



# Scientific Research Methodology

Two-Week Massive Open Online Course (MOOC)

developed under The UNESCO Open Education for a  
Better World (OE4BW) - Online Mentoring Programme



**Course Mentor:**  
**Dr. Madhuri Isave**  
Associate Prof., Tilak College  
of Education, Pune,  
Maharashtra, India



**Course Developer:**  
**Dr. Roshan D'Souza**  
Associate Prof. & Head  
Department of Zoology,  
Sophia College (Autonomous),  
Mumbai – 400 026,  
Maharashtra, India

**Hub Co-Ordinator: Samantha Ahern**  
Faculty LT Lead (Bartlett), UCL

**OE4BW EDUSCOPE 2022**  
**SEPTEMBER 20 – 22, 2022 VIPAVA, SLOVENIA**

## COURSE FOCUS

- Scientific Research Methodology course emphasized on a **holistic approach to organizing the research activity** that ensures selecting the correct research techniques as well as the other elements of the scientific research process such as research ethics and research publication ethics.
- **Rejuvenating the research culture in academics** that was disrupted due to the COVID-19 pandemic

## UNIQUE FEATURES

- About 3 to 4 hours per week of learner's engagement
- Demo videos for course registration on Canvas LMS, navigation through Course and assignment submissions
- Live Interaction session via Zoom platform to facilitate understanding
- Criteria for successful completion:
  - Submission of all the activities and the assignments
  - Minimum 60% score in each of the activities and the assignments



## ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

- The online course with a **flexible asynchronous learning mode**
- **Open** to all the **undergraduate and postgraduate students of science** faculty who could get **foundation knowledge and relevant skills** for research-based careers such as research fellows, research communication and publication
- **Rejuvenating the research culture in academics** that was disrupted due to the COVID-19 pandemic
- **Open** to all the **teachers** who could get **trained in research methodology** which could be resourceful for promoting **research-based pedagogy** that **imparts critical thinking and offers autonomy to learners** for addressing a given scientific problem systematically



## Course Objectives:

- To understand the concept of Scientific Research Methodology
- To gain knowledge about the elements of research methodology
- To be able to design the experiment keeping to the ethical guidelines
- To apply the scientific writing skills while preparing the manuscript for research publication
- To implement and evaluate the important aspects of ethics in research publication

## Course Learning Outcomes:

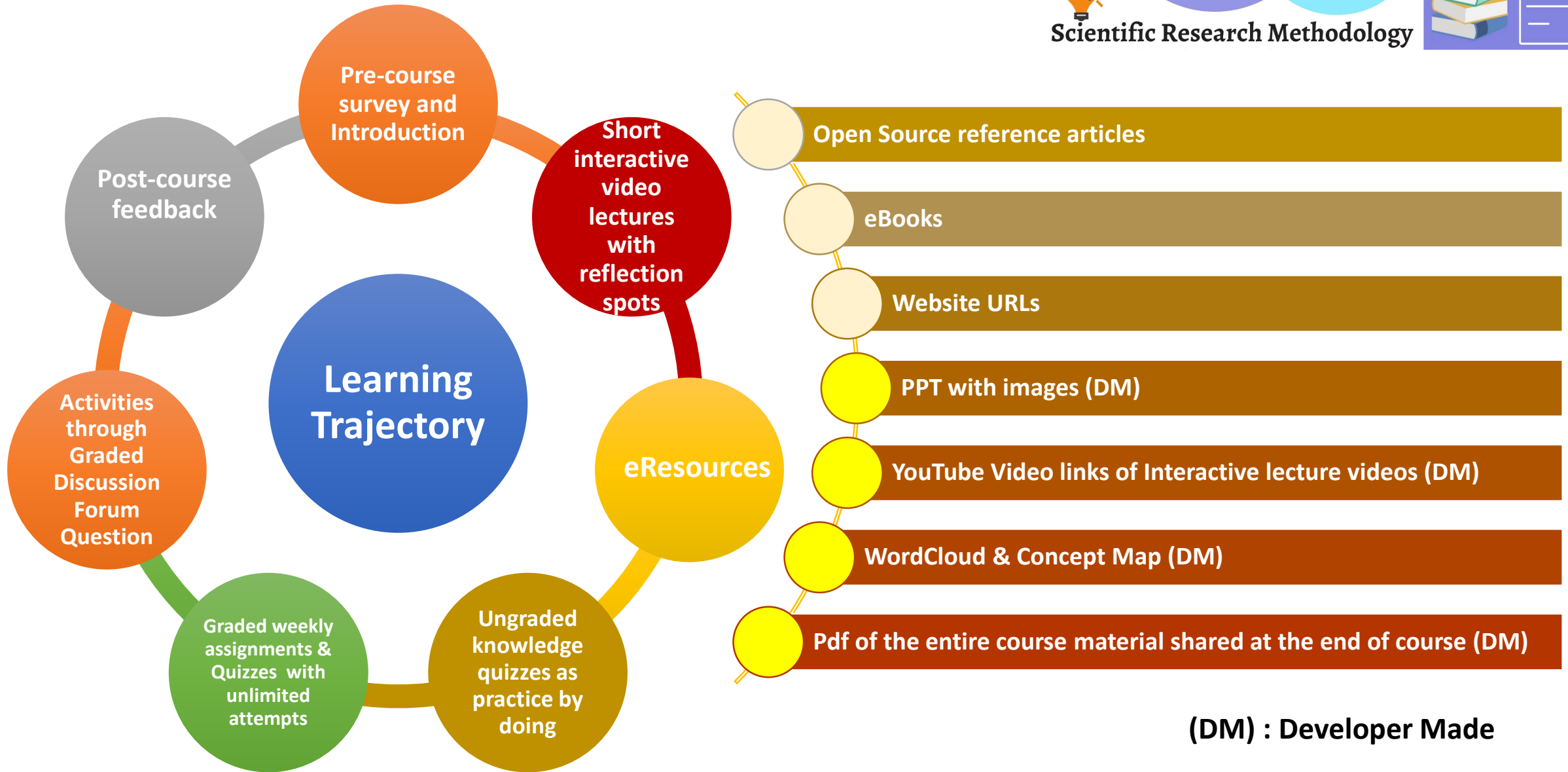
- Differentiate between research methods and research methodology
- Relate between the various elements of research methodology
- Write a research proposal having an experimental design that follows the ethical guidelines
- Prepare a manuscript for a research paper to be published taking into consideration the related ethics



