

# Reflection from Hybrid Style Teaching in the Computer Application in Forestry Course

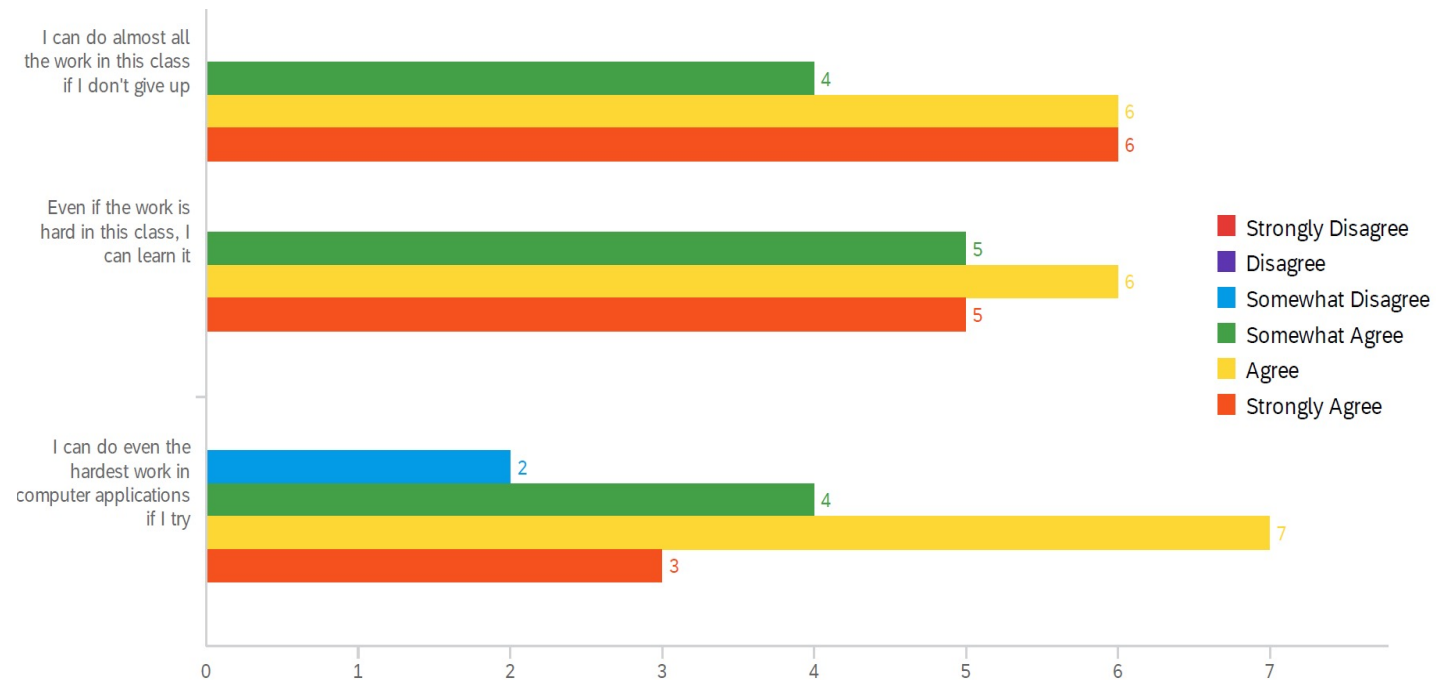
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Department of Forest Resources  
Management  
Faculty of Forestry, UBC



Hybrid Teaching and Learning Conversations:  
The Challenge of Flexibility

August 23<sup>rd</sup> 2021

# Course Background


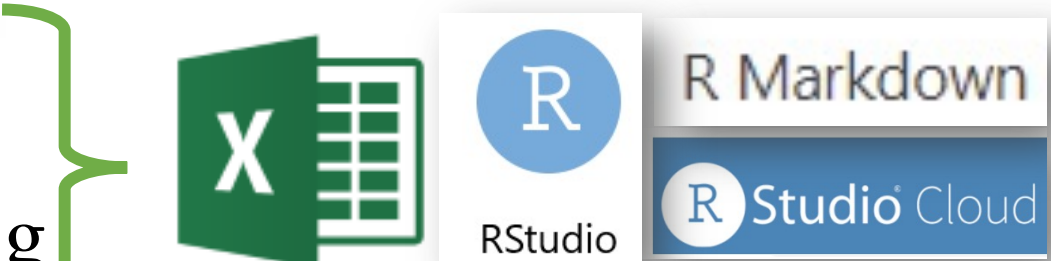

## Computer Applications in Forestry

Preparing students to be proficient in high-level computing and analyze a wide variety of forestry-related data.



# Course Background

## Major Learning Component

- Document processing 
  - Data handling and analyzing
  - Data visualizing and summarizing
  - Managing and Analyzing geodata
- 
- 

# Course Background

## Assessment of Learning

- Quiz
- Discussion questions
- Assignment
- Presentation and peer-review
- Exams

# Learning Design

## Graphical Presentation in RMarkdown

[Summary](#)

[Part 1](#)

[Part 2](#)

[Part 3](#)

[Part 4](#)

[Try it yourself!](#)

[Discussion](#)

[Lab activities](#)

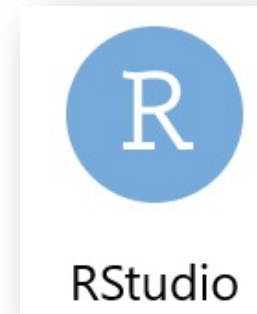
### Lesson Objectives

After studying this lesson you should be able to:

- Create scatter plots, line graphs, bar graphs, pie charts, and histograms
- Customize additional items on a graph
- Add legends to graphs
- Save graphs as an image or pdf file

Module checklist:

- [Part 1 Quiz](#)
- [Part 2 Quiz](#)
- [Part 3 Quiz](#)
- [Part 4 Quiz](#)
- [In-class Discussion](#)
- [Lab Assignment](#)



# Learning Design

## Graphical Presentation in RMarkdown

[Summary](#) | [Part 1](#) | [Part 2](#) | [Part 3](#) | [Part 4](#) | [Try it yourself!](#) | [Discussion](#) | [Lab activities](#)

### Basic Graphs: RStudio and R Markdown

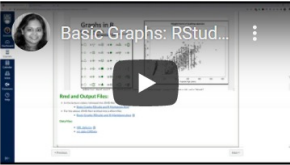
#### Lesson Objectives

After studying this lesson you should be able to:

- Familiar with creating a scatter plot
- Familiar with handling parameters in plot function and creating publication quality graphs
- Setting margins in a graph

#### Lecture Videos:

1. Audio Enabled Video



#### Lecture slides:

1. Basic Graphs in R: [Basic Graphs RStudio and R Markdown.pptx](#) ↓

#### Rmd and Output Files:

