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## RESEARCH ARTICLE

# REASONS BEHIND DIFFICULTIES IN UNDERSTANDING LIFE SCIENCE CONCEPTS OF UNDERGRADUATE STUDENTS IN UNIVERSITIES OF CHHATTISGARH: A COMPARATIVE STUDY

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### ABSTRACT

The purpose of the study was to find out the differences between the reasons behind difficulties of life science concepts of under graduate zoology students of Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee University Bilaspur, (C.G.) Chhattisgarh state. For the present study two hundred (200) B.Sc. 3rd year Zoology students of Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee University Bilaspur, (C.G.), India was selected. For the present study researcher has selected students those who are studying in B.Sc. 3rd year at the time of data collection. For the collection of data researcher has constructed "Reasons Behind Difficulties Inventory" (RBDI) with reliability 0.75 measured through test, re-test method and to find out the difference chi square test was used and implemented purposive sampling technique. In this present study only twenty (20) life science concepts of B.Sc. 3rd year Zoology subject were taken and remaining zoology concepts of B.Sc. 3rd year has not been considered. After collection of data through this tool researcher has analysed the quantitative data by using descriptive statistics. The study concluded that there was a significant difference between graduate zoology students of Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee University Bilaspur, (C.G.) in all the selected ten reasons at 0.025 level of significance.

## INTRODUCTION

In this advanced society, there is a need to become aware about the advantages of science which is necessary for living in this modern era of 21st century. In addition, there should be an awareness of the significant role of science in the life of every citizen in the decades to come. Associated with science is a method which requires careful and planned observation, open minded examination and rational analysis. Science moulds the individual and by using the knowledge of science the individual becomes able to balance his/her future. As it is well known that our life is directly or indirectly connected with life science so it's very necessary to understand life science concepts. Daily some new concepts are adding and enriching, replacing or molding the previous ones. In this world we found various concepts and under which some theories: embedded. To know and understand it in a better way there is always a need study life science. For developing any concept there is a need to develop the proper observation, making a hypothesis, collection of facts, records the data and draws a conclusion after proper experiment and these are developed and possible by studying life- science only. For develop any concept in life science, there is a need to plan, modify, accept the new and remove the previous one are needed and only science can do all these things.

This is another reason of studying science in the present days. This also helps in developing the critical and logical thinking and helps in broadening our knowledge. The present science education in Indian schools do not lay emphasis on the ways or methods through which the students can discover knowledge about universe they only emphasis on the product instead of the process of science (Kalra, 2008). To discover new concepts it's necessary to understand previous one. So in this modern era life-science is the only way which helps to understand and development new technologies and makes human life comfortable. Science always believes on reliable data, the arguments present behind your statements and the repeated testing result (Paul, 2016). If a concept of life-science is only taught without having any trust worthy base, then it will be not possible develop the accurate knowledge and understanding and that knowledge will be either feasible. The Columbia Encyclopaedia (1963) defined Science as "an accumulated and systematized learning" from the two definitions it can be concluded that 'science is both 'A Process and a product' (Bhatt, 1963). In general Science aims to explain the natural phenomena. The basic aim of learning Science is to collect knowledge and understand the actual scientific fact hidden within and apply it in our day to day life. Science is built up of facts and these facts are the stones of a building (Bhatt, 1983) of concepts of science. The whole process of the scientific enterprise is continuously replenished by new facts and discoveries.