<b>WEEK 1</b>	<b>MODULE 1 M1</b>	<b>INTRODUCTION TO BASICS OF RESEARCH METHODOLOGY</b>
<p><b>Module Objectives:</b></p> <ul style="list-style-type: none"> <li>• To understand the concept of research methodology and types of research</li> <li>• To gain knowledge about the ethical guidelines related to different types of scientific research</li> <li>• To relate the various elements of research methodology</li> </ul> <p><b>Module Outcomes:</b></p> <ul style="list-style-type: none"> <li>• To be able to differentiate between research methods and research methodology</li> <li>• To be able to design an experiment having the required elements of research methodology and applying the ethical guidelines</li> </ul>	M1.1	Research – A systematic process of enquiry
	M1.2	Types of research
	M1.3	Ethical guidelines in animal research, clinical research, and wildlife research
	M1.4	Elements of Research methodology – Part 1 : Research problem, Hypothesis, Variables
	M1.5	Elements of Research methodology – Part 2 : Experimental Design, Data Documentation and Analysis
	M1.6	Summary

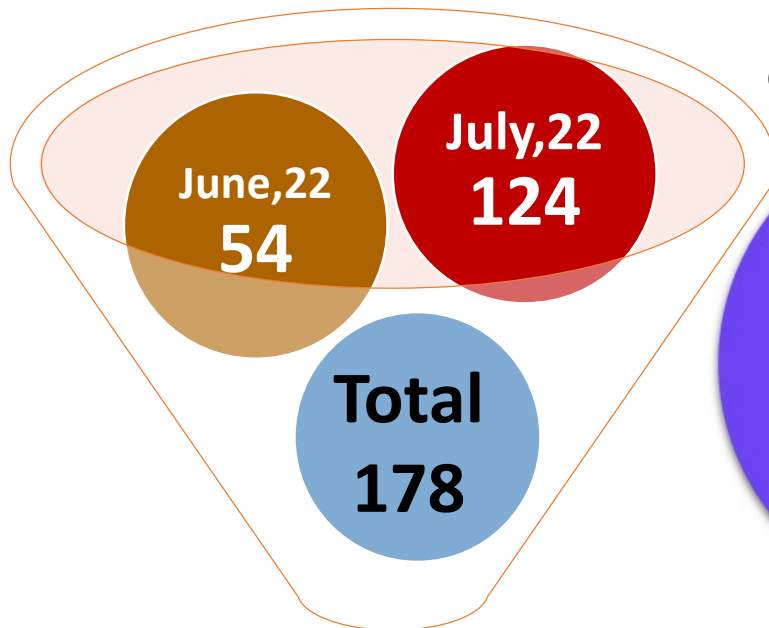


WEEK 2	MODULE 2 M2	IMPORTANT ASPECTS OF SCIENTIFIC WRITING
<p><b>Module Objectives:</b></p> <ul style="list-style-type: none"> <li>• To understand the structure and components of a research article to be published</li> <li>• To understand and apply the ethics in publication while preparing a manuscript</li> </ul> <p><b>Module Outcomes:</b></p> <ul style="list-style-type: none"> <li>• To develop scientific writing skills</li> <li>• To apply and evaluate the research publication ethics while preparing and /or reviewing a research article</li> </ul>	M2.1	Structure and components of a research paper
	M2.2	Manuscript preparation
	M2.3	Reference Writing Systems
	M2.4	Ethics in publication: Part 1: Plagiarism & its types
	M2.5	Ethics in publication: Part 2: IPR & Conflict of Interest
	M2.6	Summary

