PERCEPTION OF STUDENTS AND TEACHERS ON REFORMS IN AGRICULTURE EDUCATION SYSTEM

THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

Master of Science (Agriculture)

in

Extension Education

Supervisor
Dr. Kalyan Ghadei

Submitted by
Nisha Singh

DEPARTMENT OF EXTENSION EDUCATION
INSTITUTE OF AGRICULTURAL SCIENCES
BANARAS HINDU UNIVERSITY
VARANASI (U.P.) – 221005
INDIA

ID. No. 19412EXE019 **2021** **Enrolment No. 416512**

काशी हिन्दू विश्वविद्यालय BANARAS HINDU UNIVERSITY

कृषि विज्ञान संस्थान INSTITUTE OF AGRICULTURAL SCIENCES

Dr. Kalyan Ghadei
Professor
+91 9415447694(M)

Dept. of Extension Education
Institute of Agricultural Sciences
Varanasi – 221005

Ref. No…… *Dated ……*

CERTIFICATE

To,

The Registrar (Academic)
Banaras Hindu University,
Varanasi-221005 (India)

Through: The Head, Department of Extension Education, Institute of Agricultural Sciences, B.H.U, Varanasi.

Dear Sir,

I have great pleasure in forwarding the thesis entitled **"Perception of Students and Teachers on Reforms in Agriculture Education System"** submitted by **Nisha Singh**, **I.D. No. 19412EXE019 Enrollment No. 416512**in partial fulfillment of the requirements for the degree of **Master of Science (Agriculture)** in **Extension Education**, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi (U.P.) and placing on record that she has completed the requisite residential requirements as contained in the statutes of the university.

I certify that the entire scheme of investigation presented herein was planned and carried out solely by the candidate under my guidance and supervision. The data presented in thesis, to the best of my knowledge and belief, are genuine and original.

Thanking you,

Yours faithfully,

(Dr. Kalyan Ghadei)
Supervisor

Forwarded by

Head of Department

Perception of Students and Teachers on Reforms in Agriculture Education System

By

Nisha Singh

THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

Master of Science (Agriculture)
in
Extension Education

ID. No. 19412EXE002 **2021** **Enrolment No. 374551**

APPROVED BY THE ADVISORY COMMITTEE

Chairman
Dr. Kalyan Ghadei
Professor
Department of Extension Education
Institute of Agricultural Sciences
B.H.U., Varanasi, India

Member
Dr. A. K. Singh
Professor
Department of Extension Education
Institute of Agricultural Sciences
B.H.U., Varanasi, India

Member
Dr. Anoop M.
Assistant Professor
Department of Agricultural Economics
Institute of Agricultural Sciences
B.H.U., Varanasi, India

External Examiner

ACKNOWLEDGMENT

*With a deep sense of devotion I bow and pray to the feet of **Maa Saraswati** who provided me choicest, everlasting blessing to get an opportunity to study in Banaras Hindu University, the dream of **Bharat Ratna Mahamana Pandit Madan Mohan Malviyaji**, a great patriot, nobleman and patriarch of this university*

*With immense pleasure and profound sense of gratitude, indeed, I take this opportunity to express my heartfelt and sincere thanks to my esteemed supervisor and professor **Dr. Kalyan Ghadei**, Department of Extension Education, Institute of Agricultural Sciences, Banaras Hindu University, for his meticulous guidance, indelible inspiration, persistent encouragement, ingenious suggestions, mellifluous nature and indefatigable attitude. I will ever cherish the fatherly affection that he bestowed upon me throughout my tenure as a student under him which helped me to cope with many difficult situations.*

*I owe my sincere thanks to the members of my advisory committee **Dr. A K Singh**, Department of Extension and **Dr Anoop M**, Department of Agricultural Economics, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi (U.P.) for their critical suggestion, impeccable and benevolent guidance.*

*I extend my indebtedness to the respected teachers of the Department of Extension Education, **Dr. Arun Kumar Singh**, **Dr. Basavaprabhu Jirli** and **Dr. Saikat Maji** Institute of Agricultural Sciences, Banaras Hindu University for their discerning comments, valuable suggestions, co-operations and helpful attitude towards me during the course of investigation.*

I owe my sincere thanks to all the non-teaching staff of the Department of Extension Education, Institute of Agricultural Sciences, Banaras Hindu University for their keen interest taken in the work providing the necessary and timely research facilities, inspiration and suggestion throughout the work.

*With profound regards in a more personal sense, I owe deepest debts to my mother **Mrs. Anju Yadav** and my father **Mr. K. V. Singh**. It was their zeal and enthusiasm which made it possible for me to complete my logical end of this study. My words are too feeble to give my inner feelings. Their constant encouragement, moral and emotional support rendered throughout my education for which I will remain indebted to them throughout my life.*

*I am thankful to my brother **Ashwani Kumar**, sister **Dr. Deepti Singh** and special friends **Priya Garkoti, Aditya Kukreti and Prity Kumari** for whole hearted co-operation and continues inspiration.*

Without the help of seniors no one can learn the lesson of life and cannot teach the same to loving juniors so, heartfelt and special thanks to my most hearty senior, ***Ms. Ashima Muyal, Mr. Rohit Shelar, Ms. Shilpa Mr. Himadri, Mr. Shivanand*** *and* ***Mr. Mahesh*** *for their co-operation during the study and investigation.*

I am highly thankful to the company of my batchmates, ***Khusboo Kumari, Hanamanth, Monika Rani Pradhan, Sukhchain Singh, Sujala Unnikrishnan, Tripta Chaurasia, Surbhi Maurya, Bimal, Prem Kiran Battu, Akanchha Kumari*** *and* ***Prashish Singh*** *for their moral support, co- operation and priceless suggestions.*

I am highly thankful to my dear friends ***Devyani, Ragini, Shareena, Manjari, Nirja, Jaya*** *and* ***Soumya.***

Great thanks to all.

Date:
Place: *Varanasi* ***(Nisha Singh)***

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

"Education is the most powerful weapon which you can use to change the world"

- Nelson Mandela

The National Education Policy (NEP) 2020 states that education is fundamental to unfold human potential, equitable and just society, and promoting national development. It further emphasises that providing universal access to quality education is the key to India's continued ascent and leadership at the global stage in terms of economic, social justice, equity, scientific advancement, national integration, and cultural preservation. In the coming decade, India will have the largest population of young people, and quality education is the key to making effective use of our human resources for national development. To achieve the objective of developing human and social well-being, quality higher education is very imperative. In the present time of growing competition in the world, Indian higher education should aim at producing students with a high level of innovativeness, creativity, all-roundedness, ethics, scientific temperament, intellectual curiosity, and motivation to contribute to national development.

Agriculture is the mother of all cultures. All mankind directly depends on agriculture for their needs. India has always been one of the highest producers of food grains (297 million tons), milk (200 million tons), fish (14 million tons), and fruits and vegetables (over 320 million tons) (Source: https://icar.org.in/). Also, being the second largest agrarian economy and food producer in the world, it is a major exporter of food-grains and Agri-products. But, the other side of the coin is completely contrasting. Around 17.8 per cent of the Indian children are wasted and 34.7 per cent are stunted. India holding 101st rank is among the 16 worst performing country in Global hunger index report (2021). Moreover, there is a huge gap between income and livelihood of farming and non- farming population. This enigmatic coexistence of food surplus and high incidences of under-nutrition, deprivation and

hunger need to be viewed, analysed critically and worked upon. The tools to break this paradox are: quality agriculture education which produces efficient human resource, effective policy formulation and implementation. With the help of present study, the researcher has attempted focussed on one of the tools to break this paradox i.e., quality agriculture education. For the purpose, researcher has analysed the present agriculture education system, its constraints, need of reforms, perception of students and teachers regarding the suggested reforms.

Evolution of Agriculture Education System

The Green Revolution, which converted India from a food-dependent to a food-surplus country, was sparked by a transformation in Indian agricultural education that began in the late 1950s and 1960s, boosting innovation, science, and technology. Dr. Sarvapalli Radhakrishnan, a great educationist, philosopher, and humanist, submitted a report to the Commission on University Education in 1949 in which he proposed the establishment of an autonomous, holistic rural university where not only agriculture, but also natural science, mathematics, and humanities would be taught, and the generation and use of new innovations, skills, technology, and knowledge would be encouraged. By building agriculture institutions based on a land grant model and integrating education, research, and extension, the Indo-American team was able to turn these proposals into reality. In 1958, India's flagship institution, IARI in New Delhi, announced a change to organise PG schools according to the LGU model, and UGC (University Grant Commission) later granted it the status of deemed university. The first agriculture institution, known as U.P. Agriculture University, was founded in Pantnagar, Uttarakhand, in 1960. It is now known as Govind Ballabh Pant University of Agriculture and Technology (GBPUAT). Between the 1960s and 1970s, a number of SAUs were established, which greatly aided in the production of high-quality human resources and the improvement of the country's agricultural status by bringing about the green, blue, yellow, and white revolutions. Agriculture production (food crops, livestock, horticultural crops, and fisheries) has increased four to ten times since 1960. Hunger and poverty have also been greatly reduced as a result of the rainbow revolution.

Major landmarks of agriculture education

Table 1.1 Major landmarks of Indian Agriculture Education System

Year	Landmark
1952	Indian Council of Agricultural Education (ICAE) set up (worked up to 1964 under ICAR).
1958	First `Deemed University` status bestowed on Indian Agricultural Research Institute (IARI).
1959	Chief of Agricultural Education and ex-officio Secretary to ICAE appointed.
1960	Emergence of SAUs, starting with Pantnagar, based on the recommendations of Joint Indo-American Teams.
1965	Standing Committee on Agricultural Education replaced the Education Panel.
1965	ICAR reorganization with four Divisions including Agricultural Education.
1966	ICAR developed Model Act for Agricultural Universities in India.
1973	Second reorganization of ICAR with the establishment of Department of Agricultural Research and Education (DARE) to provide greater autonomy to ICAR, and Regional Committees to take care of regional needs, and creation of Agricultural Research Services (ARS) and Agricultural Scientists Recruitment Board (ASRB).
1974	Norms and Accreditation Committee (NAC) replaced Standing Committee on Agricultural Education.
1988	G.V.K. Rao Committee recommendations to revamp the functioning of ICAR including its role in Agricultural Education.
1995	Agricultural Human Resource Development (AHRD) project, with World Bank Support, launched (ended in 2001).
1996	Accreditation Board established replacing NAC
2007	IV Deans Committee revised UG course curricula and syllabi, and norms, standards and academic regulation.

Year	Landmark
2007	Consortium for e-Resources in Agriculture (CeRA) established for facilitating 24x7 online accesses of select journals in agricultural and allied sciences to all researchers, teachers and students, policy planners, administrators and extension specialists in NARS through IP authentication.
2009	National Core Group revised PG (Master's and PhD) course curricula and syllabi and the common academic regulations.
2009	NS-ICAR (**Netaji Subhas-ICAR International Fellowship)** was introduced for Ph.D. programme in Agricultural universities (AUs) and Overseas Universities for both Indian and Overseas candidates
2010	India-Africa and India-Afghanistan Fellowship Programme started
2013	ICAR organized XI Agricultural Science Congress on *'"Transforming Agricultural Education for Reshaping India's Future "at Bhubaneswar in 2013.
2015	New agriculture research institute at Barhi, Jharkhand formed based on IARI, New Delhi pattern
2016	NIVEDI (National Institute of Veterinary Epidemiology and Disease Informatics) is a unit of the Indian Council of Agricultural Research (ICAR) formed in Bengaluru to research the changing pattern of emerging and re-emerging animal diseases.
2016	5th Deans Committee revised course curricula and syllabi, norms, standards and academic regulations
2016	Vice-Chancellors of agriculture universities under ICAR-AU system declared the degree in Agriculture and allied subjects as professional degree
2017	NAHEP has been formulated by ICAR for five years starting from 2017-18. The project is proposed on 50:50 cost sharing basis between the World Bank and the Government of India, implemented at the Education Division, ICAR, New Delhi.
2020	First National Agriculture Education policy setup to bring academic credit banks and degree programme with multiple entry and exit options.
2021	Agri-DIKSHA launched

At present, Indian Agricultural education System 62 State Agricultural Universities, 5 Deemed to be universities, 2 Central Agricultural Universities and 4 Central Universities with Agriculture Faculty. Despite of numerous reforms and programmes, agriculture education system is plagued by many inconsistencies and loopholes that must be addressed. These flaws have existed in the system since its inception and must be rectified. The next section discusses the inequities in the agriculture education system and possible solutions.

Asymmetries in present Agricultural Education System and Solutions:

The products of the present agriculture education system i.e., human resource lack the required skill and knowledge. Lack of manpower in frontier areas, decreasing faculty strength, less experience in research work and inadequacy in hands-on skill are the major concerns in agriculture education system (Kumar et al., 2014). Faculty inbreeding and difficulty in attracting talented students are also major problems in agriculture universities (Tamboli and Nene, 2013). The problems like poor library facility, faculty inbreeding, conservative teaching from outdated notes, less recruitments and inadequate staff, disappearing basic sciences from agriculture curricula, absence of case studies in lectures, less orientation of students to actual problems in agriculture, lack of practical on field , increasing gap between research, education and extension, very limited foreign exposure of students and teacher and lack of awareness about agriculture in foreign countries among students. Unsatisfactory investment and reduced financial resources of agricultural universities/colleges, lack of resources and standards for opening new institutions, unconscious division of labour in agricultural universities, insufficient resource planning, and poor coordination between the centre and the state have further exacerbated these problems. Taking into the NAAS 2013 XI Bhubaneswar Conference and Declaration, the recommendations of the Fifth Dean's Committee in 2016, and the continued efforts of ICAR under consideration the following steps have been taken to alleviate the ongoing asymmetry in the transformation of agricultural education in India.

The most important need is to make Agricultural Education for Development (AEFD) an integral part of national agricultural policy which is essential to create a world-class agricultural university system that is adapted to local, national and international challenges and opportunities.

The National Policy on Agricultural Education (NAEP) should be aligned with the National Policy on Education 2020, which is based on five pillars, namely access, equity, quality, affordability and accountability to achieve the 2030 Agenda. This structure will allow the country to provide a quality education that will determine our future.

Our education system must also incorporate emerging issues such as, climate change, increased biotic / abiotic stress, the unprecedented Covid-19 pandemic, socio-economic crisis, biosafety / food security issues, rapidly declining natural resources and biodiversity and, risk assessment and management. In view of the above, by 2030, Sustainable Development Goal (SDG) 4 i.e., ensure inclusive and equitable quality education and promote lifelong learning opportunities for all positively affects Sustainable Development Goal 1 i.e., alleviation of poverty and Sustainable Development Goal 2 i.e., elimination of hunger. Hence, the entire education system, from schools to higher education, must be configured to support faster learning which will result in achieving these goals for which we must improve the creativity of all stakeholders and strengthen their social, moral, and emotional capabilities. The new economic policy is progressive, futuristic and student-centred, and must be appropriately incorporated into the national agricultural education policy. It is the foundation of flexibility, multi-discipline and internationality, and meets the needs, desires and voices of people in this field; it integrates indigenous and endogenous traditions, knowledge and cultural heritage on the basis of science to ensure comprehensive development. It also provides multiple entrances and exits, as well as convenient horizontal and vertical liquidity provided by credit banks. This will encourage skill-based selection and self-paced based on accessibility, fairness and affordability.

Indian agriculture universities must focus on becoming world grant from land grant. In the spirit of reform, realization and transformation, and recognize that the

local and global are no longer independent. New courses, curriculum and content must be continuously developed and dynamically include new global initiatives, such as global green economy, knowledge economy, global zero hunger challenge, etc. Reiterating the role of agriculture and social sciences as the basic driving force of change, it is recommended that agriculture, arts, and humanities be merged with science, technology, engineering, and mathematics (STEM) to transform STEM into STEAM.

India requires to rank its agriculture universities according to the indicators recommended by the National Academy of Agricultural Sciences (NAAS) to improve standards in the fields of knowledge, management, and governance, so that our students have global relevance and become true global citizens. Therefore, the resurgence of agricultural education will transform the agricultural economy and attract foreign students, making the government research program in India a success. This needs more technical interventions in disciplines such as information and communication technology, biotechnology digitization, agricultural processing, nanotechnology, systems simulation and precision agriculture. Diversified business / marketing / revenue approaches and public-private partnerships are needed to make local advocacy responsive to micro-level challenges, strengthen feedback mechanisms, and determine the right priorities. Promoting India's industry, entrepreneurship and agricultural start-ups, fostering market-oriented promotional strategies and intensive use of electronic media should be properly included in educational programs, so that scientific social responsibility (SRH) and Corporate Social Responsibility (CSR) complement each other. Agriculture (in a comprehensive sense) should be an important part of education from elementary school through high school, college, and the university system. The national agricultural education system emphasizes to train professionals with important skills to find real solutions.

Other measures include: autonomy, institutionalizing transparent governance, meritocracy, smart resource allocation, monitoring and impact evaluation, strengthening basic and emerging sciences, establishing and training centres of excellence to attract young people as agricultural leaders and develop skills through a

single regulatory agency, entrepreneurship, experiential learning, and institutionalization of professional training.

In this spirit, the quality assurance of higher agricultural education pursued by ICAR / DARE / SAU implies certification, the establishment of minimum standards of higher education, academic regulations, personnel policies, revisions of the curriculum and of the education system, delivery, and the creation / strengthening of infrastructure and support. The Fifth dean committee report of 2016 reorganized the curriculum to support relevant practical skills, entrepreneurial skills, self-employment, leadership qualities, graduate confidence, and to attract and retain graduates. New courses have been incorporated to promote local agriculture like tribal agriculture, coastal agriculture, hill agriculture. In compliance with the Student READY program launched in 2015, the Deans' Committee has designed one year program in all the UG disciplines comprising (i) Experiential Learning, including International Experiential Learning wherever feasible; (ii) Rural Agriculture Work Experience; (iii) In Plant Training/ Industrial Attachment; (iv) Hands-on Training (HOT)/ Skill Development Training; (v) Students Projects, and (vi) the Agricultural Science Pursuit for Inspired Research Excellence (ASPIRE) program.

The ongoing World Bank supported National Agricultural Higher Education Project (NAHEP), built on the preceding World Bank projects, particularly NATP and NAEP, is poised to strengthen the capacities of faculty and other staff at all levels, foster linkages of the national system with global knowledge economy, facilitate International Experiential Learning, promote learning-centred education, fortify partnership with private industries, and augment digitalization and online distance learning. All these developments are to bring a change in the educational systems in India.

To bring any change in the educational system there is need to understand the feeling and interests of people towards a change in the educational systems. So, perception and feelings are two important components related to this research that are described below.

Perception

The term "perception" is derived from the Latin roots "perceptio", "perceptio", and means "receiving, collecting, action of taking possession, and apprehension with the mind or senses."

According to the Longman Dictionary of Contemporary English perception can be defined as 1) the way you think about something and your idea of what it is like, 2) the way that you notice things with your senses of sight, hearing etc., 3) the natural ability to understand or notice things quickly. In the present study, perception is operationalized as agreement, disagreement or indecisiveness of the students and teachers regarding reforms in agriculture education system.

Reforms

The term reform is derived from the Latin word "reformare" which means "to shape". According to yahoo education 2007, It refers to improvement by alteration, a correction of error or removal of defects. educational reforms can also be defined as a program of educational change that are government directed and initiated based on an overtly political analysis, and justified on the basis of the need for a very substantial break from current practice (Young and Levin ,1999). In the present study reforms in agriculture education system are any changes (addition, deletion and modification) in the existing system with the purpose of improving it.

Problem statement

Agriculture education is not the first choice for students. As per the merit list students join agriculture education after being rejected in medical and engineering examination (Tamboli and Nene,2013). Hence, it can be said that agriculture education is considered less attractive as compared to other fields. To attract brighter minds to agriculture education, it needs to be reformed. But, to bring reforms in right direction, the present loopholes in the education system need to be analysed and perception of actual target audience i.e., students and teachers need to be explored. Park and Sung (2013) stated that teachers should not be expected to accept reforms as served by the developers as they have better understanding of its application in actual

classroom level. So, perception of students and teachers is very important to implement reforms effectively. To analyze the factors which hinder the students in opting agriculture education and insufficient research in this area is one of the reasons of this study. Considering these problems, following research questions were framed.

Research questions

1. What are the socio-personal and psychological characteristics of students and teachers of agriculture education system?

2. What is the perception level of students and teachers regarding reforms in agriculture education system?

3. How are socio-personal characteristics influencing the perception of students and teachers regarding reforms in agriculture education system?

4. How is psychological mindset of students and teachers affect their perception about reforms?

5. Is the perception of students and teachers regarding reforms in agriculture education system related?

Objectives of the study

To answer the above research questions following objectives were framed for the study:

1. To study the socio-personal and psychological characteristics of students and teachers.

2. To analyse the perception of students and teachers on reforms in agriculture education system.

3. To examine relationship between the perception regarding reforms in agriculture education and selected independent variable of students and teachers.

4. To find out the difference in level of perception of students and teachers regarding reforms in agriculture education.

Limitations of the study

1. Online survey and unprecedented COVID-19 situation led to less responsiveness of the students and teachers.
2. All the respondents belonged to one university.
3. The survey was conducted through schedule technique, so respondents may have been biased
4. There was limitation of time, sample and research facilities.

Layout of the study

The present study has been presented under six heads divided into six chapters. Each chapter is dealing with different aspect in a logical sequence. The first chapter "Introduction" deals with agriculture education system of India, evolution of agriculture education in India, asymmetries in agriculture education and solutions, the concept of perception, the concept of reform, purpose of the study, Problem statement, Research questions, Objectives, limitations and layout of the study. The second chapter "Review of Literature" comprises of finding various studies which are relevant for the present study. The third chapter "Research Methodology" includes Universe and locale of the study, Research design, Sampling designs and selection of the respondent, Selection of variables and their empirical measurements, Data collection procedures, Statistical tools used. The fourth chapter consists "Result and Discussion" of the study. The fifth chapter consists of "Summary and Conclusion" of the study

Chapter 2

REVIEW OF LITERATURE

A thorough and critical review on the side of the researcher gives a solid foundation to the research. In this chapter, an attempt was made to review all literature to date that has a direct or indirect influence on the current investigation, keeping in mind the aims of the study. The following headings have been used to organise the literature review:

1. Studies on socio personal and psychological characteristics of students and teachers.
2. Studies on relationship between perception and selected independent variable of students and teachers
3. Studies on constraints in present agriculture education system.
4. Studies on reforms in agriculture education system.
5. Studies on perception of students and teachers towards reforms in agriculture education system.

Studies on socio-personal and psychological characteristics of students and teachers

Rexlin (1993) in the study entitled "Perception of Horticulture students Toward Self Employment" found that more number female students enrolled in Horticultural college in Tamil Nadu.

Naika (1999) in the study entitled "A Study on the Impact of Educational Technology on Students Development in a State Agricultural University of Karnataka" observed that maximum number of students had urban background and studied in regional language (Kannada medium) and were in middle age group. of the students. They perceived physical facilities to be adequate. Majority of teachers also belonged to middle age group and had an experience of 11 to 20 years. Most of the teachers had masters' degree as their maximum qualification. He also suggested that

the quality of agriculture education can be improved by bringing reforms in curriculum, teaching methodology, updating teachers' knowledge, evaluation.

Foster (2003) in the study entitled "Profiling female teachers of agricultural education at the secondary level" revealed that stated that a greater number of women have taught less than 10 years with an average age of 33 years short term careers fix women in the field. More focus on demographics is needed before taking up a teaching job.

Shao and Bruening (2005) in the study "Teachers' perceptions of curriculum reforms and teacher training programs in Chinese agricultural schools." stated that the respondents age ranged between 23- 60 years. out of which 72 per cent fell between the age group of 27 and 40 years. Eight per cent of teachers had work experience between 5 to 20 years and 61 per cent of the respondents were male. While, remaining 39 per cent were female.

Raghavendra (2007) in the study "A study on learning styles of post graduate students at University of Agricultural Sciences, Bangalore" expressed that out of total 130 respondents 81 (62.30 per cent) were boys remaining 49 (37.70 per cent) were girls at University of Agriculture Sciences (Bengaluru).

Ambika (2009) in the study entitled "Perception of post-graduate students' towards teaching competency of teachers in a state agricultural university of Karnataka." interviewed 108 students, out of which 52 i.e., 48.15 per cent were male and 56 i.e., 51.85 per cent were female. among the total 108 respondents there are 52 boys (48.15) and 56 girls (51.85). Possibly, agricultural universities such as UAS (B), the girl students are joining for essentiality of the teaching and learning.

Sajeev *et al.* (2013) in the study revealed that rural urban background, achievement motivation, medium of instruction, mass media usage and leadership qualities had a positive significance while annual income of family, educational level of parents, and self-confidence had negatively significant relationship with perception.

Mahmood (2013) in the study entitled "Relationship of students' perceived information literacy skills with personal and academic variables" revealed that majority (61 per cent) of respondents were girls. Four fifth students had access to internet and overall students perceive their information literacy as good. Respondents were comfortable in using basic computer and searching internet. They were not comfortable in using HEC digital library, online indices, abstracts and online searching in database.

Davis and Jayaratne (2015) in the study "In-Service Training Needs of Agriculture Teachers for Preparing them to Be Effective in the 21st Century." stated that majority (64 per cent) of respondents were male. The teaching experience of respondents ranged from 1 to 38 years with the mean of 14 years. Only 23per cent had five years or less teaching experience.

Chauke and Kabiti (2016) stated in the study entitled "Teachers' Perceptions on Agricultural Science Curriculum Evolvement, Infrastructure Provision and Quality Enhancement in Limpopo Province, South Africa." that 58 per cent of the participants were male and 75 per cent were ranging between the age group of 18 to 50 years.

Verma *et al.* (2017) in the study "Perception of agriculture students towards rural agricultural work experience (RAWE) programme" surveyed 118 students of agricultural sciences among whom 52 were girls and 66 were boys.

Akhtar K. *et al.* (2018) in the study entitled "Possibilities of agricultural education for secondary level in Pakistan." observed that 34 of the total respondents in their study were assistant professor, 7 associate professors, 5 professors and 5 lecturers. Fourteen teachers had an experience of 1 to 5 years. 15 had an experience of more than 16 years. 94 of the respondents felt the need of including agriculture education at secondary level. Also, nineteen teachers i.e., 39.5% advised to have 50% contribution of practical in the curriculum. Sixteen teachers i.e., 13.3% felt that practical must contribute 20 to 29% while, 12.5% supported 30 to 39% contribution of practical in curriculum.

Mahara (2019) in the research study "A study on teaching effectiveness of extension teaching-learning in agricultural universities of northern India" found in his study, that majority i.e., 71.90% of students had medium level of self-confidence followed by 17.62% students who fell under high category. While, only 10.48% had low level of self-confidence. Similarly, majority (62.12%) of teachers fell under medium level of self-confidence category followed by high (30.31%) and least number of teachers (7.57%) had low level of self-confidence.

Navani and Ansari (2020) in the study "Study of e-learning readiness of teachers of state agriculture university." revealed that 95.7% of teachers had Ph.D. as their maximum-educational qualification. 42% of teachers had a teaching experience of less than 5 years, 37.14% of the teachers had between 5 to 23 years of teaching experience. While, 22.86% had more than 23 years of experience. Moreover, 68.57% of teachers had medium level of computer literacy.

Boerngen and Ricard (2020) in the research paper entitled "Assessment and perception of student farm background in an introductory agriculture course" stated that out of 775 enrolled agriculture students only 200 had agriculture background. 47.5 per cent respondents out of the 200 student's 50 % family income came from farm. The researcher emphasised the need to study the background of students and teachers as the background develop a pre-conception.

