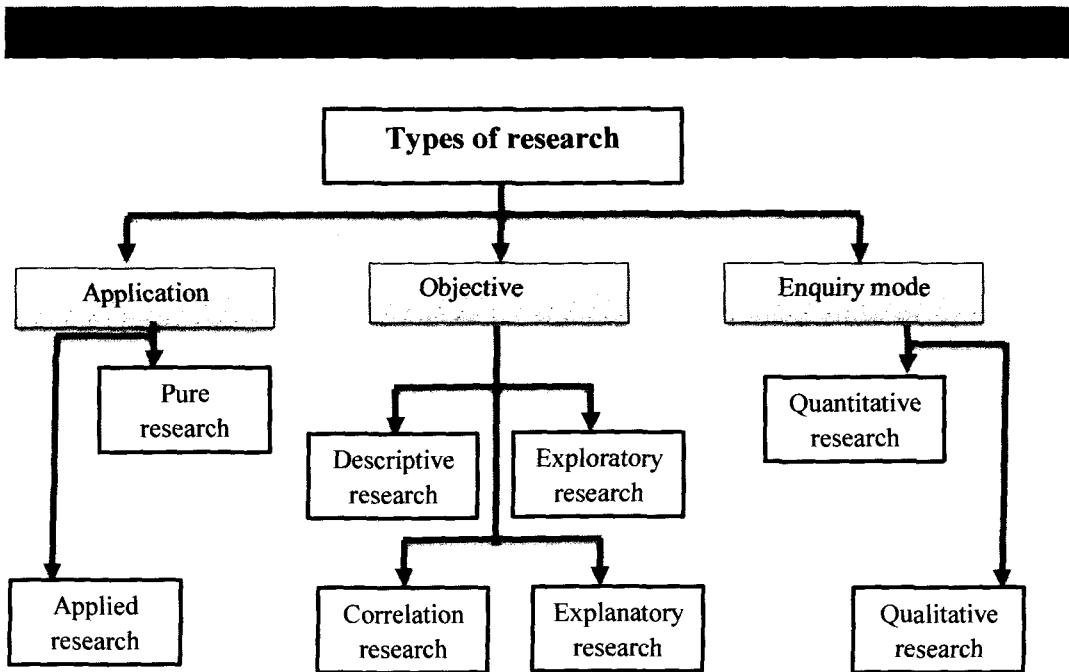
### **Example**

Robert V. Roosa, "Coping with Short-term International Money Flows", *The Banker*, London, September, 1971, p. 995.

**Writing the final draft:** This constitutes the last step. The final draft should be written in a concise and objective style and in simple language, avoiding vague expressions such as "it seems", "there may be", and the like ones. While writing the final draft, the researcher must avoid abstract terminology and technical jargon. Illustrations and examples based on common experiences must be incorporated in the final draft as they happen to be most effective in communicating the research findings to others. A research report should not be dull, but must enthuse people and maintain interest and must show originality. It must be remembered that every report should be an attempt to solve some intellectual problem and must contribute to the solution of a problem and must add to the knowledge of both the researcher and the reader. Form an opinion of how seriously the findings are to be taken. For this purpose there is the need of proper layout of the report. The layout of the report means as to what the research report should contain.

A comprehensive layout of the research report should comprise

1. preliminary pages;
2. the main text;
3. the end matter



**(i) Descriptive vs. Analytical:** *Descriptive research* includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. In social science and business research we quite often use.

**Ex post facto research:** the term *Ex post facto research* for descriptive research studies. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Most *ex post facto research* projects are used for descriptive studies in which the researcher seeks to measure such items as, for example, frequency of shopping, preferences of people, or similar data.

**(ii) Applied vs. Fundamental:** Research can either be applied (or action) research or fundamental (to basic or pure) research. *Applied research* aims at finding a solution for an immediate problem facing a society or an industrial/business organization, whereas

*fundamental research* is mainly concerned with generalizations and with the formulation of a theory. "Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research."<sup>4</sup> Research concerning some natural phenomenon or relating to pure mathematics are examples of fundamental research.

**(iii) Quantitative vs. Qualitative:** Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. For instance, when we are interested in investigating the reasons for human behavior (i.e., why people think or do certain things), we quite often talk of 'Motivation Research', an important type of qualitative research. This type of research aims at discovering the underlying motives and desires, using in depth interviews for the purpose.

**(iv) Conceptual vs. Empirical:** Conceptual research is that related to some abstract idea(s) or theory. It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research relies on experience or observation alone, often without due regard for system and theory. It is data-based research, coming up with conclusions which are capable of being verified by observation or experiment.

**(v) Some Other Types of Research:** All other types of research are variations of one or more of the above stated approaches, based on either the purpose of research, or the time required to accomplish research, on the environment in which research is done, or on the basis of some other similar factor. From the point of view of time, we can think of research either as *one-time research* or *longitudinal research*. In the former case the research is confined to a single time-period, whereas in the latter case the research is carried on over several time-periods. Research can be *field-setting research* or *laboratory research* or *simulation research*,

## **Criteria of good research**

One expects scientific research to satisfy the following criteria:

- The purpose of the research should be clearly defined and common concepts be used.
- The research procedure used should be described in sufficient detail to permit another researcher to repeat the researcher for further advancement, keeping the continuity of what has already been attained.
- The procedural design of the research should be carefully planned to yield results that are as objective as possible.
- The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.
- The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.
- Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.
- Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.



## **RESEARCH PROPOSAL**

### **Title of the Proposal:**

The first part of any research proposal is its title. If the title is not clearly stated it will not help the researcher in his work. A good title should clearly identify the research proposal and must clearly state about the following:

- What variables are included in the research proposal?

- What is the relationship between the different variables?
- Which is the population to which the results may be generalized?

**A research proposal should contain the following information about your study:**

- an introduction, including a brief literature review;
- theoretical framework that underpins your study;
- conceptual framework which constitutes the basis of your study;
- objectives or research questions of your study;
- hypotheses to be tested, if applicable;
- study design that you are proposing to adopt;
- setting for your study;
- research instrument(s) you are planning to use;
- sampling design and sample size;
- ethical issues involved and how you propose to deal with them;
- data processing procedures;
- proposed chapters of the report;
- problems and limitations of the study;
- proposed time-frame for the project.

**Some good titles are given below**

1. "A Comparison Between Two Methods of Teaching Algebra-Expository and Discovery-in the Tenth Class in a Recognized Secondary School".

2. "The Effects of Grading on Achievement in Mathematics."

3. "The Relationship between Spelling, Achievement and a Personality Factor".

4. "A Comparison of the Evaluation of Teacher Performance by Principals and Teachers".

5. "A Study of the Effect of Two Seating Arrangements in the in the Foreign Language Achievement of Class VI."

Having done all the preparatory work, the next step is to put

everything together in a way that provides adequate information about your research study, for your research supervisor and others. This overall plan, called a research proposal, tells a reader about your research problem and how you are planning to investigate. Broadly, a research proposal's main function is to detail the operational plan for obtaining answers to your research questions. In doing so it ensures – and reassures the readers of – the validity of the methodology to obtain answers accurately and objectively. Universities and other institutions may have differing requirements regarding the style and content of a research proposal, but the majority of institutions would require most of what is set out here. Requirements may also vary within an institution, from discipline to discipline or from supervisor to supervisor.

A research proposal must tell you, your research supervisor and a reviewer the following information about your study:

- what you are proposing to do;
- how you plan to proceed;
- why you selected the proposed strategy.

**Title should contain the following information:**

- a statement of the objectives of the study;
- a list of hypotheses, if you are testing any;
- the study design you are proposing to use;
- the setting for your study;
- the research instrument(s) you are planning to use;
- information on sample size and sampling design;
- information on data processing procedures;
- an outline of the proposed chapters for the report;
- the study's problems and limitations; and
- the proposed time-frame.

**STIMULUS MATERIALS**

It should also be specified in the research proposal that what



stimulus materials will be used in the study. Kinds and ways of stimuli should be described. Most commonly used stimuli are printed instructional materials. Instructional materials should include the following elements;

- Title
- Author/Editor
- Publisher
- Year of publication
- Intended population
- Time required for administration
- Cost of material

### **RESPONSE MEASURES**

The researcher should specify clearly what raw data are required by the research design and how they will be collected. Each instrument should be described including the following items of information:

- Title
- Author/Editor
- Publisher
- Population
- Forms
- Test Objectives
- Description of test ,items, scoring procedures
- Traits represented in score
- Predictive / Concurrent validity
- Reliability data
- Normative data
- Internal consistency of tests
- Time required for administration
- Cost of material
- Data of publication

## **Research Process**

- Formulating the Research Problem
- Extensive Literature Survey
- Developing the Research Hypothesis
- Preparing the Research Design
- Determining the Research Design
- Collecting the Research Data
- Execution of the Project
- Analysis of Data
- Hypothesis Testing
- Generalization and Interpretation
- Preparing of the Report or Presentation of the Result

### **(i) Formulation of Research Problem:**

At the very outset, the researcher must decide the general area of interest or aspect of a subject matter that he would like to inquire into and then research problem should be formulated.

The formulation of a research problem is the first and most important step of the research process. It is like the identification of a destination before undertaking a journey. In the absence of a destination, it is impossible to identify the shortest – or indeed any – route. Similarly, in the absence of a clear research problem, a clear and economical plan is impossible. To use another analogy, a research problem is like the foundation of a building. The type and design of the building are dependent upon the foundation. If the foundation is well designed and strong you can expect the building to be also. The research problem serves as the foundation of a research study: if it is well formulated, you can expect a good study to follow. According to Kerlinger:

If one wants to solve a problem, one must generally know what the problem is. It can be said that a large part of the problem lies in

knowing what one is trying to do. (1986: 17) You must have a clear idea with regard to what it is that you want to find out about and not what you think you must find.

**Most research in the humanities revolves around four Ps:**

- people;
- problems;
- programs; (content, structure, needs, profile)
- phenomena (cause and effect, relationship)

**Considerations in selecting a research problem**

When selecting a research problem/topic there are a number of considerations to keep in mind which will help to ensure that your study will be manageable and that you remain motivated. These considerations are:

**Interest**– Interest should be the most important consideration in selecting a research problem. A research endeavor is usually time consuming, and involves hard work and possibly unforeseen problems. If you select a topic which does not greatly interest you, it could become extremely difficult to sustain the required motivation and put in enough time and energy to complete it.

**Magnitude**– You should have sufficient knowledge about the research process to be able to visualize the work involved in completing the proposed study. Narrow the topic down to something manageable, specific and clear. It is extremely important to select a topic that you can manage within the time and with the resources at your disposal. Even if you are undertaking a descriptive study, you need to consider its magnitude carefully.

**Measurement of concepts**– If you are using a concept in your study (in quantitative studies), make sure you are clear about its indicators and their measurement. For example, if you plan to measure the effectiveness of a health promotion program, you must be clear as to what determines effectiveness and how it will be measured. Do not use concepts in your research problem that you are

not sure how to measure. This does not mean you cannot develop a measurement procedure as the study progresses. While most of the developmental work will be done during your study, it is imperative that you are reasonably clear about the measurement of these concepts at this stage.

**Level of expertise**– Make sure you have an adequate level of expertise for the task you are proposing. Allow for the fact that you will learn during the study and may receive help from your research supervisor and others, but remember that you need to do most of the work yourself.

**Relevance**– Select a topic that is of relevance to you as a professional. Ensure that your study adds to the existing body of knowledge, bridges current gaps or is useful in policy formulation. This will help you to sustain interest in the study.

**Availability of data**– If your topic entails collection of information from secondary sources (office records, client records, census or other already-published reports, etc.) make sure that this data is available and in the format you want before finalizing your topic.

**Ethical issues**– Another important consideration in formulating a research problem is the ethical issues involved. In the course of conducting a research study, the study population may be adversely affected by some of the questions (directly or indirectly); deprived of an intervention;

expected to share sensitive and private information; or expected to be simply experimental 'guinea pigs'. How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem-formulation stage.

▪ To gain familiarity with a phenomenon or to achieve new insights into it. (Studies with this object in view are termed as exploratory or formative research studies).

▪ To portray accurately the characteristics of a particular individual, situation or a group.(Studies with this object in view are known as descriptive research studies).

▪ To determine the frequency with which something occurs or with which it is associated with something else. (Studies with this object in view are known as diagnostic research studies).

▪ To test a hypothesis of a causal relationship between variables. (Such studies are known as hypothesis-testing research studies).

Problem statement and description of the objective of the paper are very specific parts of the paper and the phrases used depend on the nature of the problem. Examples showing how closely this part is related to the literature review and previous research are given below.

(A ..... theory of .....) has recently been presented in [.....]. However, several practical questions arise when dealing with .....: 1) It is important to (identify .....). 2) It is key to (predict .....). 3. It is crucial to (establish when .....). To answer all these questions, we present an original approach which ..... .

Even though (the efficiency of .....) has been improved in recent years, most improvements have been achieved by (minimizing the amount of energy lost in .....). Nonetheless, it is possible to further improve (the efficiency by .....). With this goal, this work (explores, seeks to .....).

Based on the approach presented in [3], the purpose of this paper is to ....

In this paper, while we refer to our earlier work [2], [3], [4], the focus is different.

Like most authors, we .....

The objective/aim of this paper/study is to propose .....

The paper presents/proposes a new approach to .....

This article introduces a new type of .....

In this paper, we/the authors offer .....

In this paper, we explore the possibility of .....

In this study, a new technique that improves ..... is suggested.

See also Abstract, Introductory sentences. There are varieties of ways through which we may classify it into different categories.

### **TEMPLATE ON HOW TO START RESEARCH PURPOSE**

The major objective of this study was to investigate .....

The aim of this study was to clarify several aspects of ...

The aim of this study is to investigate the differences between X and Y.

The aim of this research project has therefore been to try and establish what

The main aim of this investigation is to assess the doses associated with ....

The aim of this study is to shine new light on these debates through an examination of ....

The objectives of this research are to determine whether ....

The main purpose of this study is to develop an understanding of ....

This paper investigates the usefulness of ....

This thesis intends to determine the extent to which .... and whether .

This thesis will examine the way in which the ....

This research examines the emerging role of X in the context of ....

This case study seeks to examine the changing nature of ....

This dissertation seeks to explain the development of ....

This dissertation aims to unravel some of the mysteries surrounding .

This study systematically reviews the data for., aiming to provide

Part of the aim of this project is to develop software that is compatible with...

There are two primary aims of this study: 1. To investigate .... 2. To ascertain..

Drawing upon two stands of research into X, this study attempts to..

One purpose of this study was to assess the extent to which these factors...

This study seeks to obtain data which will help to address these research...

This study therefore set out to assess the effect of X ....., and the effect of ....



### **Following are the characteristics of research:**

- Research is directed toward the solution of a problem.
- Research requires expertise.
- Research emphasizes the development of generalizations, principles, or theories that will be helpful in predicting future occurrences.
- Research is based upon observable experience or empirical evidences.
- Research demands accurate observation and description.
- Research involves gathering new data from primary or first-hand sources or using existing data for a new purpose.
- Research is characterized by carefully designed procedures that apply rigorous analysis.
- Research involves the quest for answers to un-solved problems.
- Research strives to be objective and logical, applying every

possible test to validate the procedures employed the data collected and the conclusions reached.

- Research is characterized by patient and unhurried activity.
- Research is carefully recorded and collected.
- Research sometimes requires courage.

### **Historical Research Method**

History is the record of the changing processes. History consists of changes which social structures undergo. Social scientists studies the past to gain a better understanding of the present state of affairs. History is the meaningful record of man's achievement. It is not merely a list of characteristics of chronological events, but an integrated account of the relationship between persons, events, times and places.

**John W. Best**, "Man uses history to understand the past, and try to understand the present in the light of past events and developments."

**F.N. Kerlinger**, "Historical research is the application of the scientific method of inquiry to historical problems."

**Whitney**, "Historical research deals with the past experiences... Its aim is to apply the method of reflective thinking of social problems, still unsolved, by means of discovery of past trends of event, fact and attitude. It traces the lines of development in human thought and action in order to reach some basis for social activity."

**Redcliff Browne**, "Historical method may be defined as a system in which present day events are studied with reference to the events that took place in the past."

Historical method seeks to find explanation of questions of current interest by an intensive study of the past. Many studies in the field of economics, politics, sociology, education and psychology are



essentially historical in approach. 79

### **Purpose of Historical Research**

- Historical researches provide important information concerning the effects of certain past practices and may suggest plans for future actions.

- It also offers explanation of the how and why of many of the theories and practices that has developed and now prevails in the school/college.

- It contributes to an understanding of the significance of the phenomenon studied.

- It helps to gain an accurate account of the past.

- It helps to gain a clear perspective of the present.

### **Sources of Historical Research**

There are many sources for collection of historical data like; Autobiographies, Diaries, Confessions, Memories, Personal letters, Accessible documents, news-papers and literature, books and Magazines, Cultural and Analytical history material, Artistic materials, historical paintings, Portraits , charts etc.

These sources can be divided into two categories i.e. Primary sources and Secondary sources.

On the basis of research method we may classify a research into five different categories.

- **Philosophical Research:** It is purely qualitative in nature and we are focusing on the vision of others on the content of research.

- **Historical Research:** It is both qualitative as well as quantitative in nature and deals with past events.

- **Survey Research:** It deals with present events and is quantitative in nature. It may further be sub-divided into; discretional, correlational and exploratory type of research.

- **Experimental Research:** This is purely quantitative in nature and deals with future events.

- **Case-Study Research:** It deals with unusual events. It may be

qualitative as well as quantitative in nature depending upon the content.

### **Characteristics of historical method**

- Historical method is universal.
- Historical method involves very deep and intensive investigation of material that already exists.
- Historical facts cannot be repeated in an accurate fashion as can be done in laboratory observation.
- Only such problems which are based on historical records can be investigated by following this approach.
- Historical approach to research is the application of scientific method to historical problems.
- In Historical Method hypothesis may or may not be formulated depending upon the nature of the research.
- The interpretation of data entirely depends upon the topic of research.

## **APPROACHES TO HISTORICAL RESEARCH**

### **1. Perspective Approach:**

It means to study the events from the past towards present. It is ancient approach. Ancient approach was to study the political personality approach.

### **2. Retrospective Approach:**

It means to study the events of present and proceed to past events. It is a recent approach to study the phenomena in social milieu.

## **TYPES OF HISTORICAL RESEARCH**

### **(1) Approach:**

An example is the pragmatic approach used by Karl max to arrange facts of history to support his concept of socialism.

### **(2) Subject:**

It includes the bibliography of a given person, monograph of a

town, state, nation or civilization or slightly higher level the history of ideas, institutions.

**(3) Technique:** It is based either on documents or relics.

**(4) Classical studies**

**(5) Documentary research:** It considers only documents.

**(6) Bibliographical research:**

It includes history of a unit. (nation, person, culture)

**(7) Legal Research**

## **STEPS OF HISTORICAL RESEARCH**

**(1) Identification and Definition of the Problem:**

It involves not only the location of the problem, which has a historical significance, but also the availability of adequate data.

**(2) Collection of Data:**

It may involve anything from digging up ancient ruins to stumbling on old documents or remains. Most educational data have to be gathered in the routine fashion by giving minutes of meetings, diaries etc. Data are collected by two sources: primary or secondary.

**(3) Criticism of Data:**

The establishment of the validity of data involves a dual process, of first establishing the authenticity of the sources and then the validity of its content.

**(4) Interpretation of Data:**

This should be made from the standpoint of a hypothesis or theory of the data. Data should be considered in relation to one another and synthesized into a generalization or conclusion which places the overall significance in focus.

## **LIMITATIONS OF HISTORICAL RESEARCH**

- It is very difficult to study historical events on the basis of cause-effect relationship.
- Many obstacles hinder the objectivity of the study.
- The investigator must have a special historical perspective.

- The importance of historical research has declined due to use of scientific method in social sciences.

## GUIDELINES OF HISTORICAL RESEARCH

- Primary sources should be used as extensively as possible.
- Personal bias should not be allowed to influence research procedure.
  - Proper recognition should be given to the inter-relationship of education with other social institutions and forces.
  - Words and expressions should be interpreted in the light of their usages in earlier times.
  - Various facts should be synthesized and integrated into meaningful generalization.
  - Significant facts must be distinguished from trivial facts in a situation.

### 1. Mathematical-statistical

#### ▪ CORRELATION

Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together.

A **correlation coefficient** is a numerical measure of some type of correlation, meaning a statistical relationship between two variables. The variables may be two columns of a given data set of observations, often called a sample, or two components of a multivariate random variable with a known distribution.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Correlation coefficient formulas are used to find how strong a relationship is between data. The formulas return a value between -1 and 1, where:

- 1 indicates a strong positive relationship.
- -1 indicates a strong negative relationship.

- A result of zero indicates no relationship at all.

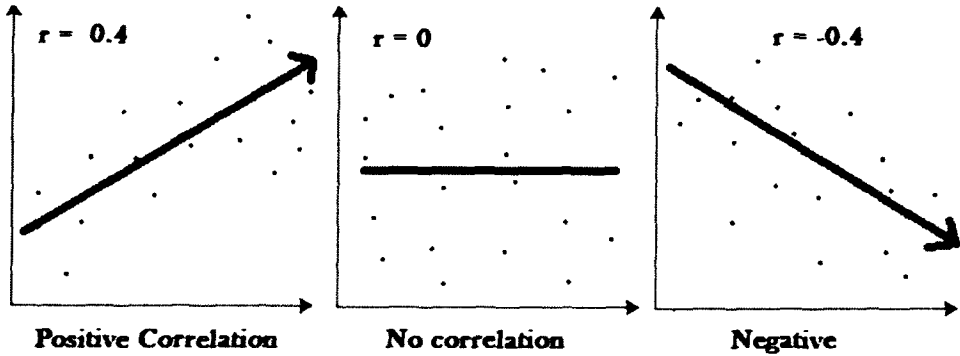
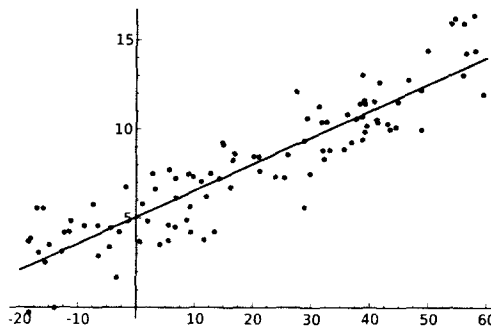


Figure N. Graphs showing a correlation of -1, 0 and +1

### ▪ REGRESSION

In statistical modeling, **regression analysis** is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.



Linear regression

$$y_i = \beta_0 + \beta_1 x_i + \varepsilon_i, \quad i = 1, \dots, n.$$

Nor liner, for example exponential function:

$$f(x) = ab^x,$$

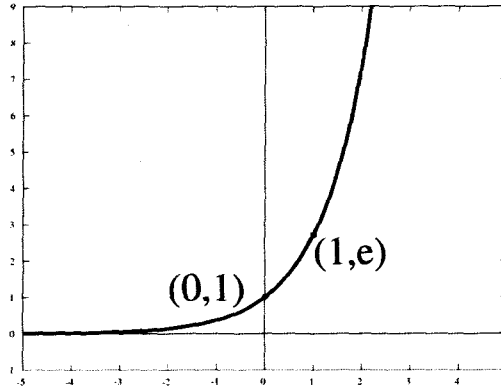


Figure N. Exponential function

#### • FACTOR ANALYSES

**Factor analysis** is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called **factors**. For example, it is possible that variations in six observed variables mainly reflect the variations in two unobserved (underlying) variables. Factor analysis searches for such joint variations in response to unobserved latent variables. The observed variables are modeled as linear combinations of the potential factors, plus "error" terms. Factor analysis aims to find independent latent variables.

#### DISTRIBUTION LAW

Suppose we have a set of  $p$  observable random variable,  $x_1, \dots, x_p$  with means  $\mu_1, \dots, \mu_p$ . Suppose for some unknown constant  $l_{ij}$  and  $k$  unobserved random variable  $F_j$  (Called "common factor," because they influence all the observed random variables), where  $\epsilon, \dots, p$  and  $j \in \epsilon, \dots, k$ , where  $k < p$ , we have

$$x_i - \mu_1 = l_{i1} F_1 + \dots + l_{ik} F_k + \varepsilon_i.$$

Here, the  $\varepsilon_i$  are unobserved stochastic error terms with zero mean and finite variance, which may not be the same for all  $i$ . In matrix terms, we have

$$x - \mu = LF + \varepsilon.$$

If we have  $n$  observations, then we will have the dimensions  $x_{p \times n}$ ,  $L_{p \times k}$ , and  $F_{k \times n}$ . Each column of  $x$  and  $F$  denotes values for one particular observation, and matrix  $L$  does not vary across observations

Also we will impose the following assumptions on  $F$ :

1.  $F$  and  $\varepsilon$  are independent.
2.  $E(F) = 0$
3.  $\text{Cov}(F) = I$  (to make sure that the factors are uncorrelated).

Any solution of the above set of equations following the constraints for  $F$  is defined as the factor, and the **loading matrix**.

Suppose  $\text{Cov}(x - \mu) = \Sigma$ . Then note that from the conditions just imposed on  $F$ , we have

$$\text{Cov}(x - \mu) = \text{Cov}(LF + \varepsilon),$$

or

$$\Sigma = L \text{Cov}(FL^T) + \text{Cov}(\varepsilon),$$

or

$$\Sigma = LL^T + \psi.$$

Note that for any orthogonal matrix  $Q$ . If we set  $L = LQ$  and  $F = LQ^T$ . The criteria for the beginning factors and factor loadings still hold. Hence a set factors and factor loadings is unique only up to an orthogonal transformation.

## 2. Macro econometric

### ▪ ECONOMIC GROWTH THEORY

**Economic growth** is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP.

Growth is usually calculated in *real* terms - i.e., inflation-adjusted terms - to eliminate the distorting effect of inflation on the price of goods produced. Measurement of economic growth uses national income accounting.

**For example: Harrod Domar Growth model, Solow-Swan model, etc**

### ▪ PRODUCTION FUNCTION

**Cobb-Douglas production function (1927-1947)**

In economics and econometrics, the **Cobb-Douglas production function** is a particular functional form of the production function, widely used to represent the technological relationship between the amounts of two or more inputs (particularly physical capital and labor) and the amount of output that can be produced by those inputs.

Formulation

In its most standard form for production of a single good with two factors, the function is

$$Y = AL^{\beta}K^{\alpha}$$

where:

- $Y$  = total production (the real value of all goods produced in a year or 365.25 days)
- $L$  = labor input (the total number of person-hours worked in a year or 365.25 days)



- $K$  = capital input (a measure of all machinery, equipment, and buildings; the value of capital input divided by the price of capital)
- $A$  = total factor productivity and your usual depreciation by utility in day after
- $\alpha$  and  $\beta$  are the output elasticities of capital and labor, respectively. These values are constants determined by available technology.

Paul Douglas explained that his first formulation of the Cobb–Douglas production function was developed in 1927; when seeking a functional form to relate estimates he had calculated for workers and capital, he spoke with mathematician and colleague Charles Cobb, who suggested a function of the form  $Y = AL^{\beta}K^{1-\beta}$ , previously used by Knut Wicksell, Philip Wicksteed, and Léon Walras, although Douglas only acknowledges Wicksteed and Walras for their contributions

### **PANEL (DATA) ANALYSES**

**Panel (data) analysis** is a statistical method, widely used in social science, epidemiology, and econometrics to analyze two-dimensional (typically cross sectional and longitudinal) panel data. The data are usually collected over time and over the same individuals and then a regression is run over these two dimensions. Multidimensional analysis is an econometric method in which data are collected over more than two dimensions (typically, time, individuals, and some third dimension).

### **TIME SERIES ANALYSES**

Time series analysis is a statistical technique that deals with time series data, or trend analysis. Time series data means that data is in a series of particular time periods or intervals. The data is considered in three types:

**Time series data:** A set of observations on the values that a variable takes at different times.

**Cross-sectional data:** Data of one or more variables, collected at the same point in time.

**Pooled data:** A combination of time series data and cross-sectional data.

### **FUZZY SET ANALYSES**

In mathematics, **fuzzy sets** (aka **uncertain sets**) are somewhat like sets whose elements have degrees of membership. At the same time, Saliu (1965) defined a more general kind of structure called an *L*-relation, which he studied in an abstract algebraic context. Fuzzy relations, which are used now in different areas, such as linguistics (De Cock, Bodenhofer & Kerre 2000), decision-making (Kuzmin 1982), and clustering (Bezdek 1978), are special cases of *L*-relations when *L* is the unit interval  $[0, 1]$ .

### **3. Optimum programming**

#### **• LINEAR PROGRAMMING**

**Linear programming (LP, also called linear optimization)** is a method to achieve the best outcome (such as maximum profit or lowest cost) in a mathematical model whose requirements are represented by linear relationships. Linear programming is a special case of mathematical programming (also known as mathematical optimization).

Liner programs are problems that can be expressed in canonical form as

Maximize  $c^T x$

Subject to  $Ax \leq b$

And  $x \geq 0$

where  $x$  represents the vector of variables (to be determined),  $s$  and  $b$  are vectors of (known) coefficients,  $A$  is a (known) matrix of coefficients, and  $(.)^T$  is the matrix transpose.

#### ▪ DYNAMIC PROGRAMMING

**Dynamic programming** is both a mathematical optimization method and a computer programming method. The method was developed by Richard Bellman in the 1950s and has found applications in numerous fields, from aerospace engineering to economics. In both contexts it refers to simplifying a complicated problem by breaking it down into simpler sub-problems in a recursive manner. While some decision problems cannot be taken apart this way, decisions that span several points in time do often break apart recursively. Likewise, in computer science, if a problem can be solved optimally by breaking it into sub-problems and then recursively finding the optimal solutions to the sub-problems, then it is said to have optimal substructure.


#### ▪ STOCHASTIC PROGRAMMING

In the field of mathematical optimization, **stochastic programming** is a framework for modeling optimization problems that involve uncertainty. Whereas deterministic optimization problems are formulated with known parameters, real world problems almost invariably include some unknown parameters. When the parameters are known only within certain bounds, one approach to tackling such problems is called robust optimization. Here the goal is to find a solution which is feasible for all such data and optimal in some sense. Stochastic programming models are similar in style but take advantage of the fact that probability distributions governing the data are known or can be estimated. The

goal here is to find some policy that is feasible for all (or almost all) the possible data instances and maximizes the expectation of some function of the decisions and the random variables. More generally, such models are formulated, solved analytically or numerically, and analyzed in order to provide useful information to a decision-maker.

#### ▪ **GAME THEORY**

**Game theory** is the study of mathematical models of strategic interaction between rational decision-makers. It has applications in all fields of social science, as well as in logic and computer science. Originally, it addressed zero-sum games, in which one person's gains result in losses for the other participants. Today, game theory applies to a wide range of behavioral relations, and is now an umbrella term for the science of logical decision making in humans, animals, and computers.



“Research design is a master plan specifying the methods and procedures for collection and analyzing the needed information.”

#### **William Zikmund**

“Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance.”

#### **Kerlinger**

Thus we can say that a research design is the arrangement of condition for collection and analysis of data in a manner that aims to generalize the findings of the sample on the population.

The research design should indicate how the research setting will be arranged in order to yield the desired data with the least possible contamination/ error by intervening variables. There is no single design that can be applied in all the cases. It depends upon individual

researcher to devise his design. The design should ensure the answer of every hypothesis designed in the proposed research work.

**A well prepared research design characteristics;**

- Specifications of its relationship to each research hypothesis.
- Description of the methods of proposed control of confounding variables and threats to validity.
- Description of the design in statistical terms.
- Identification of the types of interferences that may be made.

**PURPOSE OF RESEARCH DESIGN**

Research designs are used for the following purposes;

**(i) To minimize the expenditure**

Research design carries an important influence on the reliability of the results attained .It therefore provides a solid base for the whole research. This makes the research as effective as possible by providing 19 maximum information with minimum spending of effort, money and time by preparing the advance plan of all about the research.

**(ii) To facilitate the smooth scaling**

Research design is needed because it facilitates the smooth scaling of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money.

**(iii) To collect the relevant data and technique**

Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff time and money. Poor preparation of research design upset the entire project.

**(iv) To provide blue print for plans**

Research design is needed due to the fact that it allows for the

smooth working of many research operations. It is like blue print which we need in advance to plan the methods to be adopted for collecting the relevant data and techniques to be used in its analysis for preparation of research project. Just as for better economical and attractive construction of a house need a blue print and a map of that, similarly we needs a blue print or a design for the smooth flow of operation of research. A research design provides an overview of all the research process and with the help of the design we can take the help and views of experts 20. The design helps the investigator to organize his ideas , which helps to recognize and fix his faults.

**(v) To provide an overview to other experts**

**(vi) To provide a direction**

A research design provides a proper or particular direction to the other executives and others who are helping us into the process. The researcher studies available, literature and learns about new (alternative approaches.

### **DESIGN IN QUANTITATIVE RESEARCH**

- number of contacts with the study population;
- reference period of the study;
- nature of the investigation.

**Design should include information about the following:**

- Who makes up the study population?
- Can each element of the study population be identified? If yes, how?
  - Will a sample or the total population be studied?
  - How will you get in touch with the selected sample?
  - How will the sample's consent to participate in the study be sought?
    - How will the data be collected (e.g. by interview, questionnaire or observation)?
    - In the case of a mailed questionnaire, to what address should the questionnaire be returned?

- Are you planning to send a reminder regarding the return of questionnaires?
- How will confidentiality be preserved?
- How and where can respondents contact you if they have queries?

**Study designs based on the number of contacts:**

- cross-sectional studies;
- before-and-after studies;
- longitudinal studies.

**A cross-sectional study** is extremely simple in design. You decide what you want to find out about, identify the study population, select a sample (if you need to) and contact your respondents to find out the required information. For example, a cross-sectional design would be the most appropriate for a study of the following topics:

- The attitude of the study population towards uranium mining in Australia.
- The socioeconomic–demographic characteristics of immigrants in Western Australia.
- The incidence of HIV-positive cases in Australia.
- The reasons for homelessness among young people.
- The quality assurance of a service provided by an organization.
- The impact of unemployment on street crime (this could also be a before-and-after study).
- The relationship between the home environment and the academic performance of a child at school.
- The attitude of the community towards equity issues.
- The extent of unemployment in a city.
- Consumer satisfaction with a product.
- The effectiveness of random breath testing in preventing road accidents (this could also be a before-and-after study).
- The health needs of a community.
- The attitudes of students towards the facilities available in

their library.

**Before-and-after design** (also known as the pre-test/post-test design) is that it can measure change in a situation, phenomenon, issue, problem or attitude. It is the most appropriate design for measuring the impact or effectiveness of a program. A before-and-after design can be described as two sets of cross-sectional data collection points on the same population to find out the change in the phenomenon or variable(s) between two points in time.

**Examples of topics that can be studied using this design**

- The impact of administrative restructuring on the quality of services provided by an organization.
- The effectiveness of a marriage counseling service.
- The impact of sex education on sexual behavior among schoolchildren.
- The effect of a drug awareness programmer on the knowledge about, and use of, drugs among young people.
- The impact of incentives on the productivity of employees in an organization.
- The impact of increased funding on the quality of teaching in universities.
- The impact of maternal on the infant mortality rate.
- The effect of random breath testing on road accidents.
- The effect of an advertisement on the sale of a product.

**Longitudinal studies** the study population is visited a number of times at regular intervals, usually over a long period, to collect the required information. These intervals are not fixed so their length may vary from study to study.

Study designs based on the reference period. The reference period refers to the time-frame in which a study is exploring a phenomenon, situation, event or problem.

**Studies are categorized from this respective as:**

- retrospective;



- prospective;
- retrospective–prospective.

