



**Y.V.N.R. GOVERNMENT DEGREE COLLEGE**

(NAAC GRADE "B+" CGPA : 2.61)

AFFILIATED TO KRISHNA UNIVERSITY

KAIKALURU - 521 333, KRISHNA DIST. A.P.



*International Webinar on*

# **RESEARCH METHODOLOGY**

(Multidisciplinary)

**On 18<sup>th</sup> & 19<sup>th</sup> NOVEMBER 2021**

**Proceedings of the International Webinar**



Organized By :

**DEPARTMENTS OF PHYSICS, CHEMISTRY** & In Association with IQAC

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### ABOUT THE COLLEGE

Y.V.N.R. Government Degree College, Kaikaluru is a public funded educational institution. This college, popularly known as GDC kaikaluru is located in the world famous wet land, Ramsar, Kolleru Lake. The college has a unique logo with the citation "Knowledge is Power". The citation depicts the ancient adage the "Knowledge is power". The logo is flagged by rising sun, Kolleru Lake, Kolleru fisher men, and Kolleru birds.

The required knowledge to cope with the current trends in the competitive world is being inculcated to the students at various levels by the institute. The students are benefited with the power to sustain in the community. The rising sun in the logo is the symbol of knowledge. Like the sun shining the institute provides the radiance of knowledge to the community. The other parts of the logo i.e., Kolleru birds and Kolleru fisher men are the representations of the community. All of them depict communal approach with enriched knowledge is imparted to the stake holders in the institute.

The college was established in the year 1982. Sri Yerneni Raja Rama Chandar, Yerneni Nagendranath, Yerneni Sitha Devi (Former Education Minister, Govt. of A.P.) and Yerneni family members generously came forward and raised funds from the public for the establishment of this institution. The college development committee secretary Sri Gurajada Narasimha Rao coordinated the activities of the development committee and with in no time with the support of the state government under the Telugu Grameen Kranti Padham, buildings were constructed. With the generous assistance of philanthropists and the elite of the village - Sri Kammlu Vitthal Rao, Sri Rama Raju, Sri Naidu, Sri Undukuri Satyanarayana Raj; CPDC members - Sri Gadiraju Bhaskara Varma, Sri Potluri Vijaya Bhaskar, Sri S. Satyanarayana Murthy, Sri Kare Sarat Babu, Sri B.D. Srinivas, Sri G. Chandra Mohan, Sri G. Udaya Sankar and Government funds, additional class rooms were built.

In the 2017, 2nd Cycle NAAC Accreditation, It is gratifying to see this college maintain a better position than the grade achieved in the previous first cycle by achieving a "B+" grade with 2.61 CGPA in Government Degree Colleges. Achieving this grade involves the hard work of lecturers and students under the leadership of the then principal. That is why the proverb that people become sages if they work hard does not come with ease. Most importantly, due to the efforts of the college governing body CPDC, with the help of donors and financial assistance for the infrastructure, Rs. 2 crores was obtained in RUSA 2.0 by getting a B grade in the 2nd cycle. Class rooms and labs are already under construction under RUSA Funds and the college computer lab is modernized with these funds. It is the result of the efforts of our CPDC.

### WEBINAR CO-ORDINATORS

Dr. K.A. EMMANUEL  
Dr. P. PAUL DIVAKAR

S.G. Lecturer in Chemistry  
S.G. Lecturer in Physics



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### Y.V.N.R. GOVERNMENT DEGREE COLLEGE

KAIKALURU - 521 333, KRISHNA DIST. A.P.

### Chief Patron :

Dr. **POLA BHASKAR** IAS,  
Commissioner Collegiate Education, Vijayawada

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Sri **A. ASIRVADAM**, M.Sc., Dept. of Physics

### THEMES :

- Introduction to Research
- General Research Methods / Characterization Techniques
- Research Methodology- An Overview

### ABOUT THE WEBINAR

Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability. Now a days it is very essential for a researcher to know about the research methodology. There fore this topic is chosen as a theme to bring awareness among the teaching staff, research scholars and post graduate students.

### PLEASE NOTE :

- E-Certificates will be provided to the participants who successfully complete the webinar
  - Registration is FREE and Last date for Registration : 15-11-2021
  - Webinar will be organised through Google meet
  - Registered participants will get the webinar link to your mail id and to your Whatsapp.
  - Online Registration link : <https://forms.gle/HAqVgGywcHTHdudtKA>
- For any queries please contact :

99850 50696, 98481 50912, 99495 49365, 92472 03460

### RESOURCE PERSONS

Inaugural Address : Prof. Dr. **K.B. CHANDRA SEKHAR**  
Vice Chancellor, Krishna University, Machilipatnam

Greetings by : Dr. **R. DAVID KUMAR**  
Joint Director, Collegiate Education, Vijayawada, A.P.

Valedictory Address : Dr. **C. KRISHNA**, R.J.D. GCE,  
Rajamahendravaram

### SPEAKERS

Dr. **ARUL MANIKANDAN** Research Fellow  
National University of Ireland, Galway Ireland

Prof. **PAMU D.**, PhD., Dept. of Physics,  
Indian Institute of Technology, Guwahati, Assam

Dr. **SANTHI RAJU PILLI** Assistant Professor, Chemical  
Engineering, Jazan University, Kingdom of Saudi Arabia

Dr. **DOLLA THARUN**, Post Doc Fellow, Dept., of Civil  
Engineering, Indian Institute of Technology Bombay



### EXECUTIVE COMMITTEE

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Sri N. **SRINIVASA RAO**, H.O.D., Commerce  
Sri **ABDUL GHAFFAR**, Dept. of Commerce  
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Sri B. **BALA SUBRAHMANYAM** Dept. of Computers  
Dr. **JAGANMOHAN RAO**, Dept. of Mathematics  
Dr. K. **PANKAJ KUMAR**, Dept. of English  
Dr. CH. **KISHORE**, Dept. of Telugu

**Y.V.N.R. GOVERNMENT DEGREE COLLEGE, KAIKALURU**



*Invitation*



**INTERNATIONAL WEBINAR ON  
RESEARCH METHODOLOGY**

*You are cordially inviting you  
to the Virtual Inaugural Function  
at 3.00 pm on 18<sup>th</sup> November, 2021*

Chief Patrons :

Dr. **POLA BHASKAR** IAS,  
Comissioner Collegiate Education, Vijayawada

Chief Guest :

Prof. Dr. **K.B. CHANDRA SEKHAR**  
Vice Chancellor, Krishna University, Machilipatnam

Guests of Honour :

Dr. **R. DAVID KUMAR**  
Joint Director, Colligiate Education, Vijayawada, A.P.

Patron :

Sri **D. UDAY PRAKASH**, M.Sc., B.Ed.,  
Vice-Principal



Dr. **B. Raghunatha Reddy**

M.Com., B.Ed., MPhil., Ph.D., Principal  
*will preside over the function*

**Faculty & Students Departments of  
Physics, Chemistry & IQAC Coordinator**  
Y.V.N.R. GOVERNMENT DEGREE COLLEGE, KAIKALURU, KRISHNA DIST., A.P.

**Y.V.N.R. GOVERNMENT DEGREE COLLEGE, KAIKALURU**



*Invitation*



**INTERNATIONAL WEBINAR ON  
RESEARCH METHODOLOGY**

*You are cordially invited to  
the Virtual Valedictory Function  
at 5.00 pm on 19<sup>th</sup> November, 2021*

Chief Patron :

Dr. **POLA BHASKAR** IAS,  
Comissioner Collegiate Education, Vijayawada

Chief Guest :

Dr. **C. KRISHNA**, RJD, CCE,  
Rajamahendravaram

Patron :