Studies on relationship between perception and selected independent variable of respondents

Sandhu (1968) in the research on "Job Preference Between Teaching, Research and Extension by Agricultural Graduate Students" revealed that among the Under-Graduate students of Agriculture sciences, the ones belonging to rural background were more knowledgeable in Agricultural subjects as compared to the ones with urban background.

Maccoby and Jacklin (1974) in the work on "The psychology of sex differences." stated girls and boys have different interest, attitude and values regarding learning.

Jagannadhan (1985) in the research paper on "Impact of socio-economic status (rural) on Academic Achievement." found a non-significant relationship between locality and academic achievement.

Curtis *et al.* (1986) with the help of study on "Measuring Computer Literacy in Colleges of Agriculture: Results, Conclusions and Implications." laid out in their study that seniors had more computer literacy as compared to juniors in colleges of agriculture. They also suggested the need of university to take over the charge to provide computer literacy.

Sudarajan and Lilly (1991) in the study entitled "Study habits of ninth standard pupils in and around Chidambaram." observed that female students had better learn habits than males. No significant difference was found between study habits of students and type of organization (public and private).

Denakker and Damme (2001) with the help of study on **"**Relationship between school composition and characteristics of school process and their effect on mathematics achievement." indicated that there was a positive association between students' levels of accomplishment and a range of inputs in schools (e.g., skilled instructors, availability of instructional tools, favourable school atmosphere and efficient school administration).

Nagaraju (2004) who researched on **"**Study habits of secondary school students." reveal that girls had significantly different study habit than boys. Parents occupation and rural urban background also significantly influenced the study habit of students.

Leite *et al.* (2005) in the study named "The Implementation of Educational Reform in Brazil's Agricultural Schools: A Study of Agricultural Teachers' Perceptions." found that teaching experience was the only demographic characteristic that significantly influenced adoption. Teachers considered reforms to be complex. authoritarian approach of reform implementation was opposed by teachers.

Kabadayi (2010) through the study entitled "Investigating demographic characteristics and teaching perceptions of Turkish preschool teachers" showed that quality of teaching beliefs and education given to young students is significantly affected by qualifications of teachers. Higher qualifications of preschools teachers positively affect students both in short and long term.

Park and Sung (2013) in the study on **"**Teachers' perceptions of the recent curriculum reforms and their implementation: what can we learn from the case of Korean elementary teachers." revealed that teachers generally had negative and unconstructive feeling in implementing suggested reforms. The reason behind such feeling is lack of opportunities to work through implementation. Additionally, cultural and contextual constraints also inhibit implementation. they emphasized that teachers should not be expected to accept reforms as served by the developers as they have better understanding of its application in actual classroom level.

Baliyan *et al.* (2015) who researched on "Demographic factors influencing senior secondary school students' attitude towards agriculture in Botswana." found that attitude of students towards agriculture is significantly influenced by his or her intention to study in agriculture programme in which they are currently enrolled. School location and family income also affected student's attitude.

Adegoke and Osokoya (2015) in their study on "Socio-Economic Background and Access to Internet as Correlates of Students' Achievement in Agricultural Science" found that 67.7 per cent of agriculture students had access to internet. There is a positive but nonsignificant relationship between access to internet and student's achievement in agricultural sciences. There is a positive and significant relationship bet socio-economic background and students' achievement in Agricultural Science.

Karani *et al.* (2021) in the study "Teaching competence-based agriculture subject in primary schools in Kenya; a review of institutional preparedness." concluded through his study that admission of preservice teachers in colleges and universities with low entry grades negatively affect learners' competencies and some

countries that admit the top students in teaching have been confirmed to produce globally competent students in vocational subjects.

Studies on Constraints in present agriculture education system

Wassef (1978) found that the major constraints which hindered educational technology development were lack of good teachers, lengthy school curricula, preparation programmes, inadequate fund, bureaucracy and negative attitude of teachers towards media.

Black (1983) in the study **"**Introducing diagnostic assessment" analyzed the method of diagnostic tests used in schools of Edinburgh in United Kingdom. He found that lack of assessment skills of teachers, lack of existing assessment policies of exams and sociological problems influenced assessment of students. Therefore, unless a favorable environment was created, these problems of diagnostic assessment were likely to be misunderstood and misused by the teachers.

Martin *et al.* (1999) in their article on "A Global Perspective on Change in Higher Education for Agriculture" emphasised Agricultural institutions around the world are experiencing a variety of problems notably decreasing enrolments, keeping up with technological advancements and decreasing resource allocations. Major reforms in agriculture education depend on allocation of fund.

Maguire *et al.* (2000) in the study "Agricultural education in Africa: Managing change" revealed the problems in agricultural universities of Africa. There is unemployment among graduates, poor practical skills, inbreeding of faculty, lack of linkage to other organizations, lack of interaction of students with employers, decreased funding and failure to attract best quality students.

Desimone (2002) in the study on **"**Effects of professional development on teachers' instruction: Results from a three-year longitudinal" pointed out that Schools do not have coherent and coordinated approach for professional development and instruction. they must focus on professional development of teachers to increase the

quality of education. Schools must set priorities for professional development and build infrastructure for it.

Tamboli and Nene (2013) in their study on "Modernizing higher agricultural education system in India to meet the challenges of 21st century" identified major constraints in higher agriculture education. A few important ones were: 1) difficulty in attracting bright/talented students (2) funding crunch (3) large number of vacancies (4) inbreeding of faculty (5) lack of autonomy to the Vice-chancellors and (6) poor state–centre and state–SAU relationship.

Javed *et al.* (2015) performed dimension wise analysis and found a significant difference in the current situation and the expectations of the faculty. The maximum difference or gap in the existing and desired situation was found to be in four aspects like orientation, innovation, monetary gain and physical facilities. Evaluation was also found to be unsatisfactory. overall gap between perception was found to be non-significant.

Studies on reforms in agriculture education system

Meighan (1978) in the study entitled **"**A pupils eye view of teaching performance" revealed that pupils' feedback on lessons preparation, presentation, general class management and attitude of teachers to pupils were constructive, sympathetic and helpful to the teachers of Birmingham University.

Kuppuswamy and Natrajan (1989) recommended improvements in lecture through the study on "Lecture Method. Strategies for Improvement". He emphasised on teachers' efforts to attract learners' attention by the use of change in pitch during speech, style of speaking and understanding student's non-verbal communication to make learning situation more comfortable for the students. His recommendation can be beneficial for better and desirable learning outcomes. So, careful analysis should be done and reforms should be designed and implemented.

Gurumurthy (1998) through the study on "Improving academic environment in agricultural universities." suggested that to increase the teaching quality, basic

amenities for teachers and students should be provided such as physical facilities in class rooms, free access to audio-visual aid for instructors, research well equipped laboratory facilities, favorable environment for learning, proper seating arrangement cafeteria facilities, residences, and so on.

Gordon *et al.* (1999) in his study entitled "Relationship between personality characteristics and observable teaching effectiveness of selected beginning career and technical education teachers." stated that educational reforms and school improvement efforts are only possible when teachers are identified as key link in the reform process.

Melnychuk (1999) pointed out six steps to be taken to reform agriculture education system of Ukraine in the study entitled "Ukrainian National Agricultural University Reform Activities: Integration into the World Education System" .The steps were: Studying agriculture education system of different universities and international linkage between universities; Providing autonomy and democracy to universities for personnel management; Exploring linkage between university's scientific research and educational activities; Improving structure and administration of the university; Updating computer and information technology and providing students with distance learning programme; Reforming the linkage between university administration and student organizations.

Reed (2000) confirms the need to intimately involve teachers in conceptualization and in directing of school reform process in the study entitled "Teaching with power: Shared decision-making and classroom practice". The Researcher emphasised Teacher's knowledge is very important for the reform process. The final implementation of reform depends on the willingness of teachers hence their agreement is important for positive consequences.

Ananthasayanam and Ravi (2004) revealed in the study on "Cognitive abilities and their effect on receptive skills among primary school children a study" that in the present times major responsibility of higher education is to shift from traditional knowledge intensive curriculum to competency building of the learners.

Erickson (2006) states in the book "Concept-based curriculum and instruction for the thinking classroom" that traditional curriculum of agriculture education fails to provide strong conceptual knowledge. Hence, curriculum model is required which provide cognitive teaching and learning. Concept based curriculum is beneficial for the present changing world and better use of mind of the learners.

Audu *et al.* (2013) stated in the study "Facilities Provision and Maintenance: Necessity for Effective Teaching and Learning in Technical Vocational Education. International Organization of Scientific Research" that the availability and maintainence of facilities will improve the academic performance and practicle skills required for gainfull employment.

Kumar and Kumar (2014) in the study on **"**Pedagogy in higher education of agriculture" emphasise the need to reform agriculture education system with the increasing involvement of private players in agriculture. They pointed that curriculum should be market oriented and focus on subsistence and alleviating poverty in the country. pedagogy in agriculture must shift from hierarchical to participatory and organization must shift from being reactive to pro-active.

Davis and Jayaratne (2015) in the study entitled "In-Service Training Needs of Agriculture Teachers for Preparing them to Be Effective in the 21st Century" reaffirms the need for continuation of leadership education and application of problem-based learning, planning and delivering lessons to utilize higher order thinking skills, teaching leadership skills, development of teamwork and student collaboration were the five most important in-service training needs for preparing agriculture teachers to be effective educators.

Perception of students and teachers regarding reforms in agriculture education system

Knobloch (1997) revealed that teachers of elementary education needed user friendly resources and current and over 90 per cent of the teachers agreed that agriculture studies also include other areas such as wildlife, woodlands, natural resources, forestry horticulture, floriculture, and processing food and fiber; eight of

ten teachers felt that agriculture can be taught in any subject like social sciences, math's, art, language arts and science. Moreover, teachers of elementary education see a very positive future in the field of agriculture and consider it a highly technological, environmentally conscious, science based and competitive business operated industry having ample number of career opportunities with educated and skilled workforce and teachers also felt that felt that every elementary student should be taught agriculture in school no matter what career they are going to pursue in future.

Mazumdar (1997) in the study "Teaching Material for Social Work Education" reported that Newspaper clippings, video tapes, overhead projector, posters slides, black board, flash cards, role play and pamphlets were the teaching learning aids used by instructors to support their teaching. Furthermore, the usage of instructional aids resulted in improved conceptual understanding, attention, and involvement.

Naika (1999) in the study entitled **"**A Study on the Impact of Educational Technology on Students Development in a State Agricultural University of Karnataka" reported that 64.58 per cent of teachers found the physical facilities to be adequate and use of instructional aid as moderate (more than eighty per cent).60.00 per cent of students perceived that course content of curriculum were adequate. Use of instruction aid by the teachers were moderate (71.35). more than 50 per cent students considered evaluation system rigid. Teachers considered student management, administration, higher training and promotional opportunity as the major constraints in curriculum.

Bagalkoti *et al.* (2006) revealed in the study "Students perception of quality in higher education: A case study" that 38 percent of professional course students and 45 per cent of non-professional course students believe that the present evaluation system in the study area is ineffective. They advocate for more frequent exams, as well as an assessment that covers all of the material learned. They advised to have more transparency and accountability in assessment and evaluation.

Joong P. *et al.* (2013) in the study on "Teachers and students' perceptions of secondary reform and implementation: A China and Canada Comparison" showed a contrast in perception of students and teachers. Teachers perceived that they provided activity-based teaching and used diverse learning modes than earlier. While, students said that teachers mainly used teacher talk and individualized work methods.

Muchiri *et al.* (2013) in the study on "Students 'perception Of Secondary School Agriculture: A Case of Meru Central District, Kenya" observed that agriculture students have positive perception to learn agriculture in secondary school education. They think of agriculture being a useful subject for school students and neighboring community. No significant relationship was found between parents' residence and students' gender with their perception regarding inclusion of agriculture subject in secondary education.

Mahra *et al.* (2015) in the study entitled "Perception of Agricultural Students and Agro-professionals towards Agricultural Education and Skill Development in India: Connect and Disconnect." found that respondents (students and agriculture professionals) gave high importance to core competency skills, communication and professional skills. Students also perceived that among professional skills creativity, problem solving, time management, planning, leadership and organizing were given least importance by the institution.

Chapter 3

RESEARCH METHODOLOGY

Research Methodology is a way to systematically solve any research problem. This chapter aims to deal with procedures and methods used for selection of area, universe and locale of the study, sampling design, selection of respondents, selection of variables for the study and their empirical measurements, the data collection procedures and statistical methods employed for the analysis of the data. The research methodology developed for conducting the present study is discussed under the following sections:

3.1 Universe and locale of the study

Universe of the study refers to the place where research was conducted. This study was conducted at Institute of Agriculture sciences of Banaras Hindu University, Varanasi. Institute of agriculture Sciences was chosen as locale of the study because students and teachers in the institute are a part of agriculture education system. The second reason for selection of IAS was it having more diversity of students and teachers as compared to State Agriculture Universities. The Present investigation is an attempt to know the perception of teachers and students regarding reforms in agriculture education system. Background information of Universe and locale of the research is as follows:

3.1.1 About Banaras Hindu University (Universe)

Banaras Hindu University is an internationally reputed temple of learning, situated in the holy city of Varanasi. This creative and innovative university was founded by a great nationalist leader, Pandit Madan Mohan Malviya in the year 1916 with the cooperation of great personalities like Dr Annie Besant, who considered it as the University of India. Banaras Hindu University was created under the parliamentary legislation – B.H.U. Act 1915. It played a great role in the independence movement and has developed into the greatest centre of learning in India. The area of the main campus is 1300 acres and is one of the largest residential

Source: https://www.bhu.ac.in/aboutus/map.php

Fig 3.1.1: Representation of universe of the study

universities in Asia, with over 20,000 students. The university comprises all castes, creeds, religions and genders, and is on the list of Institutes of National Importance. South Campus of the university, located in Barkachha in Mirzapur district is spread over an area of 2700 acres i.e., 11 km. The south campus also comprises Krishi Vigyan Kendra (Agriculture Science Centre). BHU is organised into 6 institutes, 14 faculties (streams) and more than 132 departments. The university's engineering institute was designated as IIT in June 2012. As of 2017, the total student enrolment in the university is 27,259 from 48 nations. It has over 75 hostels for resident students.

3.1.2 About Institute of Agricultural Sciences (Locale)

The Institute of agricultural sciences had its inception in 1931 when it was established on the recommendation of the royal commission of which Mahamana Pandit Madan Mohan Malviya Ji was a member. It formally got established in the year 1980. At the time of its formation, the Institute was one of the pioneers in starting postgraduation teaching and research programmes in Agriculture in India, one other institution being at Lyalpur which is now in Pakistan. India was the first country to have established an Institute of Agricultural Research offering Masters and doctorate degrees. However, the under-graduate teaching programme started in the year 1945 and the Institute of Agricultural Research was renamed as College of Agriculture and brought under the Faculty of Technology in the same year. In the year 1968 College of Agriculture became an independent Faculty of Agriculture. Subsequently 6 departments viz, Agronomy, Genetics & Plant Breeding, Soil Science, Plant Physiology. Plant Pathology& Agricultural Chemistry. Department of Agricultural Economics was created in the year 1969. Departments of Entomology & Agricultural Zoology and the department of Horticulture were added in 1971. Animal Husbandry & Dairying, Extension Education and Farm Engineering were formed in 1981. Centre of Food Science and Technology (CFST) was established in 2008 and became integral and permanent part of the Institute in 2016.Keeping in view the requirement of human resources and specialized demand of 21st century, during post 2006, Institute started 11 new specialized courses viz Master of Agri Business Management (MABM), M.Sc. (Agro-forestry), M.Sc. in Plant Biotechnology, M.Sc.

in Soil & Water Conservation, MTech in Soil & water Conservation, M.Sc. & Ph.D. in Food Science, Ph.D. in Agricultural Statistics, Soil & Water Conservation and Post-harvest Management and one Diploma Course in Seed Production and Marketing.

Teaching, Research and Extension activities in agriculture was given greater emphasis on the establishment of Agricultural Universities based on land grant pattern of the U.S.A. Thus, it was the need of the hour to reorganize the Faculty of Agriculture into an Institute of Agricultural Sciences, so that along with teaching, research and extension needs of eastern Uttar Pradesh can also be met. On the recommendation of ICAR and UGC visiting team institute of agriculture sciences was reformed in August 1980. The objectives of the institute are as follows:

- To improve the quality of technical manpower with an integrated approach for teaching, research and extension, thereby providing a practical bias to all the three aforesaid functions and making research production-oriented, problem-solving, comprehensive and interdisciplinary. Due emphasis was given to practical training, particularly at the B.Sc. (Ag.) level.
- To create easily adaptable technical know-how from well organized, well-equipped research laboratories and experiment stations;
- To develop technically competent and organizationally strong extension service for transmitting the results of researches down even to the remote fields and farmers of the region and bringing back the cultivator's problems to the laboratories for their solution:
- To organize with the co-operation of the State Government a dependable supply-line of pure and improved seeds and related inputs.

At the time of formation, the institute had a faculty strength of just 3 members. At present, it has 89 teachers and scientists. Students take admission in the institute through all India entrance examinations. Presently, 8 students are admitted in M. Sc. (Ag)/ Ph.D. programme. Additionally, 25%of seats are allocated to ICAR sponsored candidates. The institute has also started new courses like soil and water conservation,

MABM and food science and technology. For technological advancement of crop and animal production, a number of research projects supported by UPCAR, UGC, ICAR, CST, NABARD, World bank, CSIR and other national and international institutions are running in almost all the departments. At present, the institution has 10 AICRPs involving crop-weather interaction, on-farm research in participatory mode, integrated pest management, crop improvement, mechanization etc. Additionally, Institute has a World bank funded competitive grant project (CGP) and several NATP research Projects in the production system & mission mode.

Source: http://www.iagscbhu.in/about.php

Fig 3.1.2: Representation of locale of the study

Institute of Agricultural Sciences is located at the main campus of BHU on the southern outskirts of Varanasi. The Institute also includes 160 acres (65 hectares) farm in the main campus. IAS manages a Krishi Vigyan Kendra (KVK) (Agricultural Science Centre) in the south campus of BHU at Barkachha, in Mirzapur district. The KVK manages around 2500 acres (1000 hectares) of farms for community education and research purposes. It has a dairy for study and research purposes with about 400 animals. It has a study and research of flowering plants, horticultural unit for development, and a specialized unit for medicinal plants. Students have access to both university and institute library that has specialized collection of periodicals, volumes related to agricultural sciences and journals. the Institute is contributing to the nation in achieving Sustainable Development Goals (SDGs) and doubling farmers' income.

There are currently 10 multi-disciplinary ICAR All-India Coordinated Research Projects (30.41crores), 2 ICAR Network Projects, 47 newly sanctioned Ad-hoc research projects (total outlay :Rs. 3.27crores) and 40 on going Ad-hoc research projects (total outlay : Rs. 20.91crores), sanctioned by various national agencies and industries, and one Mega Seed Project (involving Crop Seed, Horticulture, and Mushroom Production : 1.5 crores).

3.2 Research design

Research design is an important organ of any research as it increases the efficiency of any research. According to C.R. Kothari, research design includes decisions regarding what, when, where, how much, by what means concerning an inquiry or a research study constitute a research design. It is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. For the present study, descriptive research design was used under which survey method was applied. A descriptive research design Survey is a list of set of questions aimed at obtaining specific data from a particular group of people. The Research was conducted from December 2020 to August 2021. Due to the emergence of second wave of unprecedented COVID-19 final data collection was done through validated web questionnaire tool. WhatsApp and telephonic calls were also used to receive more and faster responses.

Online Survey was conducted via mail, WhatsApp and phone call. This study was conducted from 2020-21and used to describe and relate the perception of students and teachers.

3.3 Sampling design and selection of the respondents

Sampling design is the method of choosing respondents in a manner to meet the objectives of the research. Respondents selected by researcher for the present study were teachers and students (post-graduation and doctoral degree) of Institute of Agriculture Sciences. There were total teachers in the institute at the time of study.

Out of 132 teachers only 24 were selected. As far as students were concerned, there were 253 and 205 students enrolled in Masters and PhD programme respectively in the session of 2019-20. Out of the total students only 95 were selected for the study. For the present investigation, Random sampling was done. The following figure (fig 3.3.1) gives the clear picture about the population and the sample selected for the study.

3.3.1 Sampling Procedure

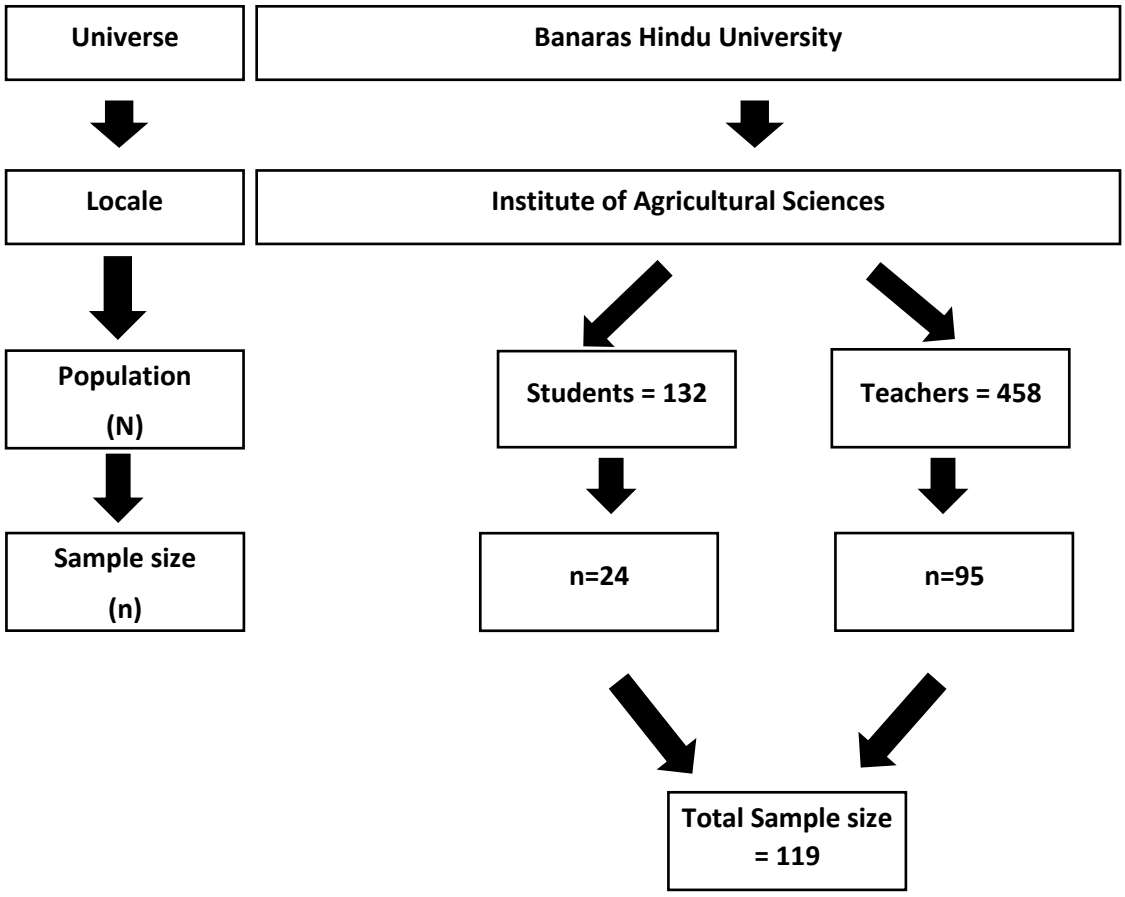


Fig 3.3: Representation of selection of respondents

3.4 Selection of variable and their empirical measurement

Variable is a concept which can take different quantitative values. In the present study dependent and independent variables are used. If one variable depends on the consequence of other variable it is called dependent variable e.g., attitude,

perception knowledge etc. The variable that is antecedent to the dependent variable is called independent variable e.g., education, age, gender, family income.

Table 3.4: Dependent variable, independent variable and their measurement

S. No.	Variables	Measurement
A.	**Independent variable**	
1.	Age	Direct questioning
2.	Gender	Schedule developed by the researchers
3.	Educational qualification	Schedule developed by the researchers
4.	Experience	Schedule developed by the researchers
5.	Designation	Schedule developed by the researchers
6.	Social background	Schedule developed by the researchers
7.	Medium of school education	Schedule developed by the researchers
8.	Specialization	Direct questioning
9.	Exposure to universities	Direct questioning
10.	Social participation	Schedule developed by the researchers
11.	Subject stream in 12^{th}	Schedule developed by the researchers
12.	Information seeking means	Schedule developed by the researchers
13.	Web search skills	Schedule developed by the researchers
14.	Computer literacy	Schedule developed by the researchers
15.	Internet literacy	Schedule developed by the researchers
16.	Self confidence	Schedule prepared by the researchers
B.	**Dependent variable**	
1.	Perception	Schedule prepared by the researchers

3.4.1 Independent variable

1. Age

Age is the length of time the respondent had completed at the time of data collection. The age used for the purpose is chronological age. In the present study age of the students were grouped according to the standard deviation and mean of student's population. (Mean= 24.24 &Standard deviation=1.82)

S. No.	Category	Range (Years)
1.	One	< than 22.42
2.	Two	22.42-26.06 years
3.	Three	>26.06 years

Teachers were also categorized after analysing mean and standard deviation of teacher's population as follows.

S. No.	Categories	Range (Years)
1.	Young age	<44.23 years
2.	Middle age	44.24-61.01 years
3.	Old age	>61.01 years

2. Gender

Gender is the difference in male and female in terms of status and role in society, attitudes, values and their socio-psychological variables. The respondents were categorized and indicated by following indicants.

S. No.	Category	Indicants
1.	Male	2
2.	Female	1

3. Educational qualification

Educational qualification is the degree earned by the respondent through systematic and formal education system. In the present study the last degree received by the respondent from any formal educational institute was considered as his/her maximum educational qualification. Educational qualification is classified as under-graduate, post- graduate, Doctorate, post doctorate. The respondents were categorized and assigned following scores.

S. No.	Categories	Score
1.	Under-graduate	1
2.	Post-graduate	2
3.	Doctorate	3
4.	Post-doctorate	4

4. Teaching Experience

Teaching Experience is operationalized as the number of years the respondent has been teaching in a formal system. It was classified as teachers having no teaching experience, less than ten years, between ten to twenty years, between 21 to 30 years and more than 30 years of teaching experience. The respondents were categorized and assigned following scores.

S. No.	Category	Score
1.	No	0
2.	Less than 10	1
3.	10-20	2
4.	21-30	3
5.	More than 30	4

5. Designation

Designation is the hierarchical organizational position the respondent is holding in an organization. In the present study, designation was studied under six groups i.e., master scholar, PhD Scholar, assistant professor, associate professor, professor and head of the department. The respondents were classified and given following scores.

S. No.	Categories	Score
1.	MSc.	1
2.	PhD	2
3.	Assistant Professor	3
4.	Associate Professor	4
5.	Professor	5
6.	Head of Department	6

6. Background

Social background is operationalized as place where the respondent is residing before joining agriculture education. Background is the root place of origin of the respondents. It is grouped as Urban and rural. The respondents were classified and represented by following indicants.

S. No.	Category	Indicants
1.	Rural	1
2.	Urban	2

7. Medium of Education

Medium of education is operationalised as medium of instruction of the respondent throughout the education. It was categorized in 3 groups i.e., only regional or Hindi, only English and both regional or Hindi and English. The respondents were categorised and represented by following indicants.