**Retrospective studies** investigate a phenomenon, situation, problem or issue that has happened in the past. They are usually conducted either on the basis of the data available for that period or on the basis of respondents' recall of the situation.

- The living conditions of Aboriginal and Torres Strait Islander peoples in Australia in the early twentieth century.
- The utilization of land before the Second World War in Western Australia.
- A historical analysis of migratory movements in Eastern Europe between 1915 and 1945.
- The relationship between levels of unemployment and street crime.

### **The prospective study design**

Prospective studies refer to the likely prevalence of a phenomenon, situation, problem, attitude or outcome in the future. Such studies attempt to establish the outcome of an event or what is likely to happen.

- To determine, under field conditions, the impact of maternal and child health services on the level of infant mortality.
- To establish the effects of a counseling service on the extent of marital problems.
- To determine the impact of random breath testing on the prevention of road accidents.
- To find out the effect of parental involvement on the level of academic achievement of their children.
- To measure the effects of a change in migration policy on the extent of immigration in Australia.

**Retrospective–prospective studies** focus on past trends in a phenomenon and study it into the future. Part of the data is collected retrospectively from the existing records before the intervention is

introduced and then the study population is followed to ascertain the impact of the intervention.

### **STUDY DESIGNS CLASSIFICATION**

- experimental;
- non-experimental;
- quasi- or semi-experimental.

#### **Experimental study designs**

There are so many types of experimental design that not all of them can be considered within the scope of this book. This section, therefore, is confined to describing those most commonly used in the social sciences, the humanities, public health, marketing, education, epidemiology, social work, and so on.

These designs have been categorized as:

- the after-only experimental design;
- the before-and-after experimental design;
- the control group design;
- the double-control design;
- the comparative design;
- the 'matched control' experimental design;
- the placebo design.

#### **Classification of experimental designs:**

##### **(a) Pre-experimental designs:**

In this type of design there is no control over extraneous or situation variables. They are divided into the following categories;

##### **Design 1**

##### **One Group, Pre-test - Post-test Design**

<b>Pre-test</b>	<b>Independent Variable</b>	<b>Post-test</b>
T <sub>1</sub>	X	T <sub>2</sub>

Since there is no control group in this research design it cannot be checked whether the obtained result is due to treatment or extraneous variables.

**Design 2**  
**Two Group, Static Design**

<b>Group</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental		T <sub>2</sub>
Control		T <sub>2</sub>

In this design, the two groups are assigned but neither on the basis of randomization nor matching. There is no pre-test so the researcher cannot measure the difference on account of treatment. In this design, comparison is made on the basis of post-test, in experimental group and control group.

**(b) True-experimental designs:**

In these designs, the researcher attempts to control the effects of history, maturation, testing, measuring instruments etc.

**Design 3**  
**Two Groups, Randomized Subject, Post-test only Design**

<b>Randomly assigned Group</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental		T <sub>2</sub>
Control		T <sub>2</sub>

In this design, there is provision of randomization of subjects to the two groups, it assures the equivalence of groups and since there is no provision of pre-test there is probability of interaction effect. However, the use of the designs restricts the external validity of the experiment. There are some situations which do not permit selection of subjects at random.

**Design 4**  
**Two Groups, Randomized Matched Subjects, Post-test only**  
**Design**

<b>Randomly assigned group after matching</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental		T <sub>2</sub>
Control		T <sub>2</sub>

This design is the most useful where small groups are to be used. In this design the subjects are randomly assigned to two groups after matching, it ensures strengths to design. But it is very difficult to match the subjects with precision because it reduces the sizes of the sample. In some cases it is not possible to match one or more potential subjects. If some subjects are to be reduced for this purpose, a bias is introduced in the sample.

**Design 5**  
**Randomized Groups Pre-test, Post-test Design**

<b>Randomly assigned</b>	<b>Pre-test</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental	T <sub>1</sub> E		T <sub>2</sub> C
Control	T <sub>1</sub> C		T <sub>2</sub> C

In this design additional check is provided for the equality of Experimental group and control group because there is provision of pre-test. The nature of the design is such that it controls most of the extraneous variables.

However, the design has certain limitations. Firstly interaction between pre-test and treatment may sensitize subjects which may affect the results. Secondly, interaction of experimental variable with other factor limits its generalization. Thirdly, experimental procedure may affect normalcy.

**Design 6**  
**The Randomized Solomon Three Groups Design**

<b>Randomly assigned</b>	<b>Pre-test</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental group (E)	T <sub>1</sub> E		T <sub>2</sub> C
Control group 1(C <sub>1</sub> )	T <sub>1</sub> C <sub>1</sub>		T <sub>2</sub> C <sub>1</sub>
Control group 2(C <sub>2</sub> )	No Pre-test		T <sub>2</sub> C <sub>2</sub>

In this design check is provided for the equality of Experimental group and control group because there is provision of pre-test. The nature of the design is such that it controls most of the extraneous variables. The provision of the second control group ensures control interaction effect of Pre-test and treatment.

**Design 7**  
**The Randomized Solomon Four Group Design**

<b>Randomly assigned</b>	<b>Pre-test</b>	<b>Independent Variable</b>	<b>Post-test</b>
Experimental group (E)	T <sub>1</sub> E		T <sub>2</sub> C
Control group 1(C <sub>1</sub> )	T <sub>1</sub> C <sub>1</sub>		T <sub>2</sub> C <sub>1</sub>
Control group 2(C <sub>2</sub> )	No Pre-test		T <sub>2</sub> C <sub>2</sub>
Control group 3(C <sub>3</sub> )	No Pre-test		T <sub>2</sub> C <sub>3</sub>

In this stage check is provided for equality of Experimental group and control group, because there is provision of pre-test. The nature of the design is such that it controls most of the extraneous variables. The provision of the second control ensures control interaction effect of pre-test and treatment. The design controls any possible contemporary effects between pre-test and post-test. The result in this design provides greater confidence. However this design is such that it is difficult to conduct in practical situation. There is a difficulty

of statistical application in this design.

### **(C) Factorial Design:**

This design enables the experimenter to evaluate or manipulate two or more experimenter to evaluate or manipulate two or more variables simultaneously in order to study the effects of number of independent factors singly as well as the effects due to interactions with one another.

### **(D) Single Factorial Design**

There are two independent variables and each of the independent variables has two values. The first independent variable which is manipulated and has two values is called the experimental variable. The second independent variable which is divided into levels may be called control variable. In this design the impact of more than one variable can be studied simultaneously. In this not only the *significance of difference of different levels* is studied but interaction effect can also be studied. However, if too many variables and too many levels are studied, the experiment and statistical analysis becomes too difficult to manage.

The central question in this dissertation asks how ....

This research seeks to address the following questions:

In particular, this dissertation will examine six main research questions:

The hypothesis that will be tested is that ....

The key research question of this study was whether or not ....

This study aimed to address the following research questions:

Another question is whether ....

### **CHARACTERISTICS OF GOOD RESEARCH DESIGN**

Generally a good research design minimizes bias and maximizes the reliability of the data collected and analyzed. The design which gives the smallest experimental error is reported to be the best design in scientific investigation. Similarly, a design which yields maximum information and provides an opportunity for considering

different aspects of a problem is considered to be the most appropriate and efficient design. A good research design possesses the following characteristics;

### **(i) Objectivity**

It refers to the findings related to the method of data collection and scoring of the responses. The research design should permit the measuring instruments which are fairly objective in which every observer or judge scoring the performance must precisely give the same report. In other words, the objectivity of the procedure may be judged by the degree of agreement between the final scores assigned to different individuals by more than one independent observer. This ensures the objectivity of the collected data which shall be capable of analysis and interpretation.

### **(ii) Reliability**

It refers to consistency throughout a series of measurements. For example, if a respondent gives out a response to a particular item, he is expected to give the same response to that item even if he is asked repeatedly. If he is changing his response to the same item, the consistency will be lost. So the researcher should frame the items in a questionnaire in such a way that it provides consistency or reliability.

### **(iii) Validity**

Any measuring device or instrument is said to be valid when it measures what it is expected to measure. For example, an intelligence test conducted for measuring the IQ should measure only the intelligence and nothing else and the questionnaire shall be framed accordingly.

### **(iv) Generalizability**

It means how best the data collected from the samples can be utilized for drawing certain generalizations applicable to a large

group from which sample is drawn. Thus a research design helps an investigator to generalize his findings provided he has taken due care in defining the population, selecting the sample, deriving appropriate statistical analysis etc. while preparing the research design. Thus a good research design is one which is methodologically prepared and should ensure that generalization is possible.

For ensuring the generalization we should confirm that our research problem has the following characteristics;

- The problem is clearly formulated.
- The population is clearly defined.
- Most appropriate techniques of sample selection are used to form an appropriate sample.
- Appropriate statistical analysis has been carried out.
- The findings of the study are capable of generalizations.

#### **(v) Adequate Information**

The most important requirement of good research design is that it should provide adequate information so that the research problem can be analyzed on a wide perspective. An ideal design should take into account important factors like;

- Identifying the exact research problem to be studied
- The objective of the research
- The process of obtaining information
- The availability of adequate and skilled manpower and
- The availability of adequate financial resources for carrying research.

#### **(vi) Other Features**

Some other important features of a good research design are flexibility, adaptability, efficiency, being economic and so on. A good research design should minimize bias and maximize reliability and generalization



## TEMPLATES ON HOW TO WRITE RESEARCH DESIGN

Five works will be examined, all of which ....

Data for this study were collected using ....

This dissertation follows a case-study design, with in-depth analysis of

This study was exploratory and interpretative in nature.

The approach to empirical research adopted for this study was one of

The methodological approach taken in this study is a methodology based on..

By employing qualitative modes of enquiry, I attempt to illuminate the

This work takes the form of a case-study of the ....

Both qualitative and quantitative methods were used in this investigation.

Qualitative and quantitative research designs were adopted to provide..

A holistic approach is utilized, integrating X, Y and Z material to establish ....

The research data in this thesis is drawn from four main sources: ....

The study was conducted in the form of a survey, with data being gathered...

### **Indicating significance**

This project provided an important opportunity for understanding of

This study provides an exciting opportunity to advance our knowledge of ....

This is the first study to undertake a longitudinal analysis of ....

The findings should make an important contribution to the field of .....

Therefore, this study makes a contribution to research on X by demonstrating ....

The study offers some important insights into ....

This study aims to contribute to this growing area of research by

exploring ....

There are several important areas which makes an original contribution to ....

### **Indicating limitations**

The thesis does not engage with ....

Due to practical constraints, this paper cannot provide a detail review of ....

It is beyond the scope of this study to examine the ....

The reader should bear in mind that the study is based on ....

Another potential problem is that the scope of my thesis may be too broad.

A full discussion of X lies beyond the scope of this study.

### **Giving reasons for personal Interest**

My main reason for choosing this topic is personal interest.

I became interested in X after reading ....

I have worked closely with X for many years and ....

It is my experience of working with X that has driven this research.

### **Outlining the structure**

The main questions/issues addressed in this paper are: a), b and c).

This paper has been divided into four parts. The first part deals with.

The essay has been organized in the following way.

This paper reviews the evidence for ....

This paper begins by .... It will then go on to ....

The first section of this paper will examine ....

This paper first gives a brief overview of the recent history of X.

My thesis is composed of four themed chapters.

The overall structure of the study takes the form of six chapters, including this introductory chapter.

Chapter Two begins by laying out the theoretical dimensions of the research, and looks at how ....

The third chapter is concerned with the methodology used for this

study.

The fourth section presents the findings of the research, focusing on the three key themes that ....

Chapter 6 analyses the results of interviews and focus group discussions undertaken during ....

The remaining part of the paper proceeds as follows: ....

The final chapter draws upon the entire thesis, tying up the various theoretical and empirical strands in order to ....

.... and includes a discussion of the implication of the findings to future research into this area.

Finally, the conclusion gives a brief summary and critique of the findings.

Finally, areas for further research are identified.

### **Explaining Keywords (refer to *Defining Terms*)**

Throughout this paper, the term X will refer to ....

Throughout this dissertation, the term X will be used to refer to ....

In this article, the acronym/abbreviation XYZ will be used.

According to Smith (2002), X can be defined as follows: "...."

The term X is a relatively new name for ...., commonly referred to as

While a variety of definitions of the term X have been suggested, this paper will use the definition first suggested by Smith (1968) who saw it as ....

The obstacles which hinder our path are regarded as problem.

Different definitions of the problem are given below;

"Problem is the obstacle in the path of satisfying our needs."

**John Geoffery**

"Problem is a question which is to be solved."

**John. G. Tornsand**

"To define a problem means to put a fence around it, to separate it by

careful distinctions from like questions found in related situations of need.”

**Whitney**

“A problem is a question proposed for a solution generally speaking a problem exists when there is a no available answer to same question.”

**J.C. Townsend**

“A problem is an interrogative sentence or statement that asks: What relation exists between two or more variables?”

## **IDENTIFICATION OF A RESEARCH PROBLEM**

The following steps are to be followed in identifying a research problem;

**Step I** Determining the field of research in which a researcher is keen to do the research work.

**Step II** The researcher should develop the mastery on the area or it should be the field of his specialization.

**Step III** He should review the research conducted in area to know the recent trend and studies are being conducted in the area.

**Step IV** On the basis of review, he should consider the priority field of the study.

**Step V** He should draw an analogy and insight in identifying a problem or employ his personal experience of the field in locating the problem. He may take help of supervisor or expert of the field.

**Step VI** He should pin point specific aspect of the problem which is to be investigated.

### **THE SOURCES OF THE PROBLEM**

- The classroom, school, home, community and other agencies of education are obvious sources.
- Social developments and technological changes are constantly bringing forth new problems and opportunities for research.
- Record of previous research such specialized sources as the

encyclopedias of educational, research abstracts, research bulletins, research reports, journals of researches, dissertations and many similar publications are rich sources of research problems.

- Text book assignments, special assignments, reports and term papers will suggest additional areas of needed research.

- Discussions-Classroom discussions, seminars and exchange of ideas with faculty members and fellow scholars and students will suggest many stimulating problems to be solved, close professional relationships, academic discussions and constructive academic climate are especially advantageous opportunities.

- Questioning attitude: A questioning attitude towards prevailing practices and research oriented academic experience will effectively promote problem awareness.

- The most practical source of problem is to consult supervisor, experts of the field and most experienced persons of the field. They may suggest most significant problems of the area. He can discuss certain issues of the area to emerge a problem.

## **STATEMENT OF PROBLEM**

**Kerlinger** has identified following three criteria of good problem statements;

- A problem should be concerned with relation between two or more variables.

- It should be stated 'clearly and unambiguously in question form'.

- It should be amenable to empirical testing.

### **Objectives of Assumptions about the Problem**

- To make the research work feasible.

- To delimit the scope of the problem.

- To establish the proper frame of reference.

### **Aspects of Delimiting a Problem**

- Delimited to certain variables that should be mentioned clearly in the problem.
- Delimited to the area or level as primary level, secondary level, college or university level.
- Delimited to size of sample, considering the time, energy and money.
  - Delimited to the best method only.
  - Delimited to the best available tool for measuring the variable.
  - Delimited to the most appropriate techniques.
  - Other delimitations particular to a problem.
- As the above delimitations help the researcher for conducting the study, the findings of studies also confine to these delimitations.

### **EVALUATION OF THE PROBLEM**

When considering a problem a researcher is required to ask himself a series of questions about it. These are helpful in the evaluation of the problem on the basis of personal suitability of the researcher and social value of the problem.

**Following questions must be answered affirmatively before the study is under taken:**

- Is the Problem Researchable?
- Is the Problem New?
- Is the Problem Significant?
- Is the Problem Feasible for the Particular Researcher?

**In order to be feasible, a problem should agree with the following:**

- Research competencies of the Researcher
- Interest and enthusiasm of the Researcher
- Financial consideration in the Project
- Time requirement for the Project
- Administrative considerations in the Project.

## **STEPS IN FORMULATING A RESEARCH PROBLEM**

Dissecting the subject area of domestic violence into subareas

**Controlled**- in real life there are many factors that affect an outcome. A particular event is seldom the result of a one-to-one relationship. Some relationships are more complex than others. Most outcomes are a sequel to the interplay of a multiplicity of relationships and interacting factors. In a study of cause-and-effect relationships it is important to be able to link the effect(s) with the cause(s) and vice versa. In the study of causation, the establishment of this linkage is essential;

However, in practice, particularly in the social sciences, it is extremely difficult – and often impossible – to make the link.

**Rigorous**- you must be scrupulous in ensuring that the procedures followed to find answers to questions are relevant, appropriate and justified. Again, the degree of rigor varies markedly between the physical and the social sciences and within the social sciences.

**Systematic**- this implies that the procedures adopted to undertake an investigation follow a certain logical sequence. The different steps cannot be taken in a haphazard way. Some procedures must follow others.

**Valid and verifiable**- this concept implies that whatever you conclude on the basis of your findings is correct and can be verified by you and others.

**Empirical**- this means that any conclusions drawn are based upon hard evidence gathered from information collected from real-life experiences or observations.

**Critical**- critical scrutiny of the procedures used and the methods employed is crucial to a research enquiry. The process of investigation must be foolproof and free from any drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

## TIPS FOR RESEARCH PROBLEM

1. Read and follow ALL of the guidelines for manuscript preparation listed for an individual journal. Most journals have very specific formatting and style guidelines for the text body, abstract, images, tables, and references.

2. HYPOTHESIS: be sure to have one and state it clearly. This is, after all, why you are doing the research.

3. Write as though your work is meaningful and important. If you don't, people will not perceive it as meaningful and important.

4. Use an external peer review service (available through JournalPrep.com) to get your manuscript reviewed prior to submission. Rapid and expert peer reviews, before you submit, may significantly increase your odds of getting your manuscript accepted for publication.

5. Critique your own work. Look for areas that reviewers might spot as weaknesses and either correct these areas or comment on them in your manuscript, leaving reviewers with fewer options for negative criticisms.

6. Always present the study as a finished piece of work (although you may suggest future directions). Otherwise, you can be sure reviewers will suggest additional research.

7. Be painstaking. Be thorough and patient with several rounds of editing of your work while considering all the tiny details of the specifications requested by the journal. It will pay off in the end.

8. Focus. If you have a hypothesis to develop, be consistent to the end. Have substantial and convincing evidence to prove your theories. Brainstorm your ideas and have a definite direction mapped out before beginning to write an article.

9. Write in a precise and accurate way. Avoid long sentences; the reader may find them difficult to follow.

10. Team-like spirit is an important attribute that contributes to successful publishing. Welcome advice from those around you with



potentially valuable input. No matter how competent you feel, having your work seen through a different lens may help to spot flaws that you were unable to identify.

11. As a final step, after completing your research paper, edit, edit, edit. You need to identify and correct any and all mistakes that you may have made.

12. Short papers are more likely to be read than long ones.

13. Select a descriptive title. Flash and puns are rarely as appealing as they may seem at first. You are better off going simple and descriptive. This will also help you get cited.

14. Focus on the information the readers require when following your experiment, modeling description, or data analysis instead of overloading them with details that might have been important during the study but are irrelevant for them.

15. Your paper should advance a particular line of research. It does not need to answer every remaining question about the topic.

16. If you present your work at an academic conference prior to submitting it for publication, get constructive criticisms from as many potential reviewers as possible.

17. Make sure your paper reads well. A bunch of choppy, simple sentences, while grammatically correct, is unpleasant to read.

18. Clear, concise, and grammatically correct English. Period.


19. Non-native English speakers should ALWAYS try to arrange for a review by a native speaker. If you know someone with excellent proofreading skills and a general knowledge about your research discipline (ex. Biological Sciences), ask them to help you out. If you don't know someone who meets these criteria, use a professional editing service such as that offered at [JournalPrep.com](http://JournalPrep.com). You will save yourself from a great deal of frustration and lost time.

20. Show friends and colleagues your work, including those in different fields of research. Get as much feedback as you can before you submit.

21. The body of the paper supports the central idea and must show a thoughtful, comprehensive study of the research topic; it should be clearly written and easy to follow. It generally includes three main parts: 1) Methodology, 2) Results & Data Analysis, and 3) Discussion.

22. When referencing other papers, do not simply reference work in the same way other papers have. If paper X says that paper Y showed a specific result, check for yourself to ensure that this is true before saying the same thing in your own manuscript. The number of reputable authors who misunderstand their colleagues' findings is shocking.

23. If you are in the process of running a follow-up experiment, write your manuscript in such a way that it begs for that experiment. When reviewers respond and request it you will already have it completed.



A detailed account of the research experience from selection and definition of the problem, formulation of hypotheses, gathering, analyzing and interpreting data, testing of hypotheses, making conclusion and suggesting further research in the related problem area is called a research report.

### **COMPONENTS OF REPORT**

The basic components of a research report are as follows;

#### **(i) Introduction of the research problem:**

The researcher will write in it;

- What is the problem?
- What is its importance?
- What is the relation of the problem with previous theory and research,
- What are the objectives of the study?

- What are the hypotheses?

**(ii) Description of the procedure of the research:**

The researcher will write in it;

- How did he select the subjects?
- How many subjects were used?
- How were the subjects assigned to groups?
- What was done to the subjects?
- How was it done?
- When was it done?
- How long was it done?
- How was the reliability of the measuring instruments

measured?

- How was the validity of the measuring instruments measured?

**(III) Description and presentation of the results:**

The researcher will write in it;

- Which statistical procedures he used to test the hypotheses?
- What were the outcomes of those procedures?
- What were the subsidiary findings of the research?

**(IV) Discussion of the study findings:**

The researcher will write in it;

- Why did the results manifest themselves in a particular way?
- What did their results signify?
- What was the relationship between this research and the previous research upon which it was based?

**FEATURES OF A GOOD RESEARCH**

The following are the essential features of a good research report;

- Clarity
- Conciseness
- Veracity
- No place for figures of speech, lyrical prose and in using

anecdotes.

- No lengthy digressions
- Only necessary details
- Absolute uncompromising honesty
- Serious attempt and not a game

### **MODE OF COMMUNICATIONS**

The researcher may use any of the following mode for communicating his research results;

#### **(i) A research monograph:**

The researcher may publish a research monograph on the basis of his research results through a research journals or a reputed research publisher. It depends upon the standard of the research work and the reputation of the researcher.

#### **(ii) A research journal:**

The researcher may publish a research paper in a reputed research journal. But this requires that the paper should be acceptable to the Editor of the journal. The prestigious journals send these papers to reviewers who are conversant with the research area in which the research paper has been written.

#### **(iii) Presenting in the meeting of the Association/ Society /Congress**

There are annual conferences of the associations, societies and Congress in each subject area. They provide opportunities to the researchers to present their research results in the form of a research paper before the members of the association or the society or the delegates of the Congress which are followed by the discussions.

### **TIPS FOR WRITING RESEARCH REPORTS**

Research report is a channel of communicating the research findings to the readers of the report. A good research report is one which does this task efficiently and effectively. As such it must be prepared keeping the following precautions in view:

1. While determining the length of the report (since research reports vary greatly in length), one should keep in view the fact that it should be long enough to cover the subject but short enough to maintain interest. In fact, report-writing should not be a means to learning more and more about less and less.

2. A research report should not, if this can be avoided, be dull; it should be such as to sustain reader's interest.

3. Abstract terminology and technical jargon should be avoided in a research report. The report should be able to convey the matter as simply as possible. This, in other words, means that report should be written in an objective style in simple language, avoiding expressions such as "it seems," "there may be" and the like.

4. Readers are often interested in acquiring a quick knowledge of the main findings and as such the report must provide a ready availability of the findings. For this purpose, charts, graphs and the statistical tables may be used for the various results in the main report in addition to the summary of important findings.

5. The layout of the report should be well thought out and must be appropriate and in accordance with the objective of the research problem.

6. The reports should be free from grammatical mistakes and must be prepared strictly in accordance with the techniques of composition of report-writing such as the use of quotations, footnotes, documentation, proper punctuation and use of abbreviations in footnotes and the like.

7. The report must present the logical analysis of the subject matter. It must reflect a structure where in the different pieces of analysis relating to the research problem fit well.

8. A research report should show originality and should necessarily be an attempt to solve some intellectual problem. It must contribute to the solution of a problem and must add to the store of knowledge.

9. Towards the end, the report must also state the policy implications relating to the problem under consideration. It is usually considered desirable if the report makes a forecast of the probable future of the subject concerned and indicates the kinds of research still needs to be done in that particular field.

10. Appendices should be enlisted in respect of all the technical data in the report.

11. Bibliography of sources consulted is a must for a good report and must necessarily be given.

12. Index is also considered an essential part of a good report and as such must be prepared and appended at the end.

13. Report must be attractive in appearance, neat and clean, whether typed or printed.

14. Calculated confidence limits must be mentioned and the various constraints experienced in conducting the research study may also be stated in the report.

15. Objective of the study, the nature of the problem, the methods employed and the analysis techniques adopted must all be clearly stated in the beginning of the report in the form of introduction.

### **Statement of Hypothesis**

The third part of a research proposal is statement of Hypotheses. It is done more sophisticatedly than the statement of problem. The research hypothesis is presented in an affirmative form rather than in the interrogative form. They state what is expected to occur if various conditions are evoked or presumed. The researcher should review the related literature thoroughly before formulating hypotheses.

All the terms which are used in any hypothesis should be carefully defined. The hypothesis should be unambiguous and testable. Since the quantum of achievement is difficult to predict at

the time of statement of hypothesis, researchers prefer 'null hypothesis' which assumes that only a chance difference is expected to occur between the groups A null hypothesis merely states that there is no relationship between the variables. It is expressed in statistical terms;  $X_a - X_b = 0$ .

Suppose a researcher observed that Mr.X appeared to have better teacher-student relation than Mr.Y. It was observed that Mr.X used to discuss personal problems of the students and find out their solutions while Mr.Y used to have only formal relationship of classroom teaching. The researcher formulated the following problem.

"What are the effects of discussion of personal problems of the students on the teacher-student relationship"?

The problem statement could be written as substantive hypothesis in the following words; "The discussion of personal problems of the students will have better teacher-student relationship than not having any such discussion." This hypothesis can be written as null hypothesis in the following form; "Discussion of personal problems of the students by the teachers with them and no discussion will have no differential effect upon the teacher-student relationship."

**The following criteria should be used for the formulation of testable and significant hypothesis**

- The hypothesis must be clearly stated in operational terms.
- The hypothesis must be specific and testable.
- Research problems should be selected which are directly related to previous research or theoretical formulations.

### **Definitions of Hypothesis**

"Any supposition which we make in order to endeavor to deduce conclusions in accordance with facts which are known to be real under the idea that if the conclusions to which the hypothesis leads are known truths, the hypothesis itself either must be or at least likely to be true".

### ***J.S. Mill***

“A hypothesis is a tentative generalization the validity of which remains to be tested. In its most elementary stage the hypothesis may be any hunch, guess, imaginative idea which becomes basis for further investigation”.

### ***Lundberg***

“It is a shrewd guess or inference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigation”.

**John W. Best** 33 “A hypothesis is a statement temporarily accepted as true in the light of what is, at the time, known about a phenomenon, and it is employed as a basis for action in the search for new, truth, when the hypothesis is fully established, it may take the form of facts, principles and theories”.

### ***Barr and Scates***

“Hypothesis is an assumption whose testability is to be tested on the basis of the compatibility of its implications with empirical evidence and previous knowledge”. **Gorge J. Mouly.**

## **NATURE OF HYPOTHESIS**

**(i) Conceptual:** Some kind of conceptual elements in the framework are involved in a hypothesis.

**(ii) Verbal statement in a declarative form:** It is a verbal expression of ideas and concepts. It is not merely mental idea but in the verbal form, the idea is ready enough for empirical verification.

**(iii) It represents the tentative relationship:** between two or more variables.

**(iv) Forward or future oriented:** A hypothesis is future-oriented. It relates to the future verification not the past facts and information.

**(v) Pivot of a scientific research:** All research activities are designed for verification of hypothesis.



## **FUNCTIONS OF HYPOTHESIS**

**H.H. Mc Ashan** has mentioned the following functions of hypothesis;

- It is a temporary solution of a problem concerning with some truth which enables an investigator to start his research works.
- It offers a basis in establishing the specifics what to study for and may provide possible solutions to the problem.
- It may lead to formulate another hypothesis.
- A preliminary hypothesis may take the shape of final hypothesis.
- Each hypothesis provides the investigator with definite statement which may be objectively tested and accepted or rejected and leads for interpreting results and drawing conclusions that is related to original purpose.
- It delimits field of the investigation.
- It sensitizes the researcher so that he should work selectively, and have very realistic approach to the problem.
- It offers the simple means for collecting evidences for verification.

## **IMPORTANCE OF A HYPOTHESIS**

**(i) Investigator's eyes: Carter V. Good** thinks that by guiding the investigator in further investigation hypothesis serves as the investigator's eyes in seeking answers to tentatively adopted generalization.

**(ii) Focuses research:** Without hypothesis, a research is unfocussed research and remains like a random empirical wandering. Hypothesis serves as necessary link between theory and the investigation.

**(iii) Clear and specific goals:** A well thought out set of hypothesis places clear and specific goals before the research worker and provides him with a basis for selecting sample and research procedure to meet these goals.

**(iv) Links together:** According to **Barr and Scates**, "It serves the important function of linking together related facts and information and organizing them into wholes".

**(v) Prevents blind research:** In the words of P.V. Young, "The use of hypothesis prevents a blind search and indiscriminate gathering of masses of data which may later prove irrelevant to the problem under study."

**(vi) Guiding light:** "A hypothesis serves as powerful beacon that lights the way for the research work".

(vii) It provides direction to research and prevent the review of irrelevant literature and the collection of useful or excess data.

(viii) It sensitizes the investigator certain aspects of situation which are irrelevant from the standpoint of problem at hand.

(ix) It enables the investigator to understand with greater clarity his problem and its ramification.

(x) It is an indispensable research instrument, for it builds a bridge between the problem and the location of empirical evidence that may solve the problem.

(xi) It provides the investigator with the most efficient instrument for exploring and explaining the unknown facts.

(xii) It provides a frame work for drawing conclusion.

(xiii) It stimulates the investigator for further research.

## **FORMS OF HYPOTHESIS**

According to **Bruce W. Tuckman** following are the forms of hypothesis;

### **(i) Question form:**

A hypothesis stated as a question represents the simplest level of empirical observation. It fails to fit most definitions of hypothesis. It frequently appears in the list. There are cases of simple investigation which can be adequately implemented by raising a question, rather than dichotomizing the hypothesis forms into acceptable / reject able categories.

### **(ii) Declarative Statement:**

A hypothesis developed as a declarative statement provides an anticipated relationship or difference between variables. Such a hypothesis developer has examined existing evidence which led him to believe that a difference may be anticipated as additional evidence. It is merely a declaration of the independent variables effect on the criterion variable.

### **(iii) Directional Hypothesis:**

A directional hypothesis connotes an expected direction in the relationship or difference between variables. This type of hypothesis developer appears more certain of anticipated evidence. If seeking a tenable hypothesis is the general interest of the researcher, this hypothesis is less safe than the others because it reveals two possible conditions. First that the problem of seeking relationship between variables is so obvious that additional evidence is scarcely needed. Secondly, researcher has examined the variables very thoroughly and the available evidence supports the statement of a particular anticipated outcome.

### **(iv) Non –Directional Hypothesis or Null Hypothesis:**

This hypothesis is stated in the null form which is an assertion that no relationship or no difference exists between or among the variables. Null hypothesis is a statistical hypothesis testable within the framework of probability theory. It is a non-directional form of hypothesis.

## **FORMULATION OF TESTABLE HYPOTHESIS**

A hypothesis is a tentative assumption drawn from knowledge and theory. It is used as a guide in the investigation of other facts and theory that are as yet unknown. Its formulation is one of the most difficult and most crucial step in the entire scientific process. A poorly chosen or poorly worded hypothesis can prevent the following:

- The obtaining of enough pertinent data,

- The drawing of conclusions and generalizations, and
- The application of certain statistical measures in the analysis of the result.

### **Difficulties in the Formulation of Useful Hypothesis:**

Moving from the operational to the conceptual level and vice – versa is a critical ingredient of the research to demonstration process. The following are the difficulties in the formulation of hypothesis:

- Absence of knowledge of a clear theoretical framework.
- Lack of ability to make use of the theoretical framework logically.
- Lack of acquaintance with available research technique resulting in failure to be able to phrase the hypothesis properly.

## **HYPOTHESIS TESTING**

### **Characteristics of hypothesis:**

Hypothesis must possess the following characteristics:

- Hypothesis should be clear and precise. If the hypothesis is not clear and precise, the inferences drawn on its basis cannot be taken as reliable.
- Hypothesis should be capable of being tested. In a swamp of untestable hypotheses, many a time the research programmers have bogged down. Some prior study may be done by researcher in order to make hypothesis a testable one. A hypothesis “is testable if other deductions can be made from it which, in turn, can be confirmed or disproved by observation”.
- Hypothesis should state relationship between variables, if it happens to be a relational hypothesis.
- Hypothesis should be limited in scope and must be specific. A researcher must remember that narrower hypotheses are generally more testable and he should develop such hypotheses.
- Hypothesis should be stated as far as possible in most simple terms so that the same is easily understandable by all concerned. But one must remember that simplicity of hypothesis has nothing to do

with its significance.

- Hypothesis should be consistent with most known facts i. e., it must be consistent with a substantial body of established facts. In other words, it should be one which judges accept as being the most likely.

- Hypothesis should be amenable to testing within a reasonable time. One should not use even an excellent hypothesis, if the same cannot be tested in reasonable time for one cannot spend a life-time collecting data to test it.

- Hypothesis must explain the facts that gave rise to the need for explanation. This means that by using the hypothesis plus other known and accepted generalizations, one should be able to deduce the original problem condition. Thus hypothesis must actually explain what it claims to explain;

#### **Empirical references**

- Identifying Variables
- Gender (male/female)
- Attitude
- Age (x years, y months)
- Income (\$ \_ per year)
- Weight ( \_ kg)
- Height ( \_ cm)
- Religion (Catholic, protestant, Jew, Muslim)

#### **DEVELOPING WORKING HYPOTHESES**

- Discussions with colleagues and experts about the problem, its origin and the objectives in seeking a solution;

- Examination of data and records, if available, concerning the problem for possible trends, peculiarities and other clues;

- Review of similar studies in the area or of the studies on similar problems;

- Exploratory personal investigation which involves original field interviews on a limited scale with interested parties and.

## CHAPTER X. ENTRY TO THE WRITING PROCESS

### Choosing an effective title

- Identify the main issue of the paper
- Begin with the subject of the paper
- Are accurate, unambiguous, specific, and complete
- Are as short as possible
- Articles with short, catchy titles are often better cited
- Do not contain rarely-used abbreviations
- Attract readers -Remember: readers are the potential authors

who will cite your article

### COMMON MISTAKES

#### Common mistakes seen in manuscripts submitting

The research question is not specified

The stated aim of the paper is tautological (e.g. 'The aim of this paper is to describe what we did') or vague (e.g. 'We explored issues related to X')

The structure of the paper is chaotic (e.g. methods are described in the Results section)

The manuscript does not follow the journal's instructions for authors

The paper much exceeds the maximum number of words allowed

The Introduction is an extensive review of the literature

Methods, interventions and instruments are not described in sufficient detail

Results are reported selectively (e.g. percentages without frequencies, *P*-values without measures of effect)

The same results appear both in a table and in the text

Detailed tables are provided for results that do not relate to the main research question.