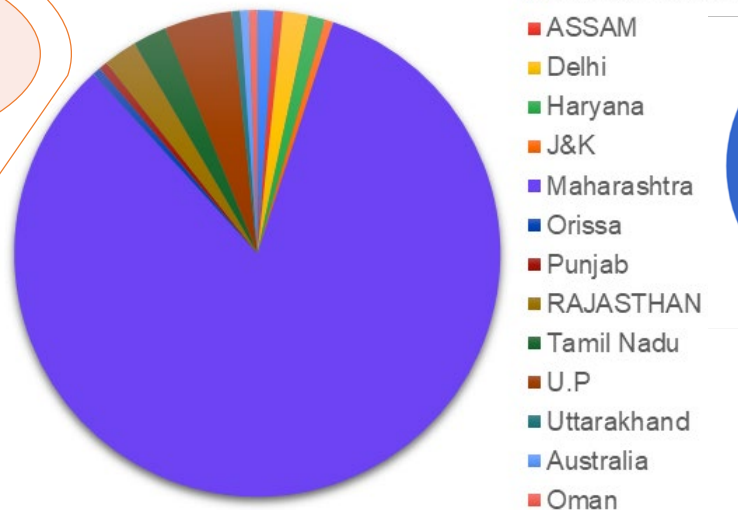


**(DM) : Developer Made**

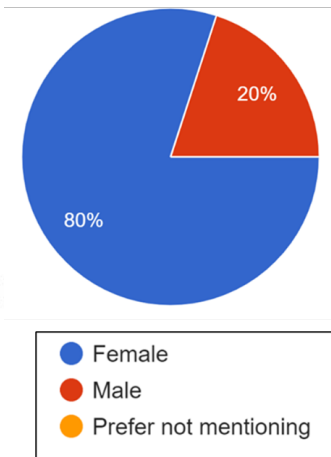
# Course Registration Statistics



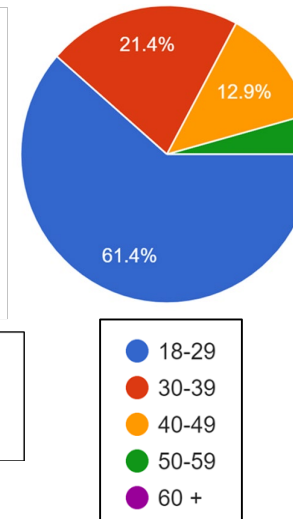
### Geographical Diversity



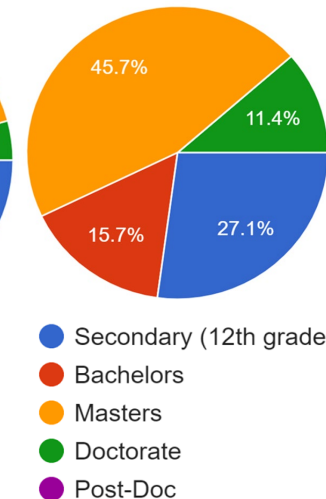