S. No.	Category	Indicants
1.	Only Regional /Hindi	1
2.	English	2
3.	Both English and Regional/Hindi	3

8. Specialization

Specialization is operationalized as the field in which the respondent has higher educational degree. It was studied under 13 groups which are: Department of Horticulture, Mycology and Plant Pathology, Agribusiness Management, Extension Education, Soil Science, Genetics and Plant Breeding, Agronomy, Agricultural Economics, Dairy Technology, Food Science Technology, Entomology and Zoology, Department of Plant Physiology and Farm Engineering. The respondents were classified and indicated by following indicants.

S. No.	Category	Indicants
1.	Mycology and Plant Pathology	1
2.	Entomology and Zoology	2
3.	Food Science Technology	3
4.	Agri-business Management	4
5.	Agricultural Economics	5
6.	Extension Education	6
7.	Agronomy	7
8.	Genetics and Plant Breeding	8
9.	Soil Science	9
10.	Horticulture	10
11.	Plant Physiology	11
12.	Farm Engineering	12
13.	Dairy Technology	13

9. Exposure to universities

Exposure to universities is operationalized as number of universities from which respondents have received education or have received a work experience. Direct questioning was done to collect response. The respondents were classified and represented by following scores.

S. No.	Category	Score
1.	One	1
2.	Two	2
3.	Three	3
4.	Four	4
5.	Five	5
6.	Six	6

10. Social participation

Social participation is defined as a person's involvement in activities that provide interaction with others in the society or the community. Social participation is operationalized as number of social organizations the respondent is connected to and his position in that organization. Position in organization was studied under four ways i.e., respondents connected to no social organization, holding the position of office bearer in the social organization, is a member of social organization and connected to the social organization but holding some other position. The respondents were classified and given following scores.

Position of respondents in social organization

S. No.	Category	Score
1.	Not connected to social organization	0
2.	Office bearer of social organization	1
3.	Member of social organization	2
4.	Other, but connected to social organization	3

11. Subject of Study in Intermediate level

It refers to the courses the respondent studied in 12thstandard. It was studied under four groups which are: Vocational; Physics, Chemistry, Mathematics; Physics,

Chemistry, Biology and Physics, Chemistry, Mathematics, Biology. The respondents were classified and represented by following indicants.

S. No.	Category	Indicants
1.	Vocational	1
2.	Physics, Chemistry, Mathematics	2
3.	Physics, Chemistry, Biology	3
4.	Physics, Chemistry, Mathematics, Biology	4

12. Information seeking means

Information seeking means are the sources from where people search information and utilize the same to complete their assigned task and enhance their knowledge. In the present study, it is operationalized as what and how many sources respondents use to seek knowledge. The sources of information considered in the study were print media, social media, radio, television and others. Respondents were asked to tick all the sources he or she uses to seek information. The respondents were classified and assigned following scores.

S. No.	Category	Score
1.	One source	1
2.	Two sources	2
3.	Three sources	3
4.	Four sources	4
5.	Five sources	5

13. Computer literacy

Computer literacy is defined as the knowledge and ability to use computers and related technology efficiently, with skill levels ranging from elementary use to computer programming and advanced problem solving. It also refers to the comfort level someone has with using computer programs and applications. In the present study, computer literacy is studied with the help of years of computer use of the respondent and self-perception of respondents about his/her ability to use computer. To classify the years of computer use, mean and standard deviation was used separately for students and teachers.

13(a) Duration of computer use of students

S. No.	Category	Range
1.	Low	<4.22 years
2.	Medium	4.22-12.96 years
3.	High	>2.96 years

(Mean=8.59) (Standard deviation=4.37)

13(b) Duration of computer use of teachers

S. No.	Category	Range
1.	Low	<14.16 years
2.	Medium	14.16-26.42 years
3.	High	> 26.42 years

(Mean=20.29) (Standard deviation=6.13)

14. Self-perception of computer literacy

Self- perception is the person interpretation of their own overt behaviour rationally in the same way they attempt to explain others' behaviour. In the present investigation, Self-perception of computer literacy is studied as rating respondent gives so oneself in his or her ability to use computer. It is studied in under 5 categories: very poor, poor, average, good and very good. Respondents were asked to put themselves in the categories the following categories.

S. No.	Category	Score
1.	Very Poor	0
2.	Poor	1
3.	Average	2
4.	Good	3
5.	Very good	4

15. Internet literacy

Internet literacy is the ability of an individual to work online using internet sources. In the present investigation, internet literacy is studied with the help of web search skill and Ability to use internet. Respondents were asked to rate themselves as very poor, poor, average, good and very good.

15(a) Web search skills

Web search skill is the ability of an individual to search information on internet. In the present investigation, Respondents were asked to rate themselves as very poor, poor, average, good and very good in searching the web.

S. No.	Category	Score
1.	Very Poor	0
2.	Poor	1
3.	Average	2
4.	Good	3
5.	Very good	4

15(b) Self-Perception of internet literacy

Self- perception is the person interpretation of their own overt behaviour rationally in the same way they attempt to explain others' behaviour. Respondents were categorized and allotted following scores. In the present investigation, Self-perception of internet literacy is studied as rating respondent gives so oneself in his or her ability to use internet. It is studied in under 5 categories: very poor, poor, average, good and very good. Respondents were asked to put themselves in the categories the following categories.

S. No.	Category	Score
1.	Very Poor	0
2.	Poor	1
3.	Average	2
4.	Good	3
5.	Very good	4

16. Self confidence

Self-confidence is person's trust on oneself to reach a particular goal through his own efforts. It is studied as confidence of respondents (teachers and students) in solving academic problem. The response was obtained in Self –rating method. It is divided in five categories viz. the respondent confident in solving less than 20 per cent, 20 to 40 per cent ,40 to 60 per cent,60 to 80 per cent and more than 80 per cent of academic problems. Respondents were classified and their scores are as follows:

S. No.	Category	Score
1.	Less than 20%	0
2.	20-40%	1
3.	40-60%	2
4.	60-80%	3
5.	More than 80%	4

18. Engagement in academic discussion

Engagement in academic discussion is operationalized as involvement and enthusiasm of students and teachers in exchanging subject related ideas with others and being associated in academic activities. Respondents were asked to respond in three degree continuum namely: do not engage, engage but rarely, engage regularly. The scoring pattern assigned and grouping of respondents were as under.

S. No.	Category	Score
1.	Do not Engage	0
2.	Engage but rarely	1
3.	Engage regularly	2

19. Confidence of students in asking question in classroom

Confidence is trust in one's self and self -assurance of one's judgement. In the present research, confidence of students in asking questions in class is studied as their non hesitance behaviour in consulting teachers to clear their doubts. Students were classified and scored as follows:

S. No.	Category	Score
1.	Confident	1
2.	Not confident	0

3.4.2 Dependent variable

1. Perception

In the present study "perception" is the dependent variable. Perception is a unique way of understanding phenomena by interpreting sensory information based on experience, processing information, and forming mental models. In the present investigation perception is operationalized as agreement, disagreement and

indecisiveness of students and teachers of Institute of Agricultural Science, Banaras Hindu University about reforms in agriculture education system. Perception was studied under 7 dimensions, which are as follows:

1. Subject and Curriculum
2. Assessment and evaluation
3. Teacher and teaching
4. Learner and learning situation
5. Research and researcher
6. Physical facilities
7. Teaching learning aid

Responses are taken in three-degree continuum for each statement. The Score 2 for agree, 1 for undecided and 0 for disagree were assigned to study the concept. After data collection percentage and frequency of each option (Agree, Undecided and Disagree) was calculated.

S. No.	Category	Score
1.	Agree	2
2.	Undecided	1
3.	Disagree	0

3.5 Data collection tools and procedure

The tools for the study were developed in two parts in accordance with the need of the present study. Part A included questions related to perception of students and teachers regarding reforms in agriculture education divided under 7 dimensions mentioned above. Part B comprised of questions regarding Socio-personal and psychological characteristics of students and teachers. Various secondary sources like journals, articles, conferences, government report, webinars and websites were referred to formulate questions. Face to face discussion with students and teachers of the IAS, BHU and other universities was done to improve the quality of questions and make the study holistic. Initially 94 statements (please refer Appendix 1) were framed

focussing on all the aspects of reforms in agriculture education. The formulated 94 statements were discussed face to face with experts from various departments. They were requested to add/delete or modify any statement which they deemed fit for inclusion or deletion. They were asked to check the statements for being favourable or unfavourable towards the Reforms in agriculture education system. Again the statements were rewritten in the light of comments and criticism of the experts. After editing, final questionnaire was formed consisting of 50 questions in Part A and 20 questions in Part B (See appendix 2). The Research was conducted from December 2020 to August 2021. Due to the emergence of second wave of unprecedented COVID-19 final data collection was done through validated web questionnaire tool. WhatsApp and telephonic calls were also used to receive more and faster responses.

3.6 Statistical analysis material

3.6.1 Frequency

Frequency is the number of occurrences of particular response in the data.

n = frequency

3.6.2 Percentage

Percentage is calculated by dividing the frequency by total number of respondents than multiplied with 100. Frequency and percentage were calculated for each response. The formula of percentage is given below:

$$P = n/N * 100$$

Where,

P = percentage

n = frequency

N = total number of respondents

3.6.3 Mean

Mean or arithmetic average is the obtained by dividing the sum of scores by the total number of respondents.

Mean was calculated by using following formula,

$$\overline{X} = \frac{\sum X}{n}$$

Where,

X = Mean

$\sum X$ = Sum of observations

n = Number of respondents

3.6.4 Standard deviation

Standard deviation is a measure of the amount of variation or dispersion of a set of values. A high standard deviation indication values are spread in a wide range while; low value of standard deviation indicates less spread.

It was calculated by following formula

$$\mathbf{S\ d} = \sqrt{\frac{\sum(\mathbf{X} - \overline{\mathbf{X}})^2}{\mathbf{n}}}$$

Where,

S.D = Standard deviation

X = Score of each respondent

$\overline{\mathbf{X}}$ = Mean

n = Number of respondents

3.6.5 Correlation coefficient

Correlation coefficient measure of the strength of linear association between two variables. Correlation will always fall between -1.0 and +1.0. Positive correlation indicates positive association between variables and negative relationship in case of negative correlation. in the present investigation, Correlation analysis was done using SPSS23(Statistical Package for the Social Sciences) to find the association between selected independent variables and perception of students and teachers regarding reforms in agriculture education system. The formula of Correlation coefficient is as follows:

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[\, n\Sigma x^2 - (\Sigma x)^2 \,][\, n\Sigma y^2 - (\Sigma y)^2 \,]}}$$

The symbols in the formula signifies:

n	=	Number of values or observations
x	=	Independent variable (First Scores)
μy	=	Dependent variable (Second Scores)
Σxy	=	Sum of the product of first and Second Scores
Σx	=	Sum of First Scores
Σy	=	Sum of Second Scores
Σx^2	=	Sum of square First Scores
Σy^2	=	Sum of square Second Scores

The hypothesis tested to find association of selected independent variables and perception of students is as follows:

H_0 = There is no significant linear association between perception of Students towards reforms in agricultural education and selected independent variable.

H_1 = There is significant linear association between perception of Students towards reforms in agricultural education and selected independent variable.

Where H_0 = Null hypothesis

H_1 = Alternate hypothesis

The hypothesis tested to find association of selected independent variables and perception of teachers is given below:

H_0 = There is no significant linear association between perception of teachers towards reforms in agricultural education and selected independent variable.

H_1 = There is significant linear association between perception of teachers towards reforms in agricultural education and selected independent variable.

Where H_0 = Null hypothesis

H_1 = Alternate hypothesis

3.6.6 Regression

Regression analysis is a statistical tool for investigating relationships between variables. It includes many techniques for modelling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (Socio-personal and psychological characteristics). More specifically, regression analysis helps one understand how the typical value of the dependent variable (perception of respondents towards reforms in agricultural education system) changes when any one of the independent variables is varied, while the other independent variables are held fixed. It also indicates the strength of impact of multiple independent variables on a dependent variable. There are 7 types of regression viz., Linear, Stepwise, Polynomial, Logistic, Lasso, Ridge and Elastic Net Regressions. In the present study Multivariate Linear and Stepwise Regressions were used. Correlation was calculated and relationship among the independent variables has been determined to remove those independent variables which were significantly

correlated with each other to remove the effect of multi-collinearity and establish the independence of variables. The SPSS software version 23 was used to calculate the regression. As a first step, Multivariate Linear Regression was calculated by including all the relevant variables. The equation for it is asunder:

$$Y = a+b_1x_1+ b_2x_2+ b_3x_3+ b_4x_4 + b_5x_5+----------+ b_{12}x_{12} +e$$

Whereas,

Y is dependent variable (Composite Sustainability), a is intercept, b is slope of the line and e is error term and x1, x2, ----------, x12 are independent variables. In the next step, Stepwise Regression was calculated through using SPSS version 23 developed in the year.

Under this software, the selection of independent variables is done with the help of an automatic process, which involves no human intervention. This feat is achieved by observing statistical values like R-square, t-stats and AIC metric to discern significant variables.

Stepwise regression basically fits the regression model by adding/dropping co-variates one at a time based on a specified criterion. The final equation is as under:

$$Y = a+b_3X_3+b_5X_5+b_9X_9+b_{10}X_{10}+e$$

Durbin-Watson test was also conducted to find the autocorrelation in the regression model.

The hypothesis tested to find the extent of association between selected independent variables and perception of students is as follows:

H_0 = There is no significant linear relationship between perception of Students towards reforms in agricultural education and selected independent variable.

H_1 = There is no significant linear relationship between perception of Students towards reforms in agricultural education and selected independent variable.

The hypothesis tested to find the extent of association between independent variable and perception of teachers is mentioned below:

H_0 = There is no significant linear relationship between perception of teachers towards reforms in agricultural education and selected independent variable.

H_1 = There is no significant linear relationship between perception of teachers towards reforms in agricultural education and selected independent variable.

3.6.6.1 Stepwise regression

Stepwise regression analysis was also done to know the most significant contributor to regression model.

Hypothesis tested to find the significance of regression model is given below:

H_0 = The fit of the observed values to those predicted by stepwise regression equation is not better than which was expected by chance.

H_0 = The fit of the observed values to those predicted by stepwise regression equation is better than which was expected by chance.

3.6.7 Chi-Square Analysis

Chi Square Analysis was done to find the association between perception of students and teachers regarding reforms in agriculture education system. Response Pattern of two group of respondents (i.e., Teacher and Students) were analysed on the basis of distribution pattern of responses. Analysis was done with SPSS23. The formula of Chi-Square analysis is following:

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

In the above formula

O_i = Observed frequency

E_i = Expected frequency

The hypothesis tested to find difference between perception of students and teachers is given below:

H_0 = There is no significant difference in distribution of perception towards reforms in agricultural education system between teachers and students.

H_1 = There is significant difference in distribution of perception towards reforms in agricultural education system between teachers and students.

3.6.8 Hypothesis and their testing

A hypothesis is a supposition made as a basis for reasoning. hypothesis testing procedure uses data from a sample to test the two competing statements (null hypothesis and alternate hypothesis). Null hypothesis (H_0) is the mathematical based hypothesis that is tested for possible rejections under an assumption this is going to be true. Alternate hypothesis (H_1) is the opposite of null hypothesis. In the present study, six hypotheses are tested which are as follows:

1. The hypothesis tested to find association of selected independent variables and perception of students is as follows:

H_0 = There is no significant linear association between perception of Students towards reforms in agricultural education and selected independent variable.

H_1 = There is significant linear association between perception of Students towards reforms in agricultural education and selected independent variable.

2. The hypothesis tested to find association of selected independent variables and perception of teachers is as follows:

H_0 = There is no significant linear association between perception of teachers towards reforms in agricultural education and selected independent variable.

H_1 = There is significant linear association between perception of teachers towards reforms in agricultural education and selected independent variable.

3. The hypothesis tested to find the extent of association between selected independent variables and perception of students is as follows:

H_0 = There is no significant linear relationship between perception of Students towards reforms in agricultural education and selected independent variable.

H_1 = There is no significant linear relationship between perception of Students towards reforms in agricultural education and selected independent variable.

4. The hypothesis tested to find the extent of association between selected independent variables and perception of students is as follows:

H_0 = There is no significant linear relationship between perception of teachers towards reforms in agricultural education and selected independent variable.

H_1 = There is no significant linear relationship between perception of teachers towards reforms in agricultural education and selected independent variable.

5. Hypothesis tested to find the significance of regression model is given below:

H_0 = The fit of the observed values to those predicted by stepwise regression equation is not better than which was expected by chance.

H_0 = The fit of the observed values to those predicted by stepwise regression equation is better than which was expected by chance.

6. The hypothesis tested to find difference between perception of students and teachers is given below:

H_0 = There is no significant difference in distribution of perception towards reforms in agricultural education system between teachers and students.

H_1 = There is significant difference in distribution of perception towards reforms in agricultural education system between teachers and students.

Chapter 4

RESULTS AND DISCUSSION

This chapter describes and discusses the results and outcomes of the present investigation. The study was conducted considering the following objectives:

1. To study the socio-personal and psychological characteristics of students and teachers.
2. To analyse the perception of students and teachers on reforms in agriculture education system.
3. To examine relationship between the perception regarding reforms in agriculture education and selected independent variable of students and teachers.
4. To find out the difference in level of perception of students and teachers regarding reforms in agriculture education.

4.1 Objective1: To study the socio-personal and psychological characteristics of students and teachers.

For the purpose of studying socio-personal and psychological characteristics of the respondents, frequencies and percentage were calculated. Accordingly, tables and graphs were made to indicate the resulting frequencies and percentage.

4.1.1 Age

Table 4.1.1.1: Distribution of students according to their age

(n=95)

S. No.	Age group (years)	Frequency	Percentage
1.	<22.42	11	11.58
2.	22.42-26.06	77	81.05
3.	>26.06 years	07	07.37

(Mean=24.24, Standard deviation=1.82)

Table 4.1.1.1 indicates that majority (81.05 per cent) of students were in the age group 22.42 to 26.06 years. Around 11.57 per cent students were less than 22.42 age. Only 7.36 per cent students exceeded 26.06 years of age. In the study entitled "A Study on the Impact of Educational Technology on Students Development in a State Agricultural University of Karnataka" conducted by Naika (1999) also majority of students were found to be in middle age group.

Table 4.1.1.2: Distribution of teachers according to their age

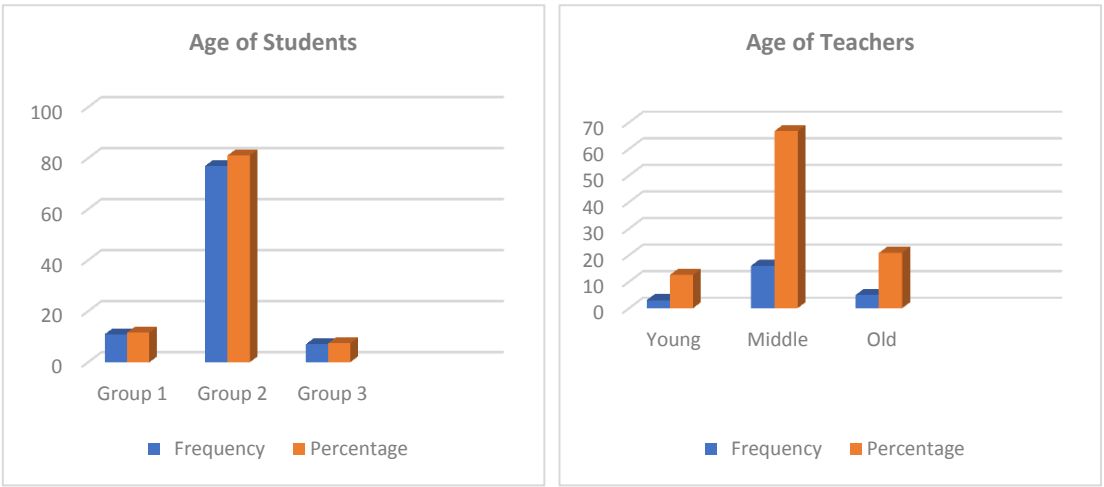
(n=24)

S. No.	Categories	Range (years)	Frequency	Percentage
1.	Young	<44.23	03	12.50
2.	Middle	44.24-61.01	16	66.67
3.	Old	>61.01	05	20.83

(Mean=52.63 Standard deviation=8.39)

Table 4.1.1.2 reflects that majority (66.67 per cent) of teachers were in the middle age group (44.24-61.01 years). Around 20.83 per cent teachers exceeded 61.01 years of age thus were under old age group. Only 12.5 per cent were under young age group (<44.23 years). These results are in line with Shao X. et al. (2005) study entitled "Teachers' perceptions of curriculum reforms and teacher training programs in Chinese agricultural schools." as most of the teachers were under middle age group in his study.

Figure 4.1.1.: Distribution of students and teachers according to their age



4.1.2 Gender

Table 4.1.2.1: Distribution of students according to their gender

(n=95)

S. No	Category	Frequency	Percentage
1.	Male	42	44.21
2.	Female	53	55.79

Table 4.1.2.1 reveals that majority (55.79%) of students were female. Remaining 44.21% were male. The result is in line with the study entitled "Perception of post-graduate students' towards teaching competency of teachers in a state agricultural university of Karnataka." conducted by Ambika (2009) and Abijith (2002). While it is contrary with study entitled "In-Service Training Needs of Agriculture Teachers for Preparing them to Be Effective in the 21st Century" by Davis and Jayaratne (2015).

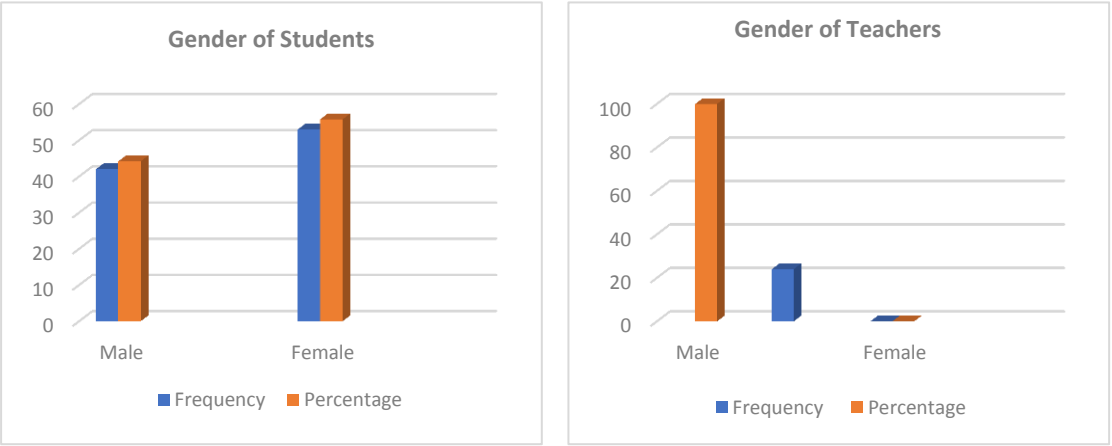
Table 4.1.2.2: Distribution of teachers according to their gender

(n =24)

S. No	Categories	Frequency	Percentage
1.	Male	24	100.00
2.	Female	00	000.00

Table 4.1.2.2 indicates that Cent per cent teachers were male. The probable reason for such result may be online survey during unprecedented COVID-19 situation, which may have led to no response of female teachers.

Figure 4.1.2: Distribution of students and teachers according to their gender



4.1.3 Educational Qualification

Table 4.1.3.1: Distribution of students according to their educational qualification

(n=95)

S. No.	Categories	Frequency	Percentage
1.	Under-graduate	84	88.42
2.	Post-graduate	11	11.58

Table 4.1.3.1 shows that majority (88.42 per cent) of students had the maximum educational qualification of under-graduation. Only 11.58 per cent had post-graduation as their maximum educational qualification.

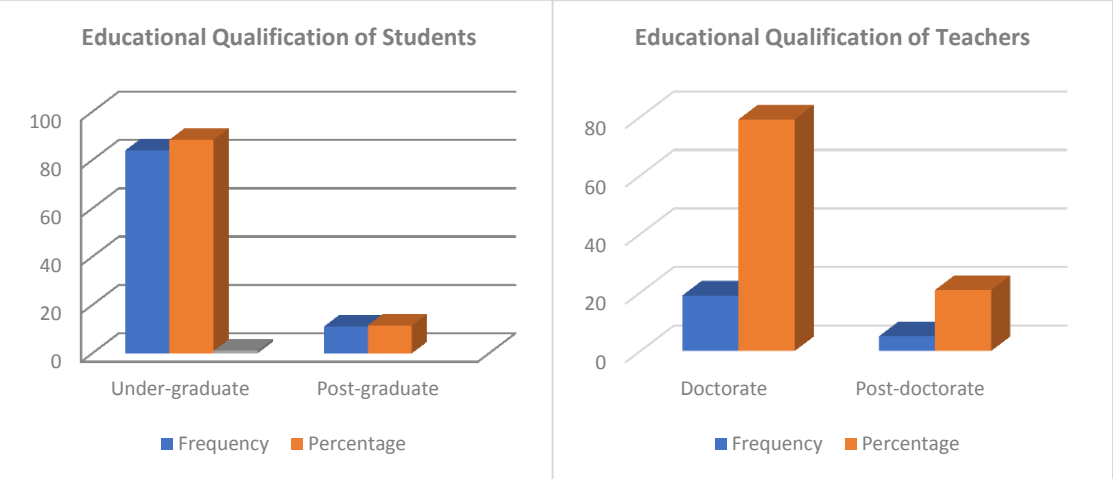
Table 4.1.3.2: Distribution of teachers according to their educational qualification

(n=24)

S. No.	Categories	Frequency	Percentage
1.	Doctorate	19	79.17
2.	Post-doctorate	05	20.83

Table 4.1.3.2 reveals that majority (79.17 per cent) of teachers had doctorate degree as their maximum educational qualification. Only 20.83 per cent had post-doctorate degree as their maximum educational qualification. These results are in consistence with Mahara (2019) and Navani and Ansari (2020) but inconsistent with Naika (1999) as in his study he revealed that maximum qualification of teachers was masters in maximum cases.

Figure 4.1.3: Distribution of students and teachers according to their educational qualification



4.1.4 Designation

Table 4.1.4.1: Distribution of students according to their designation

(n=95)

S. No.	Categories	Frequency	Percentage
1.	MSc.	85	89.47
2.	PhD.	10	10.53

Table 4.1.4.1 indicates that majority (89.47 per cent) of students were doing M.Sc. during the study. Only 10.53 per cent students were doing PhD. The probable reason for such result can be divergence of students to different fields after masters and less number of seats in PhD as compared to M.Sc.