In the Introduction and Discussion, key arguments are not

backed up by appropriate references

References are out of date or cannot be accessed by most readers

The Discussion does not provide an answer to the research question

The Discussion overstates the implications of the results and does not acknowledge the limitations of the study

The paper is written in poor English



### **Literature review in research**

**Literature review** is an integral part of the research process and makes a valuable contribution to almost every operational step. It has value even before the first step; that is, when you are merely thinking about a research question that you may want to find answers to through your research journey. In the initial stages of research it helps you to establish the theoretical roots of your study, clarify your ideas and develop your research methodology. Later in the process, the literature review serves to enhance and consolidate your own knowledge base and helps you to integrate your findings with the existing body of knowledge. Since an important responsibility in research is to compare your findings with those of others, it is here that the literature review plays an extremely important role. During the write-up of your report it helps you to integrate your findings with existing knowledge – that is, to either support or contradict earlier research. The higher the academic level of your research, the more important a thorough integration of your findings with existing literature becomes.

### **Functions of literature review**

- It provides a theoretical background to your study.

- It helps you establish the links between what you are proposing to examine and what has already been studied.
- It enables you to show how your findings have contributed to the existing body of knowledge in your profession.
- It helps you to integrate your research findings into the existing body of knowledge.

### **Useful ways of literature review**

- Bring clarity and focus to your research problem;
- Improve your research methodology;
- Broaden your knowledge base in your research area;
- Contextualize your findings.

(How do answers to your research questions compare with what others have found? What contribution have you been able to make to the existing body of knowledge? How are your findings different from those of others?)

### **Steps of conducting a literature review**

- Searching for the existing literature in your area of study.
- Reviewing the selected literature.
- Developing a theoretical framework.
- Developing a conceptual framework.

There are several sources designed to make your search for journals easier and these can save you enormous time. They are:

- Indices of journals (e.g. Humanities Index);
- Abstracts of articles (e.g. ERIC);
- Citation indices (e.g. Social Sciences Citation Index).

According to Gilbert (2008: 73), 'Most search facilities use Boolean logic, which allows three types of basic search "AND", "OR" and "NOT".' With practice you will become more efficient and effective in using keywords in combination with AND, OR and NOT, and so learn to narrow your search to help you identify the most relevant references.



## **Writing about the literature reviewed**

Now, all that remains to be done is to write about the literature you have reviewed. As mentioned in the beginning of this chapter, two of the broad functions of a literature review are (1) to provide a theoretical background to your study and (2) to enable you to contextualize your findings in relation to the existing body of knowledge in addition to refining your methodology. The content of your literature review should reflect these two purposes. In order to fulfill the first purpose, you should identify and describe various theories relevant to your field; and specify gaps in existing knowledge in the area, recent advances in the area of study, current trends and so on. In order to comply with the second function you should integrate the results from your study with specific and relevant findings from the existing literature by comparing the two for confirmation or contradiction. Note that at this stage you can only accomplish the first function of the literature review, to provide a theoretical background to your study. For the second function, the contextualization of the findings, you have to wait till you are at the research report writing stage.

### **The preparation of the research design**

- the means of obtaining the information;
- the availability and skills of the researcher and his staff (if any);
- explanation of the way in which selected means of obtaining information will be organized;
- the time available for research; and
- the cost factor relating to research, i.e., finance available for the purpose.

## **TEMPLATES ON HOW TO START LITERATURE REVIEW**

### **Referring to the sources in general**

Current research on ..... is focused on .....

Previous studies indicate that .....

The literature on ..... shows a variety of approaches

Much research on ..... has been done.

The focus of recent research has been on .....

..... has/have been widely researched/investigated.

In recent years, research on/into ..... has become very popular.

In the last decade ..... has attracted much attention from research teams .....

For several years great effort has been devoted to the study of .....

Several publications have appeared in recent years documenting .....

Previous research has documented/shown/demonstrated that .....

To solve this problem/many researchers have proposed various methods.

In the literature, several theories have been proposed to explain .....

### **Synopsis of literature**

Previous studies have reported ....

Recent evidence suggests that ....

Several attempts have been made to ....

Studies of X show the importance of ....

A number of researchers have reported ....

Recently investigators have examined the effects of X on Y.

Factors found to be influencing X have been explored in several studies.

In the past two decades a number of researchers have sought to determine ....

A considerable amount of literature has been published on X. These studies

Surveys such as that conducted by Smith (1988) showed that ....

The first serious discussions and analyses of X emerged during the 1970s ....

There have been a number of longitudinal studies involving X that have reported

Xs were reported in the first models of Y (e.g., Smith, 1977; Smith,

1977).

We know about X is largely based upon empirical studies that investigate...

Smith (1984: 217) shows how, research into X was mainly concerned with ....

### **Highlighting a problem**

However, a major problem with this kind of application is ....

Lack of X has existed as a health problem for many years.

However, these rapid changes are having a serious effect on ....

Despite its safety and efficacy, X suffers from several major drawbacks:

However, research has consistently shown that these students lack ....

There is increasing concern that some Xs are being disadvantaged ....

Despite its long clinical success, X has a number of problems in use.

Questions have been raised about the safety of prolonged use of ....

Along with this growth in X, however, there is increasing concern over ....

### **Referring to individual authors**

..... and .... are discussed in [3] and [6].

X [4] and Y [3] indicate that .....

X et al. [1] argue that .....

One of the first examples of ..... is presented in [2].

Another/The latest solution is described in [3].

The results obtained/offered by X in [5] suggest that .....

Recently, several authors [4], [5], [7] have proposed (a new theory) ..

X [2] and X [5] have demonstrated that .....

A/The most interesting approach to this issue has been proposed by [2].

X [6] has also found that ..... . However, our researchers have arrived at the conclusion/have concluded that ..... was experimentally

measured by [7].

X et al. [7] studied ..... and showed that .....

X [11] developed a novel sensor using .....

In this work and in related references it was observed that .....

In [8] it was shown that .....

As reported by X [2], .....

In a recent paper by X [9], .....

### **Saying that little research has been done in a particular field**

However, to the author's/authors' best knowledge, very few publications can be found/are available in the literature that discuss/address the issue of ....

To the author's/authors' knowledge, ..... has/have been scarcely investigated from the point of view of ...../from the theoretical point of view.

### **Controversy in the field of study**

To date there has been little agreement on what ....

One major issue in early X research concerned ....

The issue has grown in importance in light of recent ....

One observer has already drawn attention to the paradox in ....

Questions have been raised about the safety of prolonged use of ....

Debate continues about the best strategies for the management of ....

In many Xs, a debate is taking place between Ys and Zs concerning ....

This concept has recently been challenged by X studies demonstrating.

The debate about X has gained fresh prominence with many arguing that ....

More recently, literature has emerged that offers contradictory findings..

One of the most significant current discussions in legal and moral philosophy.

One major theoretical issue that has dominated the field for many

years concerns..

The causes of X have been the subject of intense within the scientific community.

The issue of X has been a controversial disputed subject within the field of ....

In the literature on X, the relative importance of Y has been subject to considerable debate.

### **Inadequacies of previous studies**

Researchers have not treated X in much detail.

Previous studies of X have not dealt with ....

Half of the studies evaluated failed to specify whether ....

Most studies in the field of X have only focused on ....

Most studies in X have only been carried out in a small number of areas.

The generalizability of much published research on this issue is problematic.

Such expositions are unsatisfactory because they ....

The research to date has tended to focus on X rather than Y.

Research on the subject has been mostly restricted to limited comparisons of

The existing accounts fail to resolve the contradiction between X and Y.

However, few writers have been able to draw on any systematic research...

However, much of the research up to now has been descriptive in nature ....

However, these results were based upon data from over 30 years ago and it is unclear if ....

Although extensive research has been carried out on X, no single study exists which ....

X's analysis does not take account of .... nor does she examine ....

### **Pointing out limitations of previous research**

A key limitation of this research is that (it does not address the problem of..)

The major drawback of this approach is .....

However, most of the previous studies do not take into account .....

This approach may not be practical/orthodox/conventional in all situations.

Reference [3] analyses and compares various aspects of .....but, there are still some interesting and relevant problems to be addressed.

However, studies on ..... are still lacking.

The problem with this approach is in that it .....

Although several studies have indicated that ....., little attention has been paid/given to .....

### **Knowledge gap in the field of study**

What is not yet clear is the impact of X on ....

No previous study has investigated X .

There has been little quantitative analysis of ....

The neurobiological basis of this X is poorly understood.

Until recently, there has been no reliable evidence that ....

In addition, no research has been found that surveyed ....

Little is known about X and it is not clear what factors ....

This indicates a need to understand the various perceptions of X that exist among.

So far this method has only been applied to ....

So far, however, there has been little discussion about ....

However, far too little attention has been paid to ....

However, the evidence for this relationship is inconclusive ....

However, much uncertainty still exists about the relation between ....

However, there have been no controlled studies which compare differences..

In contrast, very little is known about X in non-mammalian vertebrates in

<p>Although While Whilst</p>	<p>some research has been carried out on X,</p>	<p>no single study exists which .... no studies have been found which .... no controlled studies have been reported. only two studies have attempted to investigate .... the mechanism by which .... has not been established. there have been few empirical investigations into ..... there is very little scientific understanding of ....</p>
--------------------------------------	---	--

Apart from Smith (2014), there is a general lack of research in ....  
Despite this, very few studies have investigated the impact of X on ....  
Several studies have produced estimates of X (Smith, 2002; Jones, 2003), but there is still insufficient data for ....

In an **open-ended** question the possible responses are not given. In the case of a questionnaire, the respondent writes down the answers in his/her words, but in the case of an interview schedule the investigator records the answers either verbatim or in a summary.

In a **closed question** the possible answers are set out in the questionnaire or schedule and the respondent or the investigator ticks the category that best describes the respondent's answer. It is usually wise to provide a category 'Other/please explain' to accommodate any response not listed. What is your average annual income? 100,200, 300, higher.

**Likert Scale Questions** is typically a five, seven, or nine point agreement scale used to measure respondents' agreement with a variety of statements.

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0 1 2 3 4 5 6 7 photo

## **DATA COLLECTION**

- Questionnaires
- Interviews
- Schedules

## **QUESTIONNAIRE**

It is list of questions related to one topic. It may be defined as;

“A questionnaire is a systematic compilation of questions that are submitted to a sampling of population from which information is desired.”

### ***Barr, Davis & Johnson***

“In general, the word questionnaire refers to a device for securing answers to questions by using a form which the respondent fills in himself.”

### ***W. J. Goode & K. Hall***

## **CHARACTERISTICS OF A GOOD QUESTIONNAIRE:**

1. It deals with an important or significant topic.
2. Its significance is carefully stated on the questionnaire or on its covering letter.
3. It seeks only that data which cannot be obtained from the resources like books, reports and records.
4. It is as short as possible, only long enough to get the essential data.
5. It is attractive in appearance, neatly arranged and clearly duplicated or printed.
6. Directions are clear and complete, important terms are clarified.
7. The questions are objective, with no clues, hints or suggestions.
8. Questions are presented in a order from simple to complex.
9. Double negatives, adverbs and descriptive adjectives are avoided.



10. Double barreled questions or putting two questions in one question are also avoided.

11. The questions carry adequate number of alternatives.

12. It is easy to tabulate, summarize and interpret.

### **Merits**

- It's very economical.
- It's a time saving process.
- It covers the research in wide area.
- It's very suitable for special type of responses.
- It is most reliable in special cases.

### **Demerits**

- Through this we get only limited responses.
- Lack of personal contact.
- Greater possibility of wrong answers.
- Chances of receiving incomplete response are more.
- Sometimes answers may be illegible.
- It may be useless in many problems.

### **INTERVIEW**

Interview is a two way method which permits an exchange of ideas and information. "Interviewing is fundamentally a process of social interaction."

#### ***W. J. Goode & P.K. Hatt***

"The interview constitutes a social situation between two persons, the psychological process involved requiring both individuals mutually respond though the social research purpose of the interview call for a varied response from the two parties concerned."

#### ***Vivien Palmar***

"The interview may be regarded as a systematic method by which a person enters more or less imaginatively into the inner life of a comparative stranger."

#### ***P.V. Young***

## **DIFFERENCE BETWEEN INTERVIEW AND QUESTIONNAIRE**

### **Questionnaire Method**

- Data is gathered indirectly.
- No face to face contact between two.
- Interviewer should have the general knowledge of the topic.
- Interviewee will hesitate to write it.
- We get written information only.

### **Interview Method**

- Data is gathered directly.
- There is face to face contact between interviewer and interviewee.
  - Skillful interviewer is needed.
  - Some confidential information can also be obtained.
  - We get written and oral both type of information.

### **CHARACTERISTICS OF AN INTERVIEW:**

- The interviewer can probe into casual factors, determine attitudes, discover the origin of problem.
  - It's appropriate to deal with young children and illiterates person.
    - It can make cross questioning possible.
    - It helps the investigator to gain an impression of the person concerned.
      - It can deal with delicate, confidential and even intimate topics.
      - It has flexibility.
      - Sincerity, frankness, truthfulness and insight of the interviewee can be better judged through cross questioning.
      - It gives no chance for respondent to modify his earlier answer.
      - It is applicable in survey method, but it is also applicable in historical, experimental, case studies and clinical studies.

### **Merits**

- Direct research.

- Deep research
- Knowledge of past and future.
- Knowledge of special features.
- Mutual encouragement is possible.
- Supra-observation is possible.
- Knowledge of historical and emotional causes.
- Examination of known data.

### **DISADVANTAGE OF INTERVIEW:**

- May provides misleading information.
- Defects due to interviewee (low level of intelligence or may be emotionally unbalanced)
  - Result may be affected due to prejudices of interviewer.
  - Result may be affected due to the difference in the mental outlook of interwee and interviewer.
- One sided and incomplete research.
- Art rather than science.

The response rate was 60% at six months and 56% at 12 months.

Of the study population, 90 subjects completed and returned the questionnaire.

Thirty-two individuals returned the questionnaires.

### **SCHEDULE**

When a researcher is using a set of questionnaires for interview purpose it is known as schedule. "Schedule is the name usually applied to set of questions, which are asked and filled by an interviewer in a face to face situation with another."

***W.J. Goode & P. K. Hatt***

By a schedule we cannot, however, obtain information about many things at once. It is best suited to the study of a single item thoroughly.

According to **Thomas Carson Macormie**, "The schedule is

nothing more than a list of questions which, it seems necessary to test the hypothesis.”

Thus schedule is a list of questions formulated and presented with the specific purpose of testing an assumption or hypothesis.

In schedule method interview occupies a central and plays a vital role.

As a matter of fact success in the use of schedule is largely determined by the ability and tact of the interviewer rather than by the quality of the questions posed.

Because the interviewer himself poses the questions and notes down the answers all by himself, the quality of questions has not any great significance.

### **IMPORTANT FEATURES OF SCHEDULE:**

- The schedule is presented by the interviewer. The questions are asked and the answers are noted down by him.
- The list of questions is a mere formal document, it need not be attractive.
- The schedule can be used in a very narrow sphere of social research.
- It aids to delimit the scope of the study and to concentrate on the circumscribed elements essential to the analysis.
- It aims at delimiting the subject.
- In the schedule the list of questions is preplanned and noted down formally and the interviewer is always armed with the formal document detailing the questions.

### **Points to be kept in mind while designing schedule**

- Interviewer should not frame long, complex, defective questions.
- Unrelated and unnecessary questions should not be asked.
- Schedule should not contain personal and upsetting questions.

- Its questions should be simple, clear and relevant to topic.
- Questions be suitable to respondent's intelligence level.
- Impersonal, indirect and unambiguous questions should be included in schedule.

**Merits of Schedule:**

- Higher percentage of responses.
- Possible to observe personality factors.
- Through interview personal contact is possible.
- It is possible to give human touch to schedule.
- Removal of doubts is possible because face to face interaction is there.
- It is possible to know about the defects of the interviewee.

**OBSERVATION TECHNIQUE:**

This is most commonly used technique of evaluation research. It is used for evaluating cognitive and non-cognitive aspects of a person. It is used in evaluation performance, interests, attitudes, values towards their life problems and situations. It is most useful technique for evaluating the behaviors of children. It is technique of evaluation in which behavior are observed in a natural situations. "It is thorough study based on visual observation. Under this technique group behaviors and social institutions problems are evaluated."

***C. Y. Younge***

"Observation employs relatively more visual and senses than audio and vocal organs."

***C.A. Mourse***

The cause- effect relationship and study of events in original form, is known as observation. Observation seeks to ascertain what people think and do by watching them in action as they express themselves in various situations and activities. Observation is recognized as the most direct means of studying people when one is interested in their overt behavior.

## **CHARACTERISTICS OF OBSERVATION SCHEDULE**

According to **Jahoda** it has many characteristics;

- It serves a formulated research purpose.
- It is planned systematically rather than occurring haphazardly.
- It is systematically recorded and related to more general propositions.
- It is subjected to checks and controls with respect to validity, reliability and precision.
- It is a direct technique to study an object, an event or a problem.
- It is based mainly on visual –audio scene.
- It employs own experiences.
- It establishes cause-effect relationship.
- It is an objective technique of data collection.
- It is both objective and subjective evaluation technique.
- It is formal as well as informal technique.
- It is quantitative as well as qualitative technique for data collection.

### **Advantages:**

- It is reliable and valid technique of collecting data and information.
- We get first hand data through this method.
- Record of observation is also available immediately.
- It is simple, broad and comprehensive method.
- It is an oldest technique of data collection and getting direct information.

### **Limitations:**

- It has a limited scope for its use because all the events cannot be observed directly.
- It is subjective method.
- It is very time consuming process.
- Costly so energy consuming also.

- Presence of observer influences the behavior of the person i.e. subject becomes conscious.
- In case covert behavior, which can't be observed, it is not useful.
- Observer should be trained and experienced.

It deals with the investigation of the entire population. Here the data are collected for each and every unit of the universe. This method provides more accurate and exact information as no unit is left out.

### **DATA COLLECTION**

Data must be collected and recorded in a form suitable for the intended analysis. The collection of data requires time and substantial effort for acquiring skills and making the necessary arrangements for collection and to ensure adequate quality.

#### **Access to Data:**

Generally it is a problem for researcher to get access to data because the institutions or the persons who generally control the data are not willing to provide him data for one or the other reason or excuse. Some necessary steps are required to motivate such institutions or persons to provide necessary data willingly. Some educational problems are of such nature that the subjects specially girls are not willing to disclose correct information. Similarly a researcher of any board or university may not have access to confidential data.

#### **ADEQUATE STANDARD:**

The researcher should demonstrate that his data were properly collected. It is possible if the following conditions are fulfilled.

(i) It should be ensured that the supplied data met the requirement of validity. In other words the data should, ensure what they claimed to measure.

**(ii)** Proper attention should be paid to measurement error.

The following types of error are possible in data collection;

- Errors due to malfunctioning of measuring equipment/instrument.

- Error of bias.
- Deliberate falsehood.
- Distortion of facts.
- Random errors.

**(iii)** It should be ensured that a suitable sample was drawn out of the population so that proper generalization could be made.

**(iv)** It should also be checked that the data were properly recorded. The conditions under which the data were gathered should be properly noted and suitable data recording method should be used. The efforts should be made to detect and eliminate errors arising during recording. The data are generally recorded in the following forms;

- notes of the researcher
- Log books and journals are used by a researcher doing the experiment or conducting a field study
- Interview notes
- Responses to questionnaires
- Recording on tape recorder
- Video cameras
- Transcribing data for computer input

### **Data Organization:**

Whatever method is used for collection of data it will be necessary that an extensive set of supplementary notes should be made for the following;

- Sources of data
- Conditions under which data were gathered.

There should be stored in such a way as offer some reasonable prospects of retrieval when required.



## **GENERAL RULES ON DATA COLLECTION:**

There are some general rules that apply to all types of data collection. They are as follows;

- Do not collect more information than is required for the research problem.
- Make sure the wording of the data collection instrument is clear and unambiguous.
- Use clear and explicit instructions in data collection instruments.
- Design the response options as carefully as the items stems themselves.
- Make responding to the measuring instrument as alternative as possible.
- Make sure that the final products look professional

## **PRIMARY SOURCES OF DATA**

The original documents are termed as Primary sources. These are solid basis of historical research and are highly prized by a historian.

According to **Kerlinger**, "A primary source is the only repository of an historical datum, like an original record kept of an important occasion, an eye witness description of an event, a photograph, minutes of organization meeting and so on."

### **(i) Document or records:**

These are maintained and written by actual participant or witness of an event. These sources are produced for the purpose of transmitting information to be used in the future. Documents classified as primary sources are constitution, charters, laws, court decisions, diaries, deeds, genealogies, contracts, wills, autobiographies, letters, official minutes or records, permits, licenses, affidavits, depositions, declarations, proclamations certificates, lists, bills, handbills, receipts, newspapers, magazines, accounts, maps, diagrams, books, pamphlets, catalogues,

films, pictures, paintings, recordings, transcriptions and research reports.

**(ii) Remains or Relics:**

These are associated with a person, group, period, fossils, skeletons, tools, weapons, food utensils, clothing, buildings, furniture, coins, art objects, pictures and paintings are examples of relics.

**(iii) Oral Testimony:**

These are spoken account of witness or participant in an event. It is obtained in a personal interview. It may recorded as the witness relates experiences.

**Collecting Primary Data and Secondary Data:**

The primary data can be collected through laboratory measurement, field observation, questionnaires, interviews, opinionnaires, schedules etc.

The secondary data can be collected from technical publications such as manuals, handbooks, data sheets, and standards, books and journals, official publications of the Central government, state governments, local bodies, private data services and computer data base.

**SECONDARY SOURCES OF DATA**

In the words of **Kerlinger**, "A secondary source is an account or record of an historical event or circumstance one or more steps removed from an original history."

Secondary sources are the reports of a person who relates the testimony of actual witness of, or participant in an event. The writer of the secondary source who was not on the scene of the event, merely reports what the person who was there said or wrote. Most history books and encyclopedias are the examples of secondary source.

**COLLECTING SECONDARY SOURCES**

**Government or semi-government publications-** There are many government and semi government organizations that collect

data on a regular basis in a variety of areas and publish it for use by members of the public and interest groups. Some common examples are the census, vital statistics registration, labour force surveys, health reports, economic forecasts and demographic information.

**Earlier research**– For some topics, an enormous number of research studies that have already been done by others can provide you with the required information.

**Personal records**– Some people write historical and personal records (e.g. diaries) that may provide the information you need.

**Mass media**– Reports published in newspapers, in magazines, on the Internet, and so on, may be another good source of data.

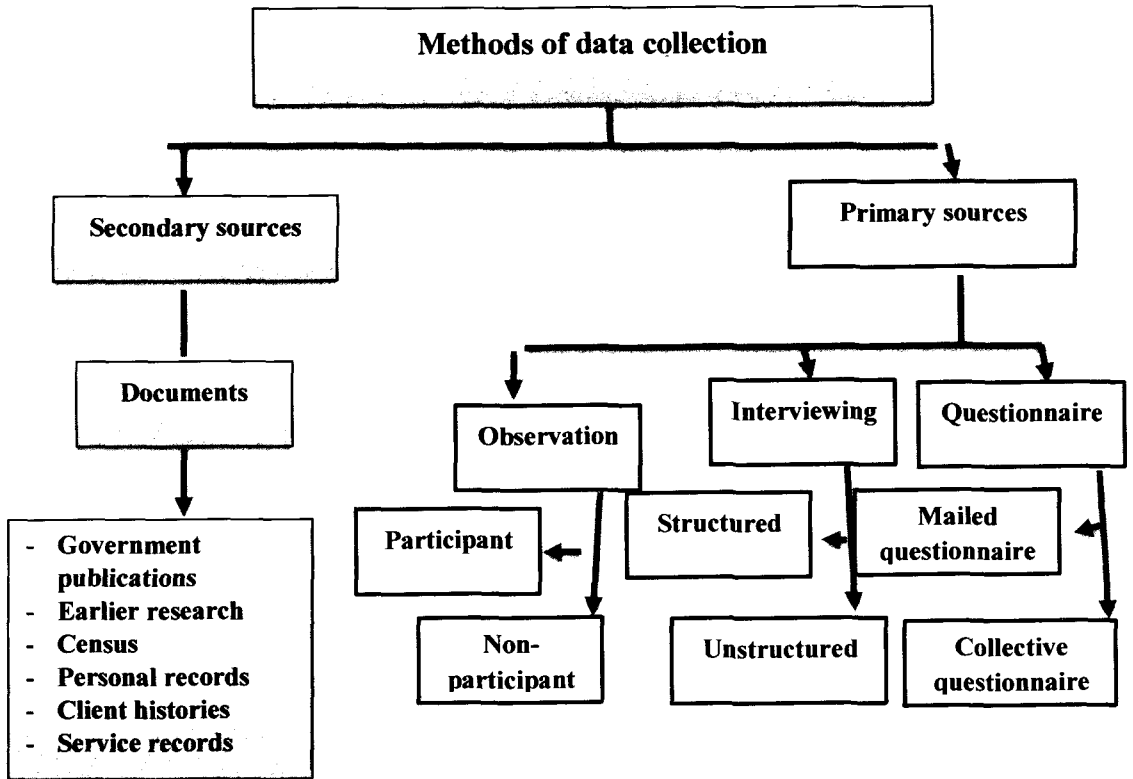
## **PROBLEMS ON COLLECTING DATA**

**Validity and reliability**– The validity of information may vary markedly from source to source. For example, information obtained from a census is likely to be more valid and reliable than that obtained from most personal diaries.

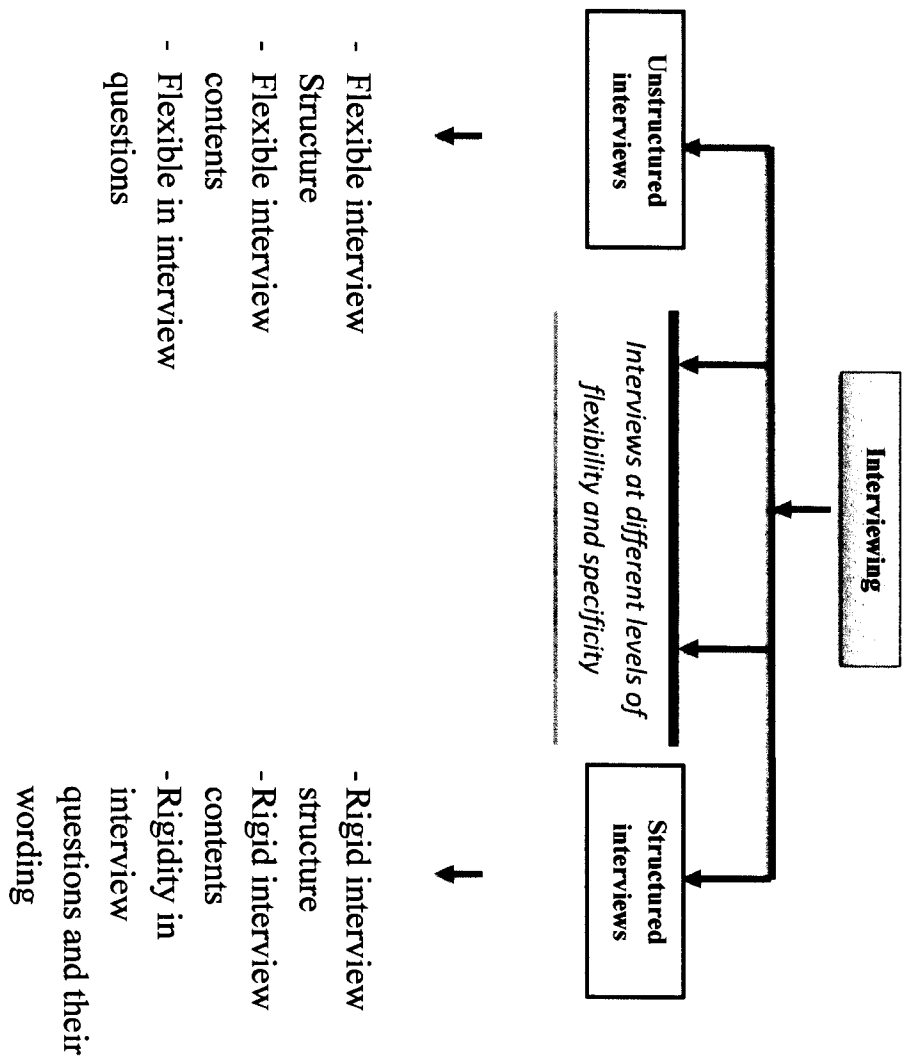
**Personal bias**– The use of information from personal diaries, newspapers and magazines may have the problem of personal bias as these writers are likely to exhibit less rigorousness and objectivity than one would expect in research reports.

**Availability of data**– It is common for beginning researchers to assume that the required data will be available, but you cannot and should not make this assumption. Therefore, it is important to make sure that the required data is available before you proceed further with your study.

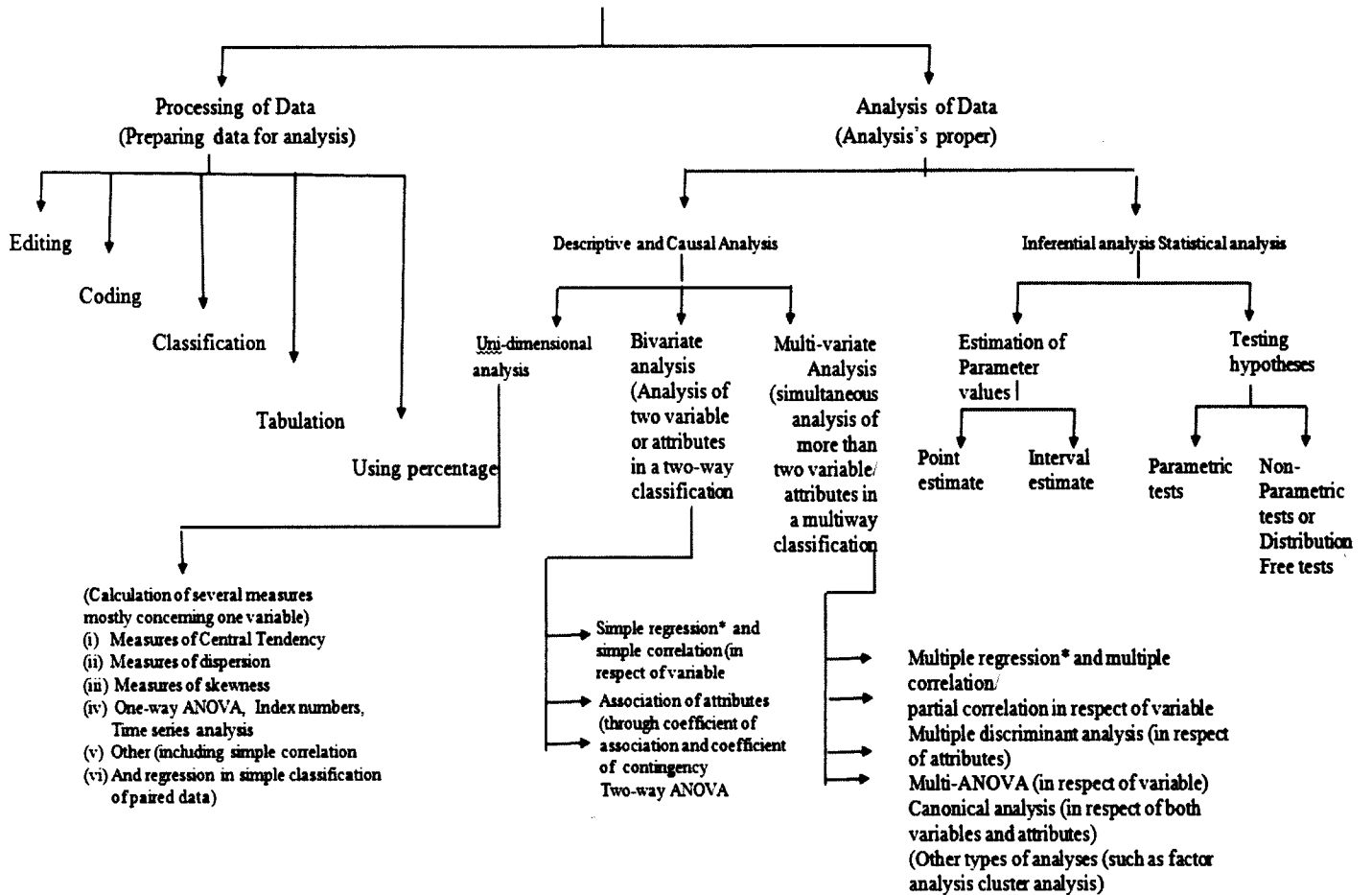
**Format**– Before deciding to use data from secondary sources it is equally important to ascertain that the data is available in the required format. For example, you might need to analyse age in the categories 23–33, 34–48, and so on, but, in your source, age may be categorized as 21–24, 25–29, and so on.



# TYPES OF INTERVIEW



## Analysis of Data (in a board general way can be categorized into)



• Regression analysis (whether simple or multiple) is termed as Causal analysis whereas correlation analysis indicates simply co-variation between two or more variable.

## PURPOSES OF DATA ANALYSIS

### **(i) Description:**

It involves a set of activities that are as essential first step in the development of most fields. A researcher must be able to identify a topic about which much was not known; he must be able to convince others about its importance and must be able to collect data.

### **(ii) Construction of Measurement Scale:**

The researcher should construct a measurement scale. All numbers generated by measuring instruments can be placed into one of four categories: 71

**(a) Nominal:** The number serves as nothing more than labels. For example no 1 was not less than no 2. Similarly no 2 was neither more than no 1 and nor less than no 3.

**(b) Ordinal:** Such numbers are used to designate an ordering along some dimensions such as from less to more, from small to large, from sooner to later.

**(c) Interval:** The interval provides more précised information than ordinal one. By this type of measurement the researcher can make exact and meaningful decisions. For example if A,B and C are of 150 cm, 145cm and 140 cm height, the researcher can say that A is 5 cm taller than B and B is 5 cm taller than C.

**(d) Ratio Scale:** It has two unique characteristics. The intervals between points can be demonstrated to be precisely the same and the scale has a conceptually meaningful zero point.

### **(iii) Generating empirical relationships:**

Another purpose of analysis of data is identification of regularities and relationships among data. The researcher has no clear idea about the relationship which will be found from the collected data. If the data were available in details it will be easier to determine the relationship. The researcher can develop theories if he

is able to recognize pattern and order of data. The pattern may be showing association among variables, which may be done by calculating correlation among variables or showing order, precedence or priority. The derivation of empirical laws may be made in the form of simple equations relating one interval or ratio scaled variable to a few others through graph methods.

#### **(iv) Explanation and prediction:**

Generally knowledge and research are equated with the identification of causal relationships and all research activities are directed to it. But in many fields the research has not been developed to the level where 72 causal explanation is possible or valid predictions can be made. In such a situation explanation and prediction is construct as enabling the values of one set of variables to be derived given the values of another.

### **FUNCTIONS OF DATA ANALYSIS**

- The researcher should analyze the available data for examining the statement of the problem.
- The researcher should analyze the available data for examining each hypothesis of the problem.
- The researcher should study the original records of the data before data analysis.
- The researcher should analyze the data for thinking about the research problem in lay man's term.
- The researcher should analyze the data by attacking it through statistical calculations.
- The researcher should think in terms of significant tables that the available data permits for the analysis of data.

### **INTERPRETATION OF DATA**

According to F.L. Whitney, interpretation means an adequate exposition of the true meaning of the material presented in terms of

the purposes of the study being reported and of the chapter and section topic involved.

### **Purposes**

The following are the main purposes of interpretation of data or results;

- To throw light on the real significance of the material in the context.
- To understand implications of the data.
- To provide hints of conclusions and recommendations of the researcher.
- To show the values of greatest worth that has resulted from the research.
- To refer important generalization.