**Table-1. Chi-square analysis of opinion of GGV and AU students on reasons behind difficulties of life science concepts**

S.NO.	REASON	Category of Students	fo	fe	fo-fe	(fo-fe) <sup>2</sup>	(fo-fe) <sup>2</sup> /fe	$\chi^2$
1.	Inability to Understand Concepts	GGV	212	486	-274	75076	154.477366	308.9547*
		AU	760	486	274	75076	154.477366	
2.	Unawareness	GGV	214	535	-321	103041	192.6	385.2*
		AU	856	535	321	103041	192.6	
3.	Poor Intensity of Learning	GGV	268	634.5	-366.5	134322.3	211.69	423.39*
		AU	1001	634.5	366.5	134322.3	211.69	
4.	Non-Adequate Facilities at Institutions	GGV	388	1100.5	-712.5	507656.3	461.296002	922.592*
		AU	1813	1100.5	712.5	507656.3	461.296002	
5.	Irregular Teaching Learning Process	GGV	346	943.5	-597.5	357006.3	378.385003	756.77*
		AU	1541	943.5	597.5	357006.3	378.385003	
6.	Unfavorable Home Environment	GGV	146	423.5	-277.5	77006.25	181.83294	363.6659*
		AU	701	423.5	277.5	77006.25	181.83294	
7.	Improper Study Habits	GGV	292	805.5	-513.5	263682.3	327.352266	654.7045*
		AU	1319	805.5	513.5	263682.3	327.352266	
8.	Peer Group Effects	GGV	139	295.5	-156.5	24492.25	82.8840948	165.7682*
		AU	452	295.5	156.5	24492.25	82.8840948	
9.	Internet and Mobile Phones Distraction	GGV	109	241.5	-132.5	17556.25	72.69	145.39*
		AU	374	241.5	132.5	17556.25	72.69	
10.	Low scientific aptitude	GGV	166	534.5	-368.5	135792.3	254.054	508.1094*
		AU	903	534.5	368.5	135792.3	254.054	

Perrone (2007) conducted a study on a very specific question i.e. what will happen to students understanding of science concepts about reproduction and heredity when addressed through inquiry based methods? The objective of the study was to determine whether or not inquiry- based teaching and learning impacts how a specific student perceives scientific concepts. For this purpose 4 sixth grade students were selected as participants who had a great array of misconceptions in science determined by the teacher observation and classroom tests. Among those four students 2 were male and 2 were female. The students were studying in the school present in North section of Philadelphia. For achieving the objective initially the researcher obtain various misconceptions from previous researches. In the next step the researcher asked a series of open-ended questions and the obtained data were analyzed qualitatively. From the result of the first step it was found that the students have so many misconceptions in the concept of reproduction and heredity. The misconceptions are like females inherits most of their genes from their mother and the boys inherit most of their genes from father. For deconstructing the misconceptions the researcher used inquiry-based method. From the observation of the researcher and the samples of student work it was observed that the students were able to deconstruct their misconceptions about some specific concepts.

Urey & Calik (2008) conducted a study aimed to display a sample teaching of cell and its organelles by combining different conceptual change methods (analogy, conceptual change and worksheet) within the 5e model. SE contains 5 phases like: engagement/ enter, exploration, explanation, elaboration and evaluation. After completion of the study it can be concluded that the study has a shortcoming in seeking the degree to which conceptual change is achieved. Newman, Catavero and Wright (2012) conducted a survey on Undergraduate Biology students to find out the students prior knowledge about the relationship between DNA, Genes and Chromosomes. For achieving the objective they examined the student's mental model by using multiple choice questions from the previous concept inventories and open-ended question. From the study it is found that when the students were asked about the relationship between DNA and Chromosomes maximum students of all levels gave the correct response though they were unable to give complete description and many of them made mistakes in explaining the nature of genes. They have difficulty in thinking about genes or alleles in context of chromosomal behaviour and are problematic to understand the complex cellular process and genetic mechanism. The students failed to explain the phenomena like homologous pairing. Finally it is concluded that the students do not transfer the knowledge of chromosome to the molecular mechanism and this is the result of not thinking about the nuclear properties of DNA when asked about the chromosomal behaviour.

**OBJECTIVE OF THE STUDY:** To compare the reasons behind the difficulties in understanding life science concepts of undergraduate students in universities of Chhattisgarh.

## MATERIALS AND METHODS

200 respondents as sample were selected randomly from B.Sc.3rd year Zoology subjects of Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee University Bilaspur, (C.G.) India. The administration of questionnaire was done on the students of Guru Ghasidas Vishwavidyalaya and various colleges affiliated by Atal Bihari Vajpayee University. (C.G.).