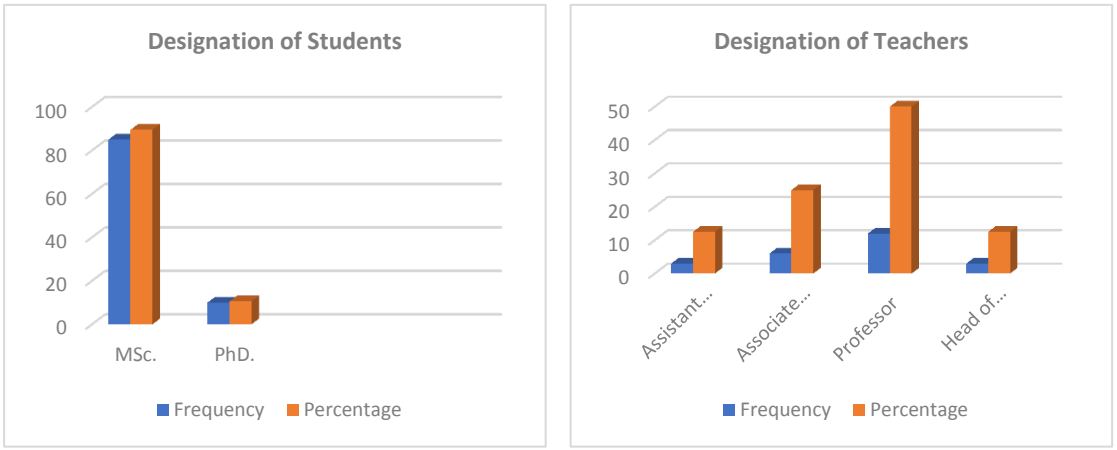
Table 4.1.4.2: Distribution of teachers according to their designation

(n= 24)

S. No.	Categories	Frequency	Percentage
1.	Assistant Professor	03	12.50
2.	Associate Professor	06	25.00
3.	Professor	12	50.00
4.	Head of Department	03	12.50

Table 4.1.4.2 reveals that 50 per cent of teachers were professor and 25 per cent were associate professor. Both assistant professor and head of the department constituted 12.5 per cent separately. These results are contrasting with Akhtar et.al (2018)

Figure 4.1.4: Distribution of students and teachers according to their designation



4.1.5 Background

Table 4.1.5.1: Distribution of students according to their background

(n=95)

S. No.	Category	Frequency	Percentage
1.	Rural	51	53.68
2.	Urban	44	46.32

Table 4.1.5.1 indicates that majority (53.68 per cent) of students belonged to rural background and 46.32 per cent of students had urban background. The results are compatible with the results of Makhija and Singh (1987).

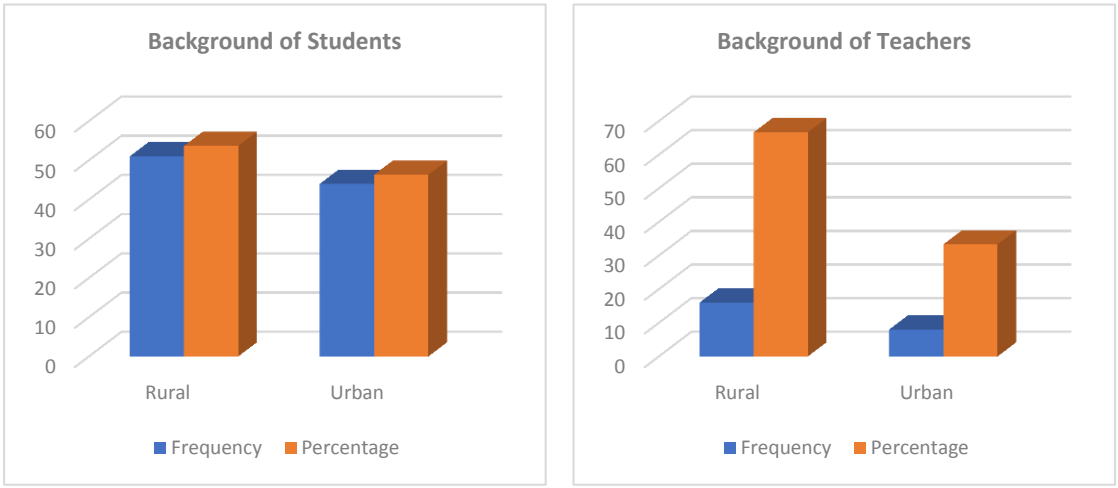
Table 4.1.5.2: Distribution of teachers according to their background

(n=24)

S. No.	Category	Frequency	Percentage
1.	Rural	16	66.67
2.	Urban	08	33.33

Table 4.1.5.2 indicates that majority (66.67 per cent) of teachers were from rural background. Whereas, only 33.33 per cent were of urban background.

Figure 4.1.5: Distribution of students and teachers according to their background



4.1.6 Exposure to different universities

Table 4.1.6.1: Distribution of students according to their exposure to different universities

(n=95)

S. No.	Category	Frequency	Percentage
1.	One	30	31.58
2.	Two	63	66.32
3.	Three	02	02.10

Table 4.1.6.1 reveals that majority (66.32 per cent) of students had an exposure to two universities. Around 31.58 per cent students had an exposure to only one university while only 2.10 per cent had an exposure to three universities.

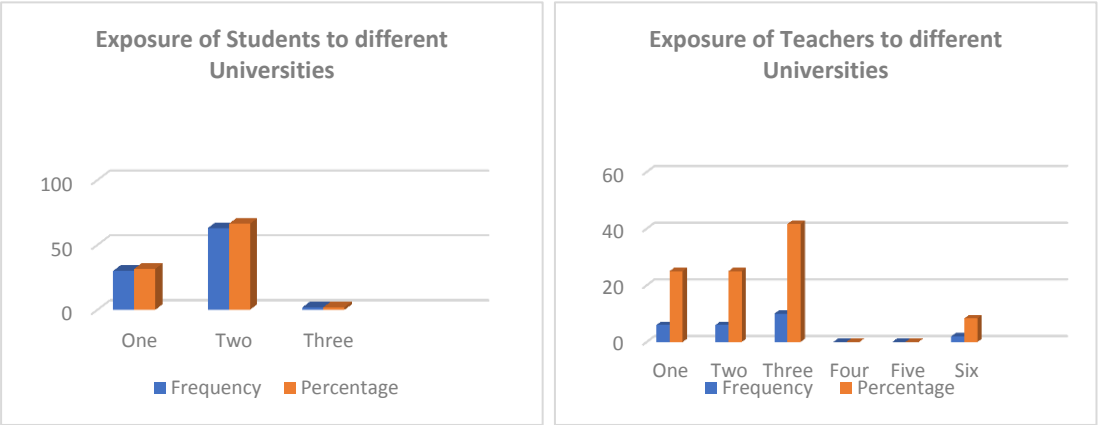
Table 4.1.6.2: Distribution of teachers according to their exposure to different Universities

(n=24)

S. No.	Category	Frequency	Percentage
1.	One	06	25.00
2.	Two	06	25.00
3.	Three	10	41.67
4.	Four	00	00.00
5.	Five	00	00.00
6.	Six	02	08.33

Table 4.1.6.2 indicates that majority i.e., 41.67 per cent teachers had an exposure to three universities. About 25 per cent teachers had an exposure to only one university. Nearly 25.00 per cent teachers had an exposure to only two universities while only 8.33 per cent teachers had an exposure to six universities.

Figure 4.1.6: Distribution of students and teachers according to their exposure to different universities



4.1.7 Teaching experience of teachers

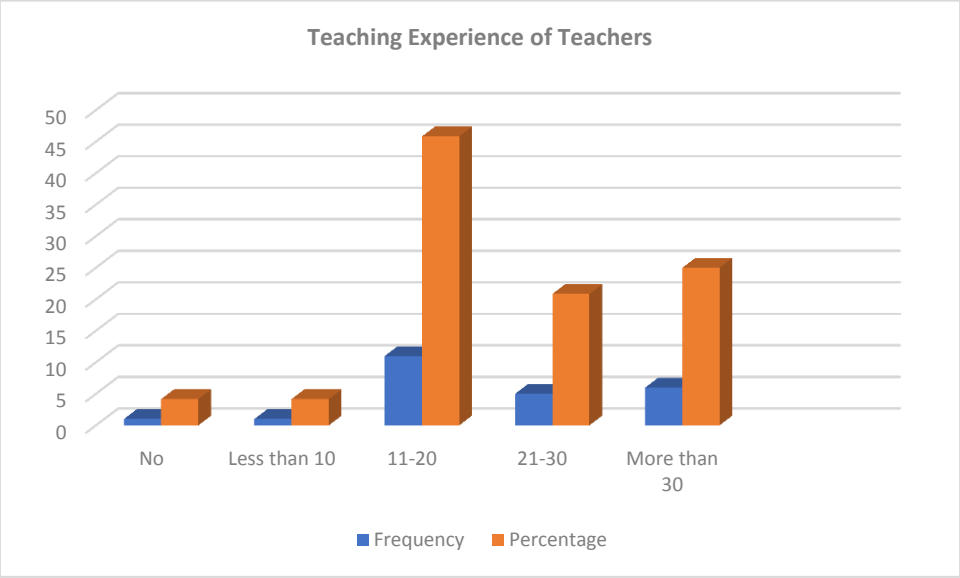
Table 4.1.7: Distribution of teachers according to their teaching experience

(n=24)

S. No.	Category(years)	Frequency	Percentage
1.	Less than 1	01	04.17
2.	1-10	01	04.17
3.	10-20	11	45.83
4.	21-30	05	20.83
5.	More than 30	06	25.00

Table 4.1.7.1 reveals that majority of teachers i.e., 45.83 per cent teachers had an experience of 10-20 years. Around 25 per cent had an experience of more than 30 years. Near about 20.83 per cent had an experience of 21-30 years. Teachers with less than 10 years of experience and less than one year experience shared the same percentage i.e., 4.17 per cent. The results are in line with the results of Shao. X. *et al* (2005) in their study on "Teachers' perceptions of curriculum reforms and teacher training programs in Chinese agricultural schools"

Figure 4.1.7: Distribution of teachers according to their teaching Experience



4.1.8 Specialization

Table 4.1.8.1: Distribution of students according to their specialization

(n=95)

S. No.	Category	Frequency	Percentage
1.	Mycology and plant pathology	11	11.58
2.	Entomology and Zoology	04	04.21
3.	Food Science Technology	02	02.10
4.	Agri-business Management	11	11.58
5.	Agricultural Economics	07	07.37
6.	Extension Education	11	11.58
7.	Agronomy	09	09.47
8.	Genetics and Plant Breeding	09	09.47
9.	Soil Science	11	11.58
10.	Horticulture	12	12.63
11.	Plant Physiology	02	02.10
12.	Farm Engineering	02	02.10
13.	Dairy Technology	03	03.16

Table 4.1.8.2: Distribution of teachers according to their specialization

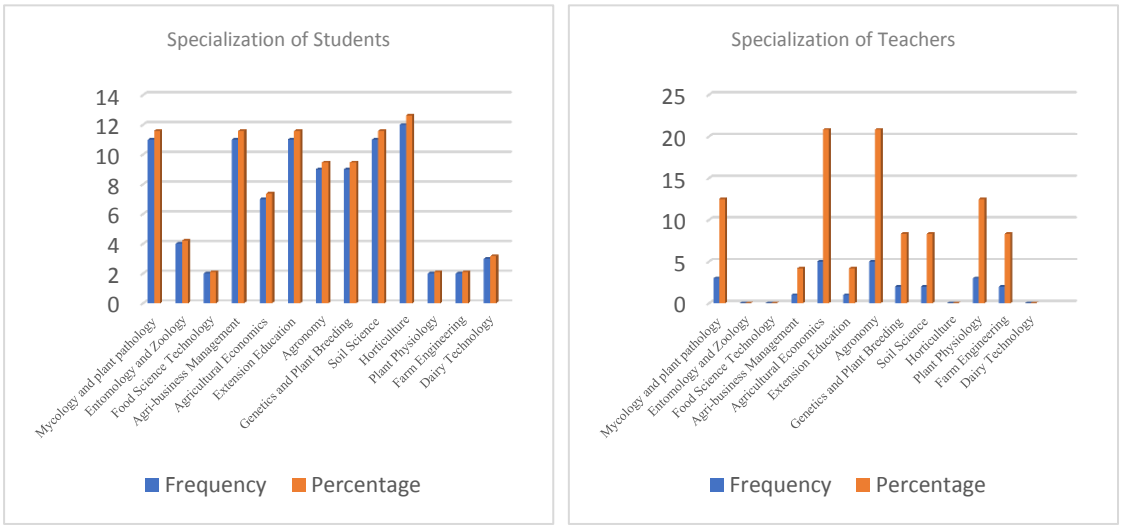
(n=24)

S. No.	Category	Frequency	Percentage
1.	Mycology and plant pathology	03	12.50
2.	Entomology and Zoology	00	00.00
3.	Food Science Technology	00	00.00
4.	Agri-business Management	01	04.17
5.	Agricultural Economics	05	20.83
6.	Extension Education	01	04.17
7.	Agronomy	05	20.83
8.	Genetics and Plant Breeding	02	08.33
9.	Soil Science	02	08.33
10.	Horticulture	00	00.00
11.	Plant Physiology	03	12.50
12.	Farm Engineering	02	08.33
13.	Dairy Technology	00	00.00

Table 4.1.8.1 indicates that maximum number i.e.,12.63 per cent students belonged to Department of Horticulture. Students belonging to Department of Mycology and Plant Pathology, Agribusiness Management, Extension Education and Soil science shared the same percentage i.e., 11.58 per cent. Students of Genetics and Plant Breeding and Agronomy were separately 9.47 per cent each of the sample size. Agricultural Economics students were found to be 7.37 per cent. Dairy technology students were 3.16 per cent. Percentage of students from department of Plant physiology, Food science technology and Farm engineering were 2.10 per cent each.

Table 4.1.8.2 reflects that majority (20.83 per cent each) of teachers were from Agronomy and Agriculture Economics Department and 12.5 per cent of teachers belonged to department of Plant physiology. Teachers from Genetics and Plant Breeding, Soil science and Farm engineering were found to be 8.33 per cent each. Agri business management and department of Extension education teachers were 4.17 per cent each. None of the teachers were from Horticulture, Entomology and Zoology, Food science technology and Dairy technology Department. The research was conducted with the help of online survey during an unprecedented covid-19 situation which may have been the possible reason of non- responsiveness of teachers from few departments.

Figure 4.1.8: Distribution of students and teachers according to their specialization



4.1.9 Medium of Education

Table 4.1.9.1: Distribution of students according to their medium of education

(n=95)

S. No.	Category	Frequency	Percentage
1.	Only Regional /Hindi	15	15.79
2.	English	78	82.10
3.	Both English and Regional/Hindi	02	02.10

Table 4.1.9.1 shows that majority of students i.e., 82.10 per cent students were from English medium. 15.79 per cent students studied in regional or Hindi language. Only 2.10 per cent students were educated in both English and Hindi/regional language. The results are inconsistent with Naika (1999) in his study on "A Study on the Impact of Educational Technology on Students Development in a State Agricultural University of Karnataka" in which majority of students had regional (Kannada) medium of education.

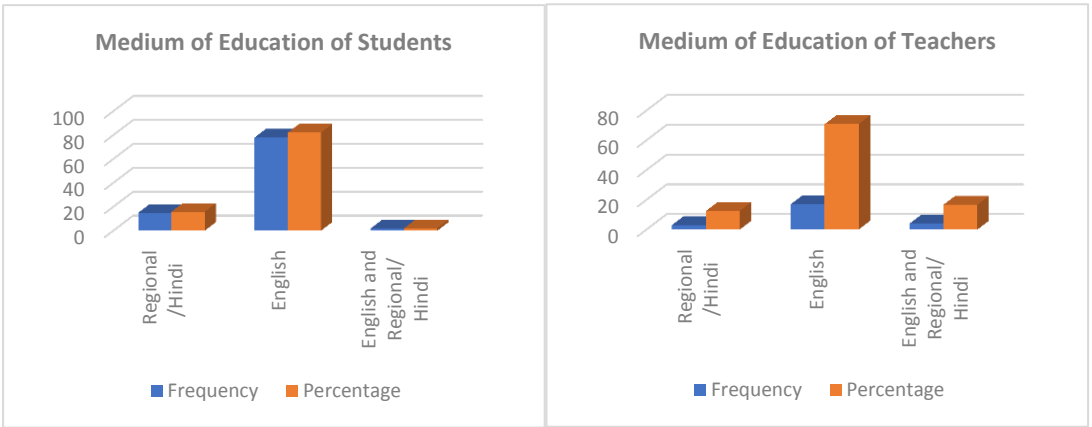
Table 4.1.9.2: Distribution of teachers according to their medium of education

(n=24)

S. No.	Category	Frequency	Percentage
1.	Only Regional /Hindi	03	12.50
2.	English	17	70.83
3.	Both English and Regional/Hindi	04	16.67

Table 4.1.9.2 indicates that majority (70.83 per cent) of teachers were educated in English language. Nearly 16.67 per cent teachers were educated in both English and regional/Hindi language. Only 12.5 per cent teachers studied from Hindi/ regional medium of education.

Figure 4.1.9: Distribution of students and teachers according to their medium of education



4.1.10 Subject of Study in Intermediate level

Table 4.1.10.1: Distribution of students according to their subject of study in Intermediate level

(n=95)

S. No.	Category	Frequency	Percentage
1.	Vocational	10	10.53
2.	Physics, Chemistry, Mathematics	12	12.63
3.	Physics, Chemistry, Biology	39	41.05
4.	Physics, Chemistry, Mathematics, Biology	34	35.79

Table 4.1.10.1 summarises that 41.05 per cent students had Physics, Chemistry, and Biology stream in higher secondary education. 35.79 per cent had Physics, Chemistry, Mathematics, and Biology. Around 12.63 per cent students belonged to Physics, Chemistry, and Mathematics background. Whereas, only 10.53 per cent students studied in vocational stream.

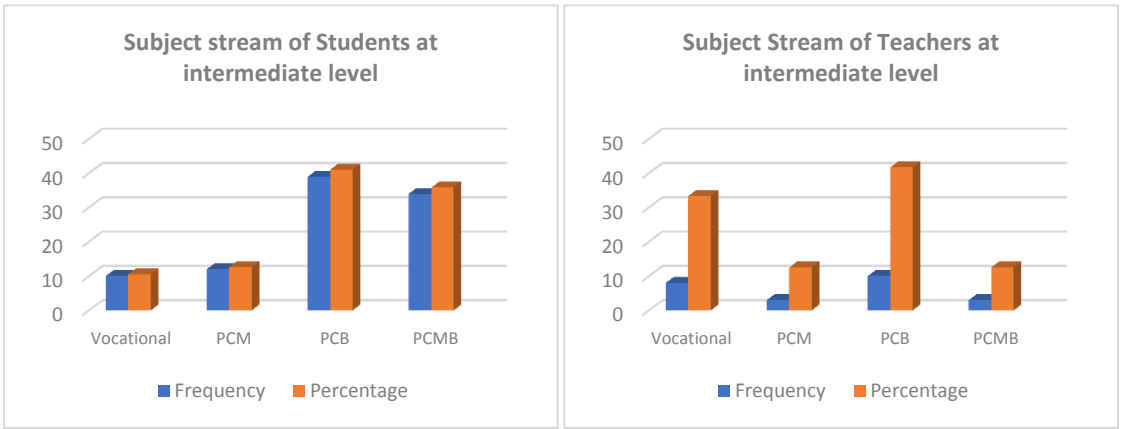
Table 4.1.10.2: Distribution of teachers according to their subject of study in Intermediate level

(n=24)

S. No.	Category	Frequency	Percentage
1.	Vocational	08	33.33
2.	Physics, Chemistry, Mathematics	03	12.50
3.	Physics, Chemistry, Biology	10	41.67
4.	Physics, Chemistry, Mathematics, Biology	03	12.50

Table 4.1.10.2 illustrates that 41.67 per cent teachers had Physics, Chemistry, and Biology stream. 33.33 per cent studied in vocational stream. Whereas, only 12.50 per cent each were from Physics Chemistry Mathematics and Physics Chemistry Mathematics Biology stream.

Figure 4.1.10: Distribution of students and teachers according to their subject of study in intermediate level



4.1.11 Social Participation

Table 4.1.11.1: Distribution of students according to their social participation

(n=95)

S. No.	Category	Frequency	Percentage
1.	Not connected to Social Organization	67	70.53
2.	Office bearer of Social Organization	05	05.26
3.	Member of Social Organization	15	15.79
4.	Other, but connected to Social Organization	08	08.42

Table 4.1.11.1 reflects that majority (70.53 per cent) of students were not connected to any social organization. 15.79 per cent were found to be members. 8.42 per cent students were connected to social organizations but were not member or office bearer. 5.26 were office bearers. The results are similar to Biswas and Ghadei (2017) in the study on perception of students.

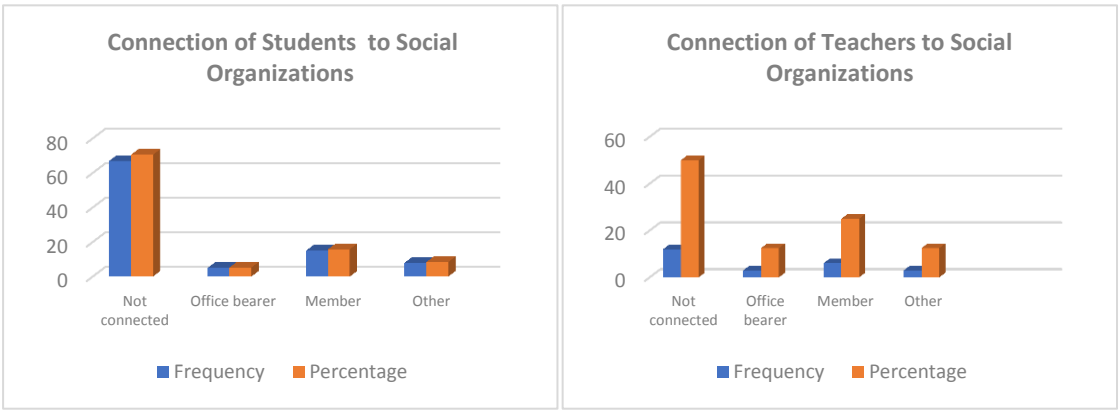
Table 4.1.11.2: Distribution of teachers according to their social participation

(n=24)

S. No.	Category	Frequency	Percentage
1.	Not connected to Social Organization	12	50.00
2.	Office Bearer of Social Organization	03	12.50
3.	Member of Social Organization	06	25.00
4.	Other, but connected to Social Organization	03	12.50

Table 4.1.11.2 signifies that majority i.e., 50 per cent of teachers were not connected to any social organization. About 25 per cent teachers were members, 12.5 per cent were office bearers and 12.5 per cent were connected to social organization but were neither member nor office bearer. The results match with the results of study conducted by Biswas and Ghadei (2017).

Figure: 4.1.11: Distribution of students and teachers according to their Social Participation



4.1.12 Association of respondents to the number of social organizations

Table 4.1.12.1: Distribution of students according to their connection with number of social organizations

(n=95)

S. No.	Category	Frequency	Percentage
1.	One	69	72.63
2.	Two	12	12.63
3.	Three	10	10.53
4.	Four	02	02.10
5.	Five	00	00.00
6.	Six	00	00.00

Table 4.1.12.1 indicates that majority (72.63 per cent) of students were connected to single social organization.12.63 per cent were connected to two social organizations. Around 10.53 per cent students were connected to three and only 2.10 per cent students were connected to four social organizations. The results are in line with Biswas and Ghadei (2017).

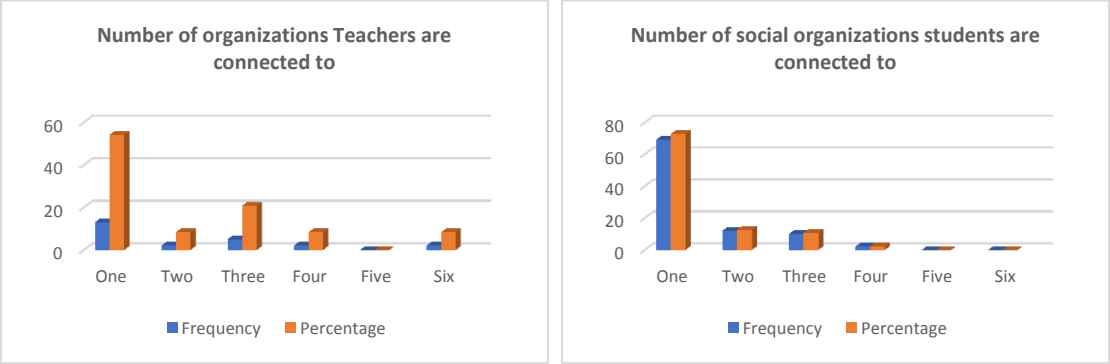
Table 4.1.12.2: Distribution of teachers according to their connection with number of social organizations

(n=24)

S. No.	Category	Frequency	Percentage
1.	One	13	54.17
2.	Two	02	08.33
3.	Three	05	20.83
4.	Four	02	08.33
5.	Five	00	00.00
6.	Six	02	08.33

Table 4.1.12.2 concludes that majority of teachers i.e., 54.17 per cent were connected to only one social organization, 20.83 per cent were connected to three, 8.33 per cent teachers separately were connected to two, four and six organizations. None of the teachers were connected to five social organizations.

Figure 4.1.12: Distribution of students and teachers according to their connection with number of social organizations



4.1.13 Self-confidence (in solving academic problem)

Table 4.1.13.1: Distribution of students according to their self confidence

(n=95)

S. No.	Category	Frequency	Percentage
1.	Less than 20%	01	01.05
2.	20-40%	03	03.16
3.	41-60%	28	29.47
4.	61-80%	44	46.32
5.	More than 80%	19	20.00

Table 4.1.13.1 revealed that majority i.e., 46.32 students perceived that they can solve 61-80 per cent of academic problems. About 29.47 per cent felt that they can solve 41-60 per cent of academic problems while 20 per cent were confident about solving more than 80 percent of academic problems. Approximately 3.16 per cent were confident about only 20-40 percent and only 1.05 per cent (1student) felt that he/she can solve less than 20 per cent of academic problems. The results are similar to finding of Mahara (2019).

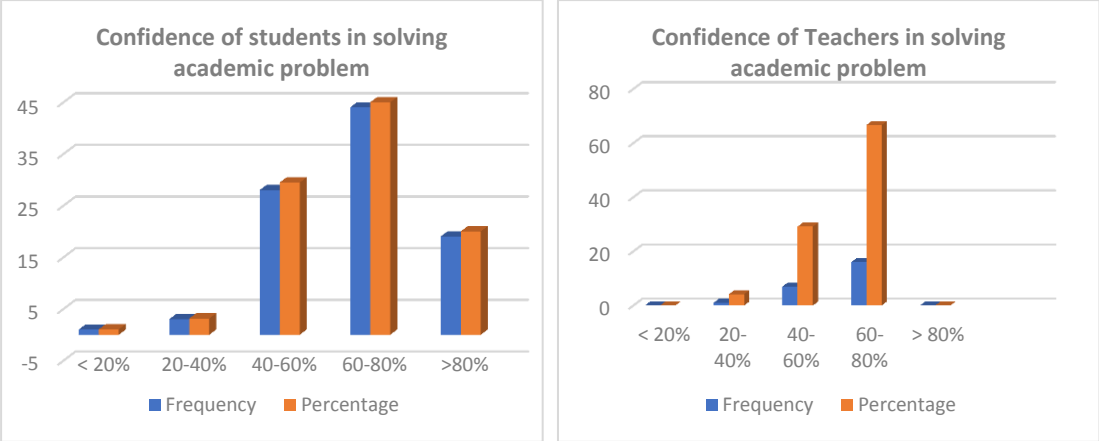
Table 4.1.13.2: Distribution of teachers according to self confidence

(n=24)

S. No.	Category	Frequency	Percentage
1.	Less than 20%	00	00.00
2.	21-40%	01	04.17
3.	41-60%	07	29.17
4.	61-80%	16	66.67
5.	More than 80%	00	00.00

Table 4.1.13.2 points that majority (66.67 per cent) of teachers were confident about solving 61-80 per cent academic problems. Nearly 29.17 per cent teachers perceived that they can solve 41-60 per cent. Whereas, only 4.17 per cent (1 teacher) felt that he can solve 21-40 percent academic problem. However, none of the teachers were confident in solving more than 80 per cent and less than 20 per cent of academic problems. By the above results it can be concluded that teachers had a medium level of self confidence in solving academic problems. The results are similar to Mahara (2019).

Figure 4.1.13: Distribution of students and teachers according to their self confidence



4.1.14 Engagement in academic discussion

Table 4.1.14.1: Distribution of students according to their engagement in academic discussion

(n=95)

S. No	Category	Frequency	Percentage
1.	Do not Engage	02	02.10
2.	Engage but rarely	11	11.58
3.	Engage regularly	82	86.32

Table 4.1.14.1 reveals that majority (86.32 per cent) of students regularly engage in academic discussions. Around 11.58 per cent students rarely engage and (2.10 per cent) never involve in academic discussion.

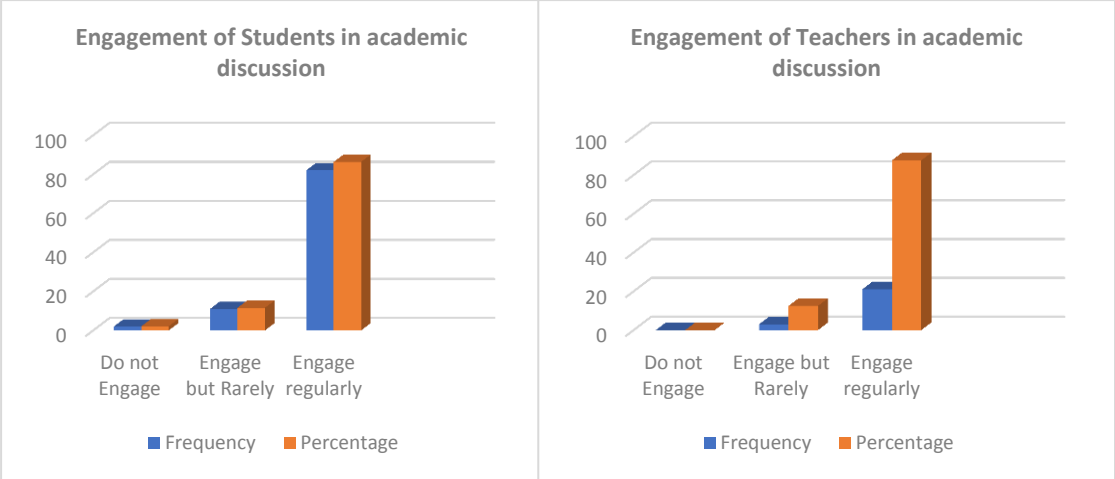
Table 4.1.14.2: Distribution of teachers according to their engagement in academic discussion

(n=24)

S. No.	Category	Frequency	Percentage
1.	Do not Engage	00	00.00
2.	Engage but rarely	03	12.50
3.	Engage regularly	21	87.50

Table 4.1.14.2 reflects that majority (87.5 per cent) teachers engaged in academic discussions on regular basis while 12.5 per cent engage rarely. none of the teachers did not engage in any academic discussion. This implies that all the teachers engage in academic discussion.

Figure4.1.14: Distribution of students and teachers according to their engagement in academic discussion



4.1.15 Confidence of students in asking question in classroom

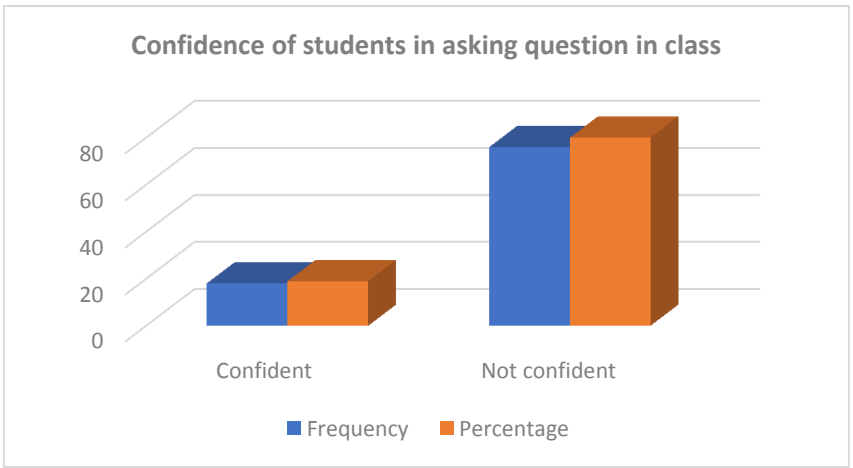
Table 4.1.15.1: Distribution of students according to their confidence in asking question in classroom

(n=95)

S. No.	Category	Frequency	Percentage
1.	Confident	18	18.95
2.	Not confident	76	80.00

Table 4.1.15.1 implies that majority (80 per cent) of the students were not confident in asking questions in class. Whereas, only 18.95 per cent of students were confident in asking questions in class.

Figure 4.1.15: Distribution of students according to their confidence in asking question in classroom



4.1.16 Information seeking behaviour

Table 4.1.16.1: Distribution of students based on number of sources he or she uses to seek information

(n=95)

S. No.	Category	Frequency	Percentage
1.	One source	49	51.58
2.	Two sources	21	22.11
3.	Three sources	17	17.89
4.	Four sources	03	03.16
5.	Five sources	05	05.26

Table 4.1.16.1 expresses that maximum (51.58 per cent) number of students use only one source for seeking information, 22.11 per cent students use two sources followed by 17.89 per cent using three sources. However, only 3.16 per cent students used four sources.

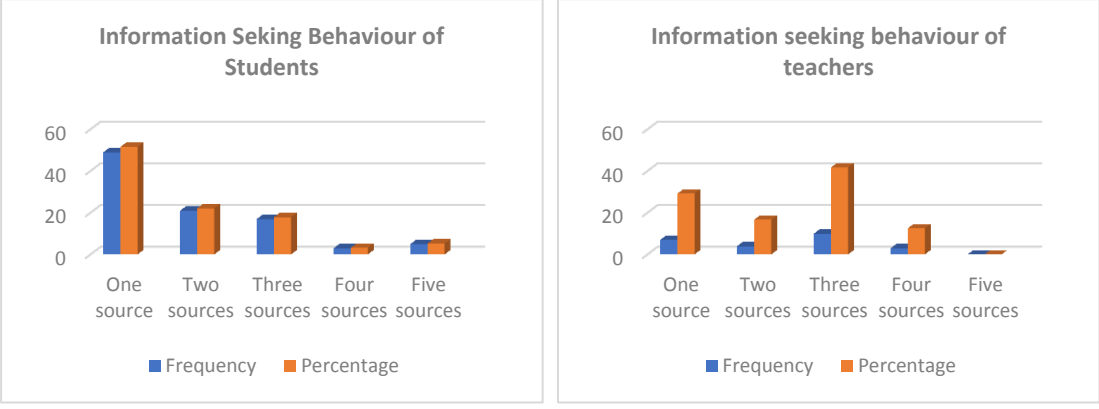
Table 4.1.16.2: Distribution of teachers based on number of sources he or she uses to seek information

(n=24)

S. No.	Category	Frequency	Percentage
1.	One source	07	29.17
2.	Two sources	04	16.67
3.	Three sources	10	41.67
4.	Four sources	03	12.50
5.	Five sources	00	00.00

Table 4.1.16.2 reflects that 41.67 per cent of teachers used three sources of information followed by 29.17 per cent using one source. 16.67 per cent used two sources. Four sources for information seeking were used by only 12.50 per cent of instructors. None of the teacher used five sources for seeking information.

Figure 4.1.16: Distribution of students and teachers based on number of sources he or she uses to seek information



4.1.17 Computer literacy

4.1.17.1 Years of computer use

Table 4.1.17.1.1: Distribution of students on the basis of years of computer use by them

(n=95)

S. No.	Category	Range	Frequency	Percentage
1.	Low	< 4.22 years	14	14.74
2.	Medium	4.22-12.96 years	63	66.32
3.	High	>12.96 years	18	18.95

(Mean=8.59 Standard deviation=4.37)

Table 4.1.1.17.1.1 shows that majority (66.32 per cent) of students used computer for medium duration (4.22-12.96 years). About 18.95 per cent students used computer for more than 12.96 years and only 14.74 per cent used less than 4.22 years.

Table 4.1.17.1.2: Distribution of teachers on the basis of years of computer use by them

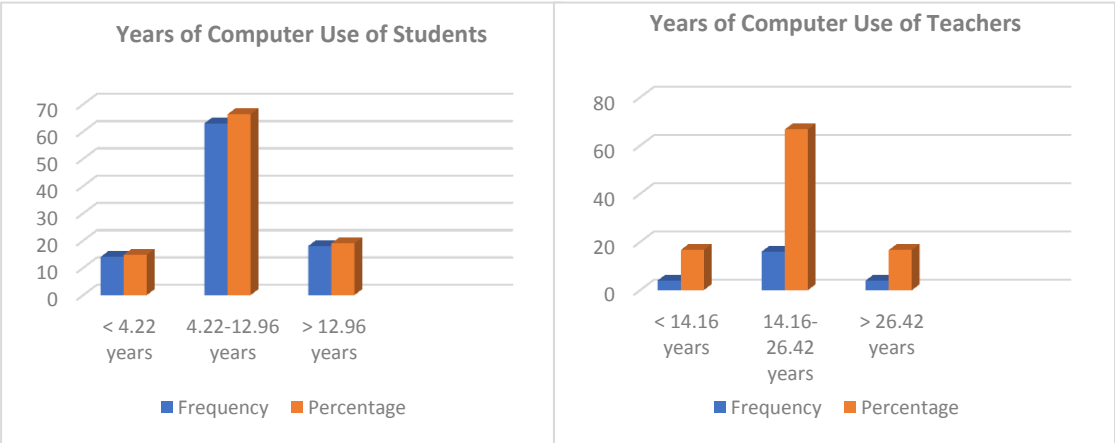
(n=24)

S. No.	Category	Range(years)	Frequency	Percentage
1.	Low	< 14.16	04	16.67
2.	Medium	14.16-26.42	16	66.67
3.	High	> 26.42	04	16.67

(Mean=20.29) (Standard deviation=6.13)

Table 4.1.17.1.2 illustrate that majority i.e.,66.67 per cent of teachers have been using computer from 14.16 to 26.42 years (Medium range). Moreover, 14.16 per cent teachers were in low and high range separately.

Figure 4.1.17.1: Distribution of students and teachers on the basis of years of computer use by them



4.1.17.2 Self-perception of computer literacy

Table 4.1.17.2.1: Distribution of students on the basis of their self-perception of computer literacy

(n=95)

S. No.	Category	Frequency	Percentage
1.	Very Poor	00	00.00
2.	Poor	02	02.10
3.	Average	28	29.47
4.	Good	42	44.21
5.	Very good	23	24.21

Table 4.1.17.2.1 reveals that 44.21 per cent of students perceived that they have good computer literacy. 29.47 per cent considered themselves average in using computer followed by 24.21 per cent with very good abilities. However, only 2.10 per cent of students consider themselves poor in computer handling. None of the students considered themselves very poor for the same.

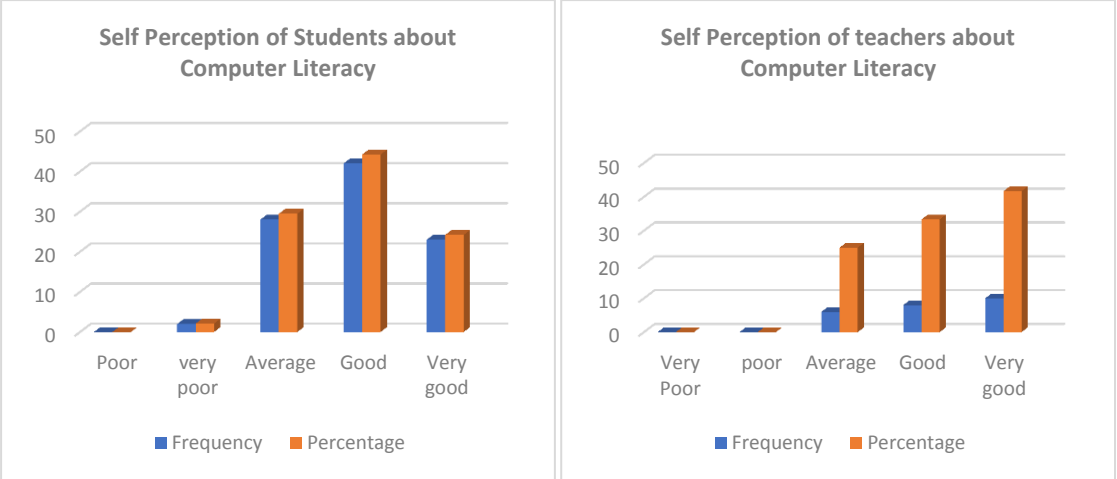
Table 4.1.17.2.2: Distribution of teachers on the basis of their self-perception of computer literacy

(n=24)

S. No.	Category	Frequency	Percentage
1.	Average	06	25.00
2.	Good	08	33.33
3.	Very good	10	41.67

Table 4.1.17.2.2 reveals that 41.7 per cent of teachers perceived that they have very good computer literacy. About 33.33 per cent considered themselves to have good ability to use computer followed by 25 per cent with average. Whereas, none of the teachers considered themselves very poor and poor in handling computer. As none of the teachers considered themselves poor in computer literacy while 2.10 per cent students (Table 4.1.17.2.1) did. So, it can be concluded that teachers perceived their computer literacy more positively. In the study conducted by Curtis et.al, (1986), they revealed that seniors had better computer literacy than juniors which is somewhat similar to the results of the present study.

Figure 4.1.17.2: Distribution of students and teachers on the basis of their self-perception of computer literacy



4.1.18 Internet Literacy

4.1.18.1 Web search skills

Web search skill is the quality of an individual to search information on internet.

Table 4.1.18.1.1: Distribution of Students on the basis of self-perception on Web Search Skills

(n=95)

S. No.	Category	Frequency	Percentage
1.	Very Poor	00	00.00
2.	Poor	00	00.00
3.	Average	38	40.00
4.	Good	12	12.63
5.	Very good	45	47.37

Table 4.1.18.1.1 put forth that 47.37 percent of students perceived that they can search the web in a very good manner. Around 40 per cent students considered themselves average in searching web. Nearly 12.63 per cent students fit under good category. Whereas, none of the students considered them poor and very poor in searching web.

Table 4.1.18.1.2: Distribution of teachers on the basis of their self-perception on Web Search Skills

(n=24)

S. No.	Category	Frequency	Percentage
1.	Very Poor	00	00.00
2.	Poor	00	00.00
3.	Average	08	33.33
4.	Good	04	16.67
5.	Very good	12	50.00

Table 4.1.18.1.2 shows that 50 per cent of teachers considered their web search skills to be very good followed by 33.33 and 16.67 per cent teachers coming in average and good category respectively. None of the teachers perceived their web search skill to be poor and very poor.

Figure 4.1.18.1: Distribution of students and teachers on the basis of their self-perception on Web Search Skills

4.1.18.2 Self-perception on ability to use internet

Table 4.1.18.2.1 Distribution of students on the basis of their self-perception on ability to use internet

(n=95)

S. No.	Category	Frequency	Percentage
1.	Very Poor	01	01.05
2.	Poor	00	00.00
3.	Average	18	18.95
4.	Good	46	48.42
5.	Very good	30	31.58

Table 4.1.18.2.1 shows that 48.42 per cent students considered themselves good in using internet and 31.58 per cent perceived themselves very good,18.95 per cent rated themselves average followed by 1.05 per cent as very poor. None of the students felt that they were poor in using internet. Hence, it can be concluded that almost all students positively perceived their ability to use internet. Mahmood (2013) in his study entitled "Relationship of students' perceived information literacy skills with personal and academic variables." observed that students perceive their information literacy. Hence, the results of the present study are in line with Mahmood (2013).

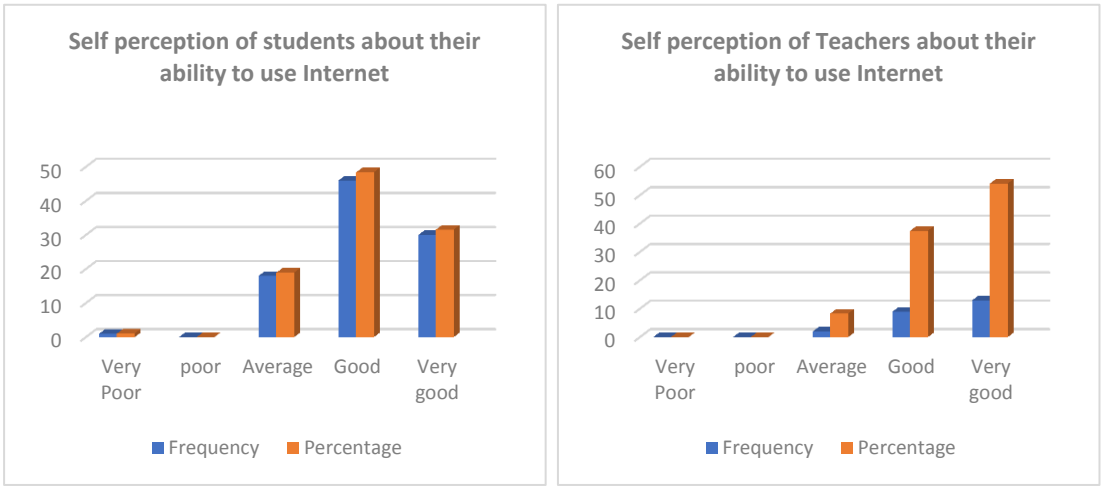
Table 4.1.18.2.2: Distribution of teachers on the basis of their self-perception on ability to use internet

(n=24)

S. No.	Category	Frequency	Percentage
1.	Very Poor	00	00.00
2.	Poor	00	00.00
3.	Average	02	08.33
4.	Good	09	37.50
5.	Very good	13	54.17

Table 4.1.18.2.2 shows that 54.17 per cent teachers considered them very good in using internet and 37.50 per cent perceived themselves good. Around 8.33 per cent rated themselves average. None of the teacher felt that they were poor and very poor in using internet.

Figure 4.1.18.2: Distribution of students and Teachers on the basis of their self-perception on ability to use internet



4.2 Objective 2: To analyse the perception of students and teachers on reforms in agriculture education system.

To explore the perception of students and teachers regarding reforms in agriculture education system frequency and percentage was calculated. The perception was studied with the help of 50 statements under seven dimensions. Each statement is measured in a three-way continuum as Agree, Disagree and Undecided. Frequency and percentage were calculated for individual options for each statement.

4.2.1 Subject and Curriculum

In this study, subject and curriculum is defined as the content and courses of agricultural sciences. The perception of students and teachers regarding subject and curriculum was studied with the help of nine statements.

Table 4.2.1.1: Distribution of perception of students regarding reforms in subject and curriculum

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
A	Subject and Curriculum	F	%	F	%	F	%
1.	Curriculum development committee should include representatives from different organizations (NGO, Industry, farmer's organization etc.)	92	96.84	02	02.10	01	01.05
2.	Curriculum should include need-based courses.	87	91.58	03	03.16	05	05.26
3.	Curriculum should include technology related courses such as robotics and GIS.	84	88.42	05	05.26	06	06.31
4.	Curriculum should include courses on agriculture legislation and current situation.	89	93.68	02	02.10	04	04.21
5.	Curriculum should be flexible to some extent with respect to regional requirement.	89	93.68	02	02.10	04	04.21
6.	All courses should have a provision of guest lectureship from different universities	83	87.37	04	04.21	08	08.42
7.	Remote sensing in agriculture should be taught with more practical approach	88	92.63	04	04.21	03	03.16
8	Courses on indigenous technology should be included in the curriculum.	86	90.52	03	03.16	06	06.31
9.	Institution should have freedom to offer special courses in which it has special expertise.	87	91.58	04	04.21	04	04.21
	Total	**87.22**	**91.81**	**03.22**	**03.39**	**04.56**	**04.79**

Table 4.2.1.1 illustrates that overall (91.81 per cent) students agreed to all the statements under reforms in subject and curriculum while 4.79 per cent remained undecisive to the same. However, 3.39 per cent students disagreed to the suggested reforms in subject and curriculum. Hence, it can be concluded that majority of students perceived the reforms in subject and curriculum positively. Maximum (96.84 per cent) agreement of students was found to be for statement 1 which states curriculum development committee should include representatives from different organizations (NGO, Industry, farmers organization etc). The results are in line with the study conducted by Erickson (2006) entitled "Concept-based curriculum and instruction for the thinking classroom" emphasised the failure of traditional curriculum in providing strong conceptual knowledge and suggested modification in the curriculum model according to the changing world.

Table 4.2.1.2: Distribution of perception of teachers regarding subject and curriculum

(n=24)

S.No.	Statement	Agree		Disagree		Undecided	
A	Subject and Curriculum	F	%	F	%	F	%
1.	Curriculum development committee should include representatives from different organizations (NGO, Industry, farmers organization etc.)	22	91.67	01	04.17	01	04.17
2.	Curriculum should include need-based courses.	23	95.83	00	00.00	01	04.17
3.	Curriculum should include technology related courses such as robotics and GIS.	23	95.83	00	00.00	01	04.17
4.	Curriculum should include courses on agriculture legislation and current situation.	21	87.5	01	04.17	02	08.33
5.	Curriculum should be flexible to some extent with respect to regional requirement.	22	91.67	02	08.33	00	00.00
6.	All courses should have a provision of guest lectureship from different universities	20	83.33	01	04.17	03	12.5
7.	Remote sensing in agriculture should be taught with more practical approach	20	83.33	00	00.00	04	16.67
8.	Courses on indigenous technology should be included in the curriculum.	22	91.67	00	00.00	02	8.33
9.	Institution should have freedom to offer special courses in which it has special expertise.	20	83.33	02	8.33	02	8.33
	Total	**21.44**	**89.35**	**0.78**	**3.24**	**1.78**	**7.41**

Table 4.2.1.2 reflects that cumulatively 89.35 per cent teachers agreed to the reforms in subject and curriculum. About 7.41 per cent teachers were undecisive and 3.24 disagreed to the same. Hence, it can be concluded that overall perception of teachers regarding reforms in subject and curriculum was found to be positive. Maximum (95.83) number of teachers agreed to inclusion of need based and technology related courses like GIS in the curriculum. Nearabout 91.67 per cent teachers also agreed to the need of flexibility in curriculum to include local courses. The results of the present investigation are similar to the study conducted by Biswas *et al*., (2020) entitled "Perception of students and teachers towards reforms on agricultural education subject matter" in which Cent per cent teachers agreed to flexibility in curriculum.

4.2.2 Assessment and Evaluation

Assessment and evaluation are operationalized as perception of students and teachers regarding reforms in examination of learner as well the university. In this study, it was studied with the help of six statements.

Table 4.2.2.1: Distribution of perception of Students regarding reforms in assessment and evaluation.

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
B	Assessment and Evaluation	F	%	F	%	F	%
1.	Evaluation system should give more weight age to practical.	80	84.21	07	07.37	08	08.42
2.	Proper yardsticks should use for evaluation of performance of university, college, department, instructor, and learner.	81	85.26	02	02.10	12	12.63
3.	Before granting permission to open, available resources of every university should be evaluated.	87	91.58	00	00.00	08	08.42
4.	Overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner.	89	93.68	04	04.21	02	02.10
5.	Evaluation of students of STUDENT READY programme should be based on number and extent of farmers which they benefited.	62	65.26	16	16.84	17	17.89
6.	National and international conferences attended by students should have marks weight age.	58	61.06	24	25.26	13	13.68
	Total	**76.17**	**80.17**	**8.83**	**9.29**	**10**	**10.52**

Table 4.2.2.2 indicates that collectively 80.17 per cent students agreed to reforms in assessment and evaluation whereas, 10.52 per cent students were undecisive and 9.29 per cent disagreed to the same. Thus, it can be concluded that students perceived reforms in assessment and evaluation in agriculture education system positively. Majority (93.68 per cent) students agreed to the fourth statement which says that the overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner.

Table 4.2.2.2: Distribution of perception of Teachers regarding reforms in assessment and evaluation

(n=24)

S.No.	Statement	Agree		Disagree		Undecided	
B	Assessment and Evaluation	F	%	F	%	F	%
1.	Evaluation system should give more weight age to practical.	16	66.67	7	29.17	1	4.17
2.	Proper yardsticks should use for evaluation of performance of university, college, department, instructor, and learner.	23	95.83	0	0	1	4.17
3.	Before granting permission to open, available resources of every university should be evaluated.	20	83.33	2	8.33	2	8.33
4.	Overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner.	23	95.83	1	4.17	0	0
5.	Evaluation of students of STUDENT READY programme should be based on number and extent of farmers which they benefited.	13	54.17	8	33.33	3	12.5
6.	National and international conferences attended by students should have marks weight age.	14	58.33	10	41.67	0	0
	Total	**18.17**	**75.69**	**4.67**	**19.45**	**1.17**	**4.86**

Table 4.2.2.2 indicates that on an average 75.69 per cent teachers agreed to reforms in assessment and evaluation whereas, 19.45 per cent disagreed and 4.86 per cent were undecisive to the same. Therefore, it can be concluded that teachers positively perceived the reforms in assessment and evaluation in agriculture education system. Majority (95. 83 per cent) of teachers agreed to the second and forth statement which emphasise the use of proper yardsticks for evaluation of performance of university, college, department, instructor, and learner and also points out that the overall understanding of learner in relation to basics, concepts and reasoning should

be evaluated in both objective and subjective manner. Javed *et al.* (2015) in their study entitled "Perceptional variations of organizational climate among faculty and administration of State Agricultural Universities" found a significant gap between present conditions and expectation of teachers regarding assessment and evaluation. Hence, the results are in line with his findings.

4.2.3 Teachers and Teaching

Teaching is the process of arranging situations in which the important things to be learned are called to the attention of the learners, their interest developed, desire aroused and action promoted. Perception of students and teachers regarding reforms in teacher and teaching were studied with 8 statements given in tables below:

Table 4.2.3.1: Distribution of perception of students regarding reforms in teachers and teaching

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
C	Teacher and teaching	F	%	F	%	F	%
1.	Teacher should include recent case studies and possible research outcomes in lecture.	91	95.79	03	03.16	01	01.05
2.	Teachers with all three degrees from different universities should be preferred in teaching profession.	47	49.47	35	36.84	13	13.69
3.	Teacher should provide environment for interaction with students.	91	95.79	02	02.10	02	02.10
4	Teacher should submit annual research and academic plan on university web-portal at beginning of academic year.	86	90.52	04	04.21	05	05.26
5.	Teacher should be trained in handling smart classrooms along with supporting staff for the same.	91	95.79	02	02.10	02	02.10
6.	Peer training by the best teachers at university to other teachers should be conducted for better efficacy of agricultural education.	82	86.31	05	05.26	08	08.42
7.	Teachers should be provided opportunities for foreign exposure to update their knowledge.	91	95.79	03	03.16	01	01.05
8.	Teacher should have good communication skills.	91	95.79	02	02.10	02	02.10
	Total	**83.75**	**88.16**	**07.00**	**07.36**	**04.25**	**04.47**

Table 4.2.3.1 reflects that Majority (88.16 per cent) of students agreed to reforms in teacher and teaching while 7.36 per cent disagreed and 4.47 per cent

remained undecisive to the same. So, it can be concluded that students had a positive perception towards reforms in teaching. Among the positively perceived statements, majority (95.79 per cent) of students agreed to five statements which emphasise on inclusion of recent case studies and possible research outcomes in lectures, teachers should provide environment for interaction with students training of teachers in handling smart classrooms, providing opportunities to teachers for foreign exposure to update their knowledge and Teacher should have good communication skills. Only 49.47 per cent of students agreed to prefer teachers from three different universities in teaching profession while 36.84 disagreed to the same. The results are in line with the study conducted by Kuppuswamy and Natrajan (1989) entitled "Lecture Method: Strategies for Improvement" in which they recommended improvements in lectures through teachers' efforts to make it compatible to the learners, so it can be perceived that he had positive perception about reforms in teaching which is similar to the finding of the present study.

Table 4.2.3.2: Distribution of perception of teachers regarding reforms in teacher and teaching

(n=24)

S. No.	Statement	Agree		Disagree		Undecided	
C	Teacher and teaching	F	%	F	%	F	%
1.	Teacher should include recent case studies and possible research outcomes in lecture.	24	100.00	00	00.00	00	00.00
2.	Teachers with all three degrees from different universities should be preferred in teaching profession.	14	58.33	07	29.17	03	12.50
3	Teacher should provide environment for interaction with students.	24	100.00	00	00.00	00	00.00
4.	Teacher should submit annual research and academic plan on university web-portal at beginning of academic year.	16	66.67	05	20.83	03	12.50
5.	Teacher should be trained in handling smart classrooms along with supporting staff for the same.	23	95.83	01	04.17	00	00.00
6.	Peer training by the best teachers at university to other teachers should be conducted for better efficacy of agricultural education.	23	95.83	01	04.17	00	00.00
7.	Teachers should be provided opportunities for foreign exposure to update their knowledge.	22	91.67	00	00.00	02	08.33
8.	Teacher should have good communication skills.	24	100.00	00	00.00	00	00.00
	Total	**21.25**	**88.54**	**01.75**	**07.29**	**01.00**	**04.16**

Table: 4.2.3.2 reveals that majority (88.54 per cent) agreed, 7.29 per cent disagreed and 4.16 per cent teachers remained undecisive to the reforms in teacher and teaching dimension. Among the agreed statements, Majority (100 per cent) of teachers agreed to three statements which emphasised on inclusion of recent case studies and possible research outcomes in lectures, teachers should provide environment for interaction with students and Teacher should have good communication skills. Hence, it can be declared that teachers had positive perception regarding reforms in teacher and teaching. Present investigation supported with the study conducted by Sung (2013) "Teachers' perceptions of the recent curriculum reforms and their implementation: what can we learn from the case of Korean elementary teachers?" which emphasised on importance of perception of teachers before designing reforms. Present study is done with the same purpose.

4.2.4 Learner and learning situation

Learning can be defined as a quantitative increase in knowledge; memorising; the acquisition for subsequent utilisation of facts and methods; the abstraction of meaning, and interpretative process aimed at understanding reality (Saljo,1979). Learning is operationalized as the process by which an individual modifies their behaviour through their own efforts and abilities. The circumstances for effective learning are operationalized as the learning situation. Learners are people who want and need to learn. Learners hold the most crucial central position in an effective learning scenario, and all efforts are focused towards them. All of the fundamental factors for facilitating learning, such as learners, teachers, subject matter, teaching materials, and physical facilities, are present in a dynamic connection with one another in an effective learning setting. Perception of students and teachers regarding learner and learning situation are studied with the help of 15 statements given in the table below:

Table 4.2.4.1: Distribution of perception of students regarding reforms in learner and learning situation

(n=95)

S. No.	Statement	Agree		Disagree		Undecided	
D	Learner and Learning Situation	F	%	F	%	F	%
1.	Students should be encouraged to develop interest in agricultural field work.	91	95.79	02	02.10	02	02.10
2.	Students should be included in village adoption programme.	86	90.53	05	05.26	04	04.21
3.	Agriculture students should be attached to at least one farmer every year throughout the degree programme.	86	90.53	06	06.32	03	03.16
4.	In under graduation education system, every student should be allotted an advisor.	69	72.63	15	15.79	11	11.58
5.	Career counselling of students should be done every year.	92	96.84	02	02.10	01	01.05
6.	University Students should be made aware of global job opportunities.	94	98.94	00	00.00	01	01.05
7.	At least one starts up every year should be developed under the guidance of university.	86	90.52	02	02.10	07	07.36
8.	School students should be oriented about career options in agriculture through Awareness camps.	93	97.89	02	02.10	00	00.00
9.	Learners should be divided into small groups for practical classes.	94	98.95	01	01.05	00	00
10.	A Desirable student teacher ratio such as 30:1 should be maintained.	78	82.10	06	06.31	11	11.58
11.	Learners should be provided opportunities for foreign exposure.	93	97.89	01	01.05	01	01.05
12.	Students should be motivated to excel in agriculture through alumni linkage programme of the university.	91	95.79	03	03.16	01	01.05
13.	Agriculture education should match with various job requirements in relation to skill, knowledge and understanding	92	96.84	01	1.05	02	02.10
14.	Students of STUDENT READY Programme should help farmers to register online in government schemes.	90	94.74	03	03.16	02	02.10
15.	Students of STUDENT READY programme should make farmers aware of online agriculture platforms.	89	93.68	03	03.16	03	03.16
	Total	**88.27**	**92.97**	**03.47**	**03.65**	**03.27**	**03.44**

Table 4.2.4.1 indicates that on an average 92.97 per cent of students agreed, 3.65 disagreed and 3.44 were undecisive to the reforms in learner and learning situation. Consequently, it is clear that students had a positive perception regarding learner and learning situation. Among the positively perceived statements, majority

(98.95 per cent) of students agreed to two statements which focus on providing awareness to students about global job opportunities and segregation of students in small groups for practical lectures. The results are in concordance with the results of Nupur and Ghadei (2017) which stated that 68.22 per cent students perceived division of class in small batches in Under-graduation and post-graduation positively.

Table 4.2.4.2: Distribution of perception of Teachers regarding reforms in learner and learning situation

(n=24)

S. No.	Statement	Agree		Disagree		Undecided	
D	Learner and Learning Situation	F	%	F	%	F	%
1.	Students should be encouraged to develop interest in agricultural field work.	24	100	00	00.00	00	00.00
2.	Students should be included in village adoption programme.	24	100	00	00.00	00	00.00
3.	Agriculture students should be attached to at least one farmer every year throughout the degree programme.	18	75	03	12.50	03	12.50
4.	In under graduation education system, every student should be allotted an advisor.	17	70.83	04	16.67	03	12.50
5.	Career counselling of students should be done every year.	22	91.67	02	08.33	00	00.00
6.	University Students should be made aware of global job opportunities.	23	95.83	00	00.00	01	04.17
7.	At least one starts up every year should be developed under the guidance of university.	17	70.83	03	12.50	04	16.67
8.	School students should be oriented about career options in agriculture through Awareness camps.	22	91.67	02	08.33	00	00.00
9.	Learners should be divided into small groups for practical classes.	22	91.67	02	08.33	00	00.00
10.	A Desirable student teacher ratio such as 30:1 should be maintained.	22	91.67	02	08.33	00	00.00
11.	Learners should be provided opportunities for foreign exposure.	23	95.83	01	04.17	00	00.00
12.	Students should be motivated to excel in agriculture through alumni linkage programme of the university.	23	95.83	00	00.00	01	04.17
13.	Agriculture education should match with various job requirements in relation to skill, knowledge and understanding	23	95.83	00	00.00	01	04.17
14.	Students of STUDENT READY Programme should help farmers to register online in government schemes.	21	87.5	02	08.33	01	04.17
15.	Students of STUDENT READY programme should make farmers aware of online agriculture platforms.	23	95.83	00	00.00	01	04.17
	Total	**21.6**	**89.99**	**01.40**	**05.83**	**01.00**	**04.17**

Table 4.2.4.2 indicates that cumulatively 89.99 per cent of teachers agreed, 5.83 per cent disagreed and 4.17 per cent remained undecisive to the reforms in learner and learning situation. As a result, it can be concluded that overall perception of teachers towards reforms in learner and learning situation was positive. Among the agreed statements, maximum (100 per cent) agreement was observed to be for first two statements which emphasised on encouraging students to develop interest in working on field and their inclusion in village adoption programme. The results are similar to result of Nupur and Ghadei (2017) i.e., 62.96 (majority) per cent teachers agreed to the provision of field visit of learners to make them aware of farmer's field situation.

4.2.5 Research and researcher

For the present study, research is operational zed as attempt to add more reservoir of knowledge to agriculture sciences. Researcher is the person who conducts research. This dimension is studied with the help of four statements to check the perception of respondents regarding research and researcher

Table 4.2.5.1: Distribution of perception of students regarding reforms in research and researcher

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
E	Research and Researcher	F	%	F	%	F	%
1.	Farmers and NGO representatives should be included in research advisory committee of students.	78	82.10	08	08.42	9	09.47
2.	Intake of Ph.D. scholars should be in alignment with vacancies in universities.	76	80.00	11	11.58	8	08.42
3.	Research should be conducted based on actual problems from farmer's field.	91	95.79	01	01.05	3	03.16
4.	Research work should be adequately and timely funded to encourage university research system.	94	98.95	00	00.00	1	01.05
	Total	**84.75**	**89.21**	**5**	**05.26**	**05.25**	**05.53**

. Table 4.2.5.1 illustrates that majority (89.21 per cent) students agreed, 5.26 per cent disagreed and 5.53 per cent remained undecided to the reforms in research and researcher. Hence, it can be concluded that overall perception of students towards reforms in research and researcher was positive. Among the agreed statements maximum (98.95 per cent) agreement was received by statement 4 which focus on adequate and timely funding of research to encourage university research system. 11.58 per cent of students disagreed intake of PhD students in alignment with the vacancies in universities while 8.42 were indecisive about the same. The above results are in line with Javed. *et.al.,* (2015) which showed gap between present situation and expectation in "monetary gain". The results are also similar with the findings of Tamboli and Nene (2013) in their study on "Modernizing higher agricultural education system in India to meet the challenges of 21st century" which considered funding crunch as a major constraint of agriculture education system.

Table 4.2.5.2: Distribution of perception of students regarding reforms in research and researcher

(n=95)

S. No.	Statement	Agree		Disagree		Undecided	
E	Research and Researcher	F	%	F	%	F	%
1.	Farmers and NGO representatives should be included in research advisory committee of students.	16	66.67	06	25.00	02	08.33
2.	Intake of Ph.D. scholars should be in alignment with vacancies in universities.	15	62.5	07	29.17	02	08.33
3.	Research should be conducted based on actual problems from farmer's field.	21	87.5	01	04.17	02	08.33
4.	Research work should be adequately and timely funded to encourage university research system.	23	95.83	01	04.17	00	00.00
	Total	**18.75**	**78.12**	**03.75**	**15.63**	**01.50**	**6.25**

Table 4.2.5.2 reveals that cumulatively majority (78.12 per cent) teachers agreed, 15.63 per cent disagreed and 6.25 were undecisive about reforms in research and researcher. Thus, it is clear that teachers had a positive perception about reforms in research and researcher. Among the agreed statements maximum (95.83 per cent) agreement was received by statement 4 which focus on adequate and timely funding

of research to encourage university research system. Maximum (29.17 per cent) disagreement was found for second statement which emphasised on admitting Ph.D. scholars in the universities in alignment with the vacancies available all over India. 87.5 per cent teachers positively perceived the conduction of research on actual farmer's field. Similarly, Biswas and Ghadei (2017) found that 70.37 per cent teachers agreed that research should be related to farmer's problem.

4.2.6 Physical facilities

Physical facilities are appropriate physical environment in which teaching learning can take place. The perception of respondents is studied with the help of four statements regarding physical facilities. Perception of students and teachers regarding reforms in physical facilities is studied with the help of 4 statements mentioned in the table given below:

Table 4.2.6.1: Distribution of perception of students regarding reforms ion physical facilities

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
F	Physical facilities	F	%	F	%	F	%
1.	Researchers should be provided with well-equipped laboratory to work.	95	100.00	00	00.00	00	00
2.	Vacancies in universities should be filled from time to time.	94	98.95	01	01.05	00	00
3.	Agriculture technology and innovation park should be established in every university for scientific orientation.	90	94.74	03	03.16	02	02.10
4.	Under graduation students should have proper access to basic laboratories and field activities.	91	95.79	01	01.05	03	03.16
	Total	**92.50**	**97.37**	**01.25**	**01.32**	**01.25**	**01.31**

Table 4.2.6.1 indicates that 97.37 per cent students agreed, 1.32 per cent disagreed and 1.31 per cent were undecisive about reforms in physical facilities. Thus, it can be concluded that students had positive perception about reforms in physical facilities. Among the agreed aspects, statement 1(Researchers should be provided with well-equipped laboratory to work.) was agreed by cent per cent students. 98.95

per cent of students agreed to timely filling of vacancies in the university. 94.74 per cent students positively perceived the establishment of agriculture technology and Innovation Park in every university for scientific orientation. "The results are in line with Biswas and Ghadei (2017).

Table 4.2.6.2: Distribution of perception of teachers regarding reforms ion physical facilities

(n=24)

S.No.	Statement	Agree		Disagree		Undecided	
F	Physical facilities	F	%	F	%	F	%
1.	Researchers should be provided with well-equipped laboratory to work.	23	95.83	00	00.00	01	04.17
2.	Vacancies in universities should be filled from time to time.	24	100.00	00	00.00	00	00.00
3.	Agriculture technology and innovation park should be established in every university for scientific orientation.	24	100.00	00	00.00	00	00.00
4.	Under graduation students should have proper access to basic laboratories and field activities.	23	95.83	00	00.00	01	04.17
	Total	**23.50**	**97.91**	**00.00**	**00.00**	**00.50**	**02.09**

Table 4.2.6.2 reflects that majority (97.91 per cent) teachers agreed, 2.09 remained undecisive and none disagreed to the reforms in physical facilities. Therefore, it can be declared that teachers perceived reforms in physical facilities positively. Among the agreed statements, most (100 per cent) agreed was timely filling of vacancies in the university and establishment of agriculture technology and Innovation Park in every university for scientific orientation. The results are supported by the study conducted by Javed *et al* (2015) entitled "Perceptional variations of organizational climate among faculty and administration of State Agricultural Universities" in which they did dimension wise analysis to find the gap between desired and existing organizational climate and found the maximum gap in physical facilities dimension.

4.2.7 Teaching learning Aid

These are appropriate instructional materials and equipment which make teaching process easy. It is studied with the help of four statements. Perception of students and teachers regarding reforms in teaching learning aid is studied with the following 4 statements given in the table

Table 4.2.7.1: Distribution of perception of students regarding reforms in teaching learning aid

(n=95)

S.No.	Statement	Agree		Disagree		Undecided	
G	Teaching Learning Aid	F	%	F	%	F	%
1.	Both teachers and students should be made aware of different Online Agriculture platforms.	94	98.95	00	00.00	01	01.05
2.	Every university should organize some awareness camps regarding national and international scholarships and awards.	90	94.74	02	02.10	03	03.16
3.	There should be a language lab in every university to support teachers and students in academics	89	93.68	00	00.00	06	06.32
4.	There should be a provision to access reputed international and national journals in every university.	92	96.84	03	03.16	00	00.00
	Total	**91.25**	**96.05**	**01.25**	**01.31**	**02.50**	**02.63**

Table: 4.2.7.1 shows that in cumulatively majority (96.05 per cent) students agreed, 2.63 were undecisive and 1.31 disagreed to the reforms in teaching learning aid dimension. Among the agreed statements, maximum (98.95 per cent) agreement was gained first statement which supports the provision of providing awareness regarding online agriculture platforms. About 96.84 per cent students agreed to the provision of access to reputed national and international journals in the university in contrast only 3.16 per cent disagreed to it Additionally, establishment of language lab in the university was also positively perceived by 93.68 per cent of the students. The results are in line with the findings of Gurumurthy (1998) in the study "Improving academic environment in agricultural universities" suggested to improve basic amenities for teachers, classroom, free access to audio-visual aid for instructors,

research well equipped laboratory facilities, favorable environment for learning, proper seating arrangement cafeteria facilities, residences, and so on.

Table 4.2.7.2: Distribution of perception of teachers regarding reforms in teaching learning aid

(n=24)

S.No.	Statement	Agree		Disagree		Undecided	
G	Teaching Learning Aid	F	%	F	%	F	%
1.	Both teachers and students should be made aware of different Online Agriculture platforms.	24	100.00	00	00.00	00	00.00
2.	Every university should organize some awareness camps regarding national and international scholarships and awards.	22	91.67	00	00.00	02	08.33
3.	There should be a language lab in every university to support teachers and students in academics	19	79.17	02	08.33	03	12.50
4.	There should be a provision to access reputed international and national journals in every university.	23	95.83	00	00.00	01	04.17
	Total	**22.00**	**91.67**	**00.50**	**02.08**	**01.50**	**06.25**

Table 4.2.7.2 reflects that over-all 91.67 per cent teachers agreed, 6.25 per cent were undecisive and 2.08 per cent disagreed to reforms in teaching learning aid. Thus, it can be concluded that teachers perceived reforms in teaching learning aid positively. Cent per cent teachers agreed to the provision of providing awareness regarding online agriculture platforms. Around 91.67 per cent of teachers agreed to organization of awareness camp to make teachers and learners aware of the national and international scholarships and awards. Nearly 79.17 per cent teachers agreed to the establishment of language lab in each university while, 12.5 per cent were indecisive and 8.33 per cent disagreed to it. 95.83 per cent students agreed to the provision of access to reputed national and international journals in the university in contrast only 4.17 per cent were indecisive about it. Hence, it can be considered that students positively perceived the reforms in teaching learning aid.

4.3 Objective3: To examine relationship between the perception regarding reforms in agriculture education and selected independent variable of students and teachers.

To examine relationship between the perception and selected independent variable of respondents. For the purpose, correlation and regression analysis was done using SPSS23.

4.3.1 Correlation Analysis

Table 4.3.1.1: Correlation between independent variables and perception of students

S. No.	Independent Variable	r value	P value
1.	Age	0.03	0. 80
2.	Gender	-0.21**	0.04
3.	Designation	-0.26**	0.01
4.	Educational Qualification	-0.24**	0.02
5.	Background	0.05	0.60
6.	Exposure to University (Number)	0.26**	0.01
7.	Specialization	-0.05	0.67
8.	Medium of Education	-0.01	0.97
9.	Higher Secondary Stream	0.02	0.86
10.	Social Participation	-0.06	0.57
11.	Number of Organization	-0.06	0.58
12.	Solving Academic Problem	0.08	0.44
13.	Engage in Academic Discussion	0.36*	0.00
14.	Asking Questions	0.15	0.15
15.	Information Seeking Behaviour	0.15	0.16
16.	Computer Literacy (Years)	0.14	0.19
17.	Computer Literacy (Self-Rating)	0.26**	0.01
18.	Internet Skill	0.13	0.22

*Indicates significance at 1 % level,
**indicates significance at 5% level,
***indicates significance at 10 % level

Table 4.3.1.1 reveals that perception of students was significantly and negatively correlated with gender at 5 per cent level of significance (p value=0.044) which implies that female students had more positive perception towards reforms in agriculture education as compared to the male students. In addition, designation (p value = 0.012) and educational qualification (p value =0.022) was also negatively and significantly correlated with the perception of students at 5 per cent level of significance which make it clear that Master scholars had more positive perception towards reforms as compared to PhD scholars. Exposure to number of university (p value =0.012) and self-rated computer literacy (p value=0.263) also found to be significantly and positively correlated with the perception of students at 5 per cent level of significance. Engagement of students in academic discussion also showed positive correlation with their perception regarding reforms in agriculture education system at 1 per cent level of significance (p value =0.000). It can be inferred from the above results that students who had more exposure to different universities perceived the reforms more positively. Students who had better computer literacy also perceived the reforms more positively. Students who engaged in academic discussion more frequently also had more positive perception towards reforms as compared to the one who participated less. Hence, null hypothesis got rejected for five independent variables (gender, designation, educational qualification, exposure to university and self-perceived computer literacy and engagement in academic discussion.) The results of the present study are contrary with the finding of the study entitled "Students 'perception Of Secondary School Agriculture: A Case of Meru Central District, Kenya" by Muchiri *et. al.,* (2013). they found no significant relationship between gender and perception of students regarding inclusion of agriculture subject in secondary education.

Table 4.3.1.2 indicates that there was no significant correlation between perception of teachers regarding reforms in agriculture education system and the independent variables tabled above. Hence, the null hypothesis got accepted for all the independent variables which implies that the independent variable does not affect the perception of teachers regarding reforms in agriculture education system. The reason behind such results may be small sample size and online survey for data collection

during unprecedented COVID-19 situation which may have led to less responsiveness of the teachers. The other reason behind such results may be homogeneity of population.

Table 4.3.1.2: Correlation between independent variables and perception of teachers

S. No.	Independent Variable	r value	P value
1.	Age	0.093	0.666
2.	Gender		
3.	Educational Qualification	-.057	0.793
4.	Background	-.003	.988
5.	Exposure to University (Number)	.069	.747
6.	Teaching Experience	.119	.579
7.	Specialization	.133	.537
8.	Medium of Education	.089	.681
9.	Higher Secondary Stream	-.179	.403
10.	Social Participation	-.070	.747
11.	Number of Organization	-.014	.949
12.	Solving Academic Problem	.166	.438
13.	Engage in Academic Discussion	-069	.747
14.	Information Seeking Behaviour	.080	.709
15.	Computer Literacy (Years)	.159	.458
16.	Computer Literacy (Self-Rating)	-.035	.870
17.	Internet Skill	-.151	.481
18.	Designation	-.122	.571

*Indicates significance at 1 % level,
**indicates significance at 5% level,
***indicates significance at 10 % level

4.3.2 Regression Analysis

Regression analysis was done to find the extent of relationship between independent variables and the perception of students and teachers (Dependent variable) regarding reforms in agriculture education system separately. The analysis was done with the help of SPSS 23 (Statistical Package for the Social Sciences).

Table 4.3.2.1(a): Details of Independent Variables in the Regression Analysis through SPSS 23 for Student's group

Model	Variables Entered	Variables Removed	Method
1.	Internet Skill, Solving Academic Problem, Age, Higher Secondary Stream, Medium of Education, Social Participation, Information Seeking Behaviour, Asking Questions, Specialization, Educational Qualification, Engage in Academic Discussion, Teaching Experience, Gender, Computer Literacy (Years), Background, exposure to University (Number), Number of Organization, Computer Literacy (Self-Rating), Designation	.	Enter

Table 4.3.2.1(b): Model Summary of Regression Analysis (Method: Enter) using SPSS of student's group

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1.	.590[a]	.348	.183	6.95737	.348	2.105	19	75	.012	1.919

Table 4.3.2.1(c): Test of Significance of Regression Model for student's group (Method: Enter)

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1.	Regression	1936.363	19	101.914	2.105	.012[b]
	Residual	3630.374	75	48.405		
	Total	5566.737	94			

a. Dependent variable: perception

b. Predictors: (Constant), Internet Skill, Solving Academic Problem, Age, Higher Secondary Stream, Medium of Education, Social Participation, Information Seeking Behaviour, Asking Questions, Specialization, Educational Qualification, Engage in Academic Discussion, Teaching Experience, Gender, Computer Literacy (Years), Background, Exposure to University (Number), Number of Organization, Computer Literacy (Self-Rating), Designation

Table 4.3.2.1(d): Details of Independent Variables in the Stepwise Regression Analysis through SPSS 23 for student's group

Model	Variables Entered	Variables Removed	Method
1.	Engage in Academic Discussion	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2.	Computer Literacy (Self-Rating)	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3.	Designation	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent variable: perception

Table 4.3.2.1(e): Model Summary of Stepwise Regression Analysis (Method: Enter) using SPSS for student's group

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1.	.361[a]	.130	.121	7.21557	.130	13.920	1	93
2.	.418[b]	.175	.157	7.06493	.045	5.008	1	92
3.	.466[c]	.218	.192	6.91861	.042	4.932	1	91

a. Predictors: (Constant), Engage in Academic Discussion
b. Predictors: (Constant), Engage in Academic Discussion, Computer Literacy (Self-Rating)
c. Predictors: (Constant), Engage in Academic Discussion, Computer Literacy (Self-Rating), Designation

Table 4.3.2.1(f): Test of Significance of Stepwise Regression Model for student's group (Method: Enter)

Dependent Variable: Perception

ANOVAa						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1.	Regression	724.750	1	724.750	13.920	.000[b]
	Residual	4841.987	93	52.064		
	Total	5566.737	94			
2.	Regression	974.717	2	487.358	9.764	.000[c]
	Residual	4592.020	92	49.913		
	Total	5566.737	94			
3.	Regression	1210.819	3	403.606	8.432	.000[d]
	Residual	4355.918	91	47.867		
	Total	5566.737	94			

a. Dependent Variable: Perception
b. Predictors: (Constant), Engage in Academic Discussion
c. Predictors: (Constant), Engage in Academic Discussion, Computer Literacy (Self-Rating)
d. Predictors: (Constant), Engage in Academic Discussion, Computer Literacy (Self-Rating), Designation

Table 4.3.2.1(a) indicates that the selected independent variables (i.e., Variables included in the study) are contributing around 34.80 per cent (Table 4.3.2.1(b)) of variance in the perception level of students towards reforms in agriculture education system. Stepwise regression analysis was carried out to know the most significant contributors to regression model. As indicated by table 4.3.2.1(e), it was found that engagement in academic discussion, designation and computer literacy (self-perceived) had the maximum effect on perception as per the derived model of regression. Hence, null hypothesis got rejected for engagement in academic discussion, designation and self- perceived computer literacy. Together they are contributing around 34.80 per cent variances on the dependent variable i.e., perception of student towards reforms in Agricultural Education System. Table 4.3.2.1(e) indicates that individually engagement in academic discussion had 13 per cent influence on perception, computer literacy had 4.5 per cent influence and designation had 4.2 per cent. The Durbin-Watson test was also carried out to test the autocorrelation in the regression model. Table 4.3.2.1(b) indicates the Durbin-Watson value (1.91) which implies that there is positive autocorrelation between the independent variables. Table 4.3.2.1(f) indicates that model used for stepwise regression was significant for Engage in Academic Discussion, Computer Literacy (Self-Rating), and Designation. Hence, null hypothesis for stepwise regression was rejected. So, alternate hypothesis stating "The fit of the observed values to those predicted by stepwise regression equation is better than which was expected by chance." got accepted.

Table 4.3.2.2(a): Details of Independent Variables in the Regression Analysis through SPSS 23 for Teacher's group

Model	Variables Entered
1.	Designation, Specialization, Internet Skill, Number of Organization, Solving Academic Problem, Background, Medium of Education, Teaching Experience, Engage in Academic Discussion, Educational Qualification, Higher Secondary Stream, Age, Exposure to University (Number), Computer Literacy (Years), Information Seeking Behaviour, Computer Literacy (Self Rating), Social Participation[b]

A. Dependent variable: Perception
B. All requested variable entered

Table 4.3.2.2(b): Model Summary of Regression Analysis (Method: Enter) using SPSS of Teacher's group

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1.	.693[a]	.480	-.992	8.50062	.480	.326	17

Table 4.3.2.2(c): Test of Significance of Regression Model for Teacher's group (Method: Enter)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	400.937	17	23.585	.326	.968[b]
Residual	433.563	6	72.261		
Total	834.500	23			

a. Dependent Variable: Perception
b. Predictors: (Constant), Designation, Specialization, Internet Skill, Number of Organization, Solving Academic Problem, Background, Medium of Education, Teaching Experience, Engage in Academic Problem, Background, Medium of Education, Teaching Experience, Engage in Academic Discussion, Education Qualification, Higher Secondary Stream, Age, Exposure to University (Number), Computer Literacy (Years), Information Seeking Behaviour, Computer Literacy (Self-Rating), Social Participation

Table 4.3.2.2(b) reveals that no significant relationship (R Square Value) was found between independent variable and the perception of teachers regarding reforms in agriculture education. The possible reason behind such result may be homogeneity of population as all the teachers belonged to same institution. As the research was conducted during unprecedented COVID-19 situation in online mode, enough responses were not received which can be the other reason for such results.

4.4 Objective 4: To find out the difference in level of perception of students and teachers regarding reforms in agriculture education system

To find out the difference in level of perception of students and teachers. Chi Square Analysis was done to find the association between perception of students and teachers regarding reforms in agriculture education system. Response Pattern of two groups of respondents (i.e., Teacher and Students) were analysed on the basis of distribution pattern of responses.

Table 4.4.1: Chi Square analysis of statements under subject and curriculum

S. No.	Statement	Results	
A	**Subject and Curriculum**	**Chi square value**	**P Value**
1.	Curriculum development committee should include representatives from different organizations (NGO, Industry, farmers organization etc.)	1.48	0.48
2.	Curriculum should include need-based courses.	0.84	0.66
3.	Curriculum should include technology related courses such as robotics and GIS.	1.53	0.47
4.	Curriculum should include courses on agriculture legislation and current situation.	1.05	0.59
5.	Curriculum should be flexible to some extent with respect to regional requirement.	3.23	0.20
6.	All courses should have a provision of guest lectureship from different universities	0.38	0.83
7.	Remote sensing in agriculture should be taught with more practical approach	7.14	0.03**
8.	Courses on indigenous technology should be included in the curriculum.	0.88	0.65
9	Institution should have freedom to offer special courses in which it has special expertise.	1.44	0.49

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.1 reflects that there was a difference in perception pattern of students and teachers based on chi square analysis in case of Statement 5 which states that curriculum should be flexible to some extent with respect to regional requirement. The chi-square statistics indicated that there was statistically significant difference at 5 per cent level between Students and teachers' groups (p value= 0.028) for the 5th statement. For all other statements the perception pattern of students and teachers were found to be fundamentally similar in nature as the difference was statistically non-significant.

Table 4.4.2: Chi square analysis of statements under Assessment and Evaluation

S. No.	Statement	Results	
B	**Assessment and Evaluation**	**Chi square value**	**P value**
1.	Evaluation system should give more weight age to practical.	8.93	0.01**
2.	Proper yardsticks should be used for evaluation of performance of university, college, department, instructor, and learner.	2.01	0.37
3.	Before granting permission to open, available resources of every university should be evaluated.	8.06	0.02**
4.	Overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner.	0.52	0.77
5.	Evaluation of students of STUDENT READY programme should be based on number and extent of farmers which they benefited.	3.29	0.19
6.	National and international conferences attended by students should have marks weight age.	5.11	0.08*

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.2 reveals that there was a significant difference in perception pattern of pattern of students and teachers based on chi square analysis in three statements. In case of Statement 1 which emphasise on giving more weightage to practical part in evaluation system, it was found that there was a significant difference at 5 per cent level (p value= 0.01) between perception pattern of students and teachers groups. In case of Statement 3 (before granting permission to open, available resources of every university should be evaluated.) Also, a significant difference in perception of students and teachers was found at 5 per cent level (p value= 0.02). Moreover, the perception of students and teachers was found to be significantly different at 1 per cent level (p value= 0.08) for statement 6 i.e., National, and international conferences

attended by students should have marks weight age. Hence, H_0 got rejected for 1st, 3rd and 6th statement. For remaining other statements, the perception pattern of students and teachers were found to be basically similar in nature as the difference was statistically non-significant and null hypothesis got accepted.

Table 4.4.3: Chi square analysis of Statement under Teacher and Teaching

S. No.	Statement	Results	
C	Teacher and Teaching	Chi-square value	P Value
1.	Teacher should include recent case studies and possible research outcomes in lecture.	1.05	0.59
2.	Teachers with all three degrees from different universities should be preferred in teaching profession.	0.63	0.73
3.	Teacher should provide environment for interaction with students.	1.05	0.59
4.	Teacher should submit annual research and academic plan on university web-portal at beginning of academic year.	9.77	0.01***
5.	Teacher should be trained in handling smart classrooms along with supporting staff for the same.	0.83	0.66
6.	Peer training by the best teachers of university to other teachers should be conducted for better efficacy of agricultural education.	2.26	0.32
7.	Teachers should be provided opportunities for foreign exposure to update their knowledge.	4.82	0.09*
8.	Teacher should have good communication skills.	1.05	0.59

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.3 illustrates that there was a significant difference in perception pattern of students and teachers based on chi square analysis in 2 statements (4th and 7th). In case of Statement 4 (Teacher should submit annual research and academic plan on university web-portal at beginning of academic year.), a significant difference between perception pattern of students and teachers' groups was found at 1 per cent level (p value= 0.008). A statistically significant difference at 5 per cent level (p value= 0.090) in perception pattern of Students and teachers' groups was also found in case of statement 7 which focus on providing opportunities for foreign exposure to teachers for updating their knowledge. The above result indicates that Null hypothesis got rejected for statement 4 and 7. The difference in perception pattern of students and teachers' groups in the remaining other statements was statistically non-significant

which implies that perception of the two groups regarding other statements were similar and null hypothesis got accepted.

Table 4.4.4: Chi Square analysis of statements under learner and learning situation

S. No.	Statement	Results	
D	Learner and Learning Situation	Chi Square Value	P Value
1.	Students should be encouraged to develop interest in agricultural field work.	1.05	0.59
2.	Students should be included in village adoption programme.	2.46	0.29
3.	Agriculture students should be attached to at least one farmer every year throughout the degree programme.	4.81	0.09*
4.	In under graduation education system, every student should be allotted an advisor.	0.03	0.98
5.	Career counselling of students should be done every year.	2.52	0.28
6.	University Students should be made aware of global job opportunities.	1.12	0.86
7.	At least one start-up every year should be developed under the guidance of university.	7.58	0.02**
8.	School students should be oriented about career options in agriculture through Awareness camps.	2.29	0.38
9.	Learners should be divided into small groups for practical classes.	4.13	0.19
10.	A Desirable student teacher ratio such as 30:1 should be maintained.	3.10	0.21
11.	Learners should be provided opportunities for foreign exposure.	1.37	0.51
12.	Students should be motivated to excel in agriculture through alumni linkage programme of the university.	1.86	0.39
13.	Agriculture education should match with various job requirements in relation to skill, knowledge and understanding	0.58	0.75
14.	Students of STUDENT READY Programme should help farmers to register online in government schemes.	1.65	0.44
15.	Students of STUDENT READY programme should make farmers aware of online agriculture platforms.	0.83	0.66

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.4 shows that there was a statistically significant difference between perception pattern of students and teachers based on chi square analysis for 2 statements (3^{rd} and 7^{th}). In case of Statement 3 (Agriculture students should be attached to at least one farmer every year throughout the degree programme), it was found that there was a statistically significant difference at 10 per cent level between perception of Students and teachers' groups (p value= 0.09). In case of Statement 7

(At least one start-up every year should be developed under the guidance of university) also, statistically significant difference was found at 5 per cent level between perception of Students and teachers' groups (p value= 0.02). As a result, Null hypothesis got rejected in third and seventh statement. In the remaining other statements, no statistically significant difference was found in perception of the two groups. Hence, null hypothesis got accepted for statements other than 3rd and 7th.

Table 4.4.5: Chi Square analysis of statements under research and researcher

S. No.	Statement	Results	
E	**Research and Researcher**	**Chi Square value**	**P Value**
1.	Farmers and NGO representatives should be included in research advisory committee of students.	5.081	0.08*
2.	Intake of Ph.D. scholars should be in alignment with vacancies in universities.	4.686	0.10*
3.	Research should be conducted based on actual problems from farmer's field.	2.47	0.29
4.	Research work should be adequately and timely funded to encourage university research system.	4.23	0.12

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.5 indicates that there was a statistically significant difference between perception pattern of students and teachers regarding reforms in agriculture education system in two statements (1 and 2) based on chi square analysis. In case of Statement 1 (Farmers and NGO representatives should be included in research advisory committee of students) a statistically significant difference was found at 10 per cent level between Students and teachers' groups (p value= 0.08). In case of Statement 2 (i.e., Intake of Ph.D. scholars should be in alignment with vacancies in universities.) also a statistically significant difference was found at 10 per cent level between Students and teachers' groups (p value= 0.10). Hence, H_0 got rejected for first two statements and got accepted for the remaining two, which implies that students and teachers had similar perception regarding research based on actual farmer's problem and timely and adequate funding of research.

Table 4.4.6: Chi Square analysis of statements under physical facilities

S. No.	Statement	Results	
F	**Physical Facilities**	**Chi square value**	**P Value**
1.	Researchers should be provided with well-equipped laboratory to work.	3.99	0.46
2.	Vacancies in universities should be filled from time to time.	0.26	1.00
3.	Agriculture technology and innovation park should be established in every university for scientific orientation.	1.32	0.52
4.	Under graduation students should have proper access to basic laboratories and field activities.	0.31	0.86

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.6 reveals that students and teachers' group had similar perception regarding all the statements under physical facilities dimension. Chi square analysis indicated no statistically significant difference in the perception of students and teachers regarding physical facilities. Thus, null hypothesis stating "There is no significant difference in distribution of perception towards reforms in agricultural education system between teachers and students." got accepted for all four statements.

Table 4.4.7: Chi Square analysis of statements under teaching learning aid

S. No.	Statement	Results	
G	**Teaching Learning Aid**	**Chi square value**	**P value**
1.	Both teachers and students should be made aware of different Online Agriculture platforms.	0.26	1.00
2.	Every university should organize some awareness camps regarding national and international scholarships and awards.	1.75	0.42
3.	There should be a language lab in every university to support teachers and students in academics	9.33	0.01***
4.	There should be a provision to access reputed international and national journals in every university.	4.72	0.10*

*Indicates significant difference at .1 level
** indicates significant difference at .05 level
*** indicates significant difference at .01 level

Table 4.4.7 reflects that there was a statistically significant difference between perception pattern of students and teachers regarding reforms in agriculture education system in two statements (3 and 4) based on chi square analysis. In case of Statement

3, which emphasised on establishment of language lab in every university, a statistically significant difference was found at 1 per cent level between perception of Students and teachers' groups (p value= 0.009). In case of Statement 4(There should be a provision to access reputed international and national journals in every university) also, a statistically significant difference was found at 10 per cent level between perception of Students and teachers' groups (p value= 0.095). Hence, Null hypothesis got rejected in last two statements and got accepted in the first two statements which implies that perception pattern of students and teachers' groups was similar regarding awareness of students and teachers about international journals and online platforms in agriculture.

Chapter 5

SUMMARY AND CONCLUSION

5.1 Introduction

Reforms are highly important to meet the present change of socio, political and economic development. It makes us compatible and responsive to the change of systems. it is critically important to reform agriculture education system from time to time. The gap between the current state of learning outcome and what is required can only be bridged through undertaking positive reforms. The present study is an attempt to explore the perception of students and teachers regarding reforms in agriculture education. The objectives were to study the socio economic and psychological profile of students and teachers, their perception regarding reforms in agriculture education, the difference in the level of perception and examine relationship between perception and selected independent variable of the respondents.

5.2 Research methodology

The study was conducted at Institute of Agricultural Sciences, Banaras Hindu University. Data was collected through purposive online survey of 95 students and 24 teachers with the help of structured questionnaire during 2021-21. Perception of the respondents was recorded under different dimensions such as Curriculum, Evaluation, Teaching, Learning, Research and physical facilities. To meet the objectives of the study, Mean, standard deviation, Frequency and percentage was calculated. Additionally, correlation analysis, regression analysis, stepwise regression analysis, Durbin-Watson test and Chi square analysis was done.

5.3 Major Findings

5.3.1 Socio-personal and psychological characteristics of students:

1. Majority (81.05 per cent) of students were between 22.42 to 26.06 years of age.

3. Majority (55.79 per cent) of students were female.

4. Majority (88.42 per cent) of students had the maximum educational qualification of under-graduation. Only 11.58 per cent had post-graduation as their maximum educational qualification.

5. Majority (89.47 per cent) of students were doing MSc during the study while only 10.53 per cent were doing PhD.

6. Majority (53.68 per cent) of students belonged to rural background and 46.32 per cent of students had urban background.

7. Majority (66.32 per cent) of students had an exposure to two universities. 31.58 per cent students had an exposure to only one university while only 2.10 per cent had an exposure to three universities.

8. Majority (12.63 per cent) of students belonged to Department of Horticulture.

9. Majority (82.10 per cent) of students were from English medium. 15.79 per cent students studied in regional or Hindi language.

10. There were 41.05 per cent students who had Physics, Chemistry, and Biology stream in higher secondary education. 35.79 per cent had Physics, Chemistry, Mathematics, and Biology. 12.63 per cent students belonged to Physics, Chemistry, and Mathematics background. Whereas, only 10.53 per cent students studied in vocational stream.

11. Majority (70.53 per cent) of students were not connected to any social organization. 15.79 per cent were found to be members. 8.42 per cent students were connected to social organizations but were not member or office bearer.

12. Majority (72.63 per cent) of students were connected to single social organization.

13. Majority (46.32 per cent) of students perceived that they can solve 61-80 per cent of academic problems.

14. Majority (86.32 per cent) of students regularly engage in academic discussions.

15. Majority (80 per cent) of the students were not confident while only 18.95 per cent of students were confident in asking questions in class.

16. Maximum (51.58 per cent) number of students use only one source for seeking information, 22.11 per cent students use two sources followed by 17.89 per cent using three sources.

17. Majority (66.32 per cent) of students come under medium range of years for computer use.

18. Around 44.21 per cent of students perceived that they have good computer literacy. About 29.47 per cent considered themselves average in using computer followed by 24.21 per cent with very good abilities.

19. Around 47.37 percent of students perceived that they can search the web in a very good manner. About 40 per cent students considered themselves average in searching web.12.63 per cent students fit under good category. Whereas, none of the students considered them poor and very poor in searching web.

20. Around 48.42 per cent students considered themselves good in using internet. About 31.58 per cent perceived themselves very good,18.95 per cent rated themselves average followed by 1.05 per cent as very poor.

5.3.1 Socio-personal and psychological characteristics of teachers:

1. Majority (66.67 per cent) of teachers were under the middle age group (44.24-61.01 years).

2. Cent per cent teachers were male.

3. Majority (79.17 per cent) of teachers had maximum educational qualification of doctorate while only 20.83 per cent had post-doctorate as their maximum educational qualification.

4. Majority (50 per cent) of teachers were professor and 25 per cent were associate professor. Both assistant professor and head of the department constituted 12.5 per cent separately.

5. Majority (66.67 per cent) of teachers belonged to rural background. Whereas only 33.33 per cent were of urban background.

6. Around 41.67 per cent) teachers had an exposure to three universities. 25 per cent teachers had an exposure to only one university. 25.00 per cent teachers had an exposure to only two universities.

7. Around 45.83 per cent) of teachers had an experience of 10-20 years. 25 per cent had an experience of more than 30 years.

8. Majority (20.83 per cent each) of teachers were from Agronomy and Agriculture Economics Department.

9. Majority (70.83 per cent) of teachers were educated in English language. 16.67 per cent teachers were educated in both English and regional/Hindi language. Only 12.5 per cent teachers studied from Hindi/ regional medium of education.

10. Around 41.67 per cent teachers had Physics, Chemistry, and Biology stream. 33.33 per cent studied in vocational stream. Whereas, only 12.5 per cent each were from Physics Chemistry Mathematics and Physics Chemistry Mathematics Biology stream.

11. Around 50 per cent of teachers were not connected to any social organization. 25 per cent teachers were members, 12.5 per cent were office bearers and 12.5 per cent were connected to social organization but were neither member nor office bearer.

12. Majority (54.17 per cent) of teachers were connected to only one social organization.

13. Majority (66.67 per cent) teachers were confident about solving 61-80 per cent academic problems.

14. Majority (87.5 per cent) of teachers engaged in academic discussions on regular basis.

15. Around 41.67 per cent of teachers used three sources of information followed by 29.17 per cent using one source. About 16.67 per cent used two sources.

16. Majority (66.67 per cent) of teachers have been using computer from 14.16 to 26.42 years (Medium range).

17. Around 41.7 per cent of teachers perceived that they have very good computer literacy. About 33.33 per cent considered themselves to have good ability to use computer.

5.3.2 Perception towards Students and regarding reforms in agriculture education system

1. Majority (91.81 per cent) of students agreed to all the statements under reforms in subject and curriculum. Maximum (96.84 per cent) agreement of students was found to be for statement 1 which stated that curriculum development committee should include representatives from different organizations (NGO, Industry, farmers organization etc). hence, it can be concluded that students had positive perception regarding reforms in subject and curriculum.

2. Majority (80.17 per cent) of students agreed to reforms in assessment and evaluation. Among the agreed the aspects, majority (93.68 per cent) of students positively perceived that the overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner. Thus, it is concluded that students perceived reforms in assessment and evaluation in agriculture education system positively.

3. Cumulatively majority (88.16 per cent) of students agreed to reforms in teacher and teaching. Among the positively perceived statements, majority (95.79 per cent) of students agreed to five statements which emphasise on inclusion of recent case studies and possible research outcomes in lectures, teachers should provide environment for interaction with students training of teachers in handling smart classrooms, providing opportunities to teachers for foreign exposure to update their knowledge and Teacher should have good communication skills. Only 49.47 per cent of students agreed to prefer teachers from three different universities in teaching profession while 36.84

disagreed to the same. So, it is concluded that students had a positive perception towards reforms in teaching.

4. On an average 92.97 per cent of students agreed to the reforms in learner and learning situation. Among the positively perceived statements, majority (98.95 per cent) of students agreed to two statements which focus on providing awareness to students about global job opportunities and segregation of students in small groups for practical lectures. Consequently, it is clear that students had a positive perception regarding learner and learning situation.

5. Overall majority (89.21 per cent) of students agreed to the reforms in research and researcher. Among the agreed statements maximum (98.95 per cent) agreement was received by aspect focusing on adequate and timely funding of research to encourage university research system. Hence, it is concluded that overall perception of students towards reforms in research and researcher was positive.

6. On an average 97.37 per cent students agreed to reforms in physical facilities. Among the agreed aspects, statement 1which says that researchers should be provided with well-equipped laboratory to work was agreed by cent per cent students. 98.95 per cent of students agreed to timely filling of vacancies in the university. 94.74 per cent students positively perceived the establishment of agriculture technology and Innovation Park in every university for scientific orientation." Thus, it is inferred that students had positive perception about reforms in physical facilities.

7. Cumulatively majority (96.05 per cent) of students agreed to the reforms in teaching learning aid dimension. Among the agreed statements, maximum (98.95 per cent) agreement was gained first statement which supports the provision of providing awareness regarding online agriculture platforms. 96.84 per cent students agreed to the provision of access to reputed national and international journals in the university in contrast only 3.16 per cent disagreed to it. Additionally, establishment of language lab in the university was also positively perceived by 93.68 per cent of the students. Thus, it is inferred that students had positive perception about reforms in teaching learning aid.

5.3.3 Perception towards teachers regarding reforms in agriculture education system

1. Cumulatively 89.35 per cent teachers agreed to the reforms in subject and curriculum. Maximum (95.83) number of teachers agreed to inclusion of need based and technology related courses like GIS in the curriculum. 91.67 per cent teachers also agreed to the need of flexibility in curriculum to include local courses. Hence, it is concluded that overall perception of teachers regarding reforms in subject and curriculum was found to be positive.

2. On an average 75.67 per cent teachers agreed to reforms in assessment and evaluation whereas, 19.45 per cent disagreed and 4.86 per cent were undecisive to the same. Majority (95. 83 per cent) of teachers agreed to the statements which emphasise the use of proper yardsticks for evaluation of performance of university, college, department, instructor, and learner and also points out that the overall understanding of learner in relation to basics, concepts and reasoning should be evaluated in both objective and subjective manner. Therefore, it is concluded that teachers positively perceived the reforms in assessment and evaluation in agriculture education system.

3. Majority (88.54 per cent) of teachers agreed to the reforms in teacher and teaching dimension. Among the agreed statements, Cent per cent teachers agreed to three statements which emphasised on inclusion of recent case studies and possible research outcomes in lectures, teachers should provide environment for interaction with students and Teacher should have good communication skills. Hence, it can be declared that teachers had positive perception regarding reforms in teacher and teaching.

4. Cumulatively 89.99 per cent of teachers agreed to the reforms in learner and learning situation. Among the agreed statements, maximum (100 per cent) agreement was observed to be for first two statements which emphasised on encouraging students to develop interest in working on field and their inclusion in village adoption programme. As a result, it can be concluded that overall perception of teachers towards reforms in learner and learning situation was positive.

5. Cumulatively 78.12 per cent of teachers agreed to reforms in research and researcher. Among the agreed statements maximum (95.83 per cent)

agreement was received by aspect which focused on adequate and timely funding of research to encourage university research system. Maximum (29.17 per cent) disagreement was received about admitting Ph.D. scholars in the universities in alignment with the vacancies available all over India. 87.5 per cent teachers positively perceived the conduction of research on actual farmer's field. Thus, it is concluded that teachers had a positive perception about reforms in research and researcher.

6. Majority (97.91 per cent) of teachers agreed to the reforms in physical facilities. Among the agreed aspects, Cent per cent agreed was timely filling of vacancies in the university and establishment of agriculture technology and Innovation Park in every university for scientific orientation. Therefore, it can be declared that teachers perceived reforms in physical facilities positively.

7. On an average 91.67 per cent teachers agreed to reforms in teaching learning aid. Cent per cent teachers agreed to the provision of providing awareness regarding online agriculture platforms. 91.67 per cent of teachers agreed to organization of awareness camp to make teachers and learners aware of the national and international scholarships and awards. 79.17 per cent teachers agreed to the establishment of language lab in each university while, 12.5 per cent were indecisive and 8.33 per cent disagreed to it. 95.83 per cent students agreed to the provision of access to reputed national and international journals in the university in contrast only 4.17 per cent were indecisive about it. Hence, it is concluded that students positively perceived the reforms in teaching learning aid.

5.3.4 Relationship between the perception and socio-personal and psychological characteristics of respondents.

5.3.4.1 Correlation between perception and socio-personal and psychological characteristics of respondents.

5.3.4.1(a)Correlation between perception and of students.

1. Female students had more positive perception towards reforms in agriculture education as compared to the male students.

2. Master scholars had more positive perception towards reforms as compared to PhD scholars.
3. Students who had more exposure to different universities perceived the reforms more positively.
4. Students who had better computer literacy also perceived the reforms more positively.
5. Students who engaged in academic discussion more frequently also had more positive perception towards reforms as compared to the one who participated less.

5.3.4.1(b) Correlation between perception and selected independent variables (socio-personal and psychological characteristics) of teachers.

There was no significant correlation between perception of teachers regarding reforms in agriculture education system and the socio-personal and psychological characteristics of teachers.

5.3.4.2 Regression between perception and socio-personal and psychological characteristics of respondents.

5.3.4.2(a) Regression between perception and socio-personal and psychological characteristics of students.

Socio-personal and psychological characteristics of students were contributing around 34.80 per cent of variance in the perception level of students towards reforms in agriculture education system. Stepwise regression analysis reflected that engagement in academic discussion, designation and computer literacy (self-perceived) had the maximum effect on perception. Together they are contributing around 34.80 per cent variances on the perception of student towards reforms in Agricultural Education System. Individually engagement in academic discussion had 13 per cent influence on perception, computer literacy had 4.5 per cent influence and designation had 4.2 per cent. the Durbin-Watson value (1.91) indicated that there is positive autocorrelation between the independent variables.

5.3.4.2(b) Regression between perception and socio-personal and psychological characteristics of teachers

No significant relationship was found between independent variable (socio-personal and psychological characteristics) and the perception of teachers regarding reforms in agriculture education system.

5.3.5 Difference in level of perception of students and teachers regarding reforms in agriculture education system (Chi Square Analysis)

5.3.5.1 Difference in level of perception of students and teachers regarding reforms in Subject and Curriculum of agriculture education system

There was a difference in perception pattern of students and teachers groups at 5 per cent level regarding flexibility of curriculum to some extent with respect to regional requirement(p value= 0.028).

5.3.5.2 Difference in level of perception of students and teachers regarding reforms in Assessment and Evaluation of agriculture education system

There was a statistically significant difference in perception pattern of students and teachers in areas like giving more weightage to practical part in evaluation system, evaluation of available resources of every university before granting it permission to open and provision of marks weightage for attending national, and international conferences.

5.3.5.3 Difference in level of perception of students and teachers regarding reforms in Teacher and Teaching of agriculture education system

There was a significant difference in perception pattern of students and teachers in aspects like submission of annual research and academic plan by teacher on university web-portal at beginning of academic year and providing opportunities for foreign exposure to teachers for updating their knowledge.

5.3.5.4 Difference in level of perception of students and teachers regarding reforms in Teacher and Teaching of agriculture education system

There was a statistically significant difference between perception pattern of students and teachers with respect to attachment of agriculture students to at least one

farmer every year throughout the degree programme and development of at least one start-up every year under the guidance of university.

5.3.5.5 Difference in level of perception of students and teachers regarding reforms in learner and learning situation of agriculture education system

There was a statistically significant difference between perception pattern of students and teachers in aspects like inclusion of Farmers and NGO representatives in research advisory committee and, Intake of Ph.D. scholars in alignment with vacancies in universities.

5.3.5.6 Difference in level of perception of students and teachers regarding reforms in physical facilities of agriculture education system

Students and teachers group had similar perception regarding all the aspects under physical facilities dimension.

5.3.5.7 Difference in level of perception of students and teachers regarding reforms in Teaching Learning Aid of agriculture education system

There was a statistically significant difference between perception pattern of students and teachers regarding establishment of language lab in every university, and provision of access reputed international and national journals in every university.

5.4 Conclusion

Overall perception of students and teachers regarding reforms in agriculture education system was positive. Both students and teachers wanted reforms in curriculum, teaching, learning, teaching learning aid, research, physical facilities and evaluation system. The most favoured was reforms in physical facility dimension. Female students had more positive perception towards reforms in as compared their male counterpart. Students who had more exposure to different universities, better computer literacy and engaged in academic discussion frequently were more enthusiastic towards reforms. Socio-personal and psychological characteristics of teachers did not affect their perception towards reforms in agriculture education system. Perception of students and teachers was different regarding using practical

approach to teach remote sensing, submission of annual research and academic plan by teachers, providing opportunities for foreign exposure to teachers and inclusion of NGO and farmer representative in research advisory committee.

5.5 Suggestions for future research:

1. Similar study can be conducted at National level by collecting sample from all agriculture universities of India.
2. Perception of under-graduate students regarding reforms in agriculture education system can also be analysed.
3. Relationship between perception of different genders can be explored.
4. Similar research can be conducted in other departments at both school and higher education level.
5. Perception of administrative staff of the university can also be considered for further study.
6. Perception of students and teachers of State agriculture universities can be compared with the ones from deemed universities.
7. As the private universities are rapidly increasing nowadays, similar study can be conducted to find the relationship between perception of students and teachers of public and private universities.
8. Similar study can be conducted through face to face contact using interview method.

BIBLIOGRAPHY

Acker, D. (1999). Leadership for higher education in agriculture. In *Proceedings of the inaugural conference of the Global Consortium of Higher Education and Research for Agriculture. Ames, Iowa: Iowa State University*.