### **Factors**

The researcher should keep the following factors in consideration in interpretation of data;

#### **(i) Not to ignore those factors which are unstudied:**

In social / behavioral researches there are many factors which have their impact upon the findings of the research but no researcher is in the position to study all the factors. Naturally he does not take into account in interpretation of the results those factors which have not been studied. It has its effect upon the search of truth. Thus the researcher should take into consideration such factors in his interpretation. For example if a comparison has been made between the traditional method of teaching and any modern method of teaching in respect of effectiveness of teaching, the interpretation that successful attainment is the result of method of teaching only is complete denial of the role of general mental ability, high achievement motivation and better study habits etc.

#### **(ii) Not to ignore those factors which have not been selected for study:**

In social / behavioral researches, the subjects are generally so



large that the researcher collects the data from a selected group only. The researcher should remember that some factors which have not been included in selective group are equally important in their impact upon findings. For example if the researcher collects data from a particular school in a particular area and then he concludes about all the schools/colleges.

**(iii) Not to over -interpret the expected results:**

The researcher should remember that even if he finds the findings of the research as per his expectations he should not interpret more than what can be interpreted on the basis of data available. The researcher should be cautious that he reports all such factors which might be responsible for the findings.

**(iv) Not to exercise defense mechanism in interpreting the results:**

The researcher should remember that it is not necessary that the hypotheses should always be confirmed. It is possible that the researcher may exercise defense mechanism if the results of the study are not found as per expectations of the research. In such a situation he should not try to find faults in tools or samples for the results against his 77 expectations.

**Data Types**

- Cross Sectional
- Time Series
- Panel

**Kaul** defines data analysis as, "Studying the organized material in order to discover inherent facts. The data are studied from as many angles as possible to explore the new facts."

With this brief introduction concerning the concepts of processing and analysis, we can now proceed with the explanation of all the processing operations.

**1. Editing:** Editing of data is a process of examining the collected raw data (especially in surveys) to detect errors and omissions and to

correct these when possible. As a matter of fact, editing involves a careful scrutiny of the completed questionnaires and/or schedules. Editing is done to assure that the data are accurate, consistent with other facts gathered, uniformly entered, as completed as possible and have been well arranged to facilitate coding and tabulation.

**2. Coding:** Coding refers to the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes. Such classes should be appropriate to the research problem under consideration. They must also possess the characteristic of exhaustiveness (i.e., there must be a class for every data item) and also that of mutual exclusivity which means that a specific answer can be placed in one and only one cell in a given category set.

Another rule to be observed is that of unidimensionality by which is meant that every class is defined in terms of only one concept.

**3. Classification:** Most research studies result in a large volume of raw data which must be reduced into homogeneous groups if we are to get meaningful relationships. This fact necessitates classification of data which happens to be the process of arranging data in groups or classes on the basis of common characteristics. Data having a common characteristic are placed in one class and in this way the entire data get divided into a number of groups or classes.

Classification can be one of the following two types, depending upon the nature of the phenomenon involved:

**(a) Classification according to attributes:** As stated above, data are classified on the basis of common characteristics which can either be descriptive (such as literacy, sex, honesty, etc.) or numerical (such as weight, height, income, etc.). (total number of classes of final order is given by  $2^n$ , where  $n$  = number of attributes considered).

**(b) Classification according to class-intervals** Unlike descriptive characteristics, the numerical characteristics refer to quantitative phenomenon which can be measured through some

statistical units. Data relating to income, production, age, weight, etc. come under this category. Such data are known as *statistics of variables* and are classified on the basis of class intervals. Some statisticians adopt the following formula, suggested by H.A. Sturges, determining the size of class interval:

$$i = R / (1 + 3.3 \log N)$$

where

$i$  = size of class interval;

$R$  = Range (i.e., difference between the values of the largest item and smallest item among the given items);

$N$  = Number of items to be grouped.

**Exclusive type class intervals:** They are usually stated as follows:

10-20

20-30

30-40

40-50 min

**Inclusive type class intervals:** They are usually stated as follows:

11-20

21-30

31-40

41-50

**4. Tabulation:** When a mass of data has been assembled, it becomes necessary for the researcher to arrange the same in some kind of concise and logical order. This procedure is referred to as tabulation. Thus, tabulation is the process of summarizing raw data and displaying the same in compact form (i.e., in the form of statistical tables) for further analysis. In a broader sense, tabulation is an orderly arrangement of data in columns and rows. Tabulation is essential because of the following reasons.

- It conserves space and reduces explanatory and descriptive

statement to a minimum.

- It facilitates the process of comparison.
- It facilitates the summation of items and the detection of errors and omissions.
- It provides a basis for various statistical computations.

### **PRINCIPLES OF TABULATION**

Such principles of tabulation, particularly of constructing statistical tables, can be briefly states as follows:

1. Every table should have a clear, concise and adequate title so as to make the table intelligible without reference to the text and this title should always be placed just above the body of the table.
2. Every table should be given a distinct number to facilitate easy reference.
3. The column headings (captions) and the row headings (stubs) of the table should be clear and brief.
4. The units of measurement under each heading or sub-heading must always be indicated.
5. Explanatory footnotes, if any, concerning the table should be placed directly beneath the table, along with the reference symbols used in the table.
6. Source or sources from where the data in the table have been obtained must be indicated just below the table.
7. Usually the columns are separated from one another by lines which make the table more readable and attractive. Lines are always drawn at the top and bottom of the table and below the captions.
8. There should be thick lines to separate the data under one class from the data under another class and the lines separating the sub-divisions of the classes should be comparatively thin lines.
9. The columns may be numbered to facilitate reference.
10. Those columns whose data are to be compared should be kept side by side. Similarly, percentages and/or averages must also

be kept close to the data.

11. It is generally considered better to approximate figures before tabulation as the same would reduce unnecessary details in the table itself.

12. In order to emphasize the relative significance of certain categories, different kinds of type, spacing and indentations may be used.

13. It is important that all column figures be properly aligned. Decimal points and (+) or (-) signs should be in perfect alignment.

14. Abbreviations should be avoided to the extent possible and ditto marks should not be used in the table.

15. Miscellaneous and exceptional items, if any, should be usually placed in the last row of the table.

16. Table should be made as logical, clear, accurate and simple as possible. If the data happen to be very large, they should not be crowded in a single table for that would make the table unwieldy and inconvenient.

17. Total of rows should normally be placed in the extreme right column and that of columns should be placed at the bottom.



**(a) Multiple regression analysis:** This analysis is adopted when the researcher has one dependent variable which is presumed to be a function of two or more independent variables. The objective of this analysis is to make a prediction about the dependent variable based on its covariance with all the concerned independent variables.

**(b) Multiple discriminant analysis:** This analysis is appropriate when the researcher has a single dependent variable that cannot be measured, but can be classified into two or more groups on the basis of some attribute. The object of this analysis happens to be to predict an entity's possibility of belonging to a particular group based on

several predictor variables.

**(c) Multivariate analysis of variance (or multi-ANOVA):** This analysis is an extension of two ways ANOVA, wherein the ratio of among group variance to within group variance is worked out on a set of variables.

**One-way (or single factor) ANOVA:** Under the one-way ANOVA, we consider only one factor and then observe that the reason for said factor to be important is that several possible types of samples can occur within that factor. We then determine if there are differences within that factor

### **Anova in Latin-square design**

Latin-square design is an experimental design used frequently in agricultural research. In such a design the treatments are so allocated among the plots that no treatment occurs, more than once in any one row or any one column. The ANOVA technique in case of Latin-square design remains more or less the same as we have already stated in case of a two-way design, excepting the fact that the variance is splatted into four parts as under:

- variance between columns;
- variance between rows;
- variance between varieties;
- residual variance.

**(d) Canonical analysis:** This analysis can be used in case of both measurable and non-measurable variables for the purpose of simultaneously predicting a set of dependent variables from their joint covariance with a set of independent variables.

*Inferential analysis* is concerned with the various tests of significance for testing hypotheses in order to determine with what validity data can be said to indicate some conclusion or conclusions. It is also concerned with the estimation of population values. It is mainly on the basis of inferential analysis that the task of interpretation (i.e., the task of drawing inferences and conclusions) is performed.

The researcher will have to use either descriptive statistics or inferential statistics for the purpose of the analysis.

**(i) Descriptive statistics** may be on any of the following forms:

**(a) Measures of Central Tendency:**

These measures are mean, median, mode geometric mean and harmonic mean. In behavioral statistics the last two measures are not used. Which of the first three will be used in social statistics depends upon the nature of the problem.

**(b) Measures of Variability:**

These measures are range, mean deviation, quartile deviation and standard deviation. In social statistics the first two measures are rarely used. The use of standard deviation is very frequently made for the purpose of analysis.

**(c) Measures of Relative Position:**

These measures are standard scores (Z or T scores), percentiles and percentile ranks .All of them are used in educational statistics for data analysis.

**(d) Measures of Relationship:**

There measures are Co-efficient of Correlation, partial correlation and multiple correlations. All of them are used in educational statistics for the analysis of data. However the use of rank method is made more in comparison to Karl Pearson method.

**(ii) Inferential statistics** may be in any one of the following forms:

**(a) Significance of Difference between Means:**

It is used to determine whether a true difference exists between population means of two samples.

**(b) Analysis of Variance:**

The Z or t tests are used to determine whether there was any significant difference between the means of two random samples. The F

test enables the researcher to determine whether the sample means differ from one another to a greater extent than the test scores differ from their own sample means using the F ratio.

**(c) Analysis of Co-Variance:**

It is an extension of analysis of variance to test the significance of difference between means of final experimental data by taking into account the Correlation between the dependent variable and one or more Co-variates or control variables and by adjusting initial mean differences in the group.

**(d) Correlation Methods:**

Either of two methods of correlation can be used for the purpose of calculating the significance of the difference between Co-efficient of Correlation.

**(e) Chi Square Test:**

It is used to estimate the like hood that some factor other than chance accounts to the observed relationship. In this test the expected frequency and observed frequency are used for evaluating Chi Square.

**(f) Regression Analysis:**

For calculating the probability of occurrence of any phenomenon or for predicting the phenomenon or relationship between different variables regression analysis is cone.



## CHARACTERISTICS OF SAMPLING

**Good and Hatt**, "A sample as the name implies, is a smaller representation of a larger whole."

**W. G. Cochran**, "In every branch of science we lack the resources, to study more than a fragment of the phenomenon that might advance our knowledge." i.e. fragment is sample and phenomenon is population. The sample observations are applied to the phenomenon



i.e. generalization.

**David S. Fox**, "In the social sciences, it is not possible to collect data from every respondent relevant to our study but only from some fractional part of the respondents. The process of selecting the fractional part is called sampling."

**Need of Sampling:**

- Economy of time.
- Economy of money.
- True detailed knowledge.
- Utility in experimental study.
- It has reliability because it is based on probability theory.

**REASONS FOR VARIETY OF SAMPLING**

1. Sampling can save time and money. A sample study is usually less expensive than a census study and produces results at a relatively faster speed.

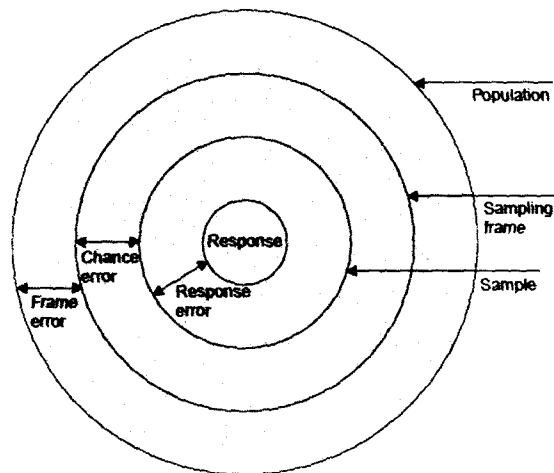
2. Sampling may enable more accurate measurements for a sample study is generally conducted by trained and experienced investigators.

3. Sampling remains the only way when population contains infinitely many members.

4. Sampling remains the only choice when a test involves the destruction of the item under study.

5. Sampling usually enables to estimate the sampling errors and, thus, assists in obtaining information concerning some characteristic of the population.

- Universe/Population
- Sampling frame
- Sampling design
- Statistic(s) and parameter(s)
- Sampling error



Sampling error = Frame error  
 + chance error + response error.  
 (If we add measurement error or the non-sampling error  
 to sampling error, we get total error)

- Deliberate sampling:
- Simple random sampling:
- Systematic sampling:
- Stratified sampling:
- Quota sampling

## DESCRIPTIVE OR SURVEY METHOD

**A survey may be conducted by either of two methods**

1. Census Method or Parametric method and
2. Sampling method or Non-parametric method.

### 1. Census method:

#### Planning a Survey Method:

The following are the steps which are involved in survey methods;

- Select a problem.
- Preliminary or pilot study should be done.
- General and Specific objectives of the study are to be framed.
- It should be determined that for which of the variables, identified in the problem whether; adequate techniques for data

collection are available, and if not then is it possible for the researcher to design them.

- Population should be identified and representative sample should be selected.
- Data collection design should be prepared.
- The data should be collected.
- The data should be analyzed.
- The report should be prepared which should have descriptive past, comparative or evaluative past and findings.

### **Merits of Survey Methods**

- Direct and close contact between researcher and respondents.
- Greater objectivity.
- Testing the validity of theories.
- Formulation and testing of hypothesis.
- Social surveys are based on actual observation.
- It has universal application.

### **Limitations**

- Survey method is costly, time consuming and wasteful in certain cases where the objectives are limited.
- The survey method is unsuitable if the numbers of persons to be surveyed are very large or if they spread over a large geographical area.
- In this method personal bias may vitiate the result.
- It lacks the flexibility.
- In this method, it is very difficult to verify the accuracy of the data collection.
- Only useful for current problems.
- It does not permit more comprehensive and dynamic study of the society but deals with the problems of immediate importance only.
- Under this method most of the surveys are conducted on

sample basis. If the sample is not carefully planned, inferences drawn may be inaccurate and misleading.

### **CHARACTERISTICS OF SURVEY METHOD**

- Social survey is confined to the study of specific current problems of society, poverty, unemployment etc.
- A survey research is planned collection of data for prediction of relations between the variables.
- Survey is concerned with large or widely dispersed group of peoples contrasted with the lab experiments.
- Under this method observation, interviews, attitude scales, projective techniques, small scale experiments etc. are used to collect data.
- The facts collected here may form the basis of further social researches

### **EXPERIMENTAL METHOD**

It may be defined as the study of the relationships among variables-those manipulated and those measured. It simply enables the researcher to improve the conditions under which the researcher observes and thus to arrive at a more precise results. It enables him to relate a given consequent to a specific antecedent rather than to a vague conglomeration of antecedents.

The term survey is used for the techniques of investigation by a direct observation of a phenomenon or a systematic gathering of data from population by applying personal contact and interviews when adequate information about certain problem is not available in records, files and other sources.

The survey is an important tool to gather evidences relating to certain social problems. The term social survey indicates the study of social phenomena through a survey of a small sampled population and also to broad segments of population. It is concerned with the

present and attempts to determine the status of the phenomenon under investigation.

**Definitions:**

“A social survey is a process by which quantitative facts are collected about the social aspects of a community composition and activities.”

***A. F. Well***

“The survey is in briefly a method of analysis in scientific and orderly form for defined purpose of given social situation of problem and population.”

***S. Herman***

**OBJECTS OF SOCIAL SURVEY**

- Direct and close contact of researcher to the phenomenon under study.
- To collect general information.
- A basis for hypothesis.
- To explain cause and effect relationship.
- To know opinion and attitudes of the people.

**Purposes:**

- It provides necessary information which helps the administrator for making decisions.
- It provides necessary information and plan for improvement so it is forward-looking.
- It interprets, synthesizes and integrates data and points out their implications.
- It is more realistic because investigation is done in this method in natural setting.
- It is the only method through which the researcher can obtain the opinions, attitudes and suggestions for improvement.
- It is useful in the development of research tools such as checklists, questionnaires etc.

## **TYPES OF DESCRIPTIVE METHOD**

Descriptive method is divided into four parts

### **Survey studies**

- School/college
- Job analysis
- Documentary analysis
- Public opinion survey
- Social survey

### **The Inter-relationship**

## **CASE STUDY**

According to H. Odum, "The case study method is a technique by which individual factor whether it be an institution or just an episode in the life of an individual or a group is analyzed in its relationship to any other in the group."

**Characteristics:** The important characteristics of the case study method are as under:

1. Under this method the researcher can take one single social unit or more of such units for his study purpose; he may even take a situation to study the same comprehensively.

2. Here the selected unit is studied intensively i.e., it is studied in minute details. Generally, the study extends over a long period of time to ascertain the natural history of the unit so as to obtain enough information for drawing correct inferences.

3. In the context of this method we make complete study of the social unit covering all facets. Through this method we try to understand the complex of factors that are operative within a social unit as an integrated totality.

4 Under this method the approach happens to be qualitative and not quantitative. Mere quantitative information is not collected. Every possible effort is made to collect information concerning all aspects of life. As such, case study deepens our perception and gives us a clear

insight into life. For instance, under this method we not only study how many crimes a man has done but shall peep into the factors that forced him to commit crimes when we are making a case study of a man as a criminal. The objective of the study may be to suggest ways to reform the criminal.

5. In respect of the case study method an effort is made to know the mutual inter-relationship of causal factors.

6. Under case study method the behavior pattern of the concerning unit is studied directly and not by an indirect and abstract approach.

7. Case study method results in fruitful hypotheses along with the data which may be helpful in testing them, and thus it enables the generalized knowledge to get richer and richer. In its absence, generalized social science may get handicapped.

**Assumptions:** The case study method is based on several assumptions. The important assumptions may be listed as follows:

- The assumption of uniformity in the basic human nature in spite of the fact that human behavior may vary according to situations.
- The assumption of studying the natural history of the unit concerned.
- The assumption of comprehensive study of the unit concerned.

**Major phases involved:** Major phases involved in case study are as follows:

- Recognition and determination of the status of the phenomenon to be investigated or the unit of attention.
- Collection of data, examination and history of the given phenomenon.
- Diagnosis and identification of causal factors as a basis for remedial or developmental treatment.
- Application of remedial measures i.e., treatment and therapy

(this phase is often characterized as case work).

**Advantages:** There are several advantages of the case study method that follow from the various characteristics outlined above. Mention may be made here of the important advantages.

(i) Being an exhaustive study of a social unit, the case study method enables us to understand fully the behavior pattern of the concerned unit. In the words of Charles Horton Cooley,

“case study deepens our perception and gives us a clearer insight into life. It gets at behavior directly and not by an indirect and abstract approach.”

(ii) Through case study a researcher can obtain a real and enlightened record of personal experiences which would reveal man's inner strivings, tensions and motivations that drive him to action along with the forces that direct him to adopt a certain pattern of behavior.

(iii) This method enables the researcher to trace out the natural history of the social unit and its relationship with the social factors and the forces involved in its surrounding environment.

(iv) It helps in formulating relevant hypotheses along with the data which may be helpful in testing them. Case studies, thus, enable the generalised knowledge to get richer and richer.

(v) The method facilitates intensive study of social units which is generally not possible if we use either the observation method or the method of collecting information through schedules. This is the reason why case study method is being frequently used, particularly in social researches.

(vi) Information collected under the case study method helps a lot to the researcher in the task of constructing the appropriate questionnaire or schedule for the said task requires thorough knowledge of the concerning universe.

(vii) The researcher can use one or more of the several research methods under the case study method depending upon the prevalent



circumstances. In other words, the use of different methods such as depth interviews, questionnaires, documents, study reports of individuals, letters, and the like is possible under case study method.

(viii) Case study method has proved beneficial in determining the nature of units to be studied along with the nature of the universe. This is the reason why at times the case study method is alternatively known as “mode of organizing data”.

(ix) This method is a means to well understand the past of a social unit because of its emphasis of historical analysis. Besides, it is also a technique to suggest measures for improvement in the context of the present environment of the concerned social units.

(x) Case studies constitute the perfect type of sociological material as they represent a real record of personal experiences which very often escape the attention of most of the skilled researchers using other techniques.

(xi) Case study method enhances the experience of the researcher and this in turn increases his analyzing ability and skill.

(xii) This method makes possible the study of social changes. On account of the minute study of the different facets of a social unit, the researcher can well understand the social change then and now. This also facilitates the drawing of inferences and helps in maintaining the continuity of the research process. In fact, it may be considered the gateway to and at the same time the final destination of abstract knowledge.

**Limitations:** Important limitations of the case study method may as well be highlighted.

(i) Case situations are seldom comparable and as such the information gathered in case studies is often not comparable. Since the subject under case study tells history in his own words, logical concepts and units of scientific classification have to be read into it or out of it by the investigator.

(ii) Read Bain does not consider the case data as significant

scientific data since they do not provide knowledge of the "impersonal, universal, non-ethical, non-practical, repetitive aspects of phenomena."8 Real information is often not collected because the subjectivity of the researcher does enter in the collection of information in a case study.

(iii) The danger of false generalization is always there in view of the fact that no set rules are followed in collection of the information and only few units are studied.

(iv) It consumes more time and requires lot of expenditure. More time is needed under case study method since one studies the natural history cycles of social units and that too minutely.

(v) The case data are often vitiated because the subject, according to Read Bain, may write what he thinks the investigator wants; and the greater the rapport, the more subjective the whole process is.

(vi) Case study method is based on several assumptions which may not be very realistic at times, and as usefulness of case data is always subject to doubt.

(vii) Case study method can be used only in a limited sphere., it is not possible to use it in case of a big society. Sampling is also not possible under a case study method.

(viii) Response of the investigator is an important limitation of the case study method. He often thinks that he has full knowledge of the unit and can himself answer about it. In case the same is not true, then consequences follow. In fact, this is more the fault of the researcher rather than that of the case method.

A researcher requires many data - gathering tools or techniques. Tests are the tools of measurement and it guides the researcher in data collection and also in evaluation. Tools may vary in complexity, interpretation, design and administration. Each tool is suitable for the collection of certain type of information.

## **2. SAMPLING METHOD**

Here a small group is selected as representative of the whole universe. It works with the objective to obtain accurate and reliable information about the universe with minimum of cost, time and energy and to set out the limits of accuracy of such estimates. It makes exhaustive and intensive study possible with much less time, money and material. Its more popular in research work.

### **Population**

Population or universe means, the entire mass of observations, which is the parent group from which a sample is to be formed. The term population or universe conveys a different meaning than a traditional one. In census survey, the count of individuals (men, women and children) is known as population.

But in Research Methodology population means characteristics of a specific group. For example secondary school teachers of, who have some specific features like teaching experience, teaching attitudes etc. Sampling means selecting a given number of subjects from a defined population as representative of that population. One type of population distinguished by educational researchers is called the target population.

By target population distinguished by educational researchers is called the target population. By target population, also called universe, we mean all the members of a real or hypothetical set of people, events or objects to which we wish to generalize the results of our research.

### **Advantages of Sampling:**

### **Disadvantages or Limitation of Sampling:**

- Scope of biasness.(Less accuracy)
- Problem of representative sample-Difficulty in selecting a truly representative sample.
- Need of eligible researchers.
- Instability of sample subjects or changeability of units i.e. in

heterogeneous population.

- There are certain situations where sampling is possible.

## **ASSUMPTIONS OF SAMPLING**

### **1. Homogeneity amidst complexity:**

Social phenomenon is very complex in nature and every unit appears to be different from another. But at the same time they also possess similarities in many respects. It is, therefore, assumed that there is the possibility of such representative types in the whole population that makes sampling possible.

### **2. Possibility of Representative Selection:**

Sampling has its origin in the mathematical theory of probability and law of statistical regularity. The law of statistical regularity lays down that a group of objects chosen at random from a large group tend to possess the characteristics of that large group (universe) by *L. R. Conner*.

**3. Absolute accuracy not essential but** relative or significant accuracy i.e. needed in case of large scale observations. Because it is practically impossible to achieve because of errors in measurement, collection of data, its analysis, interpretation.

### **Definition:**

“A statistical sample is a miniature picture or cross –section of the entire group or aggregate from which the sample is taken.”

### ***P. Y. Young***

A sample is a small proportion of a population selected for observation and analysis. It is a collection consisting of a part or subset of the objects or individuals of population which is selected for the express purpose of representing the population. By observing the characteristics of the sample, one can make certain inferences about characteristics of the population from which it is drawn. Sampling,” It is the process of selecting a sample from the population. For this purpose, the population is divided into a number of parts called

sampling units". Sampling designs means the joint procedure of selection and estimation. Sampling is a part of the strategy of research. Sampling should be such that the error of estimation is minimum.

### **ESSENTIALS OF AN IDEAL SAMPLE**

**Homogeneity:** The units included in sample must be as likeness with other units.

**Adequacy:** A sample having 10% of the whole data is adequate.

**Independence:** Every unit should be free to be included in the sample.

**Representativeness;** An ideal sample must be such that it represents the whole data adequately.

In the number of units included in a sample should be sufficient to enable derivation of conclusions applicable to the whole data.

**Economical** in terms of time and money.

**High level of reliability.**

### **CHARACTERISTICS OF A GOOD SAMPLE**

1. A good sample is the true representative of the population corresponding to its properties.

2. The population is known as aggregate of certain properties and sample is called sub-aggregate of the universe.

3. A good sample is free from bias; the sample does not permit prejudices, the learning and pre-conception, imaginations of the investigator to influence its choice.

4. A good sample is an objective one; it refers objectivity in selecting procedure or absence of subjective elements from the situation.

5. A good sample maintains accuracy .It yields an accurate estimates or statistics and does not involve errors.

6. A good sample is comprehensive in nature. This feature of a

closely linked with true-representativeness. Comprehensiveness is a quality of a sample which is controlled by specific purpose of the investigation. A sample may be comprehensive in traits but may not be a good representative of the population.

7. A good sample has the practicability for research.

## **SAMPLING TYPES**

### **Probability Sampling**

**G.C. Halmstadter**, "A probability sample is one that has been used selected in such a way that every element chosen has a known probability of being included."

- A-1 Random Sampling
- A-2 Systematic Sampling
- A-3 Stratified Sampling
- A-4 Multistage Sampling
- A-5 Purposive Sampling
- A-6 Cluster Sampling
- A-7 Multiple Sampling or Double Sampling

### **(1) Simple Random Sampling:**

It is one in which each element of the population has an equal and independent chance of being included in the sample i.e. a sample selected by randomization method is known as simple random sample and this technique is simple randomizing.

**Randomization is done by using the following techniques:**

- Tossing a coin (b) Throwing a dice
- Lottery method (d) Blind folded method
- Tippett's table method

**Merits of Randomization:**

- It requires the minimum knowledge of population.

- It is free from subjectivity and free from personal error.
- It provides appropriate data for one's purpose.
- The observations of the sample can be used for inferential purpose.

**Demerits of Randomization:**

- It cannot ensure the representativeness of a sample.
- It does not use the knowledge about the population.
- Its inferential accuracy depends upon the size of the sample.

**(2) Systematic Sampling:**

Systematic sampling is an improvement over the simple random sampling. This method requires the complete information about the population. There should be a list of information of all the individuals of the population in any systematic way.

Now we decide the size of the sample:

Let the size of sample is =  $n$  and population size is =  $N$

Now we select each  $N/n$  individual from the list and thus we have the desired size of sample which is known as systematic sample. Thus for this technique of sampling population should be arranged in any systematic way.

**Merits:**

- This is a simple method of selecting a sample.
- It reduces the field cost.
- Inferential statistics may be used.
- Sample may be comprehensive and representative of population.
- Observations of the sample may be used for drawing conclusions and generalizations.

**Demerits:**

- This is not free from error, since there is subjectivity due to different ways of systematic list by different individuals.
- Knowledge of population is essential.
- Information of each individual is essential..

- This method can't ensure the representativeness.
- There is a risk in drawing conclusions from the observations of the sample.

### **(3) Stratified Sampling:**

It is an improvement over the earlier methods. When we employ this technique, the researcher divides his population into strata on the basis of some characteristics and from each of these smaller homogenous groups (strata) draws at random a predetermined number of units. Researcher should choose that characteristic as criterion which seems to be more relevant in his research work.

Stratified sampling may be of three types;

#### **(a) Disproportionate:**

Means that the size of the sample in each unit is not proportionate to the size of the unit but depends upon considerations involving personal judgment and convenience. This method of sampling is more effective for comparing strata which have different error possibilities. It is less efficient for determining population characteristics.

#### **(b) Proportionate:**

It refers to the selection from each sampling unit of a sample that is proportionate to the size of the unit. Advantages of this procedure includes representativeness with respect to variables used as the basis of classifying categories and increased chances of being able to make comparisons between strata. Lack of information on proportion of the population in each category and faulty classification may be listed as disadvantages of this method.

#### **(c) Optimum allocation:**

Stratified sampling is representative as well as comprehensive than other stratified samples. It refers to selecting units from each stratum. Each stratum should be in proportion to the corresponding stratum the 50 population. Thus sample obtained is known as optimum allocation sample.



**Merits:**

- It is a good representative of the population.
- It is an improvement over the earlier technique of sampling.
- It is an objective method of sampling.
- Observations can be used for inferential purpose.

**Demerits:**

- Serious disadvantage of this method is that it is difficult for the researcher to decide the relevant criterion for stratification.
  - Only one criterion can be used for stratification, but generally it seems more than one criterion relevant for stratification.
  - It is costly and time consuming method.
  - Selected samples may be representative with reference to the used criterion but not for the other.
  - There is a risk of generalization.

**(4) Multiple or Double Repetitive Sampling:**

Generally this is not a new method but only a new application of the samplings. This is most frequently used for establishing the reliability of a sample. When employing a mailed questionnaire, double sampling is sometimes used to obtain a more representative sample. This is done because some randomly selected subjects who are sent questionnaires may not return them.

Obviously, the missing data will bias the result of the study, if the people who fail to reply the query differ in some fundamental way from the others in respect to the phenomenon being studied.

To eliminate this bias, a selected sample may be drawn at random from the non-respondents and the people interviewed to 51 obtain the desired information. Thus this technique is also known as repeated or multiple sampling.

This double sampling technique enables one to check on the reliability of the information obtained from first sample. Thus, double sampling, where in one sample is analyzed and information obtained

is used to draw the next sample to examine the problem further.

**Merits:**

- Thus sampling procedure leads to the inferences of free determine precision based on a number of observations.
- This technique of sampling reduces the error.
- This method maintains the procedure of the finding evaluate the reliability of the sample.

**Demerits:**

▪ This technique of sampling cannot be used for a large sample .  
It is applicable only for small sample.

- This technique is time consuming and costly.
- Its planning and administration is more complicated.

**(5) Multi Stage Sampling:**

This sample is more comprehensive and representative of the population. In this type of sampling primary sample units are inclusive groups and secondary units are sub-groups within these ultimate units to be selected which belong to one and only one group.

Stages of a population are usually available within a group or population, whenever stratification is done by the researcher. The individuals are selected from different stages for constituting the multi stage sampling.

**Merits:**

- It is a good representative of the population.
- Multistage sampling is an improvement over the earlier methods.
- It is an objective procedure of sampling.
- The observations from multi stage sample may be used for inferential purpose.

**Demerits:**

- It is a difficult and complex method of sampling.
- It involves errors when we consider the primary stages.
- It is again a subjective technique of sampling.

## **(6) Cluster Sampling:**

To select the intact group as a whole is known as a cluster sampling. In cluster sampling the sample units contain groups of element (cluster) instead of individual members or items in the population. Rather than listing all elementary school children in a given city and randomly selecting 15 % of these students for the sample, a researcher lists all of the elementary schools in the city, selects at random 15 % of these clusters of units, and uses all of the children in the selected schools as the sample.

### **Merits:**

- It may be a good representative of the population.
- It is an easy method.
- It is an economical method.
- It is practicable and highly applicable in education.
- Observations can be used for inferential purpose.

### **Demerits:**

- Cluster sampling is not free from errors.
- It is not comprehensive.

## **NON-PROBABILITY SAMPLING METHOD**

Samples which are selected through non-random methods are called non probability samples. Depending upon the technique used it may be;

### **(1) Incidental or Accidental Sampling:**

The term *incidental* or *accidental* applied to those samples that are taken because they are most frequently available i.e. this refers to the groups which are used as samples of a population because they are readily available or because the researcher is unable to employ more acceptable sampling methods.

### **Merits:**

- It is very easy method of sampling.
- It is frequently used method in behavioral sciences.

- It reduces the time, money and energy i.e. it is an economical method.

**Demerits:**

- It is not representative of the population.
- It is not free from errors.
- Parametric statistics cannot be used.

**(2) Judgment Sampling:**

This involves the selection of a group from the population on the basis of available information assuming as if they are representative of the entire population. Here group may also be selected on the basis of intuition or on the basis of the criterion deemed to be self-evident. Generally investigator should take the judgment sample so this sampling is highly risky.

**Merits:**

- Knowledge of investigator can be best used in this technique of sampling.

- This method of sampling is economical.

**Demerits:**

- This technique is objective.
- It is not free from errors.
- It includes uncontrolled variation.
- Inferential statistics cannot be used for the observation of this sampling, so generalization is not possible.

**(3) Purposive Sampling:**

The purposive sampling is selected by some arbitrary method because it is known to be representative of the total population, or it is known that it will produce well matched groups. The idea is to pick out the sample in relation to criterion which are considered important for the particular study. This method is appropriate when the study places special emphasis upon the control of certain specific variables.

**Merits:**

- Use the best available knowledge concerning the sample subjects.
- Better control of significant variables.
- Sample groups data can be easily matched.
- Homogeneity of subjects used in the sample.

**Demerits:**

- Reliability of the criterion is questionable.
- Knowledge of population is essential.
- Errors in classifying sampling subjects.
- Inability to utilize the inferential parametric statistics.
- Inability to make generalization concerning total population.

**(4) Quota Sampling:**

This combines both judgment sampling and probability sampling; on the basis of judgment or assumption or the previous knowledge, the proportion of population falling into each category is decided. Thereafter a quota of cases to be drawn is fixed and the observer is allowed to sample as he likes. Quota sampling is very arbitrary and likely to figure in municipal surveys.

**Merits:**

- It is an improvement over the judgment sampling.
- It is an easy sampling technique.
- It is not frequently used in social surveys.

**Demerits:**

- It is not a representative sample.
- It is not free from errors.
- It has the influence of regional , geographical and social factors.

**(5) Snowball Sampling:**

The term; snow ball sampling' has been used to describe a sampling procedure in which the sample goes on becoming bigger and bigger as the observation or study proceeds. The term snowball stems from the analogy of a snowball sample which would allow

computation of estimates of sampling error and use of statistical test of significance.

For example, an opinion survey is to be conducted on smokers of a particular brand of cigarette. At the first stage, we may pick up a few people who are known to us or can be identified to be the smokers of that brand. At the time of interviewing them, we may obtain the names of other persons known to the first stage subjects. Thus the subjects go on serving an informant for the identification of more subjects and the sample goes on increasing.

**Merit:**

Snowball sampling which is generally considered to be non-probabilistic can be converted into probabilistic by selecting subjects randomly within each stage.

**Demerits:**

Sampling errors may creep in.

**(6) Purposive or Expert Choice Sampling:**

Samples are sometimes expressly chosen because, in the light of available information, these mirror some larger group with reference to one or more given characteristics. The controls in such samples are usually identified as representative areas (city, country, state, and district), representative characteristics of individuals (age, sex, marital status, socio-economic status, race) or types of groups (administrator, counselors, teachers etc.).

These controls may be further sub-divided by specified categories within classes such as amount of training, years of experience or attitudes towards a specific phenomenon. Up-to this stage, these controls are somewhat similar to those used in satisfaction. Purposive sampling differs from stratified random sampling in that the actual selection of the units to be included in the sample in each group is done purposively rather than by random method.