### ADMINISTRATION OF THE TOOL

To find out the reasons behind difficulties of life science concepts by students in REASON BEHIND DIFFICULTY INVENTORY (RBDI) was used on the following difficulties i.e. Inability to understand concepts, Unawareness, Intensity of learning, Non adequate facilities at institutions, Teaching learning process, Home environment, Study habits, Peer group effects, Internet and Mobile phones, Scientific aptitude for the concepts- Accessory digestive glands, Sphygmomanometer, Flow cytometer, Accessory reproductive organs, ECG, Homeostasis, Chloride shift, Dialysis, Hormonal regulation in gametogenesis, In vivo and In vitro fertilisation, Parthenogenesis, Embryonic stem cells, Cryopreservation, Haemocytometer, Electrophoresis, Tissue Culture, Gene cloning, Bacteria inoculation, In situ and Ex situ conservation and Autoclave.

**STATISTICAL ANALYSIS:** Descriptive statistics has been used as statistical technique for the present study.

## RESULTS

The result and findings of the present study were presented in table -1. The findings of table-1 consist of opinion of undergraduate students of Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) and Atal Bihari Vajpayee university of Bilaspur (C.G.). On the basis of processing of data revealed significant Chi-Square ( $\chi^2$ ) value for undergraduate students of Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) and undergraduate students of Atal Bihari Vajpayee university of Bilaspur (C.G.) pertaining to Inability to understand concepts, Unawareness, Poor intensity of learning, Non adequate facilities at institutions, Irregular teaching learning process, Unfavorable home environment, Improper study habits, Peer group effects, Internet and mobile phones distraction and Low scientific aptitude since the obtained Chi-Square value (p-value) were 308.9547\*, 385.2\*, 423.39\*, 922.592\*, 756.77\*,

363.6659\*, .654.7045\*,165.7682\*,145.39\* and508.1094\* respectively which were greater than tabulated chi-square value (p-value) 5.024 at 0.025 level of significance. In all above selected reasons significant differences were found in all the ten given reasons between students of B.Sc.3rd year Zoology subjects of Guru Ghasidas Vishwavidyalaya and Atal Bihari Vajpayee University Bilaspur, (C.G.). Therefore, it can be concluded that there is significant difference of reasons behind difficulties between undergraduate students of Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) and undergraduate students of Atal Bihari Vajpayee university of Bilaspur (C.G.).

## CONCLUSION

In the present study the researcher concluded that in selected 20 life science concepts and 10 reasons behind difficulties in understanding life science concept there is a significant difference was found between undergraduate students of Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) and undergraduate students of Atal Bihari Vajpayee university of Bilaspur (C.G.) in all ten reasons but major significant difference was found in R-4 (Non-Adequate Facilities at Institutions), R-5 (Irregular Teaching -Learning Process), R-7 (Improper Study Habits). The reason for this difference may be availability of proper resources in one institution and lack in other. Irregularity of students, less number of faculty in institutions, not well equipped labs, libraries and class rooms, not proper evaluation process so that students learn all syllabus, improper teaching techniques. In this study researcher found that most of the students focus only on marks in exams no matter whether their concepts are clear or not even teacher focus on completion of syllabus instead of concept clarity by conducting practicals or field work. Many institutions do not follow students teacher ratio so that due to more strength of students in class it's not easy for teacher to handle students while conducting practicals so they avoid such lab activities and field visit. Some students are from Hindi medium and in higher education most of the institutions follow English language mostly, most of the time students spend in college so they get less time at home for revision and self-study and those students who are from remote area colleges in some of their families parents are not well educated and aware to guide them that is why also their learning is poor. These were the expected reasons researcher found major significant differences between undergraduate students of Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) and undergraduate students of Atal Bihari Vajpayee university of Bilaspur (C.G.) regarding life science concept learning.

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