Adegoke, S. P., & Osokoya, M. M. (2015). Socio-Economic Background and Access to Internet as Correlates of Students' Achievement in Agricultural Science. *International Journal of Evaluation and Research in Education*, **4**(1), 16-21.

Aithal, P. S., & Aithal, S. (2020). Analysis of the Indian National Education Policy 2020 towards Achieving its Objectives. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, **5**(2), 19-41.

Akhtar, K., Yousuf, M. I., & Parveen, Q. (2018). Possibilities of agricultural education for secondary level in Pakistan. *Global Social Sciences Review*, **3**(4), 173-186.

Ambika, K. S. (2009). *Perception of post-graduate students towards teaching competency of teachers in a state agricultural university of Karnataka*. Doctoral dissertation, University of Agricultural Sciences GKVK, Bangalore.

Apple, M. W. (2016). Introduction to "the politics of educational reforms". In *The Educational Forum,* **80**(2): 127-136.

Audu, R., Umar, I. Y., Idris, A.M. (2013). Facilities Provision and Maintenance: Necessity for Effective Teaching and Learning in Technical Vocational Education. International Organization of Scientific Research, *Journal of Research Method in Education*, **3**(1) 28-32.

Bagalkoti, S.T. Bhramarambika Devi, V, And Naveen Hegde. (2006). Students perception of quality in higher education: A case study, *University News*, **44**(46), 7-13

Baliyan, S. P., & Nenty, H. J. (2015). Demographic factors influencing senior secondary school students' attitude towards agriculture in Botswana. *International Journal of Education and Research*, **3**(10), 457-470.

Biswas, N., Ghadei, K., & Biswas, N. (2019). Perception of students and teachers towards reforms on agricultural education teaching and learning. *current journal of applied science and technology*, **38**(6), 1-6.

Biswas, N., Ghadei, K., & Biswas, N. (2020). Perception of students and teachers towards reforms on agricultural education subject matter. *Journal of Pharmacognosy and Phytochemistry*, **9**(2), 322-325.

Black, H.D. (1983). Introducing diagnostic assessment, *Programmed Learning and Educational Technology*, **20**, 58-63

Blackburn, J. J., Bunchm, J. C., & Haynes, J. C. (2017). Assessing the Relationship of Teacher Self-Efficacy, Job Satisfaction, and Perception of Work-Life Balance of Louisiana Agriculture Teachers. *Journal of Agricultural Education*, **58**(1), 14-35.

Boerngen, M. A., & Rickard, J. W. (2020). Assessment and perception of student farm background in an introductory agriculture course. *Natural Sciences Education*, **49**(1), e20013.

Chauke, P. K., & Kabiti, H. M. (2016). Teachers' Perceptions on Agricultural Science Curriculum Evolvement, Infrastructure Provision and Quality Enhancement in Limpopo Province, South Africa. *International Journal of Educational Sciences*, **14**(1-2), 93-101.

Croom, D. B. (2003). Teacher burnout in agricultural education. *Journal of Agricultural Education*, **44**(2), 1-13.

Curtis, P. A. (1986). Measuring Computer Literacy in Colleges of Agriculture: Results, Conclusions and Implications. 30

Davis, R. J., & Jayaratne, K. S. U. (2015). In-Service Training Needs of Agriculture Teachers for Preparing Them to Be Effective in the 21st Century. *Journal of Agricultural Education*, **56**(4), 47-58.

Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis*, **24**(2): 81-112.

Desimone, L. M., Smith, T. M., & Ueno, K. (2006). Are teachers who need sustained, content-focused professional development getting it? An administrator's dilemma. *Educational administration quarterly*, **42**(2), 179-215.

Erickson, H. L. (Ed.). (2006). Concept-based curriculum and instruction for the thinking classroom. corwin press.

Esters, L. T., & Bowen, B. E. (2005). Factors influencing career choices of urban agricultural education students. *Journal of Agricultural Education*, **46**(2), 24-35.

Foster B. (2003). Profiling female teachers of agricultural education at the secondary level. *Journal of Career and Technical Education*, **19**(2), 1-5.

Garner, W. R., Hake, H. W., & Eriksen, C. W. (1956). Operationism and the concept of perception. *Psychological review*, **63**(3), 149.

GH, H. K., & Sunagar, V. (2021). Growth and development of agricultural universities education, research and libraries in Karnataka: a case study. *IP Indian Journal of Library Science and Information Technology*, **2**(2), 97-106.

Giffing, M. D. (2009). Perceptions of agriculture teachers toward including students with disabilities. Utah State University.

Gordon, H. R., & Yocke, R. (1999). Relationship between personality characteristics and observable teaching effectiveness of selected beginning career and technical education teachers. *Journal of Vocational and Technical Education*, **16**(1): 47-66.

Grinkevich, Y., Kuskova, V., & Shabanova, M. (2020). Professional development programmes–why do universities need them? A case study from Russia. *Perspectives: Policy and Practice in Higher Education*, **24**(3), 87-95.

Gupta, B. L., & Choubey, A. K. (2021). Higher Education Institutions–Some Guidelines for Obtaining and Sustaining Autonomy in the Context of Nep 2020. *Higher Education*, **9**(1), 72-87.

Gurumurthy (1998). Improving academic environment in agricultural universities, Paper read in a seminar on Teaching, Research and Extension methodologies held at UAS, Bangalore.

Jagannadhan, K. (1985). Impact of socio-economic status (rural) on Academic Achievement. *Journal of Educational and Psychological Researches*, **43**(2), 129-134.

Joong, P., & Ryan, T. G. (2013). Teachers and students' perceptions of secondary reform and implementation: A China and Canada Comparison. In *Critical perspectives on international education*, **15**, 263-278.

Kabadayi, A. (2010). Investigating demographic characteristics and teaching perceptions of Turkish preschool teachers. *Early child development and care*, **180**(6), 809-822.

Karal, M. A., & Riccomini, P. J. (2016). Comparative Investigation of Differences between Special and General Education Teachers' Perceptions about Students with Autism in Turkey. *International Journal of Special Education*, **31**(1), 23-31.

Karani, A., Miriam, K., & Mironga, J. (2021). Teaching competence-based agriculture subject in primary schools in Kenya; a review of institutional preparedness. *International Journal of Education, Technology and Science*, **1**(1), 14-30.

Kumar A., De, D. and Sravanan, K. (2014). Quality education for quality production in agriculture, *Agriculture Update*. **9**(4), 578-583.

Kumar, A., & Kumar, V. A. (2014). Pedagogy in higher education of agriculture. *Procedia-Social and Behavioral Sciences*, **152**, 89-93.

Kuppuswamy, G. and Natarajan, R. (1989) Lecture Method. Strategies for Improvement. *Journal of Higher Education*, **14**, 1-3.

Leite, F. C. T., Baggett, C. D., & Radhakrishna, R. B. (2005). The Implementation of Educational Reform in Brazil's Agricultural Schools: A Study of Agricultural Teachers' Perceptions. *Proceedings of the 21st Annual Conference San Antonio, TX*, pp. 443-453

Levin, B. (2004). *Reforming education: From origins to outcomes*. Routledge.

Maccoby, E. E., & Jacklin, C. N., (1974). The psychology of sex differences. *Stanford, Calif.: Stanford University Press*.

Maguire, C. J. (2000). Agricultural education in Africa: Managing change. In *Prepared for workshop*.

Mahmood, K. (2013). Relationship of students' perceived information literacy skills with personal and academic variables. *Libri*, **63**(3), 232-239.

Mahra, (2019). G. S. *A study on teaching effectiveness of extension teaching-learning in agricultural universities of northern India* (Doctoral dissertation, GB Pant University of Agriculture and Technology, Pantnagar-263145 (Uttarakhand)).

Mahra, G. S., Sharma, V. P., Lenin, V., & Sarkar, S. (2015). Perception of Agricultural Students and Agro-professionals towards Agricultural Education and Skill Development in India: Connect and Disconnect. *Indian Journal of Extension Education*, **51**(3and4), 44-48.

Mazumdar, K. (1997). Teaching Material for Social Work Education. *The Indian Journal of Social Work*. **58**(2), 233-241.

Meena, D. K., Meena, V. S., & Dubey, L. R. Perception of Students towards Rural Agriculture Work Experience in College of Agriculture, Bharatpur. *Research journal of Agriculture Science*, **11**(5), 1175-1177.

Meighan, R. (1978). A pupils eye view of teaching performance. *Educational Review*, **30**(2), 125-137.

Muchiri, J. M., Odilla, G. A., & Kathuri, N. J. (2013). Students 'perception Of Secondary School Agriculture: A Case of Meru Central District, Kenya. *Asian Journal of Social Sciences and Humanities*, **2**(4), 129-135.

Muthuprasad, T., Aiswarya, S., Aditya, K. S., & Jha, G. K. (2021). Students' perception and preference for online education in India during COVID-19 pandemic. *Social Sciences & Humanities Open*, **3**(1), 100101.

Nagaraju, M. T. V. (2004). Study habits of secondary school students. Discovery Publishing House.

Naika, K. V. (1999). A Study on the Impact of Educational Technology on Students Development in a State Agricultural University of Karnataka, Doctoral dissertation, Tamil Nadu Agricultural University (India).

Navani, Y., & Ansari, M. A. (2020). Study of e-learning readiness of teachers of state agriculture university. *International Journal of Agriculture Sciences*, **12**, 0975-3710.

Op denakker, M. C., & Damme, J. (2001). Relationship between school composition and characteristics of school process and their effect on mathematics achievement. *British educational research journal*, **27**(4), 407-432.

Park, M., & Sung, Y. K. (2013). Teachers' perceptions of the recent curriculum reforms and their implementation: what can we learn from the case of Korean elementary teachers. *Asia Pacific Journal of Education*, **33**(1), 15-33.

Parr, D. M., Trexler, C. J., Khanna, N. R., & Battisti, B. T. (2007). Designing sustainable agriculture education: Academics' suggestions for an undergraduate curriculum at a land grant university. *Agriculture and Human Values*, **24**(4), 523-533.

Raghavendra, M. (2007). A study on learning styles of post graduate students at University of Agricultural Sciences, Bangalore, Doctoral dissertation, University of Agricultural Sciences GKVK, Bangalore.

Ramesh, P., & Krishnan, P. (2020). Professional competence of teachers in Indian higher agricultural education. *Current Science*, **118**(3), 356.

Ravi, R. (2004) Cognitive abilities and their effect on receptive skills among primary school children a study. Published thesis, Bharathiar University

Reed, C. J. (2000). Teaching with power: Shared decision-making and classroom practice. Teachers College Press.

Rexlin, R. (1993). Perception of Horticulture students Toward Self Employment. *Topical Research Report, DE&RS, TNAU, Madurai.*

Rice, A. H., & Kitchel, T. (2017). Teachers' Beliefs about the Purpose of Agricultural Education and Its Influence on Their Pedagogical Content Knowledge. *Journal of Agricultural Education*, **58**(2), 198-213.

Sajeev, M. V., & Gowda, K. N. (2013). Perceptions on experiential learning: a study of agriculture students. *Indian Research Journal of Extension Education*, **13**(1), 48-55.

Sandhu, N.S. (1968). Job Preference Between Teaching, Research and Extension by Agricultural Graduate Students. *Indian Journal of Extension Education*, **6**(1&2), 56.

Scott, F. L., & Lavergne, D. (2004). Perceptions of agriculture students regarding the image of agriculture and barriers to enrolling in an agriculture education class. *Journal of Southern Agricultural Education Research*, **54**(1), 48-59.

Shao, X., & Bruening, T. (2005). Teachers' perceptions of curriculum reforms and teacher training programs in Chinese agricultural schools. *Journal of International Agricultural and Extension Education*, **12**(1), 37-46.

Shao, X., & Bruening, T. H. (2002). Changing the curriculum and teaching methods in Chinese agricultural schools. *Journal of International Agricultural and Extension Education*, **9**(3), 69-76.

Sheikh, Y. A. (2017). Higher education in India: Challenges and opportunities. *Journal of Education and Practice*, **8**(1), 39-42.

Sundararajan, S., & Lilly, V. (1991). Study habits of ninth standard pupils in and around Chidambaram. *Journal of Education Research and Extension*, **28**(2), 73-78.

Swanson, R. A. (2001). Human resource development and its underlying theory. *Human Resource Development International*, **4**(3), 299-312.

Tamboli, P. M., & Nene, Y. L. (2013). Modernizing higher agricultural education system in India to meet the challenges of 21st century. *Asian Agri-History*, **17**(3), 251-264.

Varma, A. (2014). Agricultural Education in India: Imaging Possibilities to Meet Challenges in the Changing World. *National Agricultural Education Day Lecture, IARI, New Delhi*, 111.

Verma, M. (2017). *Perception of agriculture students towards rural agricultural work experience (RAWE) programme*, (Doctoral dissertation), JNKVV, Jabalpur.

Wassef, Wassef Aziz (1978). *The Use of Audio-visual Materials in Science Teaching in the Arab Republic of Egypt. Innovations in Education & Training International*, **15**(3), 181–186.

APPENDICES

Appendix I: REFORMS IN AGRICULTURE EDUCATION: PERCEPTION OF STUDENTS AND TEACHERS

Note: The following schedule consist of 94 set of statements to assess the perception of students and teachers on reforms in Agriculture Education. We need your valuable inputs and opinion regarding the correctness and validation of statements. You are requested to respond against each question in a three-point continuum in terms of Most Relevant (MR), Relevant(R), Not Relevant (NR). Please feel free to add or delete or modify the question wherever necessary.

1. EDUCATION				
1.a. Curriculum development				
MR= Most relevant, R= Relevant, NR= Non relevant				
Sl. No.	**Statements**	**MR**	**R**	**NR**
1	Curriculum development committee should include representatives from different organizations (NGO, Industry, farmers organization etc.)			
2	Curriculum should include need-based courses.			
6	There should be inclusion of technology (Robotics, GIS) in curriculum			
7	Curriculum should include courses on agriculture laws and current situation.			
8	Curriculum should be flexible to some extent. (according to regional requirement)			
9	All courses should have a provision of guest lectureship from different universities.			
10	Remote sensing in agriculture should be taught with more practical approach			
11	Under graduation students should have more access to basic laboratories and field activities.			
13	Curriculum should include a course to promote successful indigenous technology which are on the verge of extinction			
14	Institution should have freedom to offer special courses in which it has special expertise.			
1.b. Assessment and Evaluation				
16	Evaluation system should give more weightage to practical.			
19	Proper yardsticks should be there for evaluation of performance of university, college, department, instructor, learner.			
20	Resource evaluation of university must be done before granting permission to open.			
24	Examination should test overall understanding of students			

2. HUMAN RESOURCE				
2.a. Faculty				
26	Instructor should include recent case studies along with theories.			
28	Instructor should have good communication skills			
29	Instructor should have high interest and motivation to teach			
30	Instruction should not have preferential behaviour for few students			
31	Faculty should take timely feedback from students			
32	Instructor should provide environment to students to interact			
34	Faculty should submit annual research and academic plan on university website.			
37	Faculty should be given opportunity to get trained from time to time.			
38	Faculty should be given more exposure to workshops of better methods of teaching.			
39	Faculty should be assisted to handle smart class			
40	Best teachers should be requested to organise class to demonstrate other faculty members			
2.b. Student				
41	Students should develop more interest in field work.			
44	Students should be included in assisting instructor in village adoption programme.			
49	Scholarship of research scholars should be increased			
2.c. Researcher				
51	Research should be brought from actual farmers field			
55	Recent research outcome should be included in syllabus.			
56	Researchers should be funded adequately and timely			
57	Researchers should be provided with well-equipped laboratory to work.			
3. AGRICULTURE AS A CAREER				
3.a. School education				
59	Awareness workshop about agriculture as career option should be given to school children.			
3.b. Career oriented approach for undergraduates				
65	Students should be provided global job opportunities.			
66	At least one start-up per year should be developed under the guidance of university.			
67	Agriculture education should impart required skill, knowledge, understanding and ability as required in various job.			

68	Career counselling for under-graduation students should be done every year			
69	Students should be motivated to excel in agriculture by alumni workshops.			
70	Students should be made aware of the opportunities in agriculture			
3.c. Recruitments				
72	Recruitments in universities should be increased.			
74	Number of seats in PhD should be based on vacancies available in universities to assure job.			
76	A Desirable student teacher ratio should be maintained (not more then 30:1).			
4. INSTITUTIONAL RESTRUCTURING				
4.a. Internationalisation				
79	Teachers should be provided opportunities for foreign exposure.			
80	Students should be provided opportunities for foreign exposure.			
81	National and international conference attended by students should have marks weightage.			
4.b. Infrastructure				
82	Universities should provide access to reputed national and international journals			
84	Agriculture technology and innovation park should be introduced in every university.			
89	Awareness session about national and international scholarships and awards should be conducted.			
4.c. Online assistance in agriculture				
91	Students should be made aware of online platforms in Agriculture.			
92	Teachers should be made aware of online sources in Agriculture.			
93	RAWE students should help farmers to register online in government schemes			
94	RAWE students should make farmers aware of online platforms for agriculture assistance.			

An Online Survey on Reforms in Agriculture Education as Perceived by Students and Teacher

Request: Dear Respondents, I thank you for being agreed to be a part of my research. Please give your valuable response and suggestions towards the reforms in Agriculture Education. It will take around 15 minutes, please support for the research . Your response will be kept confidential and will only be used for research purpose .

*Reform: It means to change in (something, especially an institution or practice) in order to improve it .

*Required

1. Email *

Reform Related Questions

1. Subject and Curriculum

2. 1. Curriculum development committee should include representatives from different organizations(NGO, Industry, farmers organization etc.) *

Mark only one oval.

- Agree
- Disagree
- Undecided

3. 2. Curriculum should include need-based courses. *

Mark only one oval.

- Agree
- Disagree
- Undecided

4. 3. Curriculum should include technology related courses such as robotics and GIS. *

Mark only one oval.

- Agree
- Disagree
- Undecided

5. 4. Curriculum should include courses on agriculture legislation and current situation. *

Mark only one oval.

- Agree
- Disagree
- Undecided

6. 5. Curriculum should be flexible to some extent with respect to regional requirement. *

Mark only one oval.

- Agree
- Disagree
- Undecided

7. 6. All courses should have a provision of guest lectureship from different universities *

Mark only one oval.

- Agree
- Disagree
- Undecided

8. 7. Remote sensing in agriculture should be taught with more practical approach. *

Mark only one oval.

- Agree
- Disagree
- Undecided

9. 8. Courses on indigenous technology should be included in the curriculum. *

Mark only one oval.

- Agree
- Disagree
- Undecided

10. 9. Institution should have freedom to offer special courses in which it has special expertise. *

Mark only one oval.

- Agree
- Disagree
- Undecided

2. Assessment and Evaluation

11. 10. Evaluation system should give more weightage to practical. *

Mark only one oval.

- Agree
- Disagree
- Undecided

12. 11. Proper yardsticks should used for evaluation of performance of university, college, department, instructor and learner. *

Mark only one oval.

- Agree
- Disagree
- Undecided

13. 12.Before granting permission to open, available resources of every university should be evaluated. *

Mark only one oval.

- Agree
- Disagree
- Undecided

14. 13. Overall understanding of learner in relation to basics ,concepts and reasoning should be evaluated in both objective and subjective manner . *

Mark only one oval.

- Agree
- Disagree
- Undecided

15. 14. Evaluation of students of STUDENT READY programme should be based on number and extent of farmers which they benefited . *

Mark only one oval.

- Agree
- Disagree
- Undecided

16. 15. National and international conferences attended by students should have marks weightage. *

Mark only one oval.

- Agree
- Disagree
- Undecided

3. TEACHER AND TEACHING

17. 16. Teacher should include recent case studies and possible research outcomes in lecture . *

Mark only one oval.

- Agree
- Disagree
- Undecided

18. 17. Teachers with all three degrees from different universities should be preferred in teaching proffession. *

Mark only one oval.

- ◯ Agree
- ◯ Disagree
- ◯ Undecided

19. 18. Teacher should provide environment for interaction with students. *

Mark only one oval.

- ◯ Agree
- ◯ Disagree
- ◯ Undecied

20. 19. Teacher should submit annual research and academic plan on university web-portal at beginning of academic year. *

Mark only one oval.

- ◯ Agree
- ◯ Disagree
- ◯ Undecided

21. 20. Teacher should be trained in handling smart classrooms along with supporting staff for the same. *

Mark only one oval.

- ◯ Agree
- ◯ Disagree
- ◯ Undecided

22. 21. Peer training by the best teachers of university to other teachers should be conducted for better efficacy of agricultural education. *

Mark only one oval.

- Agree
- Disagree
- Undecided

23. 22. Teachers should be provided opportunities for foreign exposure to update their knowledge. *

Mark only one oval.

- Agree
- Disagree
- Undecided

24. 23. Teacher should have good communication skills. *

Mark only one oval.

- Agree
- Disagree
- Undecided

4. Learner and Learning Situation

25. 24. Students should be encouraged to develop interest in agricultural field work. *

Mark only one oval.

- Agree
- Disagree
- Undecided

26. 25. Students should be included in village adoption programme. *

Mark only one oval.

- Agree
- Disagree
- Undecided

27. 26. Agriculture students should be attached to at least one farmer every year throughout the degree programme. *

Mark only one oval.

- Agree
- Disagree
- Undecided

28. 27. In under graduation education system every student should be allotted an advisor. *

Mark only one oval.

- Agree
- Disagree
- Undecided

29. 28. Career counselling of students should be done every year. *

Mark only one oval.

- Agree
- Disagree
- Undecided

30. 29. University Students should be made aware of global job opportunities. *

Mark only one oval.

- Agree
- Disagree
- Undecided

31. 30. At least one start up every year should be developed under the guidance of university. *

Mark only one oval.

- Agree
- Disagree
- Undecided

32. 31. School students should be oriented about career options in agriculture through Awareness camps. *

Mark only one oval.

- Agree
- Disagree
- Undecided

33. 32. Learners should be divided into small groups for practical classes. *

Mark only one oval.

- Agree
- Disagree
- Undecided

34. 33. A Desirable student teacher ratio such as 30:1 should be maintained. *

Mark only one oval.

- Agree
- Disagree
- Undecided

35. 34. Learners should be provided opportunities for foreign exposure. *

Mark only one oval.

- Agree
- Disagree
- Undecided

36. 35. Students should be motivated to excel in agriculture through alumni linkage programme of the university. *

Mark only one oval.

- Agree
- Disagree
- Undecided

37. 36. Agriculture education should match with various job requirements in relation to skill, knowledge and understanding. *

Mark only one oval.

- Agree
- Disagree
- Undecided

38. 37. Students of STUDENT READY Programme should help farmers to register online in government schemes. *

Mark only one oval.

- Agree
- Disagree
- Undecided

39. 38. Students of STUDENT READY programme should make farmers aware of online agriculture platforms. *

Mark only one oval.

- Agree
- Disagree
- Undecided

5. Research and Researcher

40. 39.Farmers and NGO representatives should be included in research advisory committee of students . *

Mark only one oval.

- Agree
- Disagree
- Undecided

41. 40. Intake of Ph.D. scholars should be in alignment with vacancies in universities. *

Mark only one oval.

- Agree
- Disagree
- Undecided

42. 41. Research should be conducted based on actual problems from farmer's field. *

Mark only one oval.

- Agree
- Disagree
- Undecided

43. 42. Research work should be adequately and timely funded to encourage university research system. *

Mark only one oval.

- Agree
- Disagree
- Undecided

6. PHYSICAL FACILITIES

44. 43.Researchers should be provided with well-equipped laboratory to work. *

Mark only one oval.

- Agree
- Disagree
- Undecided

45. 44. Vacancies in universities should be filled from time to time. *

Mark only one oval.

- Agree
- Disagree
- Undecided

46. 45. Agriculture technology and innovation park should be established in every university for scientific orientation. *

Mark only one oval.

- Agree
- Disagree
- Undecided

47. 46. Under graduation students should have proper access to basic laboratories and field activities. *

Mark only one oval.

- Agree
- Disagree
- Undecided

7. Teaching Learning Aid

48. 47. Both teachers and students should be made aware of different Online Agriculture platforms. *

Mark only one oval.

- Agree
- Disagree
- Undecided

49. 48. Every university should organize some awareness camps regarding national and international scholarships and awards. *

Mark only one oval.

- Agree
- Disagree
- Undecided

50. 49. There should be a language lab in every university to support teachers and students in academics *

Mark only one oval.

- Agree
- Disagree
- Undecided

51. 50. There should be a provision to access reputed international and national journals in every university. *

Mark only one oval.

- Agree
- Disagree
- Undecided

PERSONAL INFORMATION

52. 1. Age: *

53. 2. Gender: *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Other: _____

54. 3. What is your designation ? *

Mark only one oval.

- ◯ Under-graduation student
- ◯ MSc student
- ◯ PhD student
- ◯ Assistant professor
- ◯ Associate professor
- ◯ Professor
- ◯ Head of the department

55. 4. What is your maximum education ? *

Mark only one oval.

- ◯ Class 12
- ◯ Under-graduation
- ◯ post-graduation
- ◯ Doctorate
- ◯ post-doctorate

56. 5. What motivated you to opt agriculture studies ? *

57. 6. From which background do you belong ? *

Mark only one oval.

- Rural
- Urban

58. 7. How many universities you have studied from ? *

59. 8. What is your area of specialization ? *

60. 9. Are you connected to any social organization ? If yes, What post do you hold there ? *

Mark only one oval.

- NO, I am not connected to any social organization
- Yes, I am an office bearer in the organization
- Yes, I am a member in the organization
- Yes, Other

61. 10. How many social organization are you connected to ? *

62. 11. How much work experience do you have in teaching profession ? *

Mark only one oval.

- No
- <10 years
- 10-20 years
- 21-30 years
- >30 years

63. 12. What was the medium of your education ? *

Mark only one oval.

- English
- Hindi
- Regional
- Other: _____

64. 13. What was your stream in 12th standard? *

Mark only one oval.

- Vocational
- Physics , Chemistry, Mathematics
- Physics, Chemistry , Biology
- Physics, Chemistry, Mathematics, Biology

65. 14. Which mass media do you often use for information seeking? Please tick ( ) all that apply *

Tick all that apply.

- [ ] Print media
- [ ] Social media
- [ ] Radio
- [ ] Television
- [ ] Other

66. 15. How long have you been using computers? *

_____

67. 16. How would you rate your web search skills? Please tick ( ) one that best applies. *

Mark only one oval.

- ◯ Very good
- ◯ Option 2
- ◯ Average
- ◯ Poor
- ◯ Very poor

68. 17. How would you rate your computer literacy (the ability to use the computer)? Please tick ( )one that best applies. *

Mark only one oval.

- ◯ Very good
- ◯ Good
- ◯ Average
- ◯ Poor
- ◯ Very poor

69. 18. How would you rate your Internet literacy (the ability to use the Internet)? Please tick ( ) one that best applies. *

Mark only one oval.

- Very good
- Good
- Average
- Poor
- Very Poor

70. 19. To what extent are you confident of solving an academic problem . *

Mark only one oval.

- <20%
- 20-40%
- 40- 60%
- 60-80%
- >80%

71. 20. Do you feel confident in asking questions in class ?(For students only)

Mark only one oval.

- Yes
- No

72. 21. Do you engage in academic discussions with your friends?

Mark only one oval.

- Yes
- No
- Rarely

73. 22. Would you like to give any suggestion ?If yes , you are welcomed .

I sincerely thank you for supporting me. My research would have not been possible without your valuable time and kind support.

This content is neither created nor endorsed by Google.

Google Forms