- B-1 Incidental or Accidental Sampling

- B-2 Judgment Sampling
- B-3 Purposive Sampling
- B-4 Quota Sampling
- B-5 Snowball sampling (Snowball sampling is the process of selecting a sample using networks)

## **DIFFERENCE BETWEEN PROBABILITY AND NON-PROBABILITY SAMPLING**

### **Probability Sampling**

- It is a method of sampling which gives the probability that a sample is representative of population.
  - Probability sampling is generally used in fundamental research in which the purpose is to generalize the results.
    - It refers from the sample as well as the population.
    - Every individual of the population has equal probability to be taken into the sample.
      - It may be representative of the population.
      - Its observations (data) are used for the inferential purpose.
      - Inferential or parametric statistics are used.
      - There is a risk of drawing conclusion.
      - It is based on Law of probability sampling i.e. Law of Statistical Regularity and Law of Inertia of the Large Sample.

### **Non-probability Sampling**

- In the absence of any idea of probability the method of sampling is known as non-probability sampling.
  - It is generally used in action researches in which one studies a class without any generalization purpose.
    - There is no idea of population.
    - There is no probability of selecting any individual.
    - It has free distribution.
    - The observations are not used for generalization purpose.
    - Non-inferential or non-parametric statistics are used.

- There is no risk for drawing conclusions.
- It is not based on law of probability sampling.

## **HINTS ON HOW TO START SAMPLING**

Eligibility criteria required individuals to have received ....

A random sample of patients with .... was recruited from ....

Forty-seven students studying X were recruited for this study.

Just over half the sample (53%) was female, of whom 69% were ....

Of the initial cohort of 123 students, 66 were female and 57 male.

Only children aged between 10 and 15 years were included in the study.

Eligible women who matched the selection criteria were identified by....

The students were divided into two groups based on their performance on ....

Two groups of subjects were interviewed, namely X,Y. The first group were ...

The initial sample consisted of 200 students, 75 of whom belonged to minority groups.

Semi-structured interviews were conducted with 17 male offenders with a mean age of 38 years

Publications were only included in the analysis if....

Articles were searched from January 1965 until April 2010.

A systematic literature review was conducted of studies that ....

All studies described as using some sort of X procedure were included in the analysis.

### **Indicating reasons for sample characteristics**

Criteria for selecting the subjects were as follows:

The area of study was chosen for its relatively small ....

Five individuals were excluded from the study on the basis of ....



A small sample was chosen because of the expected difficulty of obtaining ....

The subjects were selected on the basis of a degree of homogeneity of their....

A comparison group of 12 male subjects without any history of X was drawn from a pool of ....

### **Describing the process: infinitive of purpose**

In order to identify the T10 and T11 processes, the subjects were asked to ....

In order to understand how X regulates Y, a series of transfections was performed.

To establish whether .....,

To measure X, a question asking.... was used.

To see if the two methods gave the same measurement, the data was plotted..

To control for bias, measurements were carried out by another person.

To rule out the possibility that X, the participants were ....

To determine whether ..., the cells were incubated for ....

To enable the subjects to see the computer screen clearly, the laptop was configured with ....

To increase the reliability of measures, each X was tested twice with a 4-minute break between ....

To compare the scores three weeks after initial screening, a global ANOVA F-test was used

The vials were capped with .... to prevent ....

The process was repeated several times in order to remove ....

In an attempt to make each interviewee feel as comfortable as possible, the interviewer ....

### **Describing the process: other phrases expressing purpose**

For the purpose of height measurement, subjects were asked to stand

For the purpose of analysis, 2 segments were extracted from each ....

For the estimation of protein concentration, 100  $\mu$ L of protein sample was mixed with ....

### **Describing the process: typical verbs in the passive form**

The data *were normalized* using ....

Descriptive data *were generated* for all variables.

The procedures of this study *were approved* by ....

Data for this study *were retrospectively collected* from ....

Prompts *were used* as an aid to question two so that ....

The experiments *were run* using custom software written in....

Two sets of anonymised questionnaires *were completed* by ....

The solution *was washed* three times with deionized water and ....

A total of 256 samples *were taken* from 52 boreholes (Figure 11).

Significance levels *were set* at the 1% level using the student t-test.

Data management and analysis *were performed* using SPSS 16.0 (2010).

Published studies *were identified* using a search strategy developed in Injection solutions *were coded* by a colleague to reduce experimenter bias.

Drugs *were administered* by icv injection under brief CO<sub>2</sub> narcosis;

The subjects *were asked* to pay close attention to the characters whenever ....

The pilot interviews *were conducted* informally by the trained interviewer ....

This experiment *was repeated* under conditions in which the poor signal/noise ratio was improved.

## XI. WRITING THE RESEARCH PAPER WORK

### RESEARCH PAPER STRUCTURE

- Title
- Abstract
- Keywords
- Introduction
- Methods and materials
- Results
- Discussion
- Conclusion
- Acknowledgment
- References

**Title** must include no more than seven words (excluding prepositions, conjunctions and articles). The title should not contain verbs. The title should not include such words as analysis, research, study, to the question, new, problems, questions, some, features, special, from the point of view, application, search, definition, modern, current, solution, best, most / least profitable, optimum, most etc.

#### **Title of the Proposal:**

The first part of any research proposal is its title. If the title is not clearly stated it will not help the researcher in his work. A good title should clearly identify the research proposal and must clearly state about the following:

- What variables are included in the research proposal?
- What is the relationship between the different variables?

- Which is the population to which the results may be generalized?

**A research proposal should contain the following:**

- an introduction, including a brief literature review;
- theoretical framework that underpins your study;
- conceptual framework which constitutes the basis of your study;
- objectives or research questions of your study;
- hypotheses to be tested, if applicable;
- study design that you are proposing to adopt;
- setting for your study;
- research instrument(s) you are planning to use;
- sampling design and sample size;
- ethical issues involved and how you propose to deal with them;
- data processing procedures;
- proposed chapters of the report;
- problems and limitations of the study;
- proposed time-frame for the project.

**Some good titles:**

1. "A Comparison Between Two Methods of Teaching Algebra-Expository and Discovery-in the Tenth Class in a Recognized Secondary School".

2. "The Effects of Grading on Achievement in Mathematics."

3. "The Relationship between Spelling, Achievement and a Personality Factor".

4. "A Comparison of the Evaluation of Teacher Performance by Principals and Teachers".


5. "A Study of the Effect of Two Seating Arrangements in the in the Foreign Language Achievement of Class VI."

Having done all the preparatory work, the next step is to put everything together in a way that provides adequate information about your research study, for your research supervisor and others. This overall plan, called a research proposal, tells a reader about your research problem and how you are planning to investigate. Broadly, a research proposal's main function is to detail the operational plan for obtaining answers to your research questions. In doing so it ensures – and reassures the readers of – the validity of the methodology to obtain answers accurately and objectively. A research proposal must tell you, your research supervisor and a reviewer the following information about your study:

- what you are proposing to do;
- how you plan to proceed;
- why you selected the proposed strategy.

**Title should contain the following information:**

- a statement of the objectives of the study;
- a list of hypotheses, if you are testing any;
- the study design you are proposing to use;
- the setting for your study;
- the research instrument(s) you are planning to use;
- information on sample size and sampling design;
- information on data processing procedures;
- an outline of the proposed chapters for the report;
- the study's problems and limitations; and
- the proposed time-frame.



**Abstract** should be the presentation of the article without itself.

Abstract should have the same structure as the article and include problem urgency; purpose; methods; results; conclusions.

Abstract should be of 250-500 words. As the Abstract is a short version of the paper, some of the phrases used in the other parts of the paper are also used in the abstract and are not mentioned here. You can find them below under each section of the paper.

Some hints on how to start the Abstract follow:

- One paragraph (between 50-300 words) often plus Highlight bullet points
- Advertisement for your article
- A clear abstract will strongly influence if your work is considered further

### **TIPS FOR ABSTRACT**

1. In your abstract, limit the amount of background information you provide. Try to give only what is necessary in a couple of sentences or less.

2. Never refer to figures or tables in your abstract.

3. When writing an abstract, always use the past tense since you are giving a summary of what was done. One exception is if you mention future directions in your concluding statement.

4. Write a clear and concise abstract. The reader has to understand the study rationale, the methods used, and the study findings. Many researchers will only ever read the abstract of your paper so it must contain the most pertinent information.

5. Be sure to check journal guidelines for abstract length. Many journals will not accept abstracts longer than 200-250 words.

6. Feel free to hook readers with a “big picture” statement to open the abstract. Remember, many action editors will know very little about your topic area and, in some cases, your abstract will be the only thing that dictates whether or not you get through triage.

### **TEMPELATES ON HOW TO START ABSTRACT**

As the Abstract is a short version of the paper, some of the

phrases used in the other parts of the paper are also used in the abstract and are not mentioned here. You can find them below under each section of the paper.

### **Introductory sentences**

The paper/article

discusses/dealswith/analyses/considers/explains/describes/introduces .....

develops/presents/provides/studies/represents/contains/concentrates on..

covers/suggests/proposes/shows .....

demonstrates the feasibility of .....

opens up a new field/issue

gives/aims to give a comprehensive account of .....

offers a solution to .....

serves as an introduction to .....

The main objective/goal/purpose of the paper/article is .....

### **Common mistakes**

**Wrong:**

In this paper there/it is presented a novel method of .....

**Right:**

This paper presents a novel method of .....

In this paper, a novel method of .....



Keywords is a from 5 to 10 words or word combinations. With the ever-increasing volume of information available digitally, finding relevant documents has become quite the challenge! To hunt down the articles we want, we use search engines and type in keywords that narrow down results.

## **Quick guide on how to carefully choose keywords**

Make sure to **follow any instructions your target journal provides** regarding keywords. The publication's rules trump all others! For example, most clinical papers use terms from the US National Library of Medicine's Medical Subject Headings (MeSH). Many journals request five to eight terms. However, some restrict the nature of the words. For instance, a few journals want single words instead of phrases. Again, double-check journal requirements!

1. Think about **what terms you would use to search for papers related to your topic**. Chances are the phrases you choose are going to be similar to what other researchers may use when searching for literature.

2. Note that in rule #2 we used the term "phrases" instead of "words." In truth, "keywords" is a misnomer. These days, we search by phrase or complete sentence. This is because single-term searches yield a broader list of results than desired. For example, let's imagine that I want to know the specifics of Jupiter's air composition. If I type in "Jupiter," I'll receive a list containing any document related to Jupiter, but most of them might not be relevant. Therefore, **choose keyword phrases that comprise two to four words**.

3. **Avoid using terms already present in your title, particularly if your journal says not to include them**. Why? Your title is searchable and will be weighted (marked to have greater weight by a programming code), so keywords should contain a list of words that **supplement** your title's content. Even if your journal doesn't restrict title word use in keywords, we recommend using this valuable real estate for alternate terms.

4. Keywords should indicate the general subject matter; however, **they should not be too broad**. For instance, if you are writing a paper on a newly-discovered epigenetic regulator, you might not want to use general keywords such as "cell biology" or "genetics." These terms do little to reflect the specificity with which



your potential readers search for source materials. Instead, focus on key concepts covered in your abstract.

**5. If your research revolves around a key method or technique, make sure the term for it is located either in your title or your keywords.** On that note, be careful with spelling/capitalization. While search engines, by default, ignore capitalization rules, hyphenation could be an issue. **Make sure you are using the officially recognized written form of each key term.** Failure to do so might result in fewer hits for your paper.

**6. Think of generally used alternate terms to ones found in your title.** That is, include significant abbreviations, acronyms, and other short-form or substitute names for your topic. Be careful, however, of using acronyms that could have other meanings. For example, HIV would be a safe abbreviation since most hits would relate to the disease. The term, ARC, on the other hand, has significance in many fields: computer programming, engineering, math, and biology, just to name a few. Therefore, if we mean the ARC file format, then we should use the phrase, "ARC file format," as a keyword.

**7. Test your keywords before submitting your paper.** When you enter your keywords into various journal and academic databases like Google Scholar, do the results include papers similar to your topic? If not, revise the terms until they do.

**8. Use keyword generators with caution.** Some sites such as the one offered by the University of Texas (<http://www.lib.utexas.edu/keywords/index.php>) provide keyword generators or keyword planners to help you think of other terms you could include. However, make sure that those words actually relate to your paper's topic.



**Introduction** part should include the objectives of the work

and its background. It should be based on the literature review. In the literature review you should show the competence in your area and its main authors and works. In the same time, you should not cite all possible references but only those that are strictly connected with your topic. The recommended quantity of references is 5-10.

- State why the problem you address is important.
- State what is lacking in the current knowledge.
- State the objectives of your study or the research question.

**It consists of the following:**

- Importance of the problem under investigation.
- A review of related literature
- Statement of Hypotheses or relationships being studied
- Delimitations of the study
- Assumptions of the study
- Definition of important terms

**Answer a series of questions:**

- What is the problem?
- Are there any existing solutions?
- Which one is the best?
- What is its main limitation?
- What do you hope to achieve?

**TIPS FOR INTRODUCTION**

**Do not mix introduction, results, discussion and conclusions. Keep them separate.**

1. Start your article with a comprehensive yet concise literature review of your exact subject and highlight in which way your paper will make a new contribution to the field.

2. Throughout your introduction use the past tense. One exception to this is when you are speaking about generally accepted facts and figures (ex. Heart disease is the leading cause of death...).

3. Avoid using new acronyms. They will simply confuse the readers.

4. The introduction of a research paper is extremely important. It generally presents a brief literature review, the problem and the purpose of your research work. It should be powerful, simple, realistic,

and logical to entice the reader to read the full paper.

5. Avoid unnecessarily long paragraphs. Break up your paragraphs into smaller, useful units.

6. Do not be afraid to use headings in your introduction (and discussion).

### **HINTS ON HOW TO START INTRODUCTION**

In most cases, the Introduction section is treated as a whole and is not divided into subsections. The subheadings below should only help you organize the information.

#### **Problem background, state of the art.**

..... plays an important/vital role in .....

..... is an important issue for .....

..... is extensively/widely used in .....

..... is a very effective method for .....

In the last few years there has been a growing interest in .....

Quite recently, considerable attention has been paid to .....

..... have/has been gaining importance in recent years .....

..... have/has been utilized in many applications such as .....

**Establishing the importance of the topic for the world or society**

X is a fundamental property of ....

X is fast becoming a key instrument in ....

X is a common disorder characterized by ....

X plays an important role in the maintenance of ....

Xs are the most potent anti-inflammatory agents known.

X is a major public health problem, and the main cause of ....

Xs are one of the most rapidly declining groups of insects in ....

In the new global economy, X has become a central issue for ....

X is the leading cause of death in western-industrialized countries.

Xs are one of the most widely used groups of antibacterial agents and.

X is increasingly recognized as a serious, worldwide public health concern.

X is an important component in the climate system, and plays a key role in Y.

In economic history , X has been thought of as a key factor in

**Establishing the importance of the topic for the discipline**

A key aspect of X is ....

X is a classic problem in ....

A primary concern of X is ....

X is at the heart of our understanding of ....

X is an increasingly important area in applied linguistics.

Investigating X is a continuing concern within ....

Central to the entire discipline of X is the concept of ....

X and Y have been an object of research since the 1960s

X is a major area of interest within the field of ....

The issue of X has received considerable critical attention.

X has been studied by many researchers using ....

One of the most significant discussions in legal and moral philosophy is..

**Establishing the importance of the topic (time frame given)**

One of the most important events of the 1970s was ....

Traditionally, Xs have subscribed to the belief that ....

Recent developments in X have heightened the need for ....

In recent years, there has been an increasing interest in ....

Recent trends in X have led to a proliferation of studies that ....

Recent developments in the field of X have led to a renewed interest

in...

Recently, researchers have shown an increased interest in ....

The past decade has seen the rapid development of X in many ....

The past thirty years have seen increasingly rapid advances in the field of ....

Over the past century there has been a dramatic increase in ....

X proved an important literary genre in the early Y community.

The changes experienced by Xs over the past decade remain unprecedented.

### **FRAMEWORK OF THE PAPER (THE LAST PART OF THE INTRODUCTION)**

The remainder of the paper is organized as follows/into ..... sections:

Section II describes/outlines .....,

In Section II we explain ..... .

In Section II, ..... will be discussed.

The proposed (design) is discussed in Section II

Section III is devoted to ..... .

In Section III we introduce our ..... .

Section III discusses/analyses ..... .

(The implementation of the proposed design) is presented in Section III.

(Experimental results) are presented in Section IV;

Section IV presents (the experimental results).

Section IV shows (the experimental results of.....).

The measurements are presented in Section IV.

Finally, Section V concludes with a summary.

The conclusion is reported in Section V.

Section V concludes the paper.

Section V summarizes the results of this work and draws conclusions.

## **Body/Core of the paper**

### **General information**

The Body of the paper is very specific in its content. For this reason, the number of generally applicable phrases is smaller than in the other parts. Examples of some of these phrases are given below.

There are, however, linguistic means common to all kinds of research papers, i.e. words and phrases expressing cause, results, addition, similarity, etc. For lists and usage of these words and phrases see *A Remedial Course in English Grammar: Clauses and Guidelines for Academic Writing: Text structure*.

### **INDICATING THE FOCUS, AIM, ARGUMENT OF A PAPER**

This paper contests the claim that ...

This paper will review the research conducted on ...

This paper will focus on/examine/give an account of ...

This paper seeks to remedy these problems by analyzing the literature of ...

This paper examines the significance of X in the rise of ...

This essay critically examines/discusses/traces ...

This account seeks to ...

In this paper I argue that ...

In the pages that follow, it will be argued that ...

This paper attempts to show that ...

In this essay, I attempt to defend the view that ...

The central thesis of this paper is that ...

The aim of the paper is to provide a theoretical framework based on....

The purpose of this paper is to review recent research into the ...

• To gain familiarity with a phenomenon or to achieve new insights into it. (Studies with this object in view are termed as

exploratory or formative studies).

- To portray accurately the characteristics of a particular individual, situation or a group.(Studies with this object in view are known as descriptive studies).

- To determine the frequency with which something occurs or with which it is associated with something else. (Studies with this object in view are known as diagnostic research studies).

- To test a hypothesis of a causal relationship between variables. (Such studies are known as hypothesis-testing research studies).

### **HINTS ON HOW TO START PURPOSE OF RESEARCH**

The major objective of this study was to investigate ....

The aim of this study was to clarify several aspects of ....

The aim of this study is to investigate the differences between X and Y.

The aim of this research project has therefore been to try and establish what

The aim of this study is to shine new light on these debates through an examination of ....

The objectives of this research are to determine whether ....

The main purpose of this study is to develop an understanding of ....

This paper investigates the usefulness of ....

This thesis intends to determine the extent to which .... and whether...

This thesis will examine the way in which the ....

This research examines the emerging role of X in the context of ....

This case study seeks to examine the changing nature of ....

This dissertation seeks to explain the development of ....

This dissertation aims to unravel some of the mysteries surrounding..

This study systematically reviews the data for..., aiming to provide ....

Part of the aim of this project is to develop software that is compatible with..

There are two primary aims of this study: 1. To investigate .... 2. To ascertain..

Drawing upon two stands of research into X, this study attempts to ....

One purpose of this study was to assess the extent to which these factors were...

This study seeks to obtain data which will help to these research gaps.

This study therefore set out to assess the effect of X ....., and the effect of ....

**Methods and materials** should provide details of the experimental setup and the methods used for obtaining the results.

- Describe the context and setting of the study
- Specify the study design
- Describe the 'population' (patients, doctors, hospitals, etc.)
- Describe the sampling strategy
- Describe the intervention (if applicable)
- Identify the main study variables
- Describe data collection instruments and procedures
- Outline analysis methods

### **STRUCTURE OF METHODS**

- How was the study conducted?
- From which population was the sample selected?
- How many subjects were selected?
- What were the demographic characteristics of the subjects?(male/female, average age)
  - Was there any characteristic which make the sample a typical to the population?
  - How were the subjects assigned to groups?



- What instructions were given to the subjects?
- How conditions were controlled?
- What was the treatment of variables?
- How, when and on what were subjects measured?
- What data collection instruments were used?
- What was the format of items?
- What was the reliability of the instrument?
- What was the validity of the instrument?
- What are the details of the instruments which was prepared by the researcher?
- Avoid adding comments and discussion.
- Write in the past tense
- Most journals prefer the passive voice
- Consider use of Supplementary Materials

### **TIPS FOR METHODS AND MATERIALS**

1. Do not over-explain common scientific procedures. For example, you do not need to explain how PCR or Western Blotting work, just that you used the techniques. If you are using a novel technique, then you need to explain the steps involved.

2. Use third person passive tense. For example, "RNA was extracted from the cells." Compare this with, "We extracted RNA from the cells."

3. Be sure to mention from which companies you purchased any significant reagents for your experiments.

4. When in doubt about how to report your materials and methods, look to papers published in recognized journals that use similar methods and/or materials.

5. Do not mention sources of typical lab ware (beakers, pipettes, pipet tips, cell culture flasks, etc).

## TEMPLATES ON HOW TO START MATERIALS AND METHODS

### **Describing what was done and how it was done**

We started by investigating .....

We designed a new technique for .....

We used a new approach.

These experiments were carried out to find out .....

In order to verify the validity of the ..... method, we carried out several experiments.

All the tests/measurements were carried out at room temperature.

The (signals) were measured before and after .....

To illustrate ....., a simulation was performed.

The ..... analysis was performed in order to .....

We checked for the presence of .....

(The chemical structure of .....) was examined by (the ..... technique).

A gradual change (in temperature) was observed.

The increase in ..... was not caused by/was not due to a decrease in ...

The (optimized condition) was obtained from .....

### **Describing previously used methods**

To date various methods have been developed and introduced to measure X:

In most recent studies, X has been measured in four different ways.

Traditionally, X has been assessed by measuring....

Different authors have measured X in a variety of ways.

Previous studies have based their criteria for selection on ....

The use of qualitative case studies is a well-established approach in .

This test is widely available, and has been used in many investigational studies.

Case studies have been long established in X to present detailed analysis of .....

Recently, simpler and more rapid tests of X have been developed.

Radiographic techniques are the main non-invasive method used to

determine ....

A variety of methods are used to assess X. Each has its advantages and drawbacks.

Data were gathered from multiple sources at various time points during

### **Giving reasons why a particular method was adopted or rejected**

A case study approach was used to allow a ....

Qualitative methods offer an effective way of ....

A quantitative approach was employed since ....

The design of the questionnaires was based on ....

The X method is one of the more practical ways of ....

The semi-structured approach was chosen because ....

The X approach has a number of attractive features: ....

The second advantage of using the multivariate method is ....

For this study, the X was used to explore the subsurface ....

Smith *et al.* (1994) identify several advantages of the case study, ....

It was decided that the best method to adopt for this investigation was to ....

The study uses qualitative analysis in order to gain insights into ....

It was considered that quantitative measures would usefully supplement and extend the ....

Many of the distributions were not normal so non-parametric signed rank tests were run.

One advantage of the X analysis is that it avoids the problem of ....

The sensitivity of the X technique has been demonstrated in a report by Smith *et al.* (2011).

However, there are certain drawbacks associated with the use of ....

The main disadvantage of the experimental method is that ....

A major problem with the experimental method is that ....

There are certain problems with the use of focus groups. One of these is that there is less ....

### **Indicating a specific method**

X was prepared according to the procedure used by Patel *et al.* (1957).

The synthesis of X was done according to the procedure of Smith (1973).

X was synthesized using the same method that was detailed for Y, using.

This compound was prepared by adapting the procedure used by Zhao *et al.*

An alternative method for making scales homogenous is by using ....

Samples were analyzed for X as previously reported by Smith *et al.* (2012)

**Results** part should clearly and concisely present the data using figures and tables where appropriate.

- Report on data collection and recruitment (response rates, etc.)
- Describe participants (demographic, clinical condition, etc.)
- Present key findings with respect to the central research question
- Present secondary findings (secondary outcomes, subgroup analyses, etc.)
- Discussion
- State the main findings of the study
- Discuss the main results with reference to previous research
- Discuss policy and practice implications of the results
- Analyze the strengths and limitations of the study
- Offer perspectives for future work

### **RESULTS STRUCTURE**

- What statistical procedure was used to study the hypotheses?
- What was the probability level of each hypotheses test?

- What was the probability level of each statistics?
- What was the attendant degree of freedom?
- What was the strength of the relationship of the variables?
- What were the group means and standard deviation?
- What were principle finding?

### **Results-findings**

The following should be included the main findings

- Thus not all findings
- Findings from experiments described in the Methods section
- Highlight findings that differ from findings in previous publications, and unexpected findings
- Results of the statistical analysis

### **TIPS FOR RESULTS**

1. Make sure your graphs and tables can speak for themselves. A lot of people skim over academic papers.

2. The Results section should contain only results, no discussion.

3. Do not repeat in words everything that your tables and graphs convey. You can, however, point out key findings and offer some text that complements the findings.

4. Be sure to number your figures and tables according to journal guidelines and refer to them in the text in the manner specified by the journal.

5. Clear to read graphs are essential. Do not overload graphs with data. Make sure axis descriptions are not too small.

### **HINTS ON HOW TO START RESULTS**

Some of the phrases listed under Materials and Methods may also be suitable for the Results section, e.g. summarizing what was done, referring to diagrams, graphs, etc.

It has been found that .....

The results show that .....

The results thus obtained are compatible with .....

The overall measurement results are summarized in Table II.  
As mentioned earlier/above, .....  
The previous sections have shown that .....  
This method is based on .....  
The method was tested on .....  
The method is an effective way to improve .....  
The analysis and simulation indicate that .....  
The .... analysis plays a crucial role in .....  
As may be seen below, .....  
We have introduced a new approach to .....  
A similar approach is used for .....  
This approach may fail if/due to .....  
One of the big advantages of (this approach/method) ..... is that .....  
To verify this method, ..... is compared with .....  
The only disadvantage/drawback of such ..... is .....  
There is no evident relationship between ..... and .....  
..... are in good agreement/correspond with .....  
There is a good match between ..... and .....  
To illustrate the result, a simulation of ..... was performed.  
The simulation results match the calculations.  
The differences in (temperature) result in significant differences in ...  
The decrease/increase in ..... can be contributed to .....  
To overcome/avoid this problem/difficulty, it is necessary to adopt a  
One possible solution to this problem is to (use) .....  
This solution requires .....

#### **Reference to aim or method**

Changes in X and Y were compared using ....  
Simple statistical analysis was used to ....  
To assess X, the Y questionnaire was used.  
To distinguish between these two possibilities, ...  
T-tests were used to analyses the relationship between ....  
In order to assess Z, repeated-measures ANOVAs were used.

Regression analysis was used to predict the ....  
 The average scores of X and Y were compared in order to ....  
 Nine items on the questionnaire measured the extent to which ....  
 The correlation between X and Y was tested.  
 The first set of analyses examined the impact of ....  
 To compare the scores three weeks after initial screening, a global ANOVA F-test was used.  
 A scatter diagram and a Pearson's product moment correlation were used to determine the relationship between ....

### SOME EXAMPLES

<p>Table 1 Figure 1</p>	<p>shows compares presents provides</p>	<p>an overview of ....          the experimental data on X.          the summary statistics for ....          the breakdown of X according to ....          the results obtained from the preliminary analysis of X.          the inter correlations among the nine measures of X.</p>
-----------------------------	---	--

<p>The table below illustrates The pie chart above shows</p>	<p>some of the main characteristics of the .... the breakdown of ....</p>	
<p>As shown in Figure 1, As can be seen from the table (above), It can be seen from the data in Table 1 that From the graph above we can see that</p>	<p>the X group reported significantly more Y than the other two groups.</p>	
<p>The results obtained from the preliminary analysis of X The results of the correlational analysis The themes identified in these responses</p>	<p>are shown can be compared are presented are set out are summarized</p>	<p>in Table 1. in Figure 1.</p>

## **HIGHLIGHTING SIGNIFICANT DATA IN A TABLE OR CHART**

It is apparent from this table that very few ....

This table is quite revealing in several ways. First, unlike the other tables .....

What is interesting in this data is that ....

In Fig.10 there is a clear trend of decreasing ....

As Table III shows, there is a significant difference ( $t = -2.15, p = 0.03$ ) between the two groups.

The differences between X and Y are highlighted in Table 4

From the chart, it can be seen that by far the greatest demand is for ....

From the data in Figure 9, it is apparent that the length of time left between..

From this data, we can see that Study 2 resulted in the lowest value of Data from this table can be compared with the data in Table 4 which shows...

### **STATEMENTS OF POSITIVE RESULT**

Strong evidence of X was found when ....

This result is significant at the  $p = 0.05$  level.

There was a significant positive correlation between ....

There was a significant difference between the two conditions ....

On average, Xs were shown to have ....

The mean score for X was ....

Interestingly, for those subjects with X, ....

A positive correlation was found between X and Y.

The results, as shown in Table 1, indicate that ....

A two-way ANOVA revealed that ....

Post hoc analysis revealed that during ....

Further analysis showed that ....

Further statistical tests revealed ....

### **STATEMENTS OF NEGATIVE RESULT**

There was no increase of X associated with .....



There were no significant differences between ....  
No significant differences were found between ....  
No increase in X was detected.  
No difference greater than X was observed.  
No significant reduction in X was found compared with placebo.  
None of these differences were statistically significant.  
Overall, X did not affect males and females differently in these measures.  
The Chi-square test did not show any significant differences between  
A clear benefit of X in the prevention of Y could not be identified in this analysis.  
Only trace amounts of X were detected in ....

### **HIGHLIGHTING SIGNIFICANT, INTERESTING OR SURPRISING RESULTS**

Interestingly, the X was observed to ....  
Interestingly, this correlation is related to ....  
The more surprising correlation is with the ....  
The most surprising aspect of the data is in the ....  
The most striking result to emerge from the data is that ....  
The correlation between X and Y is interesting because ....  
Interestingly, there were also differences in the ratios of ....  
The single striking observation to emerge from the data comparison was ....

### **SEQUENCE WORDS AND PHRASES**

Prior to commencing the study, ethical clearance was sought from ....  
Prior to undertaking the investigation, ethical clearance was obtained from..  
In the end, the EGO was selected as the measurement for the current study.  
After 'training', the subjects were told that ....  
After collection, the samples were shipped back to X in ....

After conformational analysis of X, it was necessary to ....

After the appliance was fitted, the patients attended X every four weeks.

After obtaining written informed consent from the patients, a questionnaire regarding the ....

Once the Xs were located and marked, a thin clear plastic ruler ....

Once the positions had been decided upon, the Xs were removed from each Y and replaced by ....

Once the exposures were completed, the X was removed from the Y and placed in

On completion of X, the process of model specification and parameter estimation was carried out.

On arrival at the clinic, patients were asked to ....

Following this, the samples were recovered and stored overnight at ...

Following correction for ....., X was reduced to ....

These ratings were *then* made for the ten stimuli to which the subject had been exposed ....

The analysis was checked when initially performed and *then* checked again at the end of ....

The subjects were *then* shown a film individually and were asked to

The soil was *then* weighed again, and this weight was recorded as ....

The results were corrected for the background readings and *then* averaged before

Finally, questions were asked as to the role of ....

In the follow-up phase of the study, participants were asked ....

### **ADVERBS OF MANNER**

The soil was then placed in a furnace and *gradually* heated up to ....

The vials were shaken *manually* to allow the soil to mix well with the water.

The medium was then *aseptically* transferred to a conical flask.

A sample of the concentrate was then *carefully* injected into ....

The tubes were *accurately* reweighed to six decimal places using ....

## NUMERICAL METHODS

The equation that describes ..... is as follows:

Equation (2) represents/defines/expresses .....

The equation can be written as ....., where .....

Thus, the following equation is obtained:

..... can be computed by the following equation:

Equations (5) and (6) approximate (the original formulas).

..... satisfies equation (3).

Equations (2) and (3) demonstrate that .....

(3) implies that .....

..... is described by (5).

The function  $f$  is given/defined by.....

Let  $f$  be given/defined by .....

To simplify (3) we can .....

For simplicity we ignore the dependence of ..... on .....

It follows from (3) that .....

Substituting/inserting (4) and (6a) in(to) (6b), we obtain .....

Substitution/Insertion of (4) in(to) (5) yields .....

Now we can derive ..... according to (2)

We can now proceed analogously to .....

This is true for ...../This holds for .....

Similarly, (5) is also valid/true for the following relation.

Assume/Let us assume that (3) holds for .....

(6) holds under the condition that .....

We will make the following assumptions: .....

From now on we assume that .....

Let us define the following dependence/relation by/as .....

Let (3) satisfy the following relation .....

Equality holds in (10) if and only if .....

The inequality is satisfied if and only if .....

We shall write the above expression as .....

In this way we obtain .....

According to (5) we have/obtain .....  
..... is obtained as ...../can be obtained as .....  
..... is denoted (M) and defined as .....  
..... takes the form ..... / ..... can be written in the form .....  
As is clear from (5,) .....  
We first prove that ...../Let us first prove that .....  
It remains to prove that .....  
It is clear/evident/obvious that .....  
From this we conclude/see/deduce that .....

## **FIGURAL METHODS**

Fig. 2 shows/presents/depicts/outlines/illustrates/represents .....  
Fig. 3 gives an example of .....  
Such cases are depicted in the following figures.  
This is illustrated in Fig. 5.  
..... is/are shown/given in Figs. 3 and 4.  
..... can be found in Fig. 8.  
Consider Fig. 2, which plots ..... versus/against ..... .  
As can be seen from Figs. 5 and 3, .....  
As shown in Fig. 1, .....  
As follows from the figures shown above, .....  
From this figure it can be seen that .....  
For the resulting plot, see Fig. 2.  
For visual representation of the dependence ..... the reader is referred to Tables V and Table II summarizes .....  
The graph/diagram suggests/indicates that .....

## **THE PROCESS: USING + INSTRUMENT**

15 subjects were recruited using email advertisements requesting healthy students from ....  
Data were collected using two high spectral resolution Xs.

The data was recorded on a digital audio recorder and transcribed using a ....

Semi-automated genotyping was carried out using X software and ....

Statistical significance was analyzed using analysis of variance and t-tests as appropriate.

Comparisons between the two groups were made using unrelated t-tests.

Using the X-ray and looking at the actual X, it was possible to identify..

Using an Anthos Micro plate Reader, we were able to separate single cells into different ....

### **Describing the process: giving detailed information**

Compounds 3 and 5 were dissolved in X at apparent pH 2.5 to give concentrations of 4mM ....

.. and the solutions were degraded at 55°C or 37°C for a total time of 42 hours

At intervals of 0.5 min, 50 µL of the X was aliquot into 0.5mL of Y (pH 7.5)..

### **Indicating problems or limitations**

In this investigation there are several sources for error. The main error is ....

Another major source of uncertainty is in the method used to calculate X.

In particular, the analysis of X was problematic.

Further data collection is required to determine exactly how X affects Y.

It was not possible to investigate the significant relationships of X and Y further because the sample size was too small.

## **HINTS ON HOW TO START REPORTING RESULTS**

By the end of the survey period, data had been collected from 64 individuals, 23 of whom were ....

This section of the questionnaire required respondents to give

information...

Respondents were asked to indicate whether ....

Respondents were asked to suggest other reasons for ....

There were 53 responses to the question: '....?'

The total number of responses for this question was ....

The overall response to this question was poor.

In response to the question: '....?', a range of responses was elicited.

In response to Question 1, most of those surveyed indicated that ....

The overall response to this question was very positive.

When the participants were asked ....., the majority commented that

Other responses to this question included ....

The majority of those who responded to this item felt that ....

70% of those who were interviewed indicated that .....

Almost two-thirds of the participants (64%) said that .....

Just over half of those who answered this question reported that ....

Over half of those surveyed reported that ....

Approximately half of those surveyed did not comment on .....

Of the 62 participants who responded to this question, 30 reported an increase in

Of the 148 patients who completed the questionnaire, just half indicated that.

A small number of those interviewed suggested that .....