### Gender



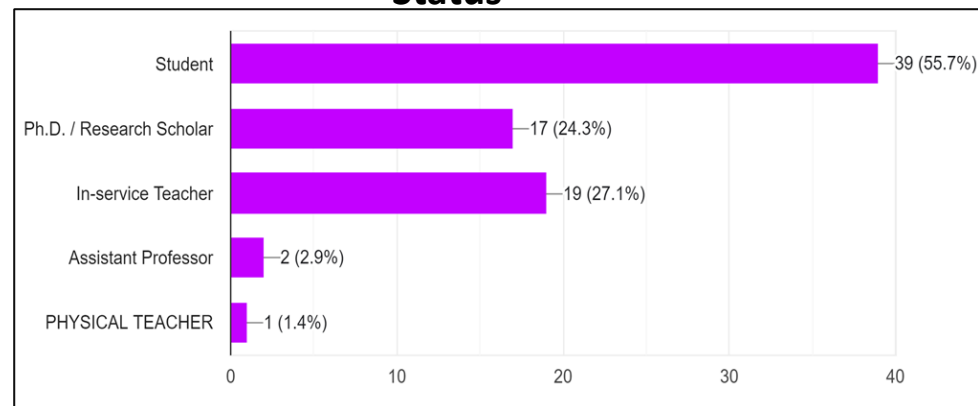
### Age Group



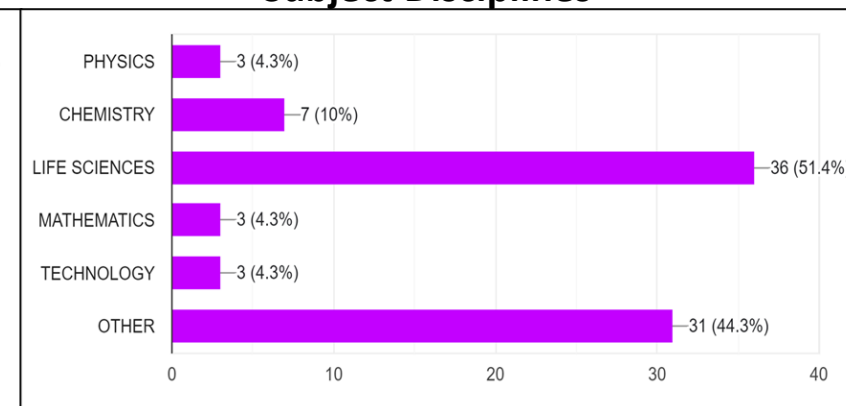
### Qualification



### Status



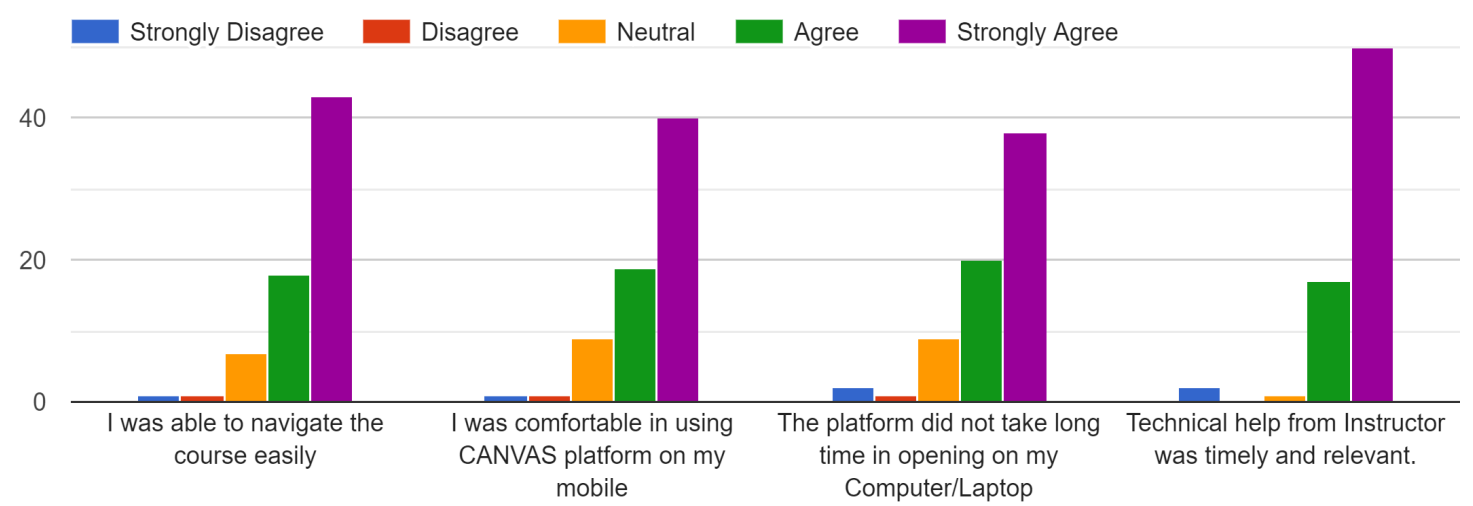
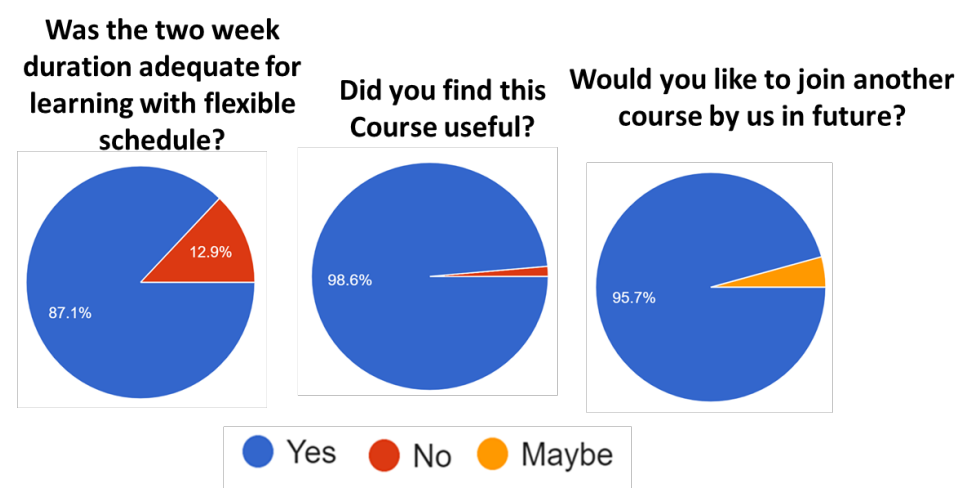
### Subject Disciplines