Sri **D. UDAY PRAKASH**, M.Sc., B.Ed.,  
Vice-Principal



Dr. **B. Raghunatha Reddy**

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## Y.V.N.R. GOVERNMENT DEGREE COLLEGE KAIKALURU

(NAAC Grade "B+" CGPA : 2.61) Affiliated to Krishna University

Kaikaluru (Mandal) Krishna Dist. Andhra Pradesh, 521333



### International Webinar on Research Methodology 18 -19 November 2021

Day	Time (IST)	Topic	Remarks
Day 1 - 18 November 2021	2.45 PM- 2.55 PM	Welcoming the guests	
	2.55-3.00	Prayer & Lighting the lamp	
	3.00-3. 05	Principal opening marks	
	3.05-3. 10	Greetings by JD garu	
	3.10- 3.15	Introducing the chief guest	Dr. K. Pankaj Kumar
	3.15- 3.25	Inaugural address by the chief guest	
	3.25-3.30	Introducing the speaker 1- Ireland	Sri.A. Ascervadam
	3.30 PM-4.15 PM	Talk 1 <b>Introduction to Research</b> by <b>Dr Arul Manikandan</b> Research Fellow National University of Ireland, Galway Ireland <a href="mailto:Arulmanikandan.n@nuigalway.ie">Arulmanikandan.n@nuigalway.ie</a>	10.05 -10.55 GMT
	4.15-4.20	Introducing Speaker 2	Dr. V. Sandhya
	4.20-5.00	Talk 2 <b>General Research Methods/ Characterization Techniques</b> by <b>Prof Pamu D, PhD</b> Dept., of Physics, Indian Institute of Technology, Guwahati, Assam <a href="mailto:pamu@iitg.ac.in">pamu@iitg.ac.in</a>	IST
	5. 00- 5.10	Closing Remarks and End of Day 1	
Day 2 19 November 2021	2.45 PM -2.50 PM	Introducing the speaker 3	Sri. K. Ramesh
	2.50- 3.40	Talk 3 <b>Research Methodology- An Overview</b> by <b>Dr Santhi Raju Pilli</b> Assistant Professor, Chemical Engineering, Jazan University, Kingdom of Saudi Arabia <a href="mailto:spilli@jazanu.edu.sa">spilli@jazanu.edu.sa</a>	2.00 –2.40 AST Arabia Standard Time
	3.40 - 3.45	Introducing the speaker 4	Ms. D. Lavanya
	3.45 - 4.30	Talk 4 <b>Research Writing (Papers and Thesis)</b> by <b>Dr. Dolla Tharun,</b> Post Doc Fellow, Dept., of Civil Engineering, Indian Institute of Technology Bombay. <a href="mailto:tharun@iitb.ac.in">tharun@iitb.ac.in</a>	IST
	4.30- 4.35	Welcoming the guests	
	4.35- 4.40	Opening remarks by the principal	
	4.40- 4.45	Introducing the chief guest	Sri.G. Raviteja
	4.45- 4.55	Valedictory address by Chief guest	
	4.55- 5.00	Feedback by the participants	
	5.00-5.10	Vote of thanks	Dr. R. Jalababu

## **PREFACE**

Research is a scientific investigation. Investigation means a search for new facts and ideas in any branch of knowledge. Thus, we can say that research is a search for knowledge. Research may be considered as a movement, a movement from the unknown to the known. It is actually a voyage of discovery. Research is carried out for two purposes; one is the discovery of new facts and the second, verification of the old ones. The object of every business organization, of course, is the discovery of new facts, new relationship, and new laws governing the business phenomena. But constant verification of the old concepts is also needed especially in dynamic business environment.

Common sense knowledge, based on the accumulated experiences, prejudices and beliefs of the people is often contradictory and inconsistent. On the other hand, scientific observations are based on verifiable evidence or systematic body of proof that can be cited. For example, some common sense statements are: man is more intelligent than woman; married men remain happier than single people; rural people are more hardworking than urban people etc. Contrary to this, the scientific research or scientific inquiry finds that woman is as intelligent as man; there is no association in happiness and marriage; hard work is not related to environment alone. Thus, a statement based on common sense is just a guess or prejudice or mistaken interpretation, though at times it may be true, wise and a useful bit of knowledge. But it is not based on any scientific evidence. A scientific statement is based on accumulated systematic knowledge through research.

As the title of the webinar deals with the issues of Research Methodology, it is an interdisciplinary research combining the physical sciences with the social sciences which provides adequate, knowledge in turn useful to improve human welfare, and raise living standards of the human beings world-wide.

We acknowledge the overwhelming response (600 participants) received from the faculty and students of different colleges. Further we are grateful and express our sincere gratitude to all the participants especially the internationally renowned resource persons

We are also grateful to the commissioner Dr. Pola Bhaskar IAS, the Joint Director Dr. R.David Kumar swamy, Commissionerate of Colligate Education Vijayawada, the Regional Joint Director, Rajamahendravaram Dr.Ch. Krishna, Principal Dr.B.Raghunatha Reddy, Vice Principal sri.D.day Prakash for their magnanimous support and co-operation towards conduct of the two day International webinar on Research Methodology.

**Dr. K.A. EMMANUEL**  
Webinar Co-ordinator  
Dept. of Chemistry

**Dr. P. PAUL DIVAKAR**  
Webinar Co-ordinator  
Dept. of Physics

## ACKNOWLEDGEMENTS

The Two day International Webinar on “Research Methodology” (IWRM-2021) has been made possible with the support of many technical experts, individuals and organizations both in man power and finance. This support is gratefully acknowledged.

We are very much grateful to our Chief Patron Dr.Pola Bhaska, Commissioner, Collegiate Education, Vijayawada for his constant encouragement given to us in organizing this type of academic activity for the welfare and development of the college.

We owe a deep sense of gratitude to Dr.R.David Kumara swamy, Joint dDirector, Commissionerate college Education, Vijayawada, for his constant Support, valuable guidance in organizing thewebinar in most efficient manner. We are very thankful to Dr.Ch.Krishna, Regional Joint Director, Rajamahendravaram for his precious cooperation in International Webinar.

Our sincere and special thanks go to Dr.B.Raghunatha Reddy, Principal Y.V.N.R Government Degree College , Kaikaluru, Krishna district for his encouragement, co-operation and meticulous guidance at every stage in organising and planning the International Webinar and bringing out this book.

Our deep sense of gratitude to Sri. D.Udaya Prakash, Vice Principal Y.V.N.R Government Degree College , Kaikaluru for his encouragement, in conducting the webinar successfully.

We express our sincere thanks to Dr. S.D.V. Satyanarayana Physical Director of Y.V.N.R Government Degree College , Kaikaluru for his constant support and having taken every responsibility for completing this task through various stages.

We also express our gratitude to Sri. K.Ramesh HOD. Department of Chemistry, Sri.N.Srinivasa Rao HOD Department of Physics for their timely help in organizing the International Webinar in a successful manner.

We also express our deep sense of gratitude to Dr R.Jala Babu IQAC Co-ordinator and Sri. A. Aseervadam Department of Physics for their support in conducting the international webinar in a successful manner.

Our sincere thanks to Ms. Dr. D.Lavanya, HOD, Department of Economics, Dr.V.Sandhya, HOD, Department of Zoology, Sri.G.Raviteja, Lecturer, Department of Zoology who acted as Rapporteurs of various technical sessions of the webinar.

We owe special thanks to Sri. E. Ashok, Office Incharge and his staff for their constant support throughout the Webinar.

We are very much grateful to my colleagues in the Departments of Chemistry, Physics and also Organizing Committee members’ teaching and non-teaching members individually, for their continuous support in making this event successful.

Finally, we thank all the people by names who were directly and indirectly involved in organizing the webinar, though we have not mentioned their names due to paucity of space.

We thank one and all.

**Dr. K.A. EMMANUEL**  
Webinar Co-ordinator  
Dept. of Chemistry

**Dr. P. PAUL DIVAKAR**  
Webinar Co-ordinator  
Dept. of Physics



**Government of Andhrapradesh  
Higher Education Department**



**Dr Pola Bhaskar IAS**  
Comissioner Collegiate Education,  
Vijayawada



*Greetings*

I am pleased to know that the Department of Physics and Chemistry of YVNR Government Degree College, Kakaluru is organizing a Two-Day International Webinar on Research Methodology during 18<sup>th</sup> and 19<sup>th</sup> November 2021.

Research Methodology is very important for the young minds who want to choose their carrer in Research. Much of the importancehas to be given research needed not only in science but also in arts and commerce fields.

I congratulate the organizers of the International Webinar for bringing eminent Professors,

Scientists, Researchers and academicians across the globe to a common platform.I am sure that this programme would turn out to be successful and deliberations will be useful which would provide many insights on the topic chosen.

I believethis International Webinar will be a landmark in the history YVNR Government Degree College, Kakaluru.

With the best wishes

**Dr Pola Bhaskar IAS**





**Government of Andhrapradesh  
Higher Education Department**



**Dr R. David Kumar Swamy**

*Joint Director, Colligate Education,  
Vijayawada, A.P.*



***Greetings***

I am happy to note that the Department of Physics and Chemistry of YVNR Government Degree College, Kakaluru is organizing a Two-Day International Webinar on Research Methodology during 18<sup>th</sup> and 19<sup>th</sup> November 2021.

These types of seminars or webinars are very useful for the young faculty and also student young minds. So starting a dialogue and drawing greater attention are a good start. I hope

this webinar is one such type., as the resource persons are with high academic qualification in the field of research.

I hope the deliberations at the webinar will be of great importance and use to help and create general awareness among the students. I congratulate the organisers and the Principal of the college for conducting the webinar.

I wish all the Best.

**Dr R. David Kumar Swamy**



**Government of Andhrapradesh  
Higher Education Department**



**Dr. Ch. Krishna** RJD, CCE,  
Rajamahendravaram



*Greetings*

I consider it a great privilege to note that the Department of Physics and Chemistry of YVNR Government Degree College, Kakaluru is organizing a Two-Day International Webinar on Research Methodology during 18<sup>th</sup> and 19<sup>th</sup> November 2021.

Research in simple terms refers to search for knowledge. It is a scientific and systematic search for information on a particular topic or issue. It is also known as the art of scientific investigation. Such investigation mind has to be developed in students from their graduation level itself. So the initiation taken up by the college is appreciable.