Only a small number of respondents indicated that ....

Some participants expressed the belief that .....

One individual stated that '....' And another commented '....'

A minority of participants (17%) indicated that ....

One participant commented: '....'

Another interviewee alluded to the notion of ....

## **OBSERVATIONS ABOUT QUALITATIVE DATA**

The themes of X and Y recurred throughout the dataset.

Five broad themes emerged from the analysis.

Two discrete reasons emerged from this. First .... Second ....

A number of issues were identified ....  
This theme came up for example in discussions of ....  
A recurrent theme in the interviews was a sense amongst interviewees that..  
These views surfaced mainly in what respects ....  
There was a sense of X amongst interviewees ....  
A variety of perspectives were expressed ....  
A common view amongst interviewees was that ....  
Issues related to X were not particularly prominent in the interview data.  
In their accounts of the events surrounding ....  
As one interviewee said: ....  
As one interviewee put it: ....  
For example, one interviewee said: ....  
Talking about this issue an interviewee said: ....  
Another interviewee, when asked ..., said: ....  
The extract/comment below shows ....  
Some interviewees argued that .... while others ....  
Some felt that .... while others considered that ....  
Two divergent and often conflicting discourses emerged ....  
Whilst a minority mentioned that... all agreed that...

### **Transition statements**

If we now turn to ....  
A comparison of the two results reveals ....  
Turning now to the experimental evidence on ....  
Comparing the two results, it can be seen that ....  
The next section of the survey was concerned with ....  
In the final part of the survey, respondents were asked ....

### **Summary and transition**

These results suggest that ....  
Overall, these results indicate that ....  
Together these results provide important insights into ....

Taken together, these results suggest that there is an association between ....

In summary, these results show that ....

The results in this Chapter indicate that .... The next Chapter, therefore, moves on to discuss the ....

**Discussion** part should describe the relationships and generalizations shown by the results and discuss the significance of the results making comparisons with previously published work.

### **STRUCTURE OF DISCUSSION**

- What were the original purposes of the study?
- How were these purpose met?
- Why the obtained occurred?
- What were the conclusions of the researcher for practice, theory and future research?
- What is the contribution of the study to the research literature?
- What are the strengths and weaknesses of the study?

### **Check for the following:**

- How do your results relate to the original question or objectives outlined in the Introduction section?
- Do you provide interpretation for each of your results presented?
- Are your results consistent with what other investigators have reported? Or are there any differences? Why?
- Are there any limitations?
- Does the discussion logically lead to your conclusion?

### **Do not**

- Make statements that go beyond what the results can support
- Suddenly introduce new terms or ideas



## **TIPS FOR DISCUSSING FINDINGS**

1. Your discussion section should answer **WHY** you obtained the observed results. Do not simply restate the results. Also address **WHY** your results are important (i.e. how do they advance the understanding of the topic).

2. If multiple explanations for your results exist, be sure to address each one. You can favor one explanation but be sure to mention alternative explanations, if some exist. If you don't, your reviewers will.

3. If your research findings are suggestive or supportive rather than decisive then make sure to indicate so. **NEVER** overstate the importance of your research findings. Rather, clearly point to their true significance.

4. Understand the message of your paper. You may discover what the message is only after a literature search, as is occasionally the case for some manuscript types such as case reports.

5. Highlight how your research contributes to the current knowledge in the field and mention the next steps or what remains. Feel free to explain why your results falsify current theories if that is the case.

6. Make sure that your discussion is concise and informative. If you ramble and include a great deal of unnecessary information, your paper will likely get rejected or at least be looked upon less favorably.

## **TEMPLATES ON HOW TO START DISCUSSION**

### **Stating the main objective**

In this paper we propose/examine/study .....

This paper proposes/has proposed .....

The purpose of the paper/study is to .....

The paper presents/has presented several solutions to .....

This paper is a modest contribution to the ongoing discussions about/on .....

It was the main purpose of the paper to draw attention to .....

The main concern of the paper was to ....  
In our paper, the focus of attention was/is on ....  
This study shows/has shown that ....  
This experiment/technique/demonstrates that ....

### **Specifying the objective**

Particular attention is paid to ....  
The author's attention was focused/concentrated not only on ... but also on..  
We have addressed not only .... but also ....  
We have also considered the consequences of ....

### **Pointing out the originality of the solution**

Our paper presents an innovative/a novel view of ....  
The originality of our solution lies in the fact that ....  
This is a novel solution to ....  
Our results describe for the first time the ....  
To our knowledge, this is the first study to deal with/examine/investigate ....  
Only one other study, to our knowledge, has come up with ....  
This paper presents a pilot study to find the answer to ....  
Our observations that .... are not new, but ....

### **Background information: reference to literature or to research aim/question**

As mentioned in the literature review, ....  
The third question in this research was ....  
Prior studies that have noted the importance of ....  
An initial objective of the project was to identify ....  
Very little was found in the literature on the question of ....  
This study set out with the aim of assessing the importance of X in ....  
The first question in this study sought to determine ....  
It was hypothesized that participants with a history of ....  
The present study was designed to determine the effect of ....

A strong relationship between X and Y has been reported in the literature.

In reviewing the literature, no data was found on the association between X and Y.

**Statements of result: usually with reference to results section**

The current study found that ...

The most interesting finding was that ...

In this study, Xs were found to cause ...

The results of this study show/indicate that ...

This experiment did not detect any evidence for ...

On the question of X, this study found that ...

The most important clinically relevant finding was ...

Another important finding was that ...

In the current study, comparing X with Y showed that the mean degree of ...

X provided the largest set of significant clusters of ...

It is interesting to note that in all seven cases of this study ...

The results of this study did not show that .../did not show any significant increase in ...

**Unexpected outcome**

Surprisingly, X was found to ...

What is surprising is that ...

One unanticipated finding was that ...

Surprisingly, no differences were found in ...

This finding was unexpected and suggests that ...

It is somewhat surprising that no X was noted in this condition ...

Contrary to expectations, this study did not find a significant difference between

However, the observed difference between X and Y in this study was not significant.

However, the ANOVA (one way) showed that these results were not statistically significant.

The main concern of the paper was to .....

In our paper, the focus of attention was/is on .....

This study shows/has shown that .....

This experiment/technique/demonstrates that .....

### **Specifying the objective**

Particular attention is paid to .....

The author's attention was focused/concentrated not only on ... but also on..

We have addressed not only ..... but also .....

We have also considered the consequences of .....

### **Pointing out the originality of the solution**

Our paper presents an innovative/a novel view of .....

The originality of our solution lies in the fact that .....

This is a novel solution to .....

Our results describe for the first time the .....

To our knowledge, this is the first study to deal with/examine/investigate .....

Only one other study, to our knowledge, has come up with .....

This paper presents a pilot study to find the answer to .....

Our observations that ..... are not new, but .....

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It was hypothesized that participants with a history of ....

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In reviewing the literature, no data was found on the association between X and Y.

### **Statements of result: usually with reference to results section**

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The most interesting finding was that ....

In this study, Xs were found to cause ....

The results of this study show/indicate that ....

This experiment did not detect any evidence for ....

On the question of X, this study found that ....

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However, the ANOVA (one way) showed that these results were not statistically significant.

## REFERENCE TO PREVIOUS RESEARCH: SUPPORT

These findings further support the idea of ....

This finding confirms the association between ....

This study confirms that X is associated with ....

These results match those observed in earlier studies.

The results of this study will be compared to the findings of previous work.

The findings of the current study are consistent with those of Smith and Jones (2001) who ....

These results are consistent with those of other studies and suggest that

This finding corroborates the ideas of Smith and Jones (2008), who suggested that

This finding is in agreement with Smith's (1999) findings which showed

It is encouraging to compare this figure with that found by Jones (1993) who found that ....

Increased activation in the X in this study corroborates these earlier findings.

The present findings seem to be consistent with other research which found

This also accords with our earlier observations, which showed that ....

These results agree with the findings of other studies, in which ....

In accordance with the present results, previous studies have demonstrated...

The findings observed in this study mirror those of the previous studies that have examined the effect of ....

This study produced results which corroborate the findings of a great deal of the previous work in this field.

There are similarities between the attitudes expressed by X in this study and those described by (Smith, 1987, 1995) and Jones (1986).

## **REFERENCE TO PREVIOUS RESEARCH: CONTRADICT**

However, the findings of the current study do not support the previous research.

This study has been unable to demonstrate that ...

However, this result has not previously been described.

In contrast to earlier findings, however, no evidence of X was detected.

These results differ from X's 2003 estimate of Y, but they are broadly consistent with earlier ...

Although, these results differ from some published studies (Smith, 1992; Jones, 1996), they are consistent with those of ...

## **EXPLANATIONS FOR RESULTS**

There are several possible explanations for this result.

A possible explanation for these results may be the lack of adequate...

It is difficult to explain this result, but it might be related to ...

There are, however, other possible explanations.

These factors may explain the relatively good correlation between X and Y.

These differences can be explained in part by the proximity of X and Y.

Some authors have speculated that ...

A possible explanation for this might be that ...

Another possible explanation for this is that ...

This result may be explained by the fact that ...

It seems possible that these results are due to ...

This inconsistency may be due to ...

This discrepancy could be attributed to ...

This rather contradictory result may be due to ...

The observed increase in X could be attributed to ...

Since this difference has not been found elsewhere it is probably not due to ...

The observed correlation between X and Y might be explained in this way. ....

The reason for this is not clear but it may have something to do with...

It may be that these students benefitted from ....

There are two likely causes for the differences between ....

The possible interference of X cannot be ruled out.

### **ADVISING CAUTIOUS INTERPRETATION**

These findings cannot be extrapolated to all patients.

These data must be interpreted with caution because ....

These results therefore need to be interpreted with caution.

It is important to bear in mind the possible bias in these responses.

However, with a small sample size, caution must be applied, as the findings might not be transferable to ....

Although exclusion of X did not reduce the effect on X, these results should be interpreted with caution.

### **SUGGESTING GENERAL HYPOTHESES**

The value of X suggests that a weak link may exist between ....

It is therefore likely that such connections exist between ....

It can thus be suggested that ....

It is possible to hypothesize that these conditions are less likely to occur in ....

It is possible/likely/probable therefore that ....

Hence, it could conceivably be hypothesized that ....

These findings suggest that ....

It may be the case therefore that these variations ....

In general, therefore, it seems that ....

It is possible, therefore, that ....

Therefore, X could be a major factor, if not the only one, causing ....

It can therefore be assumed that the ....

This finding, while preliminary, suggests that ....



## **NOTING IMPLICATIONS**

This finding has important implications for developing ....

An implication of this is the possibility that ....

One of the issues that emerges from these findings is ....

Some of the issues emerging from this finding relate specifically to ....

This combination of findings provides some support for the conceptual premise that ....

These findings may help us to understand ....

These results provide further support for the hypothesis that ....

## **COMMENTING ON FINDINGS**

However, these results were not very encouraging.

These findings are rather disappointing.

The test was successful as it was able to identify students who ....

The present results are significant in at least major two respects.

These findings will doubtless be much scrutinized, but there are some immediately dependable conclusions for ....

The results of this study do not explain the occurrence of these adverse events.

## **SUGGESTIONS FOR FUTURE WORK**

Further work is required to establish this.

This is an important issue for future research.

Several questions remain unanswered at present.

There is abundant room for further progress in determining ...

Further research should be done to investigate the ....

Research questions that could be asked include ....

Future studies on the current topic are therefore recommended.

A further study with more focus on X is therefore suggested.

Further studies, which take these variables into account, will need to be undertaken.

In future investigations, it might be possible to use a different X in which ....

In further research, the use of this data as X could be a means of ....  
However, more research on this topic needs to be undertaken before the association between X and Y is more clearly understood.

### **INTERPRETING THE FACTS**

The data obtained is/are broadly consistent with the major trends .....

These results agree/concur/are consistent/are in good agreement with other studies which have shown that .....

In contrast to some reports in the literature, there were .....

An important implication of these findings is that .....

The finding was quite unexpected/surprising and suggests that .....

The most likely explanation of the negative result is .....

The findings have a number of possible limitations, namely .....

So far, the significance of this finding is not clear.

#### **Stating the limitations of the research**

The main limitation of the experimental result is .....

One question still unanswered is whether .....

The analysis does not enable us to determine .....

These results are not conclusive.

### **USING PERCENTAGES**

1. Two or more percentages must not be averaged unless each is weighted by the group size from which it has been derived.

2. Use of too large percentages should be avoided, since a large percentage is difficult to understand and tends to confuse, defeating the very purpose for which percentages are used.

3. Percentages hide the base from which they have been computed. If this is not kept in view, the real differences may not be correctly read.

4. Percentage decreases can never exceed 100 per cent and as such for calculating the percentage of decrease, the higher figure should be taken as the base.

5. Percentages should generally be worked out in the direction of

the causal-factor in case of two-dimension tables and for this purpose we must select the more significant factor out of the two given factors as the causal factor.

- Causal-comparative study
- Correlation studies
- Prediction studies
- Comparative studies

### **The Developmental Studies**

- Growth study
- Follow up studies
- Trend studies

### **Content Analysis**

- Developing and modifying curriculum.
- Developing a standardized test in any subject.

**Conclusion** is the list of main conclusions is given. It should not repeat the results, but the generalization is intended.

### **TIPS FOR CONCLUSIONS AND REFERENCES**

1. The importance of the conclusions section should not be overlooked. It includes a brief restatement of the other parts of the research paper, such as the methodology, data analysis and results, and concludes the overall discussion. It should be brief, concise, and worth remembering.

2. Reference page: All references used as sources of information in your research paper should be mentioned to strengthen your paper and also to avoid your work being considered plagiarized.

3. Failure to include every obscure reference to a topic will NOT prevent publication. What WILL prevent publication is procrastination by insisting on including such references.

4. Use bibliographic software such as EndNote or RefWorks. This

will help you format your references section readily when you make changes throughout your paper after getting suggestions from friends, colleagues or reviewers.

### **Conclusion(s)**

- Present global and specific conclusions
- Indicate uses and extensions if appropriate
- Suggest future experiments and indicate whether they are underway
- Do not summarize the paper
- The abstract is for that purpose
- Avoid judgments about impact

### **TEMPLATES ON HOW TO START CONCLUSION(S)**

#### **Stating the objective**

The objective presented in the Conclusion(s) section should agree with the objective stated in the Introduction. For suitable phrases see Introduction and Discussion.

#### **DRAWING CONCLUSIONS**

From the research that has been carried out /done/conducted/performed/undertaken, it is possible to conclude that.

Based on the results, it can be concluded that the research into ..... has been very successful.

From the outcome of our investigation it is possible to conclude that.. The findings of our research are quite convincing, and thus the following conclusions can be drawn: .....

Summing up the results, it can be concluded that .....

In conclusion, it is evident that this study has shown .....

This paper has clearly shown that .....

It has been demonstrated/shown/found that .....

The results/data obtained indicate/have indicated/suggest/show that .....

The existence of (these effects ) implies that .....

## **SUGGESTING POSSIBLE APPLICATION(S)**

The proposed method can be readily used in practice.

The technique/approach/result is applicable to .....

..... can be successfully used for a number of ..... applications.

The/our ..... has great potential for other applications such as .....

This research was concerned with ...; however, the results should be applicable also to .....

The findings suggest that this approach could also be useful for .....

The findings are of direct practical relevance.

## **SUGGESTING FURTHER RESEARCH**

In our future research we intend to concentrate on .....

Future work will involve .....

On the basis of the promising findings presented in this paper, work on the remaining issues is continuing and will be presented in future papers.

Further study of the issue would be of interest.

Clearly, further research will be needed/required to prove/validate ...

Several other questions remain to be addressed/resolved.

More research into...is still necessary before obtaining a definitive answer to..

Further study of the issue is still required.

Continuing/continued research on/into ..... appears fully justified because .....

More tests/experiments/calculations will be needed to verify whether...

## **RESTATEMENT OF AIMS**

This paper has argued that ....

This study set out to determine ....

This essay has discussed the reasons for ....

The present study was designed to determine the effect of ....

The main goal of the current study was to determine ....

In this investigation, the aim was to assess ....

The purpose of the current study was to determine ...

This project was undertaken to design ... and evaluate ...

Returning to the hypothesis/question posed at the beginning of this study, it is now possible to state that ...

### **SUMMARIZING RESEARCH FINDINGS**

This study has shown that ...

The investigation of X has shown that ...

These findings suggest that in general ...

One of the more significant findings to emerge from this study is that..

It was also shown that ...

This study has found that generally ...

The relevance of X is clearly supported by the current findings.

This study/research has shown that ...

The second major finding was that ...

The results of this investigation show that ...

The most obvious finding to emerge from this study is that ...

X, Y and Z emerged as reliable predictors of ...

Multiple regression analysis revealed that the ...

### **SUGGESTING IMPLICATIONS**

The evidence from this study suggests that ...

The following conclusions can be drawn from the present study ...

The results of this study indicate that ...

The results of this research support the idea that ...

In general, therefore, it seems that ...

Taken together, these results suggest that ...

An implication of this is the possibility that ...

The findings of this study suggest that ...

### **SIGNIFICANCE OF THE FINDINGS OR RESEARCH CONTRIBUTION**

This research extends our knowledge of ...

The present study makes several noteworthy contributions to ...

This work contributes to existing knowledge X by providing ....  
The present study provides additional evidence with respect to ....  
The current findings add to a growing body of literature on ....  
The study has confirmed the findings of Smith *et al.* (2001) which found that..  
The findings from this study make several contributions to the current literature.  
These findings enhance our understanding of ....  
The study has gone some way towards enhancing our understanding of....  
The empirical findings in this study provide a new understanding of...  
The key strengths of this study are its long duration and ....  
This is the first study reporting an advantage in those who ....  
This is the first time that X has been used to explore ....  
This is the largest study so far documenting a delayed onset of ....  
This study has demonstrated, for the first time, that ....  
The analysis of X undertaken here, has extended our knowledge of ....  
This research will serve as a base for future studies and ....  
Taken together, these findings suggest a role for X in promoting Y.  
The present study confirms previous findings and contributes additional evidence that suggests ....  
This research has several practical applications. Firstly, it points to ....

### **SIGNIFICANCE OF THE FINDINGS WITH A QUALIFICATION**

Whilst this study did not confirm X, it did partially substantiate ....  
Despite its exploratory nature, this study offers some insight into ....  
Although the current study is based on a small sample of participants, the findings suggest ....  
Notwithstanding these limitations, the study suggests that ....

### **LIMITATIONS OF THE CURRENT STUDY**

Finally, a number of important limitations need to be considered.

First,..

The findings in this report are subject to at least three limitations.

First,..

Thirdly, the study did not evaluate the use of ....

The generalizability of these results is subject to certain limitations...

The most important limitation lies in the fact that ....

The major limitation of this study is the low response rate.

A limitation of this study is that the numbers of patients and controls were relatively small.

This limitation means that study findings need to be interpreted cautiously.

The current study has only examined ....

The current investigation was limited by ....

The current study was unable to analyse these variables.

The current research was not specifically designed to evaluate factors related

The study is limited by the lack of information on ....

The scope of this study was limited in terms of ....

However, these findings are limited by the use of a cross sectional design.

The project was limited in several ways. First, the project used a convenience sample that ....

The sample was nationally representative of X but would tend to miss people who were ....

However, with a small sample size, caution must be applied, as the findings might not be transferable to ....

These results may not be applicable to ....

It is unfortunate that the study did not include ....

The main weakness of this study was the paucity of ....

An arguable weakness is the arbitrariness in our definition of ....

An issue that was not addressed in this study was whether....

A number of caveats need to be noted regarding the present study.



One source of weakness in this study which could have affected the measurements of X was ....

Although the study has successfully demonstrated that ..., it has certain limitations in terms of ....

### **RECOMMENDATIONS FOR FURTHER RESEARCH WORK**

This research has thrown up many questions in need of further investigation.

What is now needed is a cross-national study involving ....

More broadly, research is also needed to determine ....

More research is needed to understand when implementation ends and ....

More research is required to determine the efficacy of ....

It would be interesting to assess the effects of ....

Further work needs to be done to establish whether ....

Further research is needed to account for the varying ....

Further research might explore/investigate ....

Further research in this field would be of great help in ....

Further research regarding the role of X would be worthwhile/interesting.

Further investigation and experimentation into X is strongly recommended.

Further experimental investigations are needed to estimate ....

A further study could assess the long-term effects of ....

Further research needs to examine more closely the links between X and Y.

Future trials should assess the impact of ....

Future research should therefore concentrate on the investigation of..

A future study investigating X would be very interesting.

A number of possible future studies using the same experimental set up are apparent.

Another possible area of future research would be to investigate why

A natural progression of this work is to analyses ....

These findings provide the following insights for future research: ....

The precise mechanism of X in insects remains to be elucidated.

Considerably more work will need to be done to determine ....

The issue of X is an intriguing one which could be usefully explored in further research.

Large randomized controlled trials could provide more definitive evidence.

A greater focus on X could produce interesting findings that account more for

More information on X would help us to establish a greater degree of accuracy on this matter.

If the debate is to be moved forward, a better understanding of X needs to be developed.

I suggest that before X is introduced, a study similar to this one should be carried out on ....

### **IMPLICATIONS OR RECOMMENDATIONS FOR PRACTICE OR POLICY**

Other types of X could include: a), b). ....

There is, therefore, a definite need for ....

Moreover, more X should be made available to ....

Another important practical implication is that ....

Unless governments adopt X, Y will not be attained.

These findings suggest several courses of action for ....

A reasonable approach to tackle this issue could be to ....

There are a number of important changes which need to be made.

Management to enhance bumble-bee populations might involve ....

A key policy priority should therefore be to plan for the long-term care of ....

This information can be used to develop targeted interventions aimed at

Taken together, these findings do not support strong

recommendations to ....

An implication of these findings is that both X and Y should be taken into account when ....

The findings of this study have a number of important implications for future practice.

The acknowledgment is a formal printed statement that recognizes individuals and institutions that contributed to the work being reported. Acknowledge research contributions by people other than the authors: Persons who gave scientific guidance, participated in discussions, or shared unpublished results; Persons who provided samples or equipment; Assistants or students who helped do the work; Technicians at user facilities or labs. The acknowledgment should be a simple statement of thanks, not a testimonial or dedication. Do not acknowledge non-science contributors: Persons who helped prepare the manuscript (e.g., typists, graphic artists); Persons who provided encouragement or moral support (e.g., Mom); Persons who provided non-technical services (e.g., grant coordinators, purchasing agents). These individuals might be acknowledged in a thesis, but not in a journal article, presentation, or poster.

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NSF support also must be orally acknowledged during all news media interviews, including popular media such as radio, television

followed by acknowledgements in the form of 'Preface' or 'Foreword'. Then there should be a *table of contents* followed by *list of tables and illustrations* so that the decision-maker or anybody interested in reading the report can easily locate the required information in the report.

### **(B) Main Text**

The main text provides the complete outline of the research report along with all details. Title of the research study is repeated at the top of the first page of the main text and then follows the other details on pages numbered consecutively, beginning with the second page. Each main section of the report should begin on a new page. The main text of the report should have the following sections:

- Introduction;
- Statement of findings and recommendations;
- The results;
- The implications drawn from the results;
- The summary.

**(i) Introduction:** The purpose of introduction is to introduce the research project to the readers. It should contain a clear statement of the objectives of research i.e., enough background should be given to make clear to the reader why the problem was considered worth investigating. A brief summary of other relevant research may also be stated so that the present study can be seen in that context. The hypotheses of study, if any, and the definitions of the major concepts employed in the study should be explicitly stated in the introduction of the report. The methodology adopted in conducting the study must be fully explained.

The scientific reader would like to know in detail about such thing: How was the study carried out? What was its basic design? If the study was an experimental one, then what were the experimental manipulations? If the data were collected by means of questionnaires or interviews, then exactly what questions were asked (The

questionnaire or interview schedule is usually given in an appendix)? If measurements were based on observation, then what instructions were given to the observers? Regarding the sample used in the study the reader should be told: Who were the subjects? How many were there? How were they selected? All these questions are crucial for estimating the probable limits of generalizability of the findings. The statistical analysis adopted must also be clearly stated. In addition to all this, the scope of the study should be stated and the boundary lines be demarcated. The various limitations, under which the research project was completed, must also be narrated.

**(ii) Statement of findings and recommendations:** After introduction, the research report must contain a statement of findings and recommendations in non-technical language so that it can be easily understood by all concerned. If the findings happen to be extensive, at this point they should be put in the summarized form.

**(iii) Results:** A detailed presentation of the findings of the study, with supporting data in the form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of the report, extending over several chapters. The result section of the report should contain statistical summaries and reductions of the data rather than the raw data. All the results should be presented in logical sequence and splatted into readily identifiable sections. All relevant results must find a place in the report. But how one is to decide about what irrelevant is the basic question. Quite often guidance comes primarily from the research problem and from the hypotheses, if any, with which the study was concerned. But ultimately the researcher must rely on his own judgment in deciding the outline of his report. "Nevertheless, it is still necessary that he states clearly the problem with which he was concerned, the procedure by which he worked on the problem, the conclusions at which he arrived, and the bases for his conclusions."

**(iv) Implications of the results:** Toward the end of the main text, the researcher should again put down the results of his research clearly and precisely. He should, state the implications that flow from the results of the study, for the general reader is interested in the implications for understanding the human behavior. Such implications may have three aspects as stated below:

**(a)** A statement of the inferences drawn from the present study which may be expected to apply in similar circumstances.

**(b)** The conditions of the present study which may limit the extent of legitimate generalizations of the inferences drawn from the study.

**(c)** The relevant questions that still remain unanswered or new questions raised by the study along with suggestions for the kind of research that would provide answers for them. It is considered a good practice to finish the report with a short conclusion which summarizes and recapitulates the main points of the study. The conclusion drawn from the study should be clearly related to the hypotheses that were stated in the introductory section. At the same time, a forecast of the probable future of the subject and an indication of the kind of research which needs to be done in that particular field is useful and desirable.

**(v) Summary:** It has become customary to conclude the research report with a very brief summary, resting in brief the research problem, the methodology, the major findings and the major conclusions drawn from the research results. End Matter At the end of the report, appendices should be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones. Bibliography of sources consulted should also be given. Index (an alphabetical listing of names, places and topics along with the numbers of the pages in a book or report on which they are mentioned or discussed) should invariably be given at the end of the report. The value of index lies in the fact that it works

as a guide to the reader for the contents in the report.

### **(A) TECHNICAL REPORT**

In the technical report the main emphasis is on (i) the methods employed, (ii) assumptions made in the course of the study, (iii) the detailed presentation of the findings including their limitations and supporting data.

**1. Summary of results:** A brief review of the main findings just in two or three pages.

**2. Nature of the study:** Description of the general objectives of study, formulation of the problem in operational terms, the working hypothesis, the type of analysis and data required, etc.

**3. Methods employed:** Specific methods used in the study and their limitations. For instance, in sampling studies we should give details of sample design viz., sample size, sample selection, etc.

**4. Data:** Discussion of data collected their sources, characteristics and limitations. If secondary data are used, their suitability to the problem at hand be fully assessed. In case of a survey, the manner in which data were collected should be fully described.

**5. Analysis of data and presentation of findings:** The analysis of data and presentation of the findings of the study with supporting data in the form of tables and charts be fully narrated. This, in fact, happens to be the main body of the report usually extending over several chapters.

**6. Conclusions:** A detailed summary of the findings and the policy implications drawn from the results be explained.

**7. Bibliography:** Bibliography of various sources consulted be prepared and attached.

**8. Technical appendices:** Appendices be given for all technical matters relating to questionnaire, mathematical derivations, elaboration on particular technique of analysis and the like ones.

**9. Index:** It must be prepared, be given invariably in the report at the end.

## **(B) POPULAR REPORT**

The popular report is one which gives emphasis on simplicity and attractiveness. The simplification should be sought through clear writing, minimization of technical, particularly mathematical, details and liberal use of charts and diagrams. Attractive layout along with large print, many subheadings, even an occasional cartoon now and then is another characteristic feature of the popular report. Besides, in such a report emphasis is given on practical aspects and policy implications.

### **GENERAL OUTLINE OF A POPULAR REPORT**

#### **Popular report deals with following steps**

- 1. The findings and their implications:** Emphasis in the report is given on the findings of most practical interest and on the implications of these findings.
- 2. Recommendations for action:** Recommendations for action on the basis of the findings of the study is made in this section of the report.
- 3. Objective of the study:** A general review of how the problem arise is presented along with the specific objectives of the project under study.
- 4. Methods employed:** A brief and non-technical description of the methods and techniques used, including a short review of the data on which the study is based, is given in this part of the report.
- 5. Results:** This section constitutes the main body of the report wherein the results of the study are presented in clear and non-technical terms with liberal use of all sorts of illustrations such as charts, diagrams and the like ones.
- 6. Technical appendices:** More detailed information on methods used, forms, etc. is presented in the form of appendices. But the appendices are often not detailed if the report is entirely meant for general public.



## ORAL PRESENTATION

**Documentation style:** Regarding documentation, the first footnote reference to any given work should be complete in its documentation, giving all the essential facts about the edition used. Such documentary footnotes follow a general sequence. The common order may be described as under:

### (i) Single-volume reference

1. Author's name in normal order (and not beginning with the last name as in a bibliography) followed by a comma;
2. Title of work, underlined to indicate italics;
3. Place and date of publication;
4. Pagination references (The page number).

#### *Example*

John Gassner, *Masters of the Drama*, New York: Dover Publications, Inc. 1954, p. 315.

### (ii) Arranged alphabetically works

For works arranged alphabetically such as encyclopedias and dictionaries, no pagination reference is usually needed. In such cases the order is illustrated as under:

#### *Example 1*

"Salamanca," *Encyclopedia Britannica*, 14th Edition.

#### *Example 2*

"Mary Wollstonecraft Godwin," *Dictionary of national biography*.

But if there should be a detailed reference to a long encyclopedia article, volume and pagination reference may be found necessary.

### (iii) Periodicals reference

- Name of the author in normal order;
- Title of article, in quotation marks;
- Name of periodical, underlined to indicate italics;
- Volume number;
- Date of issuance;
- Pagination.

#### **(iv) Anthologies and collections reference**

Quotations from anthologies or collections of literary works must be acknowledged not only by author, but also by the name of the collector.

#### **(v) Second-hand quotations reference**

In such cases the documentation should be handled as follows:

- Original author and title;
- "Quoted or cited in,";
- Second author and work.

#### *Example*

J.F. Jones, *Life in Ploynesia*, p. 16, quoted in *History of the Pacific Ocean area*, by R.B. Abel, p. 191.

#### **Reference Section:**

It consists of the following:

- Bibliography
- Appendices: Questionnaires, Copies of letters used, evaluation sheets, checklists etc.

### **TEMPLATES ON HOW TO START RELEVANT LITERATURE**

A large and growing body of literature has investigated ....

More recent attention has focused on the provision of ....

Much of the current literature on X pays particular attention to ....

Over the past decade most research in X has emphasized the use of ....

There is a large volume of published studies describing the role of ....

In recent years, there has been an increasing amount of literature on.

The generalisability of much published research on this issue is problematic.

During the past 30 years, much more information has become available on ....

A considerable amount of literature has been published on X. These studies ...

The first discussions and analyses of X emerged during the 1970s with..

## **MORE THAN ONE AUTHOR GENERAL REFERENCE**

Traditionally, it has been argued that .... (Smith, 1982; O'Brien, 1984).

Surveys such as that conducted by Smith (1988) have shown that ....

Many historians have argued that . (e.g. Jones, 1987; Johnson, 1990).

There is a consensus among social scientists that .(e.g. Jones, 1987)

Recent evidence suggests that .... (Smith, 1996; Jones 1999; Johnson, 2001)

Recently, in vitro studies have shown that X can(Patel *et al.*, 1997; Jones *et al.*, 1998).

Several studies investigating X have been carried out on ....

Several attempts have been made to .... (Smith, 1996; Jones 1999; ....).

Several studies thus far have linked X with Y (Smith, 2002; Jones 2004;).

Several studies have revealed that it is not just X that acts on . (Smith, 1996)

Several biographies of Brown have been published. Smith (2013) presents ....

The geology of X has been addressed in several small-scale investigations and

Data from several sources have identified the increased X and Y associated with obesity.

Previous studies have reported .... (Smith, 1985; Jones, 1987; Johnson, 1992).

Previous research has indicated that various X indicators have a positive impact on

Previous research findings into X have been inconsistent and contradictory (Smith, 1996; ....)

Numerous studies have attempted to explain .... (for example, Smith , 1996; Kelly, 1998; ....)

A number of authors have reported analyses of trends in X that demonstrated ....

A number of studies have found that .... (Smith , 2003; Jones, 2004).

A number of studies have examined X (e.g. Smith, 2003; Jones, 2005), but to date none has ...

Xs have been identified as major contributing factors for the decline of many species.

X has also been shown to reverse the anti-inflammatory effects of Y in murine-induced arthritis.

Twenty cohort study analyses have examined the relationship between..

At least 152 case-control studies worldwide have examined the relationship between.....

Other studies have considered the relationship ....

The relationship between X and Y has been widely investigated (Smith, 1985; Jones, 1987, ...

The causes of X have been widely investigated (Jones, 1987; Johnson, 1990; Smith, 1994).

Factors thought to be influencing X have been explored in several studies.

It has been suggested that levels of X are independent of the size of the Y (Smith *et al.*, 1995).

It has conclusively been shown that X and Y increase Z (Smith *et al.*, 1999; Jones, 2001 ....).

It has been demonstrated that a high intake of X results in damage to .... (Smith, 1998; ....).

### **Current state of knowledge**

There is an unambiguous relationship between X and Y (Rao, 1998).

X is one of the most intense reactions following CHD (Lane, 2003).

X has been found to oppose the anti-inflammatory actions of Y on Z (Alourfi, 2004).

A relationship exists between an individual's working memory and their ability to .... (Jones, 2002).

GM varieties of maize are able to cross-pollinate with non-GM varieties (Smith, 1998; Jones, 1999).

## SINGLE INVESTIGATIONS IN THE PAST: RESEARCHER(S) AS SENTENCE SUBJECT

Smith (1999)	found that as levels of literacy and education of the population rise ... showed that reducing X to 190oC decreased ... (see Figure 2) . demonstrated that when the maximum temperature is exceeded ....
Jones <i>et al.</i> (2001)	investigated the differential impact of formal and non-formal education on ... analyzed the data from 72 countries and concluded that ... reviewed the literature from the period and found little evidence for this .... interviewed 250 undergraduate students using semi-structured ... studied the effects of X on unprotected nerve cells. performed a similar series of experiments in the 1960s to show that ... carried out a number of investigations into the ... conducted a series of trials in which he mixed X with different quantities of ... measured both components of the ... labeled these subsets as ... examined the flow of international students ... identified parents of disabled children as ... used a survey to assess the various ...

## SINGLE INVESTIGATIONS OR PUBLICATIONS IN THE PAST: TIME FRAME PROMINENT

In 1975, Smith *et al.* published a paper in which they described ...

In 1990, Patel *et al.* demonstrated that replacement of H<sub>2</sub>O with heavy water led to..

Thirty years later, Smith (1974) reported three cases of X which ...

In the 1950s, Gunnar Myrdal pointed to some of the ways in which ...  
(Myrdal, 1957)

In 1981, Smith and co-workers demonstrated that X induced in vitro resistance to

In 1990, Al-Masry *et al.* reported a new and convenient synthetic procedure to obtain ....

In 1984, Jones *et al.* made several amino acid esters of X and evaluated them as

### **Preliminary Section:**

- Title Page
- Preface
- Table of Contents
- List of Tables
- List of figure, maps and illustrations

### **TEMPLATES ON HOW TO START PRELIMINARY WORK**

Preliminary work on X was undertaken by Abdul Karim (1992).