Active Students	174
Discussion Posts	415
Quiz Submissions	573

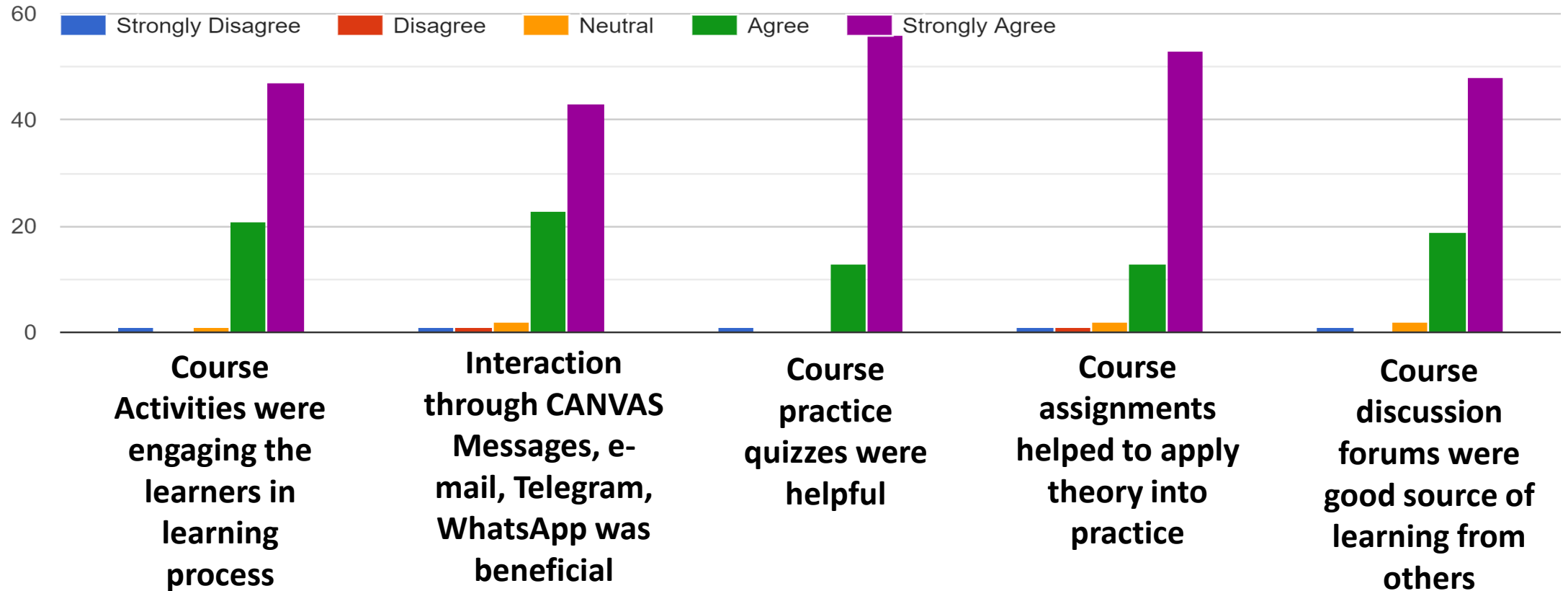
# CANVAS Platform and Tech Support



**70 responses**

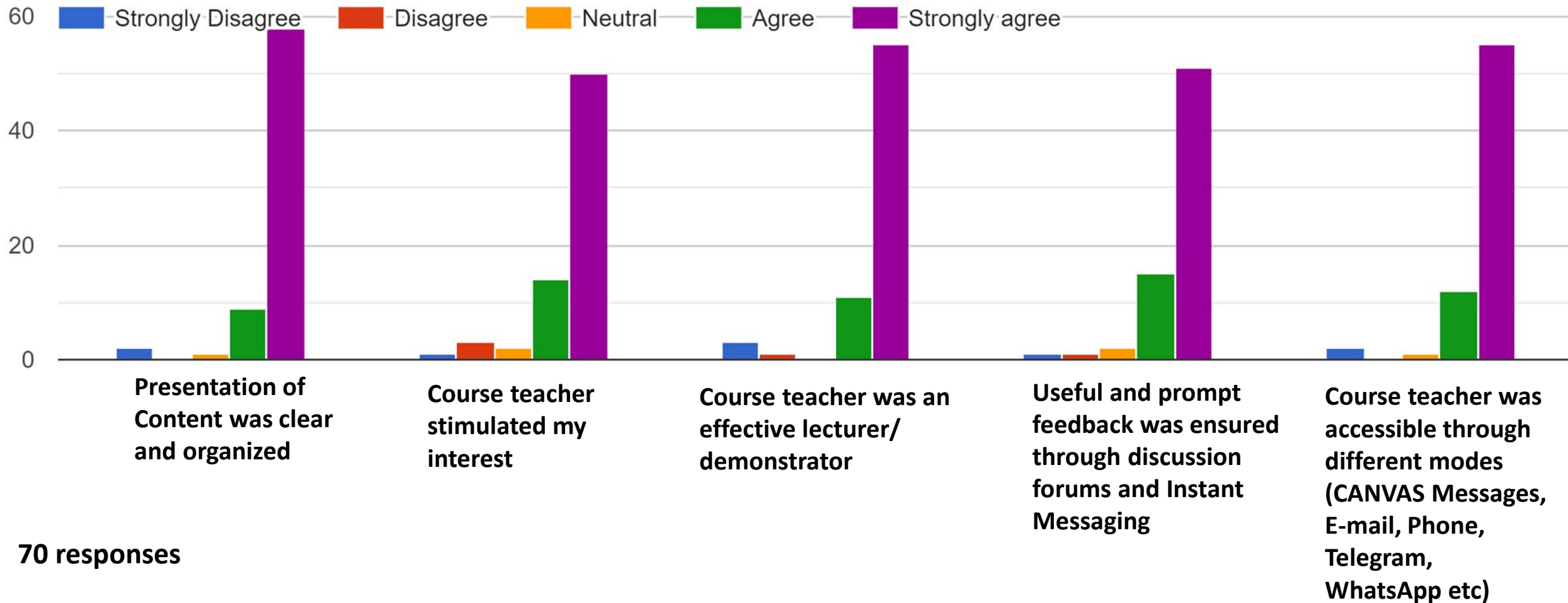


# Feedback on Course Activities



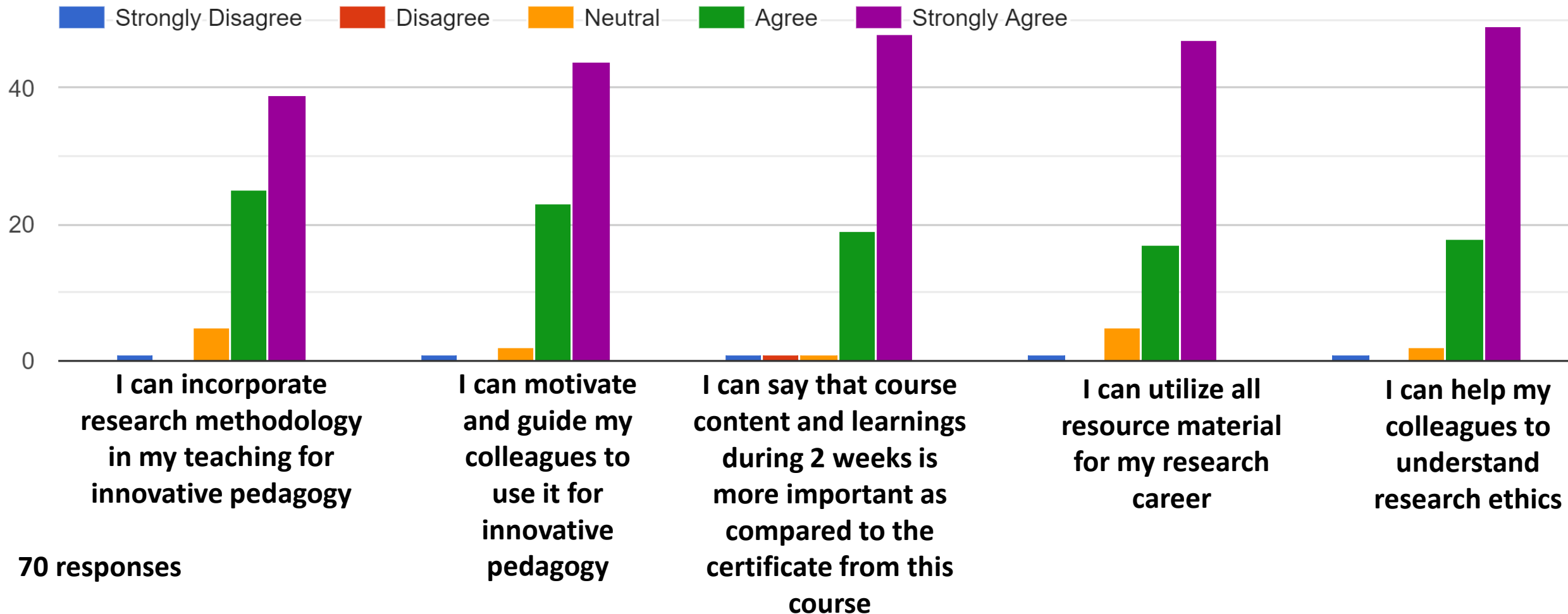


# Feedback on Skill and Responsiveness of the Course Instructor/Developer





# Reflections on the learnings from the course



# Learners' Activities

bagweakshaydilip\_34608613\_181620882\_sample paper with comments.pdf - Adobe Acrobat Reader DC (64-bit)

File Edit View Sign Window Help

Home Tools bagweakshaydilip\_... x

Sign In

4 / 8 93%

Comment Close

allowed to clot for 30 minutes. It was then centrifuged at 3000 rpm for 20 minutes. Serum was then collected and stored at -20°C for further biochemical analysis.

- **Biochemical assays:**

Biochemical assays of enzyme activities and that of metabolic parameters were carried out using Diagnostic Reagent Kit.

## Results

Sub-acute treatment of 15 days duration caused a significantly decreased ACP levels whereas increased the ALP levels, which indicate renal as well as the hepatic toxicity. Similar

16 comments

1. Kindly mention about the ethical permissions obtained for use of animals in the study.
2. Please specify which species of animals were used.

Kindly provide the details of the kit such as name of the company manufacturing kit

1. Please present the results in graphical format
2. Kindly add the section of Discussions and elaborate your interpretation of results with proper citations.
3. Please add short conclusion that summarize the major findings of your study

# Learners' Activities

The screenshot displays a Canvas LMS interface. At the top, the browser address bar shows the URL: [canvas.instructure.com/courses/4780241/gradebook/speed\\_grader?assignment\\_id=30501623&student\\_id=34608613](https://canvas.instructure.com/courses/4780241/gradebook/speed_grader?assignment_id=30501623&student_id=34608613). The navigation bar includes icons for Apps, Gmail, YouTube, and Home, along with the course name "OE4BW 2021" and the user's name "Akshay Dilip Bagwe". The assignment details show "Graded Assignment [3]" with a due date of "Jun 24 at 11:59pm - SRM-OE4BW". The student's progress is indicated as "17/70 Graded" with an "Average" of "4.06 / 5 (81%)".

The main content area shows a document titled "ASSESSMENT OF POTENTIAL CLINICAL APPLICATION OF CANTHARIS Q THROUGH SERUM BIOCHEMISTRY OF MALE ALBINO RATS TREATED FOR THE DURATION OF 15, 30 AND 60 DAYS AND ALSO THE RECOVERY" by "D'Souza R. C<sup>1</sup>. & Athalye R. P.<sup>2</sup>". The document includes an "ABSTRACT" section that begins with: "Cantharis Q is a crude alcoholic extract of blister beetle *Lytta vesicatoria* which is commonly known as Spanish fly. *Lytta vesicatoria* of Fabricius is a beetle belonging to Phylum Arthropoda, Class Insecta, Order Coleoptera, Family Meloidae. It is commonly called The Spanish fly. These beetles carry a venomous substance diffused throughout their body, especially in their blood called".

On the right side, the "Submitted Files" section shows "sample paper with comments.pdf". Below it, the "Assessment" section shows a grade of "5" out of "5". The "Assignment Comments" section features a comment from Roshan D'Souza, dated "Jun 25 at 7:10am", which is circled in red. The comment reads: "Dear Akshay, Well done! You have done a very comprehensive review of the sample paper. I would like you to also notice the following: 1. Abstract should not have citations 2. check if extra references are in the lit, as then it becomes Bibliography 3. In the acknowledgement section, the authors are also thanking lab staff, friends, family etc. which is not expected to be written in the in this section." A question mark icon is visible next to the comment.

# Learners' Activities

The screenshot displays a Canvas LMS interface for a 'Graded Assignment [2]'. The assignment is due on August 16 at 11:59pm for the course SRM-OE4BW. The student, Sheetal S. Shetty, has submitted the assignment on July 31 at 5:36am. The assignment score is 5 out of 5 (100%). The document is titled 'ASSESSMENT OF POTENTIAL CLINICAL APPLICATION OF CANTHARIS Q THROUGH SERUM BIOCHEMISTRY OF MALE ALBINO RATS TREATED FOR THE DURATION OF 15, 30 AND 60 DAYS AND ALSO THE RECOVERY' by D'Souza R. C.<sup>1</sup> & Athalye R. P.<sup>2</sup>. The document includes an abstract section. Three red comment boxes are overlaid on the document, providing feedback on the title, author information, and the abstract's length and content. The interface also shows a toolbar with various editing tools and a sidebar with submission details and a question mark icon.

Canvas Instructure URL: [https://canvas.instructure.com/courses/4924677/gradebook/speed\\_grader?assignment\\_id=30761819&student\\_id=34916694](https://canvas.instructure.com/courses/4924677/gradebook/speed_grader?assignment_id=30761819&student_id=34916694)

Graded Assignment [2]  
Due: Aug 16 at 11:59pm - SRM-OE4BW

51/175 Graded | 4.06 / 5 (81%) Average | 144/175

Submitted: Jul 31 at 5:36am

Student Viewed Document: Aug 14 at 7:39am

Word Count: 2,473 words

Submitted Files: (click to load)

Sheetal\_sample paper.pdf

Assessment  
Grade out of 5

5

Assignment Comments

**Commented [ss1]:** The title should be concise and should define the project.

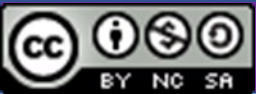
**Commented [ss2]:** Write the full names of the author along with the occupation and name of the institutions they belong to and also their contact information.

**Commented [ss3]:** The abstract is too lengthy with information that is not necessary. Include only that information that summarizes your project. Major part of it is a repetition of the introduction so paraphrase or cut-out information from it. There are also a lot of grammatical errors that need to be fixed.

**ASSESSMENT OF POTENTIAL CLINICAL APPLICATION OF CANTHARIS Q THROUGH SERUM BIOCHEMISTRY OF MALE ALBINO RATS TREATED FOR THE DURATION OF 15, 30 AND 60 DAYS AND ALSO THE RECOVERY**  
**D'Souza R. C.<sup>1</sup> & Athalye R. P.<sup>2</sup>**

**ABSTRACT**

Cantharis Q is a crude alcoholic extract of blister beetle *Lytta vesicatoria* which is commonly known as Spanish fly. *Lytta vesicatoria* of Fabricius is a beetle belonging to Phylum Arthropoda, Class Insecta, Order Coleoptera, Family Meloidae. It is commonly called The Spanish fly. These beetles carry a venomous substance diffused throughout their body, especially in their blood called cantharidin, a potent chemical that possesses caustic or blistering properties when the insects are accidentally crushed or handled roughly (Aiello, 1998). Alcoholic extract of *Lytta vesicatoria*, in homeopathy, is used in diluted potentized form for treatment of many disorders such as baldness, rheumatism, burning and cystitis, kidney and genital disorders (Ellingwood, 1919). At what period these beetles were introduced into the practice of medicine is a matter of uncertainty but find their most prominent sphere of action in exciting the animal passions. The crude alcoholic extract of these beetles called Cantharis Q leads to irritation, i.e. pains with burning due to vesication and produces unbounded sexual desire; also sexual erethism and excitability. Genito – urinary systems come under its sphere of action (Clarke, 2000).