I believe that it is a memorable and successful event in the history of YVNR GDC Kakaluru AP India.

With the best wishes

**Dr. Ch. Krishna**



**Government of Andhrapradesh  
Higher Education Department**



**Prof K B Chandra Sekhar**

*Vice Chancellor,  
Krishna University, Machilipatnam*



***Greetings***

I am very much delighted to know that the Department of Physics and Chemistry of YVNR Government Degree College, Kakaluru is organizing a Two-Day International Webinar on Research Methodology during 18<sup>th</sup> and 19<sup>th</sup> November 2021.

For one who is preparing himself for a career of carrying out research, the importance of knowing research methodology and research techniques is obvious since the same constitute the tools of his trade. The knowledge of methodology provides good training specially to the new research worker and enables him to do better research. It helps him to develop disciplined thinking or a 'bent of mind' to observe the field objectively. Hence, those aspiring for careerism in research must develop the skill of using research techniques and must thoroughly understand the logic behind them.

I hope the talks at the webinar will be helpful and create general awareness. I congratulate the organisers and the Principal of the college for conducting the webinar.

I wish all the Best.

**Prof K B Chandra Sekhar**



## INTRODUCTION

(Proceedings of the Two-Day International Webinar on “Research Methodology” (IWRM -2021)

Quite frequently these days people talk of research, both in academic institutions and outside. Several research studies are undertaken and accomplished year after year. But in most cases very little attention is paid to an important dimension relating to research, namely, that of research methodology. The result is that much of research, particularly in social sciences, contains endless word-spinning and too many quotations. Thus a great deal of research tends to be futile. It may be noted, in the context of planning and development that the significance of research lies in its quality and not in quantity. The need, therefore, is for those concerned with research to pay due attention to designing and adhering to the appropriate methodology throughout for improving the quality of research. The methodology may differ from problem to problem, yet the basic approach towards research remains the same.

Keeping all this in view, the present webinar is conducted with two clear objectives, viz., (i) to enable researchers, irrespective of their discipline, in developing the most appropriate methodology for their research studies; and (ii) to make them familiar with the art of using different research methods and techniques. It is hoped that the humble effort made in the form conducting the International webinar will assist in the accomplishment of exploratory as well as result-oriented research studies.

The webinar aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Research Methodology.

### **Inaugural Session**

Professor K.B.chandrasekhara Rao, Vice chancellor, Krishna University, Machilipatnem delivered the Inaugural address. In his inaugural address he pointed out that Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. The Advanced Learner’s Dictionary of Current English lays down the meaning of research as “a careful investigation or inquiry specially through search for new facts in any branch of knowledge.”<sup>1</sup> Redman and Mory define research as a “systematized effort to gain new knowledge.”<sup>2</sup> Some people consider research as a movement, a movement from the known to the unknown. It is actually a voyage of discovery.

### **First Technical session: (18 th November 2021)**

The session was chaired by Dr. K.A.Emmanuel, SG Lecturer in Chemistry. Dr. Arul Manikandan, research Fellow, National University of Ireland, Galway Ireland spoke on Introduction to Research. Research is the process of discovering new knowledge to alleviate the problems, thereby leading to society's advancement. This presentation will introduce the audience to the arena of research with special emphasis on experimental research. The presentation will give insight into analysing a problem and segregating its societal, environmental, national, and regional nature. The presentation will provide the audience with a profound understanding of approaching these longstanding problems sequentially to get possible solutions to put away the issues. In this presentation, the audience will be given an idea to screen the excellent research articles, thereby making them a specialist in their areas of research.

### **Second Technical session:**

This session was chaired by Dr.P.Paul Divakar, SG.Lecturer in Physics. Prof. D.Pamu, Department of Physics, Indian Institute of Techonology, Guwahati, Assam spoke on Characterization of Research Methodology. He clearly explains the purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following broad groupings:

To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formulative 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).

### **Third Technical session: (19<sup>th</sup> November 2021)**

This session was chaired by Dr. R.Jala Babu, Lecturer in Chemistry and IQAC Co-ordinator. Dr Santhiraju Pilli Assistant Profesora, Jazan University Kingdom of Saudi Arabia spoke on Research Methodology- An Overview. In his talk he explained about what is Research and Research Methods and Methodology. Research in general idiom refers to a search for knowledge or information. It can also describe research as a scientific and systematic search for relevant information on a particular subject matter. Indeed, research is an art of technological or scientific investigation. The dictionary meaning of research is "a careful investigation or inquiry, particularly through the search for new facts in any branch of knowledge." Researchers put into practice organized methods to carry out research. They

define the research topic to demonstrate a deeper and clearer understanding in the methods section. Moreover, methods comprise of all techniques, systematic plan of action, and tools working by a researcher to complete the experiment and find the answer to the research problem. On the other hand, the methodology is a systematic and theoretical or hypothetical approach to compile and evaluate data right through the research process. It allows researchers to validate a study's rigor to obtain new data. The purpose of research methodology is to prove the credibility, validity, and reliability of a chosen research method.

#### **Fourth Technical session :**

This session was chaired by Dr.Sandhya, HOD, Department of Zoology. Dr. Tharun Dolla Research fello Indian Institute of Techonology, Mumbai spoke on Thesis writing. He explained various topics like Outline and Learning Objectives, Select the topic, Review the Literature, Develop Theoretical & conceptual framework, Clarify of the research question, Research design and Data collection etc.,

#### **Valedictory Session: (19<sup>th</sup> November.2021)**

Dr.B.Raghunatha Reddy, Principal, Y.V.N.R. Government degree College, Kaikaluru, Krishna District presided over the function. Sri. D.Uday Praksh Vice Principal, Dr R.Jalababu, Dr. S.D.V Satyanarayana were present and spoke on Research Methodology .Dr.Ch.Krishna, Regional Joint Director, Rajamahendravaram attended as a chief guest of the function and addressed the gathering. Dr.K. A. Emmanuel Co-ordinator of the Webinar presented a brief report on the Webinar. The webinar concluded with the vote of thanks Proposed by Dr.R.Jalababu IQAC Co-ordinator.





# Inaugural Session



## *Principal's Message*

Distinguished Delegates, participants, and partakers!

Good afternoon and Greetings to one and all. It is a glorious moment to extend my warm wishes on behalf of YVNR Govt. Degree College, Kaikaluru. I want to convey my heartfelt gratitude to the Commissioner, Collegiate education, Andhra Pradesh for accepting to conduct this International Webinar. It also gives me an immense pleasure to welcome Prof KB Chandrasekhar, the vice-chancellor of Krishna University to deliver inaugural address on the occasion of the inauguration of this webinar on Research methodology. I am also thankful to foreign Speakers from Ireland and Saudi to enlighten all of us in the field of research.

It gives me immense warmth and great pleasure to grace all of your presence in the interest of the entire committee. It gives me tremendous contentment to be presenting the welcome speech amongst the most esteemed personalities in their respective fields.

Research in simple terms refers to search for knowledge. It is a scientific and systematic search for information on a particular topic or issue. It is also known as the art of scientific investigation. Several scientists have defined research in different ways.

There are two main approaches to research, namely quantitative approach and qualitative approach. The quantitative approach involves the collection of quantitative data, which are put to rigorous quantitative analysis in a formal and rigid manner. This approach further includes experimental, inferential, and simulation approaches to research. Meanwhile, the qualitative approach uses the method of subjective assessment of opinions, behaviour and attitudes. Research in such a situation is a function of the researcher's impressions and insights. The results generated by this type of research are either in non-quantitative form or in the form which cannot be put to rigorous quantitative analysis. Usually, this approach uses techniques like in depth interviews, focus group interviews, and projective techniques.

I want you give a piece of advice to all the faculty and scholars on this occasion that is Research should be your passion. Make research as your passion, don't do it only to get certificate, or good job, or to get high API score. Do it to make your carrier. Select only one topic go on doing it with new technologies for ever. As Technology changes don't change your topic, just modify your way of doing experiments as per new technologies.

Next about Interdisciplinary work: Today novelty can come up only if you have knowledge of all fields like Chemistry, Physics, Computer and even Biology. One person can't handle all these areas, hence do work in collaboration and in group. You will get a wonderful result and appreciation.

With this once again I express my sincere thanks to you all participants for your patience hearing. I am also thankful to the Organizing team of our college for giving me this chance to share my views. I wish you all success.

Thank you all.

## INAUGURAL TALK :

***Prof. Dr. K.B. CHANDRA SEKHAR***  
*Vice Chancellor, Krishna University,*  
*Machilipatnam*



Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. The Advanced Learner's Dictionary of Current English lays down the meaning of research as "a careful investigation or inquiry specially through search for new facts in any branch of knowledge."1 Redman and Mory define research as a "systematized effort to gain new knowledge."2 Some people consider research as a movement, a movement from the known to the unknown. It is actually a voyage of discovery. We all possess the vital instinct of inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us probe and attain full and fuller understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method, which man employs for obtaining the knowledge of whatever the unknown, can be termed as research. Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis. D. Slesinger and M. Stephenson in the Encyclopaedia of Social Sciences define research as "the manipulation of things, concepts or symbols for the purpose of generalising to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art."3 Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. The systematic approach concerning generalisation and the formulation of a theory is also research.



**Dr Arul Manikandan,**  
Research fellow,  
National University of Ireland, Galway Ireland  
Arulmanikandan.n@nuigalway.ie

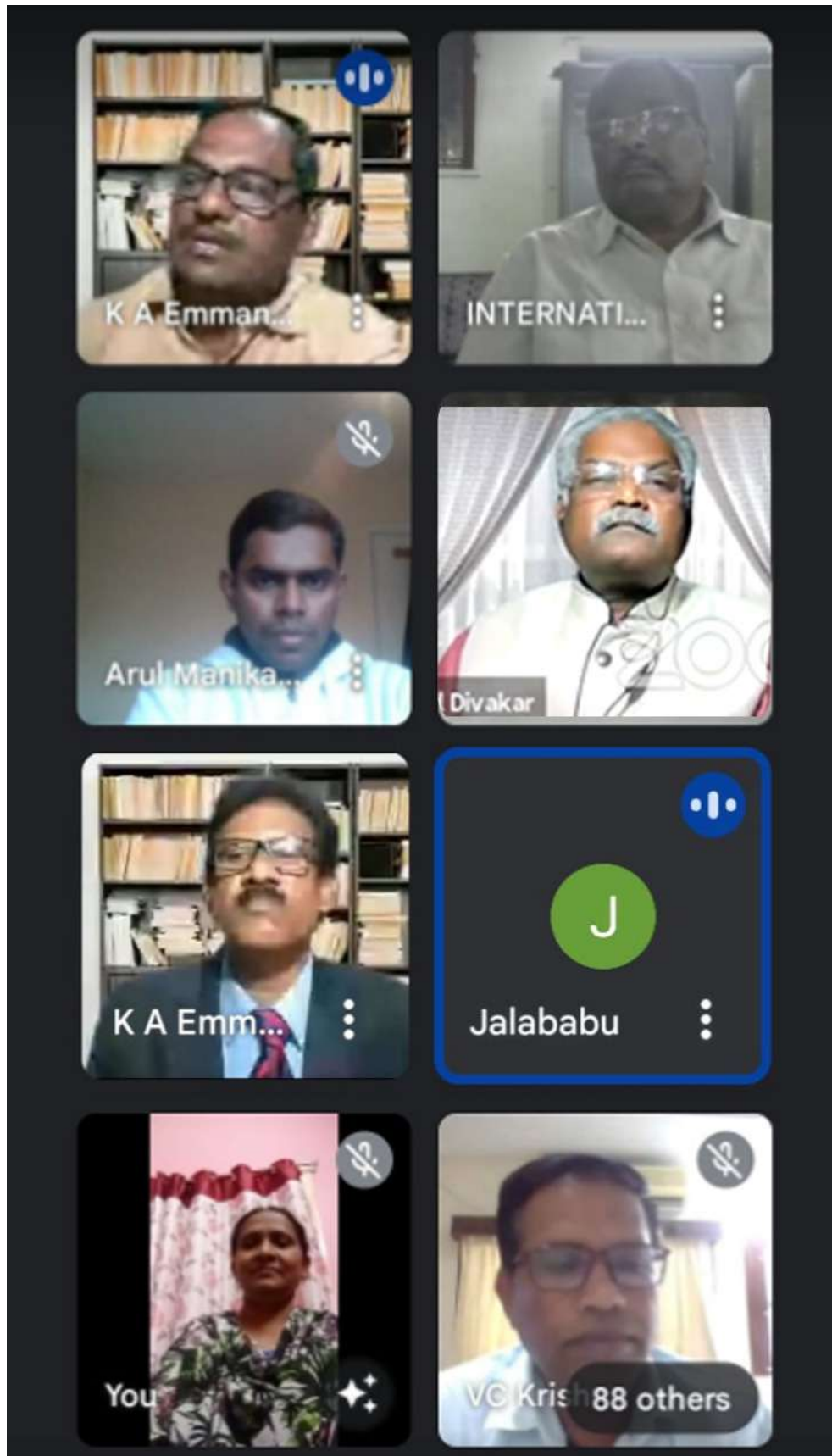
## **INTRODUCTION TO RESEARCH**

### **Abstract**

Research is the process of discovering new knowledge to alleviate the problems, thereby leading to society's advancement. This presentation will introduce the audience to the arena of research with special emphasis on experimental research. The presentation will give insight into analysing a problem and segregating its societal, environmental, national, and regional nature. The presentation will provide the audience with a profound understanding of approaching these longstanding problems sequentially to get possible solutions to put away the issues. In this presentation, the audience will be given an idea to screen the excellent research articles, thereby making them a specialist in their areas of research. Different search engines and the key criteria revolving around the literature collection will be shown to make the listener proficient in identifying apt literature for their research. Thereafter, the audience role as a researcher will be clearly outlined on how they have to take an educated guess (– generally referred to as hypothesis) on the research gap identified in the literature and further frame an ambitious aim with possible objectives. The audience requisite to choose the appropriate source of their materials and equipment and stick to the customary laws will be narrated in a nutshell to avoid serious research flaws. Some basic aspects of presenting the experimental results and all the essential criteria to be borne in mind while carrying out the result analysis will be explained. Though the present talk outlines majorly on the theoretical research, the presentation will give a brief idea on theoretical research, patent filing and business model development. A case study with seaweed research is explained frequently to make the audience allude to the presentation. Overall, this introduction to research will be an eye-opener and initiation to the subsequent fabulous presentations planned for this international seminar.

**Keywords:** Literature; Methodology; Hypothesis; Research gap; Patent; Business model

## DAY - 1, SESSION - I



## Invited Talk –2

**Prof. D. Pamu**

Department of Physics & Centre for Nanotechnology,  
Indian Institute of Technology Guwahati,  
Guwahati-781039

### RESEARCH METHODOLOGY

In the recent past, due to the advancements in science and technology, and requirements of the devices have been exact. Due to these reasons, a researcher must design an appropriate methodology suitable for the problem chosen. Identifying the proper research method would minimize our effort and obtain fruitful results of the study. This would allow us to analyze the data and see the material's suitability for device application. In this lecture, we will see the overview of the objectives and the motivation of the research. In the advancement of science and technology, the discovery of novel materials with varied characteristics and applications has played an important role. Characterization is an essential step in the development of exotic materials. The complete characterization of any material consists of phase analysis, compositional characterization, structural elucidation, microstructural analysis, and surface characterization, which have a strong bearing on the properties of materials.

This has led to the emergence of a variety of advanced techniques in the field of materials science. In this section, different analytical instrumental methods used to characterize our novel materials are described with the relevant operation and working principles.



## DAY - 1, SESSION - II

The screenshot shows a Google Meet window with the URL <https://meet.google.com/fhm-jcjk-ppp>. The presentation slide, titled "General Research Methods / Characterization Techniques" by Prof. D. Pamu, features a landscape image and the logo of the Department of Physics & Center for Nanoscience, Indian Institute of Technology Gandhinagar, Sundarabad-515039. The slide content is as follows:

What do we want to know ?	How do we find this out ?
What does the sample look like ? <ul style="list-style-type: none"> <li>on a macroscopic scale</li> <li>on a microscopic scale</li> <li>on an atomic scale</li> </ul>	<ul style="list-style-type: none"> <li>optical microscopy</li> <li>scanning electron microscopy (SEM)</li> <li>transmission electron microscopy (TEM)</li> <li>scanning probe microscopies (STM, AFM ...)</li> </ul>
What is the structure of the sample ? <ul style="list-style-type: none"> <li>internal structure</li> <li>density</li> <li>microscopic and atomic scales</li> </ul>	<ul style="list-style-type: none"> <li>X-ray diffraction (XRD)</li> <li>stylus profilometry</li> <li>quartz crystal monitors (QCM)</li> <li>ellipsometry</li> <li>low energy electron diffraction (LEED)</li> <li>reflection high energy electron diffraction (RHEED)</li> </ul>
What is the sample made of ? <ul style="list-style-type: none"> <li>elemental composition</li> <li>impurities</li> <li>chemical states</li> </ul>	<ul style="list-style-type: none"> <li>Auger Electron Spectroscopy (AES)</li> <li>Energy Dispersive Analysis of X-rays (EDAX)</li> <li>X-ray Photoelectron Spectroscopy (XPS)</li> <li>Secondary Ion Mass Spectrometry (SIMS)</li> <li>Rutherford Backscattering (RBS)</li> </ul>

The Meet interface shows participants: K A Emmanuel E..., Dr D Ch Appa Ra..., Anul Manikanda..., M NAGA PARAM..., RAGI SAHITHI, and Pamu Dobbidi (the host). The bottom status bar indicates the time is 16:16 and the date is 18-11-2021.

This screenshot shows the same Google Meet session, but the presentation slide is now a table summarizing research methods. The slide content is as follows:

What do we want to know ?	How do we find this out ?
What does the sample look like ? <ul style="list-style-type: none"> <li>on a macroscopic scale</li> <li>on a microscopic scale</li> <li>on an atomic scale</li> </ul>	<ul style="list-style-type: none"> <li>optical microscopy</li> <li>scanning electron microscopy (SEM)</li> <li>transmission electron microscopy (TEM)</li> <li>scanning probe microscopies (STM, AFM ...)</li> </ul>
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What is the sample made of ? <ul style="list-style-type: none"> <li>elemental composition</li> <li>impurities</li> <li>chemical states</li> </ul>	<ul style="list-style-type: none"> <li>Auger Electron Spectroscopy (AES)</li> <li>Energy Dispersive Analysis of X-rays (EDAX)</li> <li>X-ray Photoelectron Spectroscopy (XPS)</li> <li>Secondary Ion Mass Spectrometry (SIMS)</li> <li>Rutherford Backscattering (RBS)</li> </ul>

The Meet interface shows participants: Pamu Dobbidi, Raghuram Raiche..., Jagadish prakas..., Seiram Prakash, Lakshmi Chintalap..., Anul Manikandan N, K A Emmanuel Emmi, and 51 others. The bottom status bar indicates the time is 16:36 and the date is 18-11-2021.

**Dr. Santhi Raju Pilli,**

Assistant Professor, Chemical Engineering,  
Jazan University, Kingdom of Saudi Arabia.  
spilli@jazanu.edu.sa

## **RESEARCH METHODOLOGY- AN OVERVIEW**

### **1. What is Research?**

Research in general idiom refers to a search for knowledge or information. It can also describe research as a scientific and systematic search for relevant information on a particular subject matter. Indeed, research is an art of technological or scientific investigation. The dictionary meaning of research is “a careful investigation or inquiry, particularly through the search for new facts in any branch of knowledge.”

### **2. Research Methods and Methodology**

Researchers put into practice organized methods to carry out research. They define the research topic to demonstrate a deeper and clearer understanding in the methods section. Moreover, *methods* comprise of all techniques, systematic plan of action, and tools working by a researcher to complete the experiment and find the answer to the research problem. On the other hand, the *methodology* is a systematic and theoretical or hypothetical approach to compile and evaluate data right through the research process. It allows researchers to validate a study's rigor to obtain new data. The purpose of research methodology is to prove the credibility, validity, and reliability of a chosen research method.

### **3. How to Write Methods and Methodology Section of a Research Paper?**

*The objective of Methods and Methodology*

While the methods part is a research tool or a constituent of research, the methodology is the explanation or consideration for using a peculiar research method. The main objective of the research method is to provide necessary information on research design, participants, instrumentation or equipment, resources and materials, variables, and processes. It must permit other researchers to replicate similar results based on the authenticated methods. While the purpose of research methodology is to find out the correctness and efficiency of the methods opted by the researchers for a specific experiment.

### **4. What are the fundamental differences between Methods and Methodology?**

These listed points precisely demonstrate the difference between frequently mistaken methods and the methodology section [1]:

Methods	Methodology
The objective of the methods is to find a solution to the research problem.	The objective of the methodology is to determine the appropriateness of the methods applied to ascertain a solution.
The methods are just behavior or tools utilized to select a research technique.	The methodology is an analysis of all the methods and procedures of the investigation.
The methods are applied during the later stage of the research study.	The methodologies are applied during the first stage of the research process.
It constitutes different investigation techniques of the study.	It is a systematic approach to finding a solution to the research problem.
Methods encompass carrying out experiments, conducting surveys, tests, etc.	Methodology encompasses several techniques used while conducting these experiments, surveys, tests, etc.

To sum up, one can say that a technique is far more specific than a method and a method is far more specific than the methodology. It's ahead of listing the steps of experiment or audit trails that follow to find an answer to a research problem. With one methodology, a researcher can apply several methods to support or reject the research hypothesis. In conclusion, both methods and methodologies are a vital part of research and are related to each other's existence.

Within any line of work, where one can directly or indirectly provide a service, such as health care (such as nursing, physiotherapy, occupational medical care, community health, health promotion, and public health), education sector, psychology or social work, the application of research can be seen from four different perspectives [1]:

1. The service provider;
2. The service administrator, manager, and/or planner;
3. The service consumer; and
4. The professional.

Types of research can be seen from three different perspectives.

Types of research can be looked at from three different outlooks.

1. *Applications* of the findings of the research study;
2. *Objectives* of the study;
3. *A mode of inquiry* used in conducting the study.

Several types of research areas are such as humanities, scientific, social, marketing, artistic, practitioner, business, technological, etc. For the reason, that research has broad applications in every field it finds applications in almost every industry.

Table 1. Major areas and specific areas of application of research [2].

Areas of application of research	Application of marketing research
Medicine Industry	Demand Forecasting
Medicinal Technology, and Pharma/Genetics	Sales Analysis
Environment research	Advertising Research
Astronomy	Positioning Research
Automobile/Self-driving cars	Market Segmentation
Weather forecast	Product Research
Psychology	Pricing Research
Sociology	Distribution Research
Business research	Customer Satisfaction Research
	Meaning of Marketing Res

There are four purposes of research include exploration, description, explanation, and application. Research demands the systematic investigation of phenomena, the purpose of which could be for [3]:

1. Information collection and/or
  - i. Exploratory: e.g., discovering, uncovering, exploring
  - ii. Descriptive: e.g., gathering information, describing, summarizing
2. Theory testing
  - i. Explanatory: e.g., testing and understanding causal relations
  - ii. Correlation/Predictive: e.g., predicting what might happen in various scenarios

A *descriptive* study attempts to describe systematically a position, problem, phenomenon, service or programme, or gives information about the living environment of a community, or describes perspectives towards an issue. The main importance of a *correlational* study is to find out or establish the existence of a connection/association/mutuality between two or more opinions of a situation. For example, what is the effect of an advertising promotion on the sale of a particular product? what is the relationship between stressful living and the incidence of a heart attack? What is the relationship between fertility and mortality? What is the connection between technology and unemployment?

The *explanatory* research undertakes to explain why and how there is a relationship between two aspects of a circumstance or phenomenon. This type of research tries to explain, for instance, why stressful living results in myocardial infarction (heart attacks); why a fall in mortality is followed by a fertility decline; or how the home atmosphere affects children's level of academic achievement.



On the other hand, *exploratory* research is undertaken with the objective either to explore an area where few facts are known or to examine the possibilities of undertaking a particular research study. When a study is undertaken to determine its feasibility it is also called a feasibility study or a pilot study. It is usually carried out when an investigator wants to explore areas about which she or he has little or no knowledge. A small-scale study is attempting to decide if it is worth carrying out a detailed investigation. Based on the evaluation made during the exploratory study, a full study may come out. Exploratory studies are also conducted to develop, refine, and/or test measurement tools and procedures. However, in practice, most studies are a combination of the first three; that is, they contain elements of descriptive, correlational, and explanatory research.

### 5. Identifying variables and What is a variable?

Whether someone believes it or not, we all make value judgments always in our daily lives: 'This food is *excellent*'; 'I could not sleep *well* last night; 'I do not *like* this; and 'I think this is *wonderful*'. These are all judgments based upon our preferences, indicators, or assessment. Because these explain feelings or preferences, the basis on which they are made may differ noticeably from person to person [1]. Hence, there is no consistent standard with which to measure them.

Let us look at this in a professional context: 'This program is *effective*.' 'This program is *ineffective*.' 'We are providing a *quality* service to our clients.' 'This is a *waste of time*.' 'In this organization, women are *discriminated* against.' 'There is no *accountability* in this office.' 'This product is not doing *well*.' These are not preferences intrinsically; these are judgments that need a sound basis on which to declare. For example, if you want to find out if a program is effective, if a service is of quality or if there is discrimination, you need to be vigilant that such judgments have a coherent and sound basis.

An image, observation or concept that is capable of measurement – hence capable of taking on different values – is called a variable. In other words, a concept that can be measured is called a variable. As quoted by Kerlinger, 'A variable is a property that takes on different values. Putting it redundantly, a variable is something that varies.'

### 6. Conclusion

In this talk, the focus will be given to the importance of research in daily life and the difference between the research methods and methodology. Researchers put into practice organized methods to carry out research, furthermore, *methods* comprise of all techniques, systematic plan of action, and tools working by a researcher to complete the test and find the solution to the research problem. The *methodology* is a systematic and theoretical or hypothetical advance to collect and evaluate data. Research methodology intends to prove the reliability, validity, and consistency of a chosen research method. Also talks about the difference between the concept and the variables and with certain examples will be discussed.

## DAY - 2, SESSION - III

Zoom Meeting

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**SUMMARY**

- Objectives of research
  - To discover new facts
  - To verify or test important facts
  - To analyze an event, process or phenomenon
  - To identify a cause/effect relationship
  - To develop new scientific tools, concepts and theories to solve and understand scientific and nonscientific problems
  - To find solutions to scientific, nonscientific, and social problems
  - To overcome or solve problems occurring in our everyday lives

Dr. SR PILLI, Ph.D, 2021

Participants (132)

Find a participant

Asirvadam A (Me)

Host (Host)

SANTHI RAJU PILLI (Co-host)

Dr. P Paul Divakar (Co-host)

Dr. R. Jalobabu (Co-host)

K.A. Emmanuel (Co-host)

P.SAMSON - JH (Co-host)

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A.MUNI SANKARA SWAMY

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Ananthalakshmi

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BAVIGADDA SHARMILA RAMAIAH

BogadaturthiMadhuri

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International Webinar on Research Methodology

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**SUMMARY**

- Objectives of research
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  - To find solutions to scientific, nonscientific, and social problems
  - To overcome or solve problems occurring in our everyday lives

Dr. SR PILLI, Ph.D, 2021

Top chat

g.kishore good afternoon sir

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Thota Madam sarada Good Afternoon sir

SKY is the Limit SANDARBINA SHIVAKUMAR

SANDARBINA SHIVAKUMAR YADAV Happy to be part of the

Priyadarsini Devreddy good afternoon sir

bangaram chinri Good Afternoon to everyone Krishna Kuman Sattipati

srinivasa seshagiri rao Bollapragada hai friends

rame devi Good information

Nalapati anitha Good session

Asirvadam A Say something...

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Introduction to research methods and methodologies

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**Dr. Dolla Tharun,**

Post Doc Fellow, Dept., Civil Engineering,  
Indian Institute of Technology, Bombay.  
tharun@iitb.ac.in

## **THE RESEARCH PROCESS AND YOUR THESIS**

### **Outline and Learning Objectives**

1. The Research Process- Flowchart
2. The Dissertation Process
3. The Research Process
4. The research processes

### **Stage 1. Select the topic**

1. A crucial stage, as an inappropriate topic or question will often lead to irretrievable difficulties later in the research.
2. It is unlikely that you will develop a final question and set of objectives at this stage of the research process, and stages 2 and 3 are important in developing and assessing your question more fully.

### **Stage 2: Review the Literature**

- A literature review essentially consists of critically reading, evaluating and organising existing literature on the topic to assess the state of knowledge in the area.
- what other people have written about your subject area. It can be both descriptive or analytical.
- The main aim of the LR is to critically analysis the contribution of other writers and finding the similarities and contradiction with other writers.
- During this stage you should aim to become an 'expert' in your field of research.
- Generally done alongside the development of the theoretical and conceptual frameworks (stage 3 of the research process).
- Activities involved in LR: (contd)
- Knowing the sources
- Understanding how the library works
- Collecting the existing data available on the subject, reading and note taking
- Systematically Organizing the literature
- Appraising and writing the LR

### Stage 3. Develop Theoretical & conceptual framework

- As you read the literature, you should be continually developing and refining your theoretical and conceptual frameworks.
- Your theoretical framework refers to the underlying theoretical approach that you adopt to underpin your study.
- The conceptual framework defines and organises the concepts important within your study.

### Stage 4. Clarify of the research question

- Initial research questions are chosen, investigated and often rejected for a number of reasons, for example:
- The question lacks sufficient focus.
- The conceptual framework has identified problems in either defining and/or measuring the appropriate concepts.
- There are too many moderating or intervening variables.
- The project is unfeasible in terms of complexity, access, facilities or resources.

### Stage 5. Research design

- What data do I need to collect to answer this question?
- What is the best way to collect this data?
- What overall research design should I use? For example, a cross-sectional, experimental or longitudinal design?
- Will I need to collect primary or secondary data?
- What methods, for example interviews, questionnaire surveys and so on, will be best to collect the primary data?
- Who should participate in the research?
- How will I gain access to them?
- What are the exact procedures that I should adopt in my data collection to ensure reliability and validity?
- Are there any ethical issues associated with the research?

### Stage 6. Data collection

You have to consider

- which methodology to choose, and
- which methods to utilise.



#### Stage 7. Data analysis and discussion of the findings

- The data you collect in stage 6 needs to be analysed to provide answers to your research question.
- In your discussion of the results, reference should also be made back to the literature reviewed in stage 2, for example
- How do the findings add to this literature?
- Do they support the literature?
- If not, what are the possible reasons why?

#### Stage 8. Draw conclusions

- Conclusions should relate back to the focused research question.
- You can evaluate how successful you have been in achieving your research objectives, and highlight the strengths and weaknesses of the research.
- You may also want to make recommendations for further research.

#### Summary

1. Research is not just about the collection of data. Data collection is important, but it is simply part of a wider process – the *research process*.
2. The research process follows 8 steps: selection of topic, reviewing the literature, developing your theoretical and conceptual frameworks, clarifying your research question, developing a research design, collecting data, analysing data, and drawing conclusions.
3. Relating your project to the research process will allow you to develop and answer your research question in a logical and systematic manner.

#### The Dissertation Process

##### General process of writing Dissertation – 7 Steps

1. Selection of a dissertation topic,
2. Writing a proposal, conducting a literature review,
3. Selecting the research approach,
4. Devising research instruments,
5. Collecting information,
6. Analysing and presenting information
7. Producing a well-written dissertation.

##### 2. Selecting a Topic and Writing the Dissertation Proposal.

- Choosing of the topic
  - Topic should come from your interest and value of particular subject.
- Difficulty in Choosing topic, Follow following suggestion:
  - Consulting the library
  - Web Searching
  - Consulting colleagues and lecturer
  - Industry professional

Criteria Need to be considered while deciding topic

- A dissertation topic should be realistic.
- Your topic should be specific and narrow. ( 'Unpack it')
- Your topic should show individuality.
- Accessibility of information.
- Personal ability.
- Personal interest.

### **The Dissertation Proposal**

1. Working title.
2. Purpose.
3. Aim.
4. Objectives.
5. Hypothesis (or key questions).
6. Outline methodology.
7. Proposed contents.
8. Initial references.
9. Work plan.
  - 1. Working Title
    - ◆ It's a title that gives your research a 'direction' or 'focal point'
    - ◆ It should clearly describe your study.
    - ◆ The working title might change at later stages
  - 2. Purpose
    - ◆ This is brief description addressing the problem and the reason for the proposed study. ( 500 to 1000 word)
    - ◆ Research Goals
  - 3. Aim: Ultimate Goal
  - 4. Objectives: Breakdown Of Aim ( intermediate Goals)
  - 5. Hypotheses: Proposition that have to validate through research
    - ◆ Key question: Existing Problem or Question
  - 6. Outline methodology
    - ◆ Initial Outline of the research work.( not too detail)
  - 7. Proposed contents
    - ◆ The chapters of the dissertation.
  - 8. Initial References
    - ◆ The Sources and data base used to provide evidence for the proposal
  - 9. Work Plan
    - ◆ A simple Bar chart or Timetable showing your intend of progress

## DAY - 2, SESSION - IV

Zoom Meeting

Participants (127)

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Asirvadam A (Me)

Host (Host)

Dr P Paul Divakar (Co-host)

K.A. Emmanuel (Co-host)

Dr. R. Jalababu (Co-host)

P. SAMSON - JH (Co-host)

SANTHI RAJU PILLI (Co-host)

Dr Tharun D | IITB (Co-host)

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(Multidisciplinary)

On 18<sup>th</sup> & 19<sup>th</sup> NOVEMBER 2021

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**TO**

**Dr. Dolla Tharun**

Post Doc Fellow

Department of Civil Engineering

Indian Institute of Technology,

Bombay

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# **VALIDICTORY SESSION**







## Government of Andhrapradesh Higher Education Department



### Dr Krishna Chappidi

Regional Joint Director (FAC)  
RJD of Collegiate Education (Zone - I & II)  
Rajamahendravaram



### VALIDICTORY NOTE :

Research is a logical and systematic search for new and useful information on a particular topic. It is an investigation of finding solutions to scientific and social problems through objective and systematic analysis. It is a search for knowledge, that is, a discovery of hidden truths.

Only through research is it possible to make progress in a field. Research is done with the help of study, experiment, observation, analysis, comparison and reasoning.

Research is in fact ubiquitous. More precisely, research seeks predictions of events and explanations, relationships and theories for them.

Although we engage in such process in our daily life, the difference between our casual day-to-day generalization and the conclusions usually recognized as scientific method lies in the degree of formality, rigorousness, verifiability and general validity of the latter.

Research process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical.

- **Controlled**-in real life there are many factors that affect an outcome. The concept of control implies that, in exploring causality in relation to two variables (factors), you set up your study in a way that minimizes the effects of other factors affecting the relationship.
- **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 social sciences and within the social sciences.

- **Systematic**-this implies that the procedure adopted to undertake an investigation follows 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 method employed is crucial to a research enquiry. The process of investigation must be foolproof and free from drawbacks. The process adopted and the procedures used must be able to withstand critical scrutiny.

*For a process to be called research, it is imperative that it has the above characteristics.*

Fundamental research and Basic research are the two important areas to be focused today. Fundamental research checks with specific application of a system for its normal functioning. Basic Research is an investigation on basic principles and reasons for occurrence of a particular event or process or phenomenon. It is also called *theoretical research*. Study or investigations of some natural phenomenon or relating to pure science are termed as *basic research*. The outcomes of basic research form the basis for many applied research. Researchers working on applied research have to make use of the outcomes of basic research and explore the utility of them.

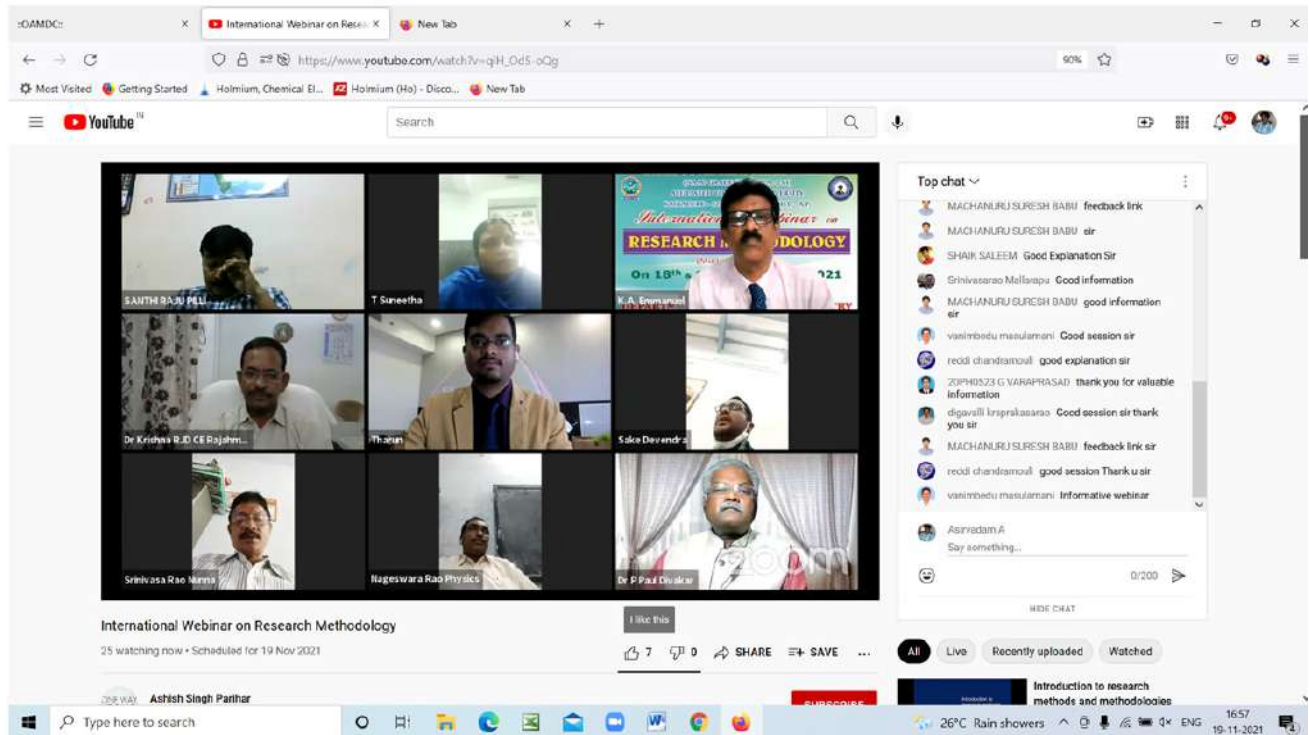
Research methodology seeks to inform : Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected and what particular method has been adopted, why particular technique of analyzing data has been used and a host of similar other questions are usually answered when we talk of research methodology concerning a research problem or study.

The research methodology constitutes the internal environment by understanding and identifying the right type of research, strategy, philosophy, time horizon, approaches, followed by right procedures and techniques based on his or her research work. Additionally, the research methodology acts as the nerve center because the entire research is bounded by it and to perform a good research work, the internal and external environment has to follow the right research methodology process.

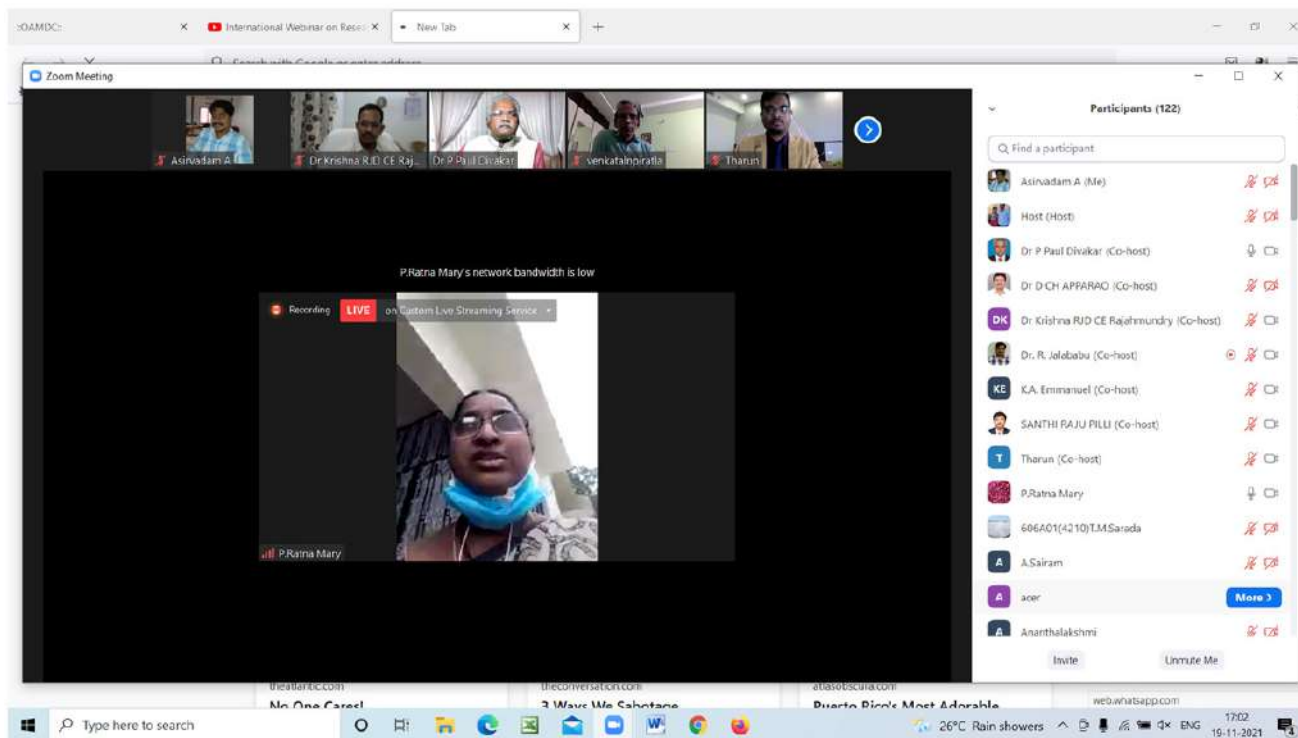
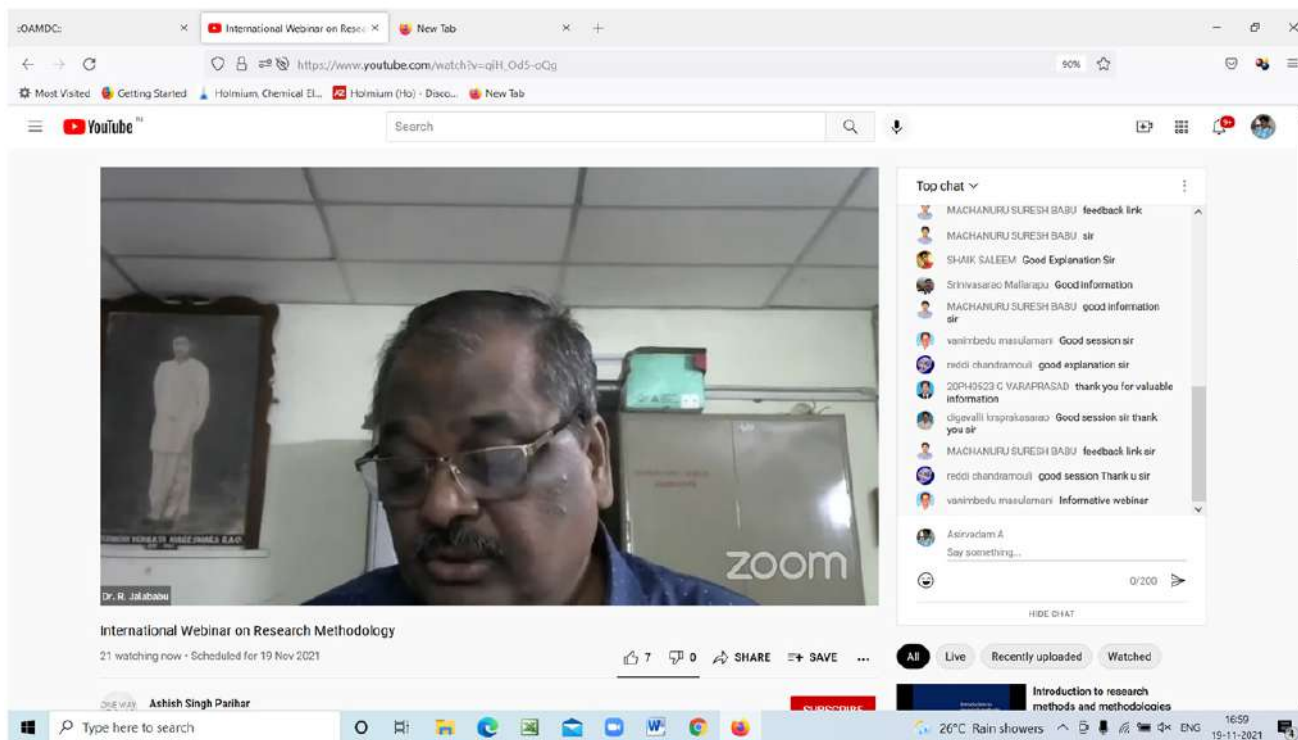
I hope the day long deliberations in this webinar focused on these aspects. Focus on the quality research with suitable methodology for long term results.

With Best wishes.

# VALIDICTORY TALK



# VALIDICTORY PHOTO



# Annexure - I

11/21/21, 11:45 AM

Feedback Form

## Feedback Form

International Webinar on Research Methodology (IWRM NOV 21)  
18th & 19th November 2021 conducted by Y.V.N.R. Government Degree College, Kaikaluru,  
Krishna district, Andhra Pradesh, India.

\* Required

1. Name (Without Prof/Dr/Mr/Mrs/Miss) \*

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2. Designation \*

---

3. Subject \*

---

4. Name of the Institution & Place \*

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5. E-mail address \*

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*Skip to question 6*

Feedback Form

Please give your feedback about the Webinar for further improvement



6. Do you feel the resource persons are helpful to improve your knowledge on Research Methodology \*

*Mark only one oval.*

- ☐ Yes  
☐ No

7. How clear were the ideas and concepts Resource persons presented \*

*Mark only one oval.*

- ☐ Excellent  
☐ Good  
☐ Fair  
☐ Poor

8. How do you feel about International Webinar on Research Methodology (IWRM NOV 21) \*

*Mark only one oval.*

- ☐ Excellent  
☐ Good  
☐ Fair  
☐ Poor

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Google Forms

## Annexure - II



**Y.V.N.R. GOVERNMENT DEGREE COLLEGE**  
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AFFILIATED TO KRISHNA UNIVERSITY  
KAIKALURU - 521 333, KRISHNA DIST. A.P.

**18th & 19th  
November 2021**

**International Webinar on  
RESEARCH METHODOLOGY**

Organised by : **Depts of Physics, Chemistry**  
In Association with : **IQAC**

*Certificate*

This is to certify that Prof. / Dr. / Mr. / Ms. ....  
Professor / Asso. Prof. / Asst. Prof. / Research Scholar / Student of .....  
University / College .....has participated  
in International Webinar on "RESEARCH METHODOLOGY".



**Sri N. Srinivasa Rao**  
ORGANISING SECRETARY

**Sri K. Ramesh**  
ORGANISING SECRETARY

**Dr. R. Jala Babu**  
IQAC, CO-ORDINATOR

**Dr. B. Raghunatha Reddy**  
PRINCIPAL



## Annexure - III



**Y.V.N.R. GOVERNMENT DEGREE COLLEGE**  
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AFFILIATED TO KRISHNA UNIVERSITY  
KAIKALURU - 521 333, KRISHNA DIST. A.P.

*International Webinar on*  
**RESEARCH METHODOLOGY**  
(Multidisciplinary)

**On 18<sup>th</sup> & 19<sup>th</sup> NOVEMBER 2021**

Organized By  
**DEPARTMENTS OF PHYSICS, CHEMISTRY**  
& In Association with IQAC

## Annexure - IV



**Y.V.N.R GOVERNMENT DEGREE COLLEGE**

**KAIKALURU, KRISHNA Dist. A.P - 521333**

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Principal

M.Com., B.Ed., M.Phil., Ph.D.

Date 19-11-2021

### పత్రికా ప్రకటన

వై.వి.ఎన్.ఆర్ ప్రభుత్వ డిగ్రీ కళాశాల కైకలూరులో “రీసెర్చ్ మెథడాలజీ” అనే అంశం పైన రెండు రోజుల అంతర్జాతీయ వెబి నార్ నవంబర్ 18 మరియు 19వ 2021 తారీకులలో జరిగినది. ఈ కార్యక్రమ ప్రారంభోత్సవంలో లో ప్రొఫెసర్ కె. బి చంద్రశేఖర్ రావు గారు ఉపకులపతి, క్రిష్ణ విశ్వవిద్యాలయము, మచిలీపట్నం మాట్లాడుతూ పరిశోధన అనేది చాలా ప్రాముఖ్యమైనది అని వివరించారు. ఈ కార్యక్రమంలో డేవిడ్ కుమార్ రాపాక జాయింట్ డైరెక్టర్, కమిషనరేట్ ఆఫ్ కాలేజ్ ఎడ్యుకేషన్, విజయవాడ వారు మాట్లాడుతూ వై.వి.ఎన్.ఆర్ డిగ్రీ కళాశాల ప్రిన్సిపాల్ గారిని మరియు అధ్యాపకులను అభినందించారు. కళాశాల ప్రిన్సిపాల్ డాక్టర్ బి.రఘునాథ రెడ్డి గారు తన ప్రసంగంలో అధ్యాపకులు అందరూ పరిశోధనలు చేయాలని సూచించారు. ఈ కార్యక్రమంలో ప్రసంగికులు గా పాల్గొన్న డాక్టర్ అరుల్ మణికందన్ అసోసియేట్ ప్రొఫెసర్, గాల్వే ఐర్లాండ్, ఇంటర్నెట్ రీసెర్చ్ అనే అంశాన్ని చక్కగా వివరించారు. ప్రొఫెసర్ డి. పాము, ఐఐఐటీ, గౌహతి మాట్లాడుతూ పరిశోధన ఫలాలు అనేవి అందరికీ అందుబాటులోకి తీసుకురావాలి అని సూచించారు. డాక్టర్. శాంతి రాజ్ పిల్లి, అసిస్టెంట్ ప్రొఫెసర్, జజాన్ విశ్వవిద్యాలయం, సౌదీ అరేబియా, “క్యారెక్టరైజేషన్ టెక్నిక్” అనే అంశంపై ప్రసంగించారు. ప్రొఫెసర్ తరుణ్ డొల్లా, అసోసియేట్ ప్రొఫెసర్, రీసెర్చ్ రైటింగ్ అనే అంశం మీద మాట్లాడారు.

ఈ అంతర్జాతీయ వెబినార్ ముగింపు కార్యక్రమంలో డాక్టర్ సి.హెచ్ కృష్ణ, రీజనల్ జాయింట్ డైరెక్టర్ రాజమహేంద్రవరం మాట్లాడుతూ పరిశోధనలు సరైన దృక్పథంతో చేసినట్లయితే సర్వ జగతికి ఉపయోగకరంగా ఉంటుందని వెల్లడించారు. ఈ కార్యక్రమంలో దేశ విదేశాల నుంచి సుమారు 600 మంది అధ్యాపకులు, పరిశోధనా విద్యార్థులు పాల్గొన్నారు.

ఈ కార్యక్రమంలో కళాశాల ఐ. క్యూ.ఎ.సి కో-ఆర్డినేటర్ డాక్టర్ ఆర్. జాలబాబు గారు మరియు వెబినార్ సమన్వయకర్తలు డాక్టర్. ఇమ్మానుయేలు, డాక్టర్ పాల్ దివాకర్ మరియు ఆర్గనైజింగ్ సెక్రటరీలు శ్రీ కె. రమేష్ రసాయన శాస్త్ర విభాగ అధిపతి, శ్రీ ఎన్. శ్రీనివాస రావు భౌతిక శాస్త్ర విభాగ అధిపతి అలాగే శ్రీ ఎ. ఆశీర్వాదం, భౌతిక శాస్త్రం అధ్యాపకులు, కళాశాల వైస్ ప్రిన్సిపాల్ గారు శ్రీ డి. ఉదయ ప్రకాష్ గారు మరియు కళాశాల వ్యాయామ అధ్యాపకులు డాక్టర్ డి. వీ. ఎస్ ధనుంజయ గారు మరియు ఇతర అధ్యాపకులు పాల్గొన్నారు.