The first systematic study of X was reported by Patel *et al.* in 1986.

The study of the structural behavior of X was first carried out by Rao *et al.* (1986).....

Analysis of the genes involved in X was first carried out by Smith et al (1983).

One study by Smith (2014) examined the trend in ....

A recent study by Smith and Jones (2012) involved ....

A longitudinal study of X by Smith (2012) reports that ....

A small scale study by Smith (2012) reaches different conclusions, finding no increase in ....

Smith's cross-country analysis (2012) showed that ....

Smith's comparative study (2012) found that ....

Detailed examination of X by Smith and Patel (1961) showed that ....

Brown's (1992) model of X assumes three main ....

In an analysis of X, Smith *et al.* (2012) found ....

In an investigation into X, Smith *et al.* (2012) found ....

In another major study, Zhao (1974) found that just over half of the ...

In a study which set out to determine X, Smith (2012) found that ....  
In a randomized controlled study of X, Smith (2012) reported that ....  
In a large study, Smith *et al.* (2012) investigated the incidence of X in Y.  
In one well-known recent experiment, limits on X were found to be ...

### **Single investigations in the past: research topic as main focus**

To determine the effects of X, Zhao et al (2005) compared ....  
X was originally isolated from Y in a soil sample from .... (Wang *et al.*, 1952).  
The electronic spectroscopy of X was first studied by Smith and Jones<sup>1</sup> in 1970  
X formed the central focus of a study by Smith (2002) in which the author found  
X was first demonstrated experimentally by Pavlov (Smith, 2002). In his seminal study ....  
The acid-catalyzed condensation reaction between X and Y was first reported by Smith in 1872  
To better understand the mechanisms of X and its effects, Al-Masry (2013) analyzed the ....  
The way in which the X gene is regulated was studied extensively by Ho and colleagues (Ho *et al.* 1995 and 1998).

### **What other writers do in their text: author as subject**

Smith (2013) identifies X, Y, and Z as the major causes of ....  
Perez (2013) draws on an extensive range of sources to assess ....  
Toh (2013) mentions the special situation of Singapore as an example of ....  
Al-Masry (2013) uses examples of these various techniques as evidence that..  
Smith (2013) questions whether mainstream schools are the best environment for...  
Jones (2013) draws our attention to distinctive categories of X often

observed in

Brown (2013) considers whether countries work well on cross-border issues such as ...

Smith (2013) discusses the challenges and strategies for facilitating and promoting ...

Jones (2013) provides in-depth analysis of the work of Aristotle showing its relevance to ....

Rao (2013) lists three reasons why the English language has become so dominant. These are: ....

Smith (2013) traces the development of Japanese history and philosophy during the 19th century.

Smith (2013) defines evidence based medicine as the conscious, explicit and judicious use of .....

Rao (2013) highlights the need to break the link between economic growth and transport growth .....

By drawing on the concept of X, Smith has been able to show that ....

Drawing on an extensive range of sources, the authors set out the different ways in which ....

In Chapter 2, Smith provides us with a number of important ....

In the subsequent chapter, Smith examines the extent to which ....

Some analysts (e.g. Carnoy, 2002) have attempted to draw fine distinctions between ....

Other authors (see Harbison, 2003; Kaplan, 2004) question the usefulness of such an approach.

In her major study, In her seminal article, In her classic critique of, In her case study of ..., In her review of ....., In her analysis of ....., In her introduction to.....'	Smith (2012) identifies five characteristics of ...
--	---



### **Another writer's ideas or position (author as subject)**

According to Smith (2003), preventative medicine is far more cost effective, and therefore ....

As noted by Smith (2003) X is far more cost effective, and therefore

Smith (2013)	points out argues maintains claims concludes suggests	that	preventative medicine is far more cost effective, and therefore better adapted to the developing world.
Smith (2013)	argues for offers proposes suggests	an explanatory theory for each type of irrational belief.	

### **SYNTHESIZING SOURCES**

Similarly, Nicoladis (2006) found that X ....

In the same vein, Smith (1994) in his book XYZ notes ....

This view is supported by Jones (2000) who writes that ....

Smith argues that her data support O'Brien's (1988) view that ....

Al-Masry's (1986) work on X is complemented by Smith's (2009) study of ....

Almost every paper that has been written on X includes a section relating to..

Unlike Smith, Jones (2013) argues that ....

In contrast to Smith, Jones (2013) argues that ....

A broader perspective has been adopted by Smith (213) who argues that ....

Conversely, Wang (2010) reported no significant difference in mortality between X and Y.

Smith argues that .... Al-Masry (2003) sees X as	Similarly, Jones (2013) asserts that .... Likewise, Wang (2012) holds the view that ....
Zhao (2002) notes that .... Smith (2013) found that X accounted for 30% of Y.	However, Jennings' (2010) study of Y found no .... Other researchers, however, who have looked at X, have found .... Jones (2010), for example, ....

Some writers (e.g. Smith, 2002) have attempted to draw fine distinctions between .... Some authors have mainly been interested in questions concerning X and Y (Smith, 2001; Jones) Much of the available literature on X deals with the question of ....	Others (see Jones, 2003; Brown, 2004) question the usefulness of .... Others have highlighted the relevance of .... But Smith (2008) is much more concerned with ....
Smith (2010) presents an X account, While Smith (2008) focuses on X,	whilst Jones (2011) .... Jones (2009) is more concerned with

### Some ways of introducing quotations

Commenting on X, Smith (2003) argues: '.... ....'

As Smith argues: 'In the past, the purpose of education was to ....' (Smith, 2000:150).

As Smith	reminds us: '.... .... .... .... ....' observes: '.... .... .... .... ....' notes: '.... .... .... .... ....' points out: '.... .... .... .... ....' argues: '.... .... .... .... ....'	(Smith 2003: 23).
----------	---	-------------------

As Carnoy (2004: 215) states: 'there are many good reasons to be sceptical'.

In the final part of the Theses, Marx writes: 'Philosophers have hitherto only interpreted the world in various ways; the point ...'

Sachs concludes: 'The idea of development stands today like a ruin in the intellectual landscape...' (Sachs, 1992a: 156).

### **SUMMARIZING THE REVIEW OR PARTS OF THE REVIEW**

Together, these studies outline that ...

Overall, these studies highlight the need for ...

Collectively, these studies outline a critical role for...

The evidence presented in this section suggests that ...

The studies presented thus far provide evidence that ...

Overall, there seems to be some evidence to indicate that ...

Together these studies provide important insights into the ...

In view of all that has been mentioned so far, one may suppose that ...

## Chapter XII. TEMPLATES ON HOW TO START INTRODUCING QUESTIONS, PROBLEMS AND LIMITATIONS

A major criticism of Smith's work is that ....

One question that needs to be asked, however, is whether ....

A serious weakness with this argument, however, is that ....

One of the limitations with this explanation is that it does not explain why... .

One criticism of much of the literature on X is that ....

The key problem with this explanation is that ....

The existing accounts fail to resolve the contradiction between X and Y.

However, there is an inconsistency with this argument.

Smith's argument relies too heavily on qualitative analysis of ....

It seems that Jones' understanding of the X framework is questionable.

Smith's interpretation overlooks much of the historical research ....

Many writers have challenged Jones' claim on the grounds that ....

X's analysis does not take account of .... nor does he examine ....

### INTRODUCING QUESTIONS, PROBLEMS AND LIMITATIONS: METHOD/PRACTICE

One major drawback of this approach is that ....

The main limitation of biosynthetic incorporation, however, is ....

However, this method of analysis has a number of limitations.

However, approaches of this kind carry with them various well known limitations.

Another problem with this approach is that it fails to take X into account.

Perhaps the most serious disadvantage of this method is that ....

Difficulties arise, however, when an attempt is made to implement

the policy.

All the studies reviewed so far, however, suffer from the fact that ....

However, there are limits to how far the idea of/concept of X can be taken.

However, such explanations tend to overlook the fact that ....

However, one of the problems with the instrument the researchers used to measure X was ....

Nevertheless, the strategy has not escaped criticism from governments, agencies and academics.

Smith's study of X is considered to be the most important, but it does suffer from the fact that ....

Although this is the most comprehensive account of X produced so far, it does suffer from a number of flaws.

However, all the previously mentioned methods suffer from some serious	limitations weaknesses disadvantages drawbacks.
--	--

### IDENTIFYING A STUDY'S WEAKNESS

(However,)	the main weakness of the study is the failure to address how the study fails to consider the differing categories of damage that .... the research does not take into account pre-existing .... such as .... the author offers no explanation for the distinction between X and Y. Smith makes no attempt to differentiate between different types of X. Jones fails to fully acknowledge the significance of .... the paper would appear to be over ambitious in its claims. the author overlooks the fact that X contributes to Y. what Smith fails to do is to draw a distinction between another weakness is that we are given no explanation of how Smith fails to fully define what .... no attempt was made to quantify the association between X and Y.
------------	--

## OFFERING CONSTRUCTIVE SUGGESTIONS

Smith's paper	would have been	more	useful	if he/she had	included
Her conclusions	might have been	much more	convincing	if the author had	considered
The study		far more	interesting		adopted
The findings			persuasive		used ...
			original		


A more comprehensive study would include all the groups of ....

## USING EVALUATIVE ADJECTIVES TO COMMENT ON RESEARCH

In his	excellent	analysis (of X), examination (of X), study (of X), survey (of X), investigation (into Y),	Smith (2012) Jones <i>et al.</i>	found .... were able to show .... concluded that ....
In	comprehensive			
their	detailed			
In this	useful			
	thorough			
	ground breaking			
	timely			
	important			
	impressive			
	limited			
	small-scale			

A better study would examine a large, randomly selected sample of societies..

A much more systematic approach would identify how X interacts with other variables that are believed to be linked to ....



Researchers have not treated X in much detail.

Previous studies of X have not dealt with ....

Such expositions are unsatisfactory because they ....

Most studies in the field of X have only focused on ....

Half of the studies evaluated failed to specify whether ....

The research to date has tended to focus on X rather than Y.

However, these studies used non-validated methods to measure ....

Most studies in X have only been carried out in a small number of areas.

The existing accounts fail to resolve the contradiction between X and Y.

However, much of the research up to now has been descriptive in nature ....

Small sample sizes have been a serious limitation for many earlier studies.

The generalizability of much published research on this issue is problematic.

However, few writers have been able to draw on structured research into...

However, only a small number of participants took part, it was made clear...

However, these results were limited to X and are therefore not representative of

The experimental data are rather controversial, and there is no general agreement about ....

Although extensive research has been carried out on X, no single study exists which adequately ....

However, these results were based upon data from over 30 years ago and it is unclear if these differences still persist.

## **INTRODUCING GENERAL CRITICISM**

Non-government agencies are also very critical of the new policies. The X theory has been vigorously challenged in recent years by a number of writers.

These claims have been strongly contested in recent years by a number of writers.

Smith's meta-analysis has been subjected to considerable criticism. The most important of these criticisms is that Smith failed to note that...

Critics question the ability of poststructuralist theory to provide .... More recent arguments against X have been summarized by Smith and Jones (1982):

Critics have also argued that not only do surveys provide an inaccurate measure of X, but the ....

Many analysts now argue that the strategy of X has not been successful. Jones (2003), for example, argues that ....

## **INTRODUCING THE CRITICAL STANCE OF PARTICULAR WRITERS**

Jones (2003) has also questioned why ....

However, Jones (2003) points out that ....

The authors challenge the widely held view that ....

Jones (2003) is critical of the conclusions that Smith draws from his findings.

Jones (2003) has challenged some of Smith's conclusions, arguing that ...

Jones (2003) is probably the best known critic of the X theory. He argues that

The latter point has been devastatingly critiqued by Jones (2003), who argues that..

Other authors (see Harbison, 2003; Kaplan, 2004) question the usefulness of such an approach.



Smith's analysis has been criticized by a number of writers. Jones (1993), for example, points out that ....

### **BEING CAUTIOUS**

One of the most noticeable stylistic aspects of academic communication is the tendency for writers to avoid expressing absolute certainty, where there may be a small degree of uncertainty, and to avoid making over-generalizations, where a small number of exceptions might exist. This means that there are many instances where the epistemological strength (strength of knowledge) of a statement or claim is mitigated (weakened) in some way. In the field of linguistics, devices for lessening the strength of a statement or claim are known as hedging devices. Analysis of research reports have shown that discussion sections tend to be particularly rich in hedging devices, particularly where writers are offering explanations for findings.

### **DEVICES THAT DISTANCE THE AUTHOR FROM A PROPOSITION**

It is believed that ....

It is thought that ....

It is a widely held view that ....

It has commonly been assumed that ....

It has been reported that ....

Smith (2001) holds the view that ....

If Smith's (2001) findings are accurate, ....

According to recent reports, ....

According to Smith (2002), ....

Many scholars hold the view that ....

Recent research has suggested that ....

There is some evidence to suggest that ....

## BEING CAUTIOUS WHEN GIVING EXPLANATIONS OR HYPOTHESIZING

These frequent storms	are almost certainly could be may be might be	due to climate change.	
It is almost certain that It is likely that It may be that It could be that It is possible that	the more extreme weather		is a result of climate change.
A likely explanation A probable explanation A possible explanation	is that	these frequent storms	are a result of climate change.

## BEING CAUTIOUS WHEN EXPLAINING RESULTS

This inconsistency may be due to ....

This discrepancy could be attributed to ....

A possible explanation for this might be that ....

It seems possible that these results are due to ....

This rather contradictory result may be due to ....

The observed increase in X could be attributed to ....

The possible interference of X cannot be ruled out ....

There are several possible explanations for this result.

There are two likely causes for the differences between ....

A possible explanation for these results may be the lack of adequate..

Since this difference has not been found elsewhere it is probably not due to...

## **BEING CAUTIOUS WHEN DISCUSSING IMPLICATIONS OR RECOMMENDATIONS**

One possible implication of this is that ...

The findings of this study suggest that ...

The evidence from this study suggests that ...

Taken together, these results suggest that ...

The data reported here appear to support the assumption that ...

Initial observations suggest that there may be a link between ...

The findings from these studies suggest that X can have an effect on ...

Strategies to enhance X might involve ...

These results would seem to suggest that the ...

There would therefore seem to be a definite need for ...

A reasonable approach to tackle this issue could be to ...

Other types of response could include: a), b). ...

Another possible area of future research would be to investigate why

### **DEVICES FOR AVOIDING OVER-GENERALIZATION**

Ozone is toxic to	almost all most many types of the majority of certain types of some types of	living organisms.
-------------------	---	-------------------

Ozone levels	nearly always frequently often occasionally	exceed WHO levels in many cities.
--------------	--	--------------------------------------

Ozone tends to attack cells and break down tissues.

There is a tendency for ozone to attack cells.

## BEING CAUTIOUS WHEN WRITING ABOUT THE FUTURE

Severe weather	will almost certainly will probably is likely to could may might	become more common in the future.
----------------	--	--------------------------------------

It is almost certain that There is a strong possibility that It is likely that There is a possibility that There is a small chance that	the situation will improve in the long term.
---	---

## ADVISING CAUTIOUS INTERPRETATION OF FINDINGS

### (Refer to *Discussing Findings*)

These data must be interpreted with caution because ....

These results therefore need to be interpreted with caution.

However, with a small sample size, caution must be applied, as the findings might not be ....

These findings cannot be extrapolated to all patients.

Although exclusion of X did not ..., these results should be interpreted with caution.

It is important to bear in mind the possible bias in these responses.

When we classify things, we group and name them on the basis of something that they have in common. By doing this we can understand certain qualities and features which they shares as a

class. Classifying is also a way of understanding differences between things. In writing, classifying is often used as a way of introducing a reader to a new topic. Along with writing definitions, the function of classification may be used in the early part of an essay, or longer piece of writing. We list things when we want to treat and present a series of items or different pieces of information systematically. The order of a list may indicate rank importance.

### GENERAL CLASSIFICATIONS

X may be divided into	three main	classes. sub-groups. categories.
-----------------------	------------	--

X may be classified	on the basis of according to depending on in terms of	Y	into Xi and Xii.
---------------------	--	---	---------------------

It has become commonplace to distinguish 'passive' from 'active' forms of X.

There are two main types of memory: declarative and non-declarative memory.

Associative learning can be categorized into classical and operant conditioning.

Bone is generally classified into two types: X bone, also known as ., and Y bone or..

Systems theory distinguishes two different types of X, i.e. social and semantic Xs (Al-Masry 2013).

Aristotle's systematic treatises may be grouped in several divisions: logic, psychological works, physical ....

The works of Aristotle fall under three headings: (1) dialogues and

....; (2) collections of facts and ....; and (3) systematic works.

There are two basic approaches currently being adopted in research into X. One is the Y approach and the other is ....

Generally, spectra typing provide two types of information: band intensity pattern and band number.

### SPECIFIC CLASSIFICATIONS

In the US system, X is graded	according to whether ... on the basis of ... in terms of ...
-------------------------------	--

Thomas (1996) describes	four basic kinds of validity:	logical, content, criterion and construct.
-------------------------	-------------------------------	--

Individuals were classified as belonging to upper or lower categories of

Smith and Jones (2003) argue that there are two broad categories of Y, which are: a) .... and b) ....

For Aristotle, motion is of four kinds: (1) motion which ....; (2) motion which ....; (3) motion which ....;and (4) motion which....

To better understand the mechanisms of X and its therapeutic implications, Smith *et al.*(2011)

classified X into 3 distinct types using ....

### INTRODUCING LISTS

This topic can best be treated under three headings: X, Y and Z.

The key aspects of management can be listed as follows: X, Y and Z.

There are three reasons why the English language has become so dominant.

There are two types of effect which result when a patient undergoes X.

These are ...

The disadvantages of the new approach can be discussed under three headings, which are: ....

The *Three Voices for Mass* is divided into six sections. These are: the *Kyrie, Gloria,*..

Appetitive stimuli have three separable basic functions. Firstly, they .... Secondly, they ....

During his tour of Britain, he visited the following industrial centres: Manchester, Leeds, and ....

This section has been included for several reasons: it is ....; it illustrates ....; and it describes....

The *Mass for Four Voices* consists of five movements, which are: the *Kyrie, Gloria, Credo, Santus* and *Agnus Dei*.

### **REFERRING TO OTHER PEOPLE'S LISTS**

Smith and Jones (1991) list X, Y and Z as the major causes of infant mortality.

Smith (2003) lists the main features of X as follows: it is X; it is Y; and it has Z.

Smith (2003) argues that there are two broad categories of Y, which are: a) . and b)

Smith (2003) suggests three conditions for its acceptance. Firstly, X should be .... Secondly, it needs to be.... Thirdly, .....For Aristotle, motion is of four kinds: (1) motion which ....; (2) motion which ....; (3) motion which ....; and (4) motion which...

### **COMPARING AND CONTRASTING**

By understanding similarities and differences between two things, we can increase our understanding and learn more about both. This usually involves a process of analysis, in which we compare the specific parts as well as the whole. Comparison may also be a preliminary stage of evaluation. For example, by comparing specific aspects of A and B, we can decide which is more useful or

valuable. Many paragraphs whose function is to compare or contrast will begin with an introductory sentence expressed in general terms.

**INTRODUCTORY SENTENCES: DIFFERENCES**

X is different from Y in a number of respects.

X differs from Y in a number of important ways.

There are a number of important differences between X and Y.

Women and men differ not only in physical attributes but also in the way in which they ....

Smith (2003)	found observed	distinct significant notable considerable major only slight	differences between X and Y.
--------------	-------------------	--	---------------------------------

Jones (2013) found dramatic differences in the rate of decline of X between Y and Z.

Areas where significant differences have been found include X and Y.

The nervous systems of X are significantly different from those of Y in several key features.

**INTRODUCTORY SENTENCES: SIMILARITIES**

The mode of processing used by the right brain	is similar to that is comparable to that is comparable in complexity to that	used by the left brain.
--	--	-------------------------

There are a number of similarities between X and Y.

The effects of X on human health are similar to those of Y.

Both X and Y generally take place in a 'safe environment'.

Numerous studies have compared Xs in humans and animals and



found that they are essentially identical.

**COMPARISON WITHIN ONE SENTENCE**

Oral societies tend to be more concerned with the present	whereas while	literate societies have a very definite awareness of the past.
---	------------------	--

Whereas While	oral societies tend to be more concerned with the present,	literate societies have a very definite awareness of the past.
------------------	--	--

In contrast to oral communities, it is very difficult to get away from *calendar* time in literate societies. Compared with people in oral cultures, people in literate cultures organize their lives around clocks and calendars.

This interpretation	contrasts with that differs from that is different from that	of Smith and Jones (2004) who argue that ...
---------------------	--	--

**COMPARISON WITHIN ONE SENTENCE (Comparative forms)**

Women are faster/slower than men at certain precision manual tasks, such as ...

Women tend to perform better/worse than men on tests of perceptual speed.

Further, men are more/less accurate in tests of target-directed motor skills.

Women are more/less likely than men to suffer aphasia when the front part of the brain is damaged.

Adolescents are less likely to be put to sleep by alcohol than adults.

Women tend to have greater/less verbal fluency than men.

In the trial, women made fewer errors than men.

The corpus callosum, a part of the brain connecting the two hemispheres, may be more/less extensive in women.

### INDICATING DIFFERENCE ACROSS TWO SENTENCES

It is very difficult to get away from calendar time in literate societies.	By contrast, In contrast, On the other hand,	many people in oral communities have little idea of the calendar year of their birth.
--	--	---

### INDICATING SIMILARITY ACROSS TWO SENTENCES

Young children learning their first language need simplified input.	Similarly, Likewise, In the same way,	low level adult L2 learners need graded input supplied in most cases by a teacher.
---	---	--

### Defining Terms

In academic work students are often expected to give definitions of key words and phrases in order to demonstrate to their tutors that they understand these terms clearly. Academic writers generally, however, define terms so that their readers understand exactly what is meant when certain key terms are used. When important words are not clearly understood misinterpretation may result. Infact, many disagreements (academic, legal, diplomatic, personal) arise as a result of different interpretations of the same term. In academic writing, teachers and their students often have to explore these differing interpretations before moving on to study a topic

### INTRODUCTORY PHRASES:

It is necessary here to clarify exactly what is meant by ....

This shows a need to be explicit about exactly what is meant by the word X.

X is a term frequently used in the literature, but to date there is no consensus about

There is a degree of uncertainty around the terminology in ....

### SIMPLE THREE-PART DEFINITIONS

A university is	an institution	where knowledge is produced and passed on to others
Social Economics may be defined as	the branch of economics	[which is] concerned with the measurement causes and consequences of social problems.
Research may be defined as	a systematic process	which consists of three elements or components: (1) a question, problem, or hypothesis, (2) data, and (3) analysis and interpretation of data.
Braille is	a system	of touch reading and writing for blind people in which raised dots on paper represent the letters of the alphabet.

### GENERAL MEANINGS OR APPLICATION OF MEANINGS

The term X refers to ....

The term X encompasses A), B), and C).

X can be defined as .... It encompasses ....

X can be loosely described as a correlation.

The term X has come to be used to refer to ....

The term X is generally understood to mean ....

The term X has been applied to situations where students ....

In the literature, the term tends to be used to refer to ....

The broad use of the term X is sometimes equated with ....

Whereas X refers to the operations of ....., Y refers to the ....

The term disease refers to a biological event characterised by .....

The term X is a relatively new name for a Y, commonly referred to....

In broad biological terms, X can be defined as any stimulus that is ...

Defined as XYZ, obesity is now considered a worldwide is associated with...

### **INDICATING DIFFICULTIES IN DEFINING A TERM**

A generally accepted definition of X is lacking.

Unfortunately, X remains a poorly defined term.

The term X embodies a multitude of concepts which ....

A further definition is given by Smith (1982) who describes ....

In the field of language teaching, various definitions of X are found.

Smith (2001) identified four abilities that might be subsumed under the term X: a) ...

Although differences of opinion still exist, there appears to be some agreement that X refers to ....

X is a commonly-used notion in language learning and yet it is a concept difficult to define precisely.

### **SPECIFYING TERMS THAT ARE USED IN AN ESSAY OR THESIS**

In the present report, X was therefore defined in terms of ...

In this essay, the term X will be used in its broadest sense to refer to all..

In this paper, the term that will be used to describe this phenomenon is X.

In this dissertation, the terms X and Y are used interchangeably to

mean

Throughout this thesis, the term education is used to refer to informal systems as well as .....

While a variety of definitions of the term X have been suggested, this paper will use the definition first suggested by Smith (1968) who saw it as ....

### **REFERRING TO PEOPLE'S DEFINITIONS: AUTHOR PROMINENT**

For Smith (2001), fluency means/refers to ....

Smith (2001) uses the term 'fluency' to refer to ....

Smith (1954) was apparently the first to use the term ....

The term 'fluency' is used by Smith (2001) to refer to ....

Macro-stabilization policy is defined by Smith (2003: 119) as '.... ....'

This definition is close to those of Smith (2012) and Jones (2013) who define X as..

In 1987, sports psychologist John Smith popularized the term 'X' to describe..

According to a definition provided by Smith (2001:23), fluency is 'the maximally ....

Aristotle defines the imagination as 'the movement which results upon an actual sensation.'

One of the first people to define nursing was Florence Nightingale (1860), who wrote: '.... ....'

Chomsky writes that a grammar is a 'device of some sort for producing the .....' (1957, p.11).

Smith, has shown that, as late as 1920, Jones was using the term 'X' to refer to particular ....

The term 'matter' is used by Aristotle in four overlapping senses. First, it is the underlying .....

Secondly, it is the potential which ....

Smith *et al.* (2002) have provided a new definition of health: 'health is a state of being with physical, cultural, psychological .....

## Referring to people's definitions: author non-prominent

Validity is the degree to which an assessment process or device measures what it is intended to measure (Smith *et al.*, 1986)

### DESCRIBING TRENDS AND PROJECTIONS

A trend is the general direction in which something is developing or changing over time. A projection is a prediction of future change. Trends and projections are usually illustrated using line graphs in which the horizontal axis represents time. Some of the language commonly used for writing about trends and projections is given below.

#### DESCRIBING TRENDS

The graph shows that there has been a Figure 2 reveals that there has been a	slight gradual slow steady marked steep sharp	increase rise decrease fall decline drop	in the number of divorces in England and Wales since 1981.
--	---	---	--

#### DESCRIBING HIGH AND LOW POINTS IN FIGURES

The number of live births outside marriage reached a peak during the second world war. The peak age for committing a crime is 18.

Oil production peaked in 1985.

Gas production reached a (new) low in 1990.

#### PROJECTING TRENDS

The number of Xs The amount of Y The rate of Z	is projected to is expected to is likely to will probably	decline steadily drop sharply level off	after 2020.
--	--	--	-------------

## **Describing Quantities**

The language for writing about quantities can be a complex area for non-native speakers because there are many combinations of short grammar words, such as prepositions and pronouns, and these can easily be confused. Many of the phrases given below also contain approximates such as:

*nearly, approximately, over half, less than, just over.*

## **DESCRIBING RATIOS AND PROPORTIONS**

*The proportion of live births outside marriage reached one in ten in 1945.*

*The proportion of the population attending emergency departments was 65% higher in X than ....*

Singapore has *the highest proportion* of millionaire households.

East Anglia had *the lowest proportion* of lone parents at only 14 per cent.

The annual birth rate dropped from 44.4 to 38.6 per 1000 per annum.

## **DESCRIBING FRACTIONS**

*Over half of those* surveyed indicated that ....

Of the 148 patients who completed the questionnaire, *just over half* indicated that ....

*Approximately half of those* surveyed did not comment on ....

*Nearly half of the respondents* (48%) agreed that ....

*Less than a third of those* who responded (32%) indicated that ....

The number of first marriages in the United Kingdom fell *by nearly two-fifths*.

## **DESCRIBING PERCENTAGES**

The response rate was *60% at six months* and 56% at 12 months.

Returned surveys from 34 radiologists yielded *a 34% response rate*.

70% of those who were interviewed indicated that ...

Since 1981, England has experienced an 89% increase in crime.

The mean income of the bottom 20 percent of U.S. families declined from \$10,716 in 1970 to ...

X found that of 2,500 abortions, 58% were in young women aged 15-24, of whom 62% were ...

He also noted that less than 10% of the articles included in his study cited ...

In 1960 just over 5% of live births in 1960 were outside marriage.

### DESCRIBING AVERAGES

This figure can be seen as the average life expectancy at various ages.

The proposed model suggests a steep decline in mean life expectancy.

Roman slaves probably had a lower than average life expectancy.

The average of 12 observations in the X, Y and Z is 19.2 mgs/m ...

The mean score for the two trials was subjected to multivariate analysis of variance to determine ...

The mean income of the bottom 20 percent of U.S. families declined from \$10,716 in 1970 to ...

### DESCRIBING RANGES

Estimates of X range from 200,000 to 700,000 and up to a million or more.

The respondents had practiced for an average of 15 years (range 6 to 35 years).

The participants were aged 19 to 25 and were from both rural and urban backgrounds.

They calculated ranges of journal use from 10.7%-36.4% for the humanities, 25%-57% for ...

Rates of decline ranged from 2.71- 0.08 cm day (Table 11) with a mean of 0.97 cm per day.

The evidence shows that life expectancy from birth lies in the range of twenty to thirty years.



Between 575 and 590 meters depth the sea floor is extremely flat, with an average slope of ....

The mean income of the bottom 20 percent of U.S. families declined from \$10,716 to \$9,833.

### Explaining Causality

A great deal of academic work involves understanding and suggesting solutions to problems. At postgraduate level, particularly in applied fields, students search out problems to study. In fact, one could say that problems are the raw material for a significant proportion of academic activity. However, solutions cannot be suggested unless the problem is fully analyzed, and this involves thorough understanding of the causes. Some of the language that you may find useful for explaining causes and effects is listed below.

#### VERBS INDICATING CAUSALITY

Lack of protein	may cause can lead to can result in	mental disability.
Scurvy is a disease	caused by resulting from stemming from	lack of vitamin C.
Much of the instability in X	stems from	the economic effects of the war.
Low levels of chlorine	can give rise to	high blood pressure.

#### Nouns indicating causality

The most likely causes of X are poor diet and lack of exercise.

The *causes* of X have been the subject of intense debate within ....

A *consequence* of vitamin A deficiency is blindness.

X can have profound health *consequences* for older people.

Physical activity is an important *factor* in maintaining fitness.

Many other medications have an *influence* on cholesterol levels.

Another *reason* why Xs have declined is that ....

### Prepositional phrases indicating causality

200,000 people per year become deaf	owing to because of as a result of as a consequence of	a lack of iodine.
-------------------------------------	---	-------------------

### Sentence connectors indicating causality

If undernourished children do survive to become adults, they have decreased learning ability.	Therefore, Consequently, Because of this, As a result (of this),	when they grow up, it will probably be difficult for them to find work..
---	---	--

### Adverbial phrases indicating causality

Malnutrition leads to illness and a reduced ability to work in adulthood, The warm air rises above the surface of the sea,	thus thereby	perpetuating the poverty cycle. creating an area of low pressure.
---	-----------------	--

### Other examples

X and Y are important driving factors of Z.

As a consequence of X , it appears that Y alone is not the causative factor of...

Extreme loneliness is a risk factor for X.

X is almost as strong a risk factor for disability as Y.

X is generally seen as a factor strongly related to Y.

Due to X and Y, inflowing surface water becomes more dense as it...

The mixing of X and Y exerts a powerful effect upon Z through.....

The study found that loneliness has twice the impact on death as obesity does Loneliness can have profound health consequences for older people.

## **Possible cause and effect relationships expressed tentatively**

This suggests a weak link may exist between X and Y.

The human papilloma virus is linked to most cervical cancer.

The use of X may be linked to behavior problems in ...

There is some evidence that X may affect Y.

The findings indicate that regular exercise could improve cognitive function in people at risk of ....

It is not yet clear whether X is made worse by Y.

X may have been an important factor in ...

X may have contributed to the increase in ...

X may have played a vital role in bringing about ....

X may have been caused by an increase in ...

In the literature, X has been associated with Y.

X in many cases may be associated with certain bacterial infections.

A high consumption of X could be associated with infertility.

### **Giving Examples as Support**

Writers may give specific examples as evidence to support their general claims or arguments. Examples can also be used to help the reader or listener understand unfamiliar or difficult concepts, and they tend to be easier to remember. For this reason, they are often used in teaching. Finally, students may be required to give examples in their work to demonstrate that they have understood a complex problem or concept. It is important to note that when statements are supported with examples, the explicit language signaling this may not always be used.

### **Examples as the main information in a sentence**

A An	well-known notable classic useful important	example of X is .....
---------	---	-----------------------

For example, the word 'doctor' used to mean a 'learned man'.

For example, Smith and Jones (2004) conducted a series of semi-structured interviews in ....

Young people begin smoking for a variety of reasons. They may, for example, be influenced by .....

An example of this is the study carried out by Smith (2004) in which ..

This is exemplified in the work undertaken by ....

Another example of what is meant by X is ....

The effectiveness of the X technique has been exemplified in a report by Smith et al (2010)

This distinction is further exemplified in studies using ....

This is certainly true in the case of ....

In a similar case in America, Smith (1992) identified ....

This can be seen in the case of the two London physics laboratories which ....

This is evident in the case of ....

The evidence of X can be clearly seen in the case of ....

X is a good illustration of ....

This can be illustrated briefly by ....

X illustrates this point this point clearly.

By way of illustration, Smith (2003) shows how the data for ....

These experiments illustrate that X and Y have distinct functions in ....

### **Examples as additional information in a sentence**

Young people begin smoking for a variety of reasons, *such as* pressure from peers and the role model of parents. Pavlov found that if some other stimulus, *for example* the ringing of a bell, preceded the food, the dog would start salivating.

In Paris, Gassed kept in close contact with many other prominent scholars, *such as* Kepler, Galileo, Hobbes, and Descartes.

The prices of resources, *such as* copper, iron ore, oil, coal and aluminum, have declined in real terms over the past 20 years.

Many diseases can result at least in part from stress, *including:* arthritis, asthma, migraine, headaches and ulcers.

## **Reporting cases as support**

Overall, these cases support the view that ...

This case has shown that ....

This has been seen in the case of ....

The case reported here illustrates the ....

This case study confirms the importance of ....

The evidence presented thus far supports the idea that ....

This case demonstrates how X used innovative marketing strategies in ..

As this case very clearly demonstrates, it is important that ....

This case reveals the need for further investigation in patients with ....

This case demonstrates the need for better strategies for ....

In support of X, Y has been shown to induce Y in several cases (Smith *et al.*).

Recent cases reported by Smith *et al.* (2013) also support the hypothesis that

## **Signaling Transition**

Previewing what is to follow in a paper or dissertation is like showing a map to a driver; it enables them to see where they are going. So it is useful to think of a preview section as a 'road map' for the reader. It must be accurate, but it must be easy to follow.

Writers are also expected to indicate to the reader when they are moving from one topic to another, or from one section of text to another. These are known as transition statements and examples of these, together with some previewing statements, are given below.

## **Previewing sections of text**

The purpose of this chapter is to review the literature on X. It begins by..

This introductory section provides a brief overview of .... It then goes on to ....

This part of the thesis discusses the findings which emerged from the statistical analysis presented in the previous chapter. This chapter

describes and discusses the methods used in this investigation. The first section .... The

second part moves on to describe in greater detail the ....

The final chapter of this dissertation is divided into two parts. The first ..

This chapter is divided into four main sections, each of which presents the results relating to one of the research questions. The structure and biological functions of Xs will be discussed in the forthcoming sections.

### **Introducing a new topic or aspect of a topic**

As regards X, ....

With respect to X, ....

With regard to X, ....

Regarding X, ....

As far as X is concerned, ....

In terms of X, ....

In the case of X ....