# Learners' Activities

- Account
- Dashboard
- Courses
- Calendar
- Inbox
- History
- Commons
- Help

- Home
- Assignments
- Discussions
- People
- Quizzes
- Modules
- Attendance
- Syllabus
- Announcements
- Grades
- Rubrics
- BigBlueButton
- Collaborations
- Files
- Pages
- Outcomes
- Settings

Published Edit

This is a graded discussion: 5 points possible due Jun 24

 **To do or not to do!!** Roshan D'Souza Jun 15 at 9:16am 37

Dr. M is a Ph.D. supervisor and has one of his research students applying for a grant at an organization that is funding the similar type of research. Dr. M. will be the Principal Investigator and his student will be the co-investigator for this research study. Dr. M has his brother on the scrutiny and selection committee for approving the proposals and giving the funding at this organization. Do you think Dr. M. should be encouraging his student to submit the proposal at this organization?


Please state your answer with respect to the ethics involved in this case, if any and its type. You have to justify your answer in 2-3 sentences. You must also respond to at least one comment other than yours in at least 2 sentences.

Please note that this a graded activity and the score will be considered for final grading. Your own response and for the other's post is mandatory for the completion of this activity.

Search entries or author Unread


Subscribed

Reply

 **Chaitali Pujare** Inactive Jun 16, 2022

Yes, He will encourage his student to submit the proposal for getting the funds for his research work. As Dr.M's brother is in the selection committee he will definitely encourage his student to submit the proposal for funding so that he can take the help of him in approving the proposal. This will also show the interest of student in research work and he can judge him on the basis of proposal for funding.

Reply Like

 **Ayesha Shaikh** Inactive Jun 17, 2022

I don't think that Dr M should encourage his student to apply to the same organization where his brother is on the scrutiny and selection committee for approving the proposals since it may create a sought of favouritism where there is a high likelihood that his brother can give unfair preferential treatment to Dr M's student and there might not be a fair chance for others. This is also not good for Dr M's student since his student will not be able to learn.

Reply (3 likes)




# Learners' Activities

← → ↻ canvas.instructure.com/courses/4780241/discussion\_topics/15021064 🔍 📄 ☆ 🖥️ R ⋮


📱 Apps 📧 Gmail 📺 YouTube 🏠 Home :Committee f... 🗨️ OE4BW 2021 🌐 Scientific Research... 📄 EMS For SERB 📁 Other bookmarks

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- Assignments
- Discussions
- People
- Quizzes
- Modules
- Attendance
- Syllabus
- Announcements
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- Rubrics
- BigBlueButton
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0  **Ayesha Shaikh** Inactive  
Jun 17, 2022


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↩ Reply 👍 (3 likes)

0  **Megha Amit Marathe** Inactive  
Jun 18, 2022


If Student has done hard work & followed all required guidelines of the organization And Proposal is very much fair then definitely Dr. M should encourage his student for approval according to me which do not require any favoritism and which is without any bias so it is acceptable.

↩ Reply 👍 (2 likes)

0  **Anjali Mali** Inactive  
Jun 20, 2022


Regarding the students' efforts, I agree with you. Since Dr. M wants to offer his student a fair chance, he should really avoid writing his name anywhere in the project. If the name appears anywhere on the project, it is clear that the choice will be made one way or the other. Whenever the work is finished, the student can acknowledge Dr.M for his cooperation and support.

↩ Reply 👍

0  **Asmita Binay Yadav** Inactive  
Jun 21, 2022


I agree, if student has worked according to the guidelines provided for proposal then there are fair chances to get the approval.

↩ Reply 👍

0  **Prachi Suryawanshi (She/Her)** Inactive  
Jun 24, 2022

Yes, I agree 🙌

↩ Reply 👍

0  **Nikhil Dilip Yadav** Inactive  
Jun 22, 2022

Yes, i am agree with the above opinion. As it is mentioned in the paragraph that Dr. M's brother is on the scrutiny and selection committee , there might be unfair practice in getting the funding from that organization.

↩ Reply 👍

# Impact of the Course



## At Personal Level

1. Rich experience gained for OER creation through guidance of Mentor & Hub-Coordinator
2. Interaction with diverse learners
3. Opportunity to curate resources as per learners' needs

## At Learners' Level

1. Knowledge about the importance of systematic research process & its elements
2. Insights into research ethics, Plagiarism & Conflict of Interest
3. Peer interaction through DF and live interaction session
4. Variety of learning resources

## Future Prospects

1. Launching the course on a larger platform
2. Implementing this course as a hybrid mode of learning
3. Advanced course based on other aspects of research methodology

**Thank you for the opportunity  
and  
Your kind attention**

\*\*\*\*\*

*Course Developer: Roshan D'Souza*

*Course Mentor: Madhuri Isave*