### **Reintroducing a topic**

As was pointed out in the introduction to this paper, ....

As was mentioned in the previous chapter, ....

As explained earlier, ....

As explained in the introduction, it is clear that ....

As described on the previous page, ....

As discussed above, ....

Returning (briefly) to the (subject/issue) of X, ....

### **Moving from one section to the next**

So far this paper/chapter has focused on X. The following section will discuss ....

Before proceeding to examine X, it will be necessary to ....

Before employing these theories to examine X, it is necessary to ....

Having defined what is meant by X, I will now move on to discuss ....  
Having discussed how to construct X, the final section of this paper addresses ways of ....

This section has analyzed the causes of X and has argued that .... The next part of this paper will ....

This chapter has demonstrated that .... It is now necessary to explain the course of ..

Turning now to the experimental evidence on ....

This (chapter) follows on from the previous (chapter), which (examined/laid out/outlined) X.

### **Moving from one section to the next whilst indicating addition, contrast or opposition**

In addition, it is important to ask ....

On the other hand, in spite of much new knowledge about the role of, However, this system also has a number of serious drawbacks.

Despite this, little progress has been made in the ....

### **Previewing a following section**

This raises questions about X which will be discussed in the next chapter.

The next chapter describes synthesis and evaluation of ....

In the section that follows, it will be argued that ....

The following is a brief report on a ....

What follows is a description/outline/account of ...

The problem of X is discussed in the following section.

### **Transition statements for results and discussion**

Turning now to the experimental evidence on ....

Comparing the two results, it can be seen that ....

A comparison of the two results reveals ....

As pointed out in the introduction to this paper, ....

From the previous discussion, it can be seen that ....

It is also worth noting that X is significantly more frequent in ....

The differences between X and Y are highlighted in Table 4.

## Summary and preview

This section has reviewed the three key aspects of ....

This chapter has described the methods used in this investigation and it has ..

In this section, it has been explained that ....The chapter that follows moves on to consider the....

This chapter began by describing X and arguing that .... It went on to suggest that the .... The next chapter describes the procedures and methods used in this investigation.

These analytical procedures and the results obtained from them are described in the next chapter summary of the main findings and of the principal issues and suggestions which have arisen in this discussion are provided in the next chapter, which ... .

## Writing about the Past

Writing about the past in English is made difficult by the rather complex tense system. However, the phrases grouped below give an indication of the uses of the main tenses in academic writing. For comprehensive explanation of the uses of the various tenses you will need to consult a good English grammar book. A good recommendation is *Practical English Usage* by Michael Swan, Oxford University Press.

### Time phrases associated with the use of the simple past tense: specific times or periods of time in the past, completed

During the Nazi period, Between 1933 and 1945, From 1933 to 1945, In the 1930s and 1940s,	restrictions were placed on German academics.
For centuries, In the second half of the 19th century, At the end of the nineteenth century,	church authorities placed restrictions on academics.
Following World War I, In 1999,	Fleming actively searched for anti-bacterial agents. Fleming was named one of the <i>100 Most Important People of the century</i> .



## **Time phrases associated with the use of the present perfect tense: past and present connected**

To date, little evidence has been found associating X with Y.

Up to now, the research has tended to focus on X rather than on Y.

Since 1965, these four economies have doubled their share of world production and trade.

So far, three factors have been identified as being potentially important: X, Y, and Z.

Until recently, there has been little interest in X.

Recently, these questions have been addressed by researchers in many fields.

In recent years, researchers have investigated a variety of approaches to X but ....

More recently, literature has emerged that offers contradictory findings about ....

The past decade has seen the rapid development of X in many ....

Over the past few decades, the world has seen the stunning transformation of X, Y, Z.

Over the past century there has been a dramatic increase in ....

Writing about the past in English is made difficult by the rather complex tense system. However, the phrases grouped below give an indication of the uses of the main tenses in academic writing. For comprehensive explanation of the uses of the various tenses you will need to consult a good English grammar book. A good recommendation is *Practical English Usage* by Michael Swan, Oxford University Press.

## **The present perfect tense may also be used to describe research or scholarly activity that has taken place recently**

Several studies have revealed that ....

Previous studies of X have not dealt with ....

A considerable amount of literature has been published on X.  
There have been several investigations into the causes of illiteracy (Smith, 1985; Jones, 1987).  
The new material has been shown to enhance cooling properties (Smith, 1985, Jones, 1987).  
Invasive plants have been identified as major contributing factors for the decline of  
The relationship between a diet high in fats and poor health has been widely investigated Smith,1985, Jones, ....

**For reference to single investigations or publications in the past  
the simple past tense is used**

In 1975, Smith *et al.* published a paper in which they described ....  
In 1990, Patel *et al.* demonstrated that replacement of H<sub>2</sub>O with heavy water led to  
In the 1950s, Gunnar Myrdal pointed to some of the ways in which .... (Myrdal, 1957)  
In 1981, Smith and co-workers demonstrated that X induced in vitro resistance to..  
In 1984, Jones *et al.* made several amino acid esters of X and evaluated them as ....  
An experimental demonstration of this effect was first carried out by  
The first experimental realization of ....., by Smith *et al.* [12], used a ....  
The first systematic study of X was reported by Patel *et al.* in 1986.  
Erythromycin was originally isolated from X in a soil sample from .... (Wang *et al.*, 1952).  
Smith and Jones (1994) were the first to describe X, and reported that  
Thirty years later, Smith (1974) reported three cases of *Candida Albicans* which ....

## A NOTE ON ACADEMIC STYLE

The principal characteristics of written academic style are listed below.

### 1. Evidence-based

Perhaps the most important distinguishing feature of written academic style is that it is evidence based. Writers support their arguments and claims with evidence from the body of knowledge relevant to their discipline. In addition, any research that is undertaken must make reference to previous work in the field. As a result, academic texts are rich in attributions to other writers and references to previous research, as seen in the examples below:

- Previous studies have shown that ....
- These sources suggest that from the fifth century onwards .....
- According to the 1957 Annual Medical report, the death of the 960 inhabitants...
- However, as has been shown elsewhere (e.g. Smith, 1992), the increase in...

For further examples, refer to the section on *Referring to the Literature* in this document. In addition, general propositions are usually supported with real examples.

- This can be seen in the case of ....
- A good example of this can be found in ....

### 2. Words of classical origin

Unlike everyday English, academic writing is characterized by a high frequency of words of classical origin (Greek and Latin). The main reason for this is that Latin was the *lingua academic* during the European renaissance; in other words, it was the international language of scholars. Even up until relatively recently, great works of science, such as Isaac Newton's *Philosophia Naturalis Principia Mathematica* (1687), were written in Latin.

<b>everyday words</b>	<b>academic words</b>
worry	concern
story	account
get rid of	eradicate
a lot of	considerable
not enough	insufficient
trouble	difficulty
big	significant
way (of doing)	method
bring together	synthesize
thing	object

Even where academic texts were written in English, words of classical origin were used for concepts and phenomena for which there was no equivalent in English. Although the *lingua academica* of today is English, writers of academic English still tend to use words which are derived from Latin, and also, mainly through Latin, from Greek.

There are also some changes to grammatical words (though these are not of classical origin):

### **3. Cautious**

Academic writers are careful about the claims they make: they take care not to appear certain where some doubt may exist, and they are careful not to over-generalize. An example of this kind of transformation can be seen below. The second sentence is in academic style:

- Drinking alcohol causes breast cancer in women. →
- Some studies suggest that drinking alcohol increases the risk of breast cancer.

For more examples of this kind of language, refer to the section on ***Being Cautious***.

### **4. Impersonal**

In the interests of objectivity, academic writers tend to remove themselves from the writing. The focus is on 'what' happened, 'how' it was done and 'what' was found. The 'who' (the writer) is not

normally given very much attention. This is one of the reasons why personal pronouns ('I' and 'we') tend not to be used. In addition, academic texts rarely address the reader directly and the pronoun normally used for this, 'you', is avoided.

- *You could say that Churchill made some catastrophic decisions early in the War* →

- *It can be said that Churchill made some catastrophic decisions early in the War*

There are some exceptions: in certain disciplines, it may be appropriate for a writer to explain their personal interest in the research area. In some disciplines, the researcher may participate in the research as a participant-observer. In these cases, 'I' will be used. The example below, which illustrates the former situation, is taken from a dissertation in History.

*I became interested in X after reading ..... I hope to convey some of my fascination for the subject, as well as expressing my admiration of the artistic achievements of those involved.*

In research undertaken by teams, for example in medicine and science, it is common for the research to be reported using the personal pronoun 'we'.

## **5. Nominalization**

There is a tendency for academic writers to transform verbs (actions) into nouns. In the example below, the verb 'abandoned' becomes the abstract noun 'abandonment'.

- *Unwanted Roman children were generally abandoned in a public place.* →

- *The abandonment of unwanted Roman children generally occurred in a public place.*

As a result of this kind of transformation, academic writing is characterized by long noun phrase constructions, as in: 'the abandonment of unwanted Roman children'. In certain cases, these nominalized forms can become long and complex:

*the effect of reducing aggressiveness by producing an ACTH-mediated condition of decreased androgen levels.* Although this kind of construction is considered normal in scientific writing, unless the reader is familiar with the constructions, it does make reading difficult as there are so many pieces of information to process in the one sentence. There is an argument that too much nominalization should be discouraged.

## **6. Rhetorical questions**

Questions to introduce significant new ideas are avoided, and are replaced with statements:

- *Is the welfare system good or not? →*
- *It is important to consider the effectiveness of the British welfare system.*

## **7. Contracted forms avoided**

Contracted forms (e.g. *it's, don't, isn't, aren't*) should not be used in academic writing. The only exception would be if you retranscribing a recorded conversation or interview.

## **8. Precise and detailed**

Last of all, one of the most noticeable features of academic writing is that it is very precise and detailed. This relates to the setting out and development of the thinking and the ideas as well as to the language used in the writing.

Your spell checker will only indicate words that are misspelt and which it does not recognize. However, if a misspelling results in a word which has another meaning or use, the spellchecker will not show this to you. Here is a list of words which are commonly confused:

### **Abbreviation/acronym**

An *abbreviation* is a shortened form of a word or phrase. Usually,

but not always, it consists of a letter or group of letters taken from the word or phrase. *Dr.* and *Prof.* are common examples. An *acronym* is an abbreviation formed from the initial components in a phrase or a word. These elements in turn form a new word: *NATO*, *Benelux*, *UNESCO*.

**affect/effect**

*Affect* is a verb, e.g. *A affects B*;

*Effect* is a noun and is therefore always used after an article/determiner ('an' or 'the'/'this'), e.g. *The Greenhouse Effect*.

**compliment/complement**

*Compliment* (verb) means to praise someone. *Complement* (verb) means to complete something in away that makes it very good. Both words can also be used as nouns.

**comprise/consist**

Both words mean 'to be made up of', but only *consist* is accompanied by *of*.

**discrete/discreet**

*Discrete* is an adjective which means 'separate' or 'distinct'.  
*Discreet* is an adjective which means 'to keep silent or tactful about something'.

**formerly/formally**

*Formerly* means 'earlier'. *Formally* means 'conventionally' or 'officially'.

**i.e./e.g.**

*i.e.* is the abbreviation for *id est*. which mean 'that is' or 'in other words'.

*e.g.* is the abbreviation for *exempli gratia* which has the same meaning as 'for example' and 'for instance'.

**its/it's**

*its* - without an apostrophe - is a possessive determiner similar to 'my' or 'your' .

*it's* is a contracted form of 'it is' or 'it has' . Note, however, that

contracted forms are avoided in academic writing.

**later/latter**

*Later* is an adverb which means 'at an advanced point of time'.  
*Latter* is an adjective used to refer to items listed in a text. It means 'most recently mentioned'; in other words, the last item.

**practice/practise**

In British English, *practice* is a noun and *practise* is a verb.  
American English allows both spellings for both forms.

**precede/proceed**

*Precede* means 'to come before'. *Proceed* means 'to go forward' or 'to begin to carry out'.

**principle/principal**

*Principle* is a noun which means 'a basic belief, theory or rule'.  
*Principal* is an adjective which means 'main' or 'most important'.

**there/their**

*There* is used to indicate the existence of something. *Their* is used to indicate possession, i.e. if something belongs to someone or something.

**prescribe/proscribe**

*Prescribe* means to advise or authorize the use of something.  
*Proscribe* means to forbid or to restrict.

**A note on British and US spelling**

The most common difference which is noticed in academic writing concerns verbs which end in *ise/yse* Br. or *ize/zye* US:

- *analyse* Br. v *analyze* US.
- *industrialise* Br. v *industrialize* US.

This difference also affects the nouns derived from the verbs:

- *organisation* Br. v *organization* US.
- *globalisation* Br. v *globalization* US.

Another noticeable difference relates to words ending in *re*:

- *centre* Br. v *center* US.
- *metre* Br. v *meter* US.



British	American	British	American
Aeroplane	Airplane	Foetus	Fetus
Analogue	Analog	Instalment	Installment
Behaviour	Behavior	Labour	Labor
Catalogue	Catalog	Paediatric	Pediatric
Colour	Color	Plough	Plow
Connection	Connexion	Programme	Program
Defence	Defense	Rigour	Rigor
Endeavour	Endeavor	Skeptical	Skeptical
Encyclopaedia	Encyclopedia	Skilful	Skillful
Fibre	Fiber	Travelled	Traveled

If you are writing for a British university or a British journal, you should use the *British* spelling.

### PUNCTUATION

As the purpose of punctuation is to make written English easier to read and to make the meaning clear and unambiguous, good, accurate punctuation is important in academic writing. The following notes highlight points of particular relevance to academic writing.

#### 1. Full stop .

- To indicate the end of a sentence
- To indicate an abbreviation such as *etc.*, *et al.* (not always used)
- To indicate an omission in a quoted text [ ... ]

#### 2. Comma ,

- To separate two main parts of a sentence joined by words such as *and*, *or*, *but*,

- To separate a dependent part of a sentence (beginning with words such as *although*, *when*, *because*) from the main part, particularly if the dependent part comes first in the sentence
- To indicate additional information, *however relevant it may be*, in a sentence (parenthesis)

- To indicate a non-defining relative clause, *which simply provides additional information*, in sentence

- To separate items in a list such as *clauses*, *phrases*, *nouns*, *adjectives*, and *adverbs*

### 3. Colon:

- To introduce an explanation: *The reason the experiment failed was obvious: the equipment was faulty.*
- To introduce a list, particularly a grammatically complex list: see the example below under *semi-colon*
- To introduce a direct quotation, particularly a long one: *Jones (2003) states that: ‘’*

### 4. Semi-colon ;

- To separate two sentences that are very closely connected in meaning (optional, in place of a full stop): *Some students prefer to write essays; others prefer to give presentations.*
- To separate clearly items in a grammatically complex list: *For Aristotle, motion is of four kinds: (1) motion which ....; (2) motion which ....; (3) motion which ....; and (4) motion which....*

### 5. Quotation marks ‘ ’ / “ ”

- To indicate a direct quotation
- To highlight words or phrases used in a special or unusual way: *Quotation marks are also called ‘inverted commas’.*

**NB** Single quotation marks now seem to be more commonly used than double. For quotations within quotations, use double quotation marks inside single (or single inside double).

### 6. Dash (-)

- Generally avoid in formal academic writing. Replace by colon, semi-colon, or brackets, as appropriate.

Articles use in English is a very complex area. However, there are a few simple rules which will help you in many situations and these are explained below:

#### 1. Singular countable nouns

All singular countable nouns are always preceded by a small modifying word known in grammar as a determiner, and this is often

an article (*a/an, the*). Countable words which are common in academic writing and which cause problems for non-native speakers of English, include: *system, model, method, approach, group, problem, effect, level, investigation, sector, study, participant, condition, category*

Note that even if these words are preceded by uncountable nouns or adjectives a determiner is still needed:

- *the greenhouse effect, the transport system, the control group*
- *a high level, a systematic approach, a rigorous study, an exploratory investigation*

## **2. Plural countable nouns**

If the writer is thinking about a specific group, then the definite article is normally used: *The books in this collection were published in the 19th or early 20th century.*

Otherwise no article is used:

- *Learners tend to remember new facts when they are contextualized.*

## **3. Uncountable nouns**

Uncountable nouns are not normally accompanied by an article:

- *Science has been defined as a systematic approach to answering questions.*
- *Reliability* is an important quality of any test.

But if they are post-modified by *of.....*, or *which ...* the definite article is normally used:

- *The science of global warming is a complex and controversial area.*
- *The reliability of this instrument is poor.*
- *Chemistry is the science which addresses the composition and behavior of matter.*

## **4. Names**

Names and titles are not normally preceded by the definite article (*the*)

- *Manchester University, Manchester*

But this changes if the noun phrase contains a post-modifying structure (*of..* )

• *The University of Manchester; The United States of America* or if they contain words like *organization, association or institute*.

*The World Health Organization, The American Heart Association, The Royal Society. The SETI Institute*

Apart from these simple rules, the other thing you need to do is to check how noun phrases are used in the texts that you read. Make a mental note of this as you read, or check back to the source text when you are writing.

## STRUCTURE OF SENTENCE

### 1. Simple sentences

In written English, all sentences contain a Subject → Verb structure. The subject always precedes the verb, except in questions where the order is reversed.

<b>S V</b>
An electron is an elementary particle.

The subject may be one word, but it is usually a group of words centered around a noun. The verb, which can indicate an action, a state, or simply serve to link the subject to other information, may also consist of more than one word. Various other sentence elements may be placed before or after the Subject → Verb structure:

### 2. Complex sentences

Many sentences contain more than one Subject → Verb structure, but one of these parts (known grammatically as clauses) will convey the main meaning and will make sense by itself:

Dependent part		Main part	
S	V	S	V
<i>Although findings of recent research have shown</i>	<i>X<sub>1</sub></i>	<i>no controlled studies have been reported</i>	

### 3. Compound sentences

Some sentences may have two Subject → Verb structures and both of these convey meaning that can make sense by itself; in other words, there are two main parts. The two parts may be joined by words like *and, or, but, so*, or by using a semi-colon (;) .

<b>S</b>	<b>V</b>
Supporters of the 'Great Divide' theory	agree that something is lost as well as gained when people become literate,

<b>S</b>	<b>V</b>	
but they	consider	it is worth losing some benefits in order to obtain many others.

**4. Common problems on sentence structure**

Problems occur in writing when dependent parts of sentences are written as complete sentences with a full stop:

- *Whereas literate societies have a very definite awareness of the past. X*
- *Although a number of studies have been undertaken. X*

Problems also occur when two independent parts are written as one sentence without a joining word.

- *Supporters of the 'Great Divide' theory agree that something is lost as well as gained when people become literate, they consider it is worth losing some benefits in order to obtain many others. X*

**PARAGRAPH STRUCTURE**

A pattern that can be identified in many well-written paragraphs is that of a controlling idea followed by supporting information. The controlling idea, sometimes referred to as the *topic sentence*, introduces a new idea, topic, argument or piece of information into the main text. This is then either explained further or supported by subsequent sentences. This structure can be represented schematically thus:

<b>Topic Sentences (new point, expressed in general terms)</b>
Supporting information which may include a combination of: <ul style="list-style-type: none"> <li>▪ An explanation or reason</li> <li>▪ Reference to previous research</li> <li>▪ Examples</li> <li>▪ Quotations</li> <li>▪ Statistics</li> <li>▪ Specific aspects or details</li> <li>▪ A development in time</li> <li>▪ An effect or consequences</li> </ul>

<b>Jargon</b>	<b>Preferred Usage</b>	<b>Jargon</b>	<b>Preferred Usage</b>
a considerable amount of	much	adjacent to	near, next to
a considerable number of		along the lines of	like
a decreased amount of	many	an adequate amount of	enough
a decreased number of	less	an example of	for example
a great deal of		this is the fact that	
a majority of	fewer		10 times as fast
a number of	much	an order of magnitude	
a small number of	most	faster	
absolutely essential	many, some	advise	inform
accounted for by the fact	a few	are of the same opinion	agree
as a result of	essential	as a consequence of	because
as is the case	because	as a matter of fact	in fact (or leave out)
as of this date	because	definitely proved	proved
as to	as happens	despite the fact that	although
at rapid rate	today	due to the fact that	because
at an earlier date	about (or leave out)	during the course of	during, while
at an early date	rapidly, fast	during the time that	while
at no time	previously	effectuate	cause
at present	soon	elucidate	explain
at some future time	never	employ	use
at the conclusion of	now	enclosed herewith	enclosed
at the present time	later, sometime	end result	result
at this point in time	after	endeavor	try
based on the fact that	now	entirely eliminate	eliminate
because of the that fact	now	eventuate	happen
	because	fabricate	make
	because	facilitate	help

by means of	by, with	fatal outcome	death
casual factor	cause	fellow colleague	colleague
cognizant of	aware of	fewer in number	fewer
completely full	full	finalize	end
consensus of opinion	consensus	first of all	first
considerable amount of	much	following	after
contingent upon	dependent on	for the purpose of	for
		for the reason that	because
count the number of	count	from the point of view of	
		future plans	plans
Give an account of	Describe	In the absence of	Without
give rise to	cause	in the event that	if
has been engaged in a study of	has studied	in the most effective manner	most effectively
has a capability of	can	in the not-too-distant future	soon
has the potential	can, may	in the possession of	has, have
having regard to	about	in this day and age	today
immune serum	antiserum	in view of the fact that	because
impact (v.)	affect	inasmuch as	for, as
implement (v.)	start, put into action	incline to the view	think
important essentials	essentials	initiate	begin, start
in number of cases	sometimes	is defined as	is
in a position to	able to	is desirous of	wants
in satisfactory manner	satisfactorily	is detrimental to	harms
in a situation in which	when	is similar to	resembles
in a very real sense	in a sense (or leave out)	it has been reported by smith	smith reported
in almost all	nearly	it has long been	I haven't

instances	always	known that	bothered to look up the reference
in case	if	it is apparent that	apparently, clearly
in close proximity to	close, near	it is believed that	I think (or say who thinks)
in connection with	about concerning	it is clear out	clearly
in light of the fact that	because	it is clear that much additional work will be required for complete understanding	I don't understand it
in many cases	often	it is evident that <i>a</i> produced <i>b</i>	<i>a</i> produced <i>b</i>
in most cases	usually	in generally believed	many think
in my opinion it is not an unjustifiable assumption that	I think	it is my understanding that	I understand that
in only a small number of cases	rarely	it is interest to note that	(leave out)
in order to	to	it is often the case that	often
in relation to	toward, to	i suggested that	I think
in respect to	about	it is worth pointing out in this context that	note that
in some cases	sometimes		
in terms of	about	it may be that	I think, perhaps
it may, however, be noted that	but	protein determinations were performed	proteins were determined
it should be noted that	note that (or leave out)	quantify	measure
it was observed in course of the experiments that	we observed	quite a large quantity of	much



join together	join	quite unique	unique
lacked the ability to	could not	rather interesting	interesting
large in size	large	red in color	red
let me make one thing perfectly clear	a snow job is coming	referred to as	called
majority of	most	regardless of the fact that	even though
make reference to	refer to	relative to	about
met with	met	resultant effect	result
militate against	prohibit	root cause	cause
more often than not	usually	serious crisis	crisis
needless to say	(leave out, and consider leaving out what follows it)	should it prove the case that	if
new initiatives	initiatives	smaller in size smaller	
no later than of an efficient nature	efficient	so as to	to
of great theoretical and practical importance	useful	subject matter	subject
of long standing	old	subsequent to	after
of the opinion that	think that	sufficient	enough
on a daily basis	daily	take into consideration	consider
on account of	because	terminate	end
on behalf of	for	the fact of the matter is that	(leave out)
on no occasion	never	the field of chemistry	chemistry
on the basis of	by	the great majority of	most, almost all
on the grounds that	because	the opinion is advanced	I think
on the part of	by, among for	The predominate	most
on those occasions in which	when	The question as to whether	whether

our attention has been called to	we belatedly discovered the fact that	The reason is because	Because
owing to the fact that	because	The vast majority of	Most, almost all
perform	do	There is reason to believe	I think
place a major emphasis on	stress, emphasize	They are the investigators who	They
pooled together	pooled	This result would	The result
presents a picture similar to	resembles	Seem to indicate	Indicates
previous to	before	Through the use of	By, with
prior to	before		
To the fullest possible extent	fully	We wish to thank	We thank
Transpire	Happen	What is the explanation of	Why
Ultimate	Last	Whether or not to	Whether to
Unanimity of opinion	Agreement	With a view to	To
Until such time	That	With reference to	About
Utilization	use	With regard to	Concerning, about (or leave out)
Utilize	Use	With respect to	About
Very unique	unique	With the exception of	Except
Was of the opinion that	Believed	With the result that	So that
Ways and means	Ways, means (both)	Within the realm of possibility	possible
We have insufficient knowledge	We do not know		

## REFERENCES

1. Ackoff, Russell L. (1961). *The Design of Social Research*, University of Chicago Press: Chicago.
2. Ackoff, Russell L., *Scientific Method*, New York: John Wiley & Sons, 1962.
3. Allen, T. Harrell, (1978). *New Methods in Social Research*, Praeger Publication: New York.
4. Allen, T. Harrell, *New Methods in Social Science Research*, New York: Praeger Publishers, 1978.
5. Amerind Publishing Co. Pvt. Ltd., *Fourth Indian Reprint*, 1976.
6. Anderson, H.H., and Anderson, G.L., *An Introduction to Projective Techniques and Other Devices for Understanding the Dynamics of Human Behaviour*, New York: Prentice Hall, 1951.
7. Anderson, T.W., *An Introduction to Multivariate Analysis*, New York: John Wiley & Sons, 1958.
8. Bailey, Kenneth D., "Methods of Social Research," New York, 1978.
9. Baker, R.P. & Howell, A.C. (1958). *The Preparation of Reports*, Ronald Press: New York.
10. Baker, R.P., and Howell, A.C., *The Preparation of Reports*, New York: Ronald Press, 1938.
11. Bartee, T.C., "Digital Computer Fundamentals," 5th Ed., McGraw-Hill, International Book Co., 1981.
12. Barzun, Jacques & Graff. F. (1990). *The Modern Researcher*, Harcourt, Brace Publication: New York.
13. Barzun, Jacques, and Graff, Henery, F., *The Modern Researcher*, rev. ed., New York: Harcourt, Brace & World, Inc., 1970.
14. Bell, J.E., *Projective Techniques: A Dynamic Approach to the Study of Personality*, New York: Longmans Green, 1948.

15. Bellenger, Danny N., and Greenberg, Barnett A., *Marketing Research-A Management Information Approach*, Homewood, Illinois: Richard D. Irwin, Inc., 1978.
16. Berdie, Douglas R., and Anderson, John F., *Questionnaires: Design and Use*, Metuchen N.J.: The Scarecrow Press, Inc., 1974.
17. Berelson Conard & Colton, Raymond. (1978). *Research and Report Writing for Business and Economics*, Random House: New York.
18. Berelson, Bernard, *Content Analysis in Communication Research*, New York: Free Press, 1952.
19. Berenson, Conard, and Colton, Raymond, *Research and Report Writing for Business and Economics*, New York: Random House, 1971.
20. Best, John W., and Kahn, James V., "Research in Education," 5th Ed., New Delhi: Prentice-Hall of India Pvt. Ltd., 1986.
21. Best, John, W. & Kahn, James. (1986). *Research in Education*, 5 Th ed., Prentice-Hall of India Pvt Ltd: New Delhi.
22. Bhattacharya, Srinivas. (1972). *Psychometrics & Behavioural Research*, Sterling Publishers Pvt.Ltd.: New Delhi.
23. Bhattacharya, Srinibas, *Psychometrics & Behavioural Research*, New Delhi: Sterling Publishers Pvt. Ltd., 1972.
24. Bolinger, D. (1976) 'Meaning and memory'. *Forum Linguisticum*.
25. Bowley, A.L., *Elements of Statistics*, 6th ed. London: P.S. King and Staples Ltd., 1937. Selected References and Recommended Readings 391
26. Burgess, Earnest. (1960). *Research Methods in Sociology*, New York Philosophical Library: New York.
27. Burgess, Ernest W., "Research Methods in Sociology" in Georges Gurvitch and W.E. Moore (Ed.), *Twentieth Century Sociology*, New York: New York Philosophical Library, 1949.
28. Chance, William A., *Statistical Methods for Decision Making*, Bombay: D.B. Taraporevala Sons & Co. Pvt. Ltd., 1975.

29. Clover, Vernon T. & Balsley, Howard L. (1984). *Business Research Methods*, Grid, Inc: Columbus.
30. Cochran, W.G., *Sampling Techniques*, 2nd ed. New York: John Wiley & Sons., 1963.
31. Cooley, William W., and Lohnes, Paul R., *Multivariate Data Analysis*, New York: John Wiley & Sons., 1971.
32. Deming, W. Edwards. (1980). *Sampling Designs in Business Research*, John Wiley & Sons: New York.
33. Deming, W. Edwards., *Sample Design in Business Research*, New York: John Wiley & Sons., Inc., 1960.
34. Dennis, Child. (1980). *The Essentials of Factor Analysis*, Rinehart & Winston: New York.
35. Dennis, Child, *The Essentials of Factor Analysis*, New York: Holt, Rinehart and Winston, 1973.
36. Denzin, Norman, *The Research Act*, Chicago: Aldine, 1973.
37. Edwards, Allen L., *Techniques of Attitude Scale Construction*, New York: Appleton-Century-Crofts, 1957.
38. Edwards, Allen, *Statistical Methods*, 2nd ed., New York: Holt, Rinehart & Winston, 1967.
39. Emory, C. William, *Business Research Methods*, Illinois: Richard D. Irwin, Inc. Homewood, 1976.
40. Ferber, R. & Verdoorn, P.J. (1972). *Research Methods in Economics and Business*, The Macmillan Company: New York.
41. Ferber, Robert (ed.), *Handbook of Marketing Research*, New York: McGraw-Hill, Inc., 1948.
42. Ferguson, George A., *Statistical Analysis in Psychology and Education*, 4th ed., New York: McGraw-Hill Book Co., Inc., 1959.
43. Fisher, R.A., *The Design of Experiments*, 7th rev. ed., New York: Hafner Publishing Co., 1960.
44. Fox, James Harold, *Criteria of Good Research*, Phi Delta Kappa, Vol. 39 (March 1958).

45. Fruchter, Benjamin, *Introduction to Factor Analysis*, Princeton, N.J.: D. Van Nostrand, 1954.
46. Giles, G.B., *Marketing*, 2nd ed., London: Macdonald & Evans Ltd., 1974.
47. Godfrey, Arthur, *Quantitative Methods for Managers*, London: Edward Arnold (Publishers) Ltd., 1977.
48. Good, Carter V., and Douglas, E. Scates, *Methods of Research—Educational, Psychological, Sociological*, New York: Appleton-Century-Crofts, Inc., 1954.
49. Goode, William, J. & Hatt, Paul K. (1968). *Methods in Social Research*, McGraw-Hill: New York.
50. Gopal, M.H., *An Introduction to Research Procedure in Social Sciences*, Bombay: Asia Publishing House, 1964.
51. Gopal, M.H., *Research Reporting in Social Sciences*, Dharwar: Karnatak University, 1965.
52. Gorden, Raymond L., *Interviewing: Strategy, Techniques and Tactics*, rev. ed., Homewood, Ill.: Dorsey Press, 1975.
53. Green, Paul E., *Analyzing Multivariate Data*, Hinsdale, Ill.: Dryden Press, 1978.
54. Guilford, J.P., *Psychometric Methods*, New York: McGraw Hill, Inc., 1954.
55. Harnett, Donald L., and Murphy, James L., *Introductory Statistical Analysis*, Philippines: Addison-Wesley Publishing Co., Inc., 1975.
56. Hillway, T., *Introduction to Research*, 2nd ed., Boston: Houghton Mifflin, 1964.
57. Hollander, Myles, and Wolfe, Douglas A., *Nonparametric Statistical Methods*, New York: John Wiley, 1973.
58. Hopkins, A. & Dudley-Evans, A. (1988). 'A genre-based investigations of the discussions sections in articles and dissertation'. *English for Specific Purposes*, 7(2)

59. Hyman Herbert H. et al., (1975). *Interviewing in Social Research*, University of Chicago Press: Chicago.
60. Hyman, Herbert H., et al., *Interviewing in Social Research*, Chicago: University of Chicago Press, 1975.
61. John, Peter W.M., *Statistical Design and Analysis of Experiments*, New York: The Macmillan Co., 1971.
62. Johnson Ellen. (1961). *The Research Report: A Guide for the Beginner*, Ronald Press: New York.
63. Johnson, Rodney D., and Siskin, Bernard R., *Quantitative Techniques for Business Decisions*, New Delhi: Prentice-Hall of India Pvt. Ltd., 1977.
64. JournalPrep.com
65. Karson, Marvin J., *Multivariate Statistical Methods*, Ames, Iowa: The Iowa State University Press, 1982.
66. Kendall, M.G., *A Course in Multivariate Analysis*, London, Griffin, 1961.
67. Kothari, C.R., *Quantitative Techniques*, 2nd ed., New Delhi: Vikas Publishing House Pvt. Ltd., 1984.
68. Lastrucci, Carles L., *The Scientific Approach: Basic Principles of the Scientific Method*, Cambridge, Mass.: Schenkman Publishing Co., Inc., 1967.
69. Leonard Schatzman & Anselm L. Strauss. (1973). *Field Research*, Prentice-Hall Inc.: New Jersey.
70. Maranell, Gary M. (ed.), *Scaling: A Source Book for Behavioral Scientists*, Chicago: Aldine, 1974.
71. Meadows, R., and Parsons, A.J., "Microprocessors: Essentials, Components and Systems," Pitman, 1983.
72. Moroney, M.J., *Facts from Figures*, Baltimore: Penguin Books, 1956.
73. Nagel, Stuart S., and Neef, Marian, *Policy Analysis in Social Science Research*, London: Sage Publications, 1979.

74. Nie, N.H., Bent, D.H., and Hull, C.H., *Statistical Package for the Social Sciences*, New York: McGraw-Hill, 1970.
75. Noether, G.E., *Elements of Nonparametric Statistics*, New York: John Wiley & Sons, Inc., 1967.
76. Ostle, Bernard, and Mensing, Richard W., *Statistics in Research*, 3rd ed., Ames Iowa: The Iowa State University Press, 1975.
77. Payne, Stanley, *The Art of Asking Questions*, Princeton: Princeton University Press, 1951.
78. Roscoe, John T., *Fundamental Research Statistics for the Behavioral Sciences*, New York: Holt, Rinehart and Winston, Inc., 1969.
79. Sinclair, J. (1991) *Corpus, concordance, collocation*. Oxford: Oxford University Press.
80. Swales, J. (1981). *Aspects of article introductions* (Aston ESP Research Report No. 1). Birmingham: Language Studies Unit: University of Aston.
81. Swales, J. (1990). *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press
82. Travers, Robert M.W., *An Introduction to Educational Research*, 4th ed., New York: Macmillan Publishing Co., Inc., 1978.
83. Willemsen, Eleanor Walker, *Understanding Statistical Reasoning*, San Francisco: W.H. Freeman and Company, 1974.
84. Young Pauline V. (1960). *Scientific Social Surveys and Research*, 3<sup>rd</sup> ed., Prentice-Hall: New York.
85. Young, Pauline V., *Scientific Social Surveys and Research*, 3rd ed., New York: Prentice-Hall, 1960



# **Explore Yourself Among World – Class Researchers**

**Publication License: AI 009 20.07.2018.**

**Allowed to print 27.07.2019. Format 70x100 1/16.**

**Headset Times. Offset paper. Rizograph printing method**

**Conditional Printing tab 26.6 Publication tab 14.2**

**Issue 100. Order No. U/29-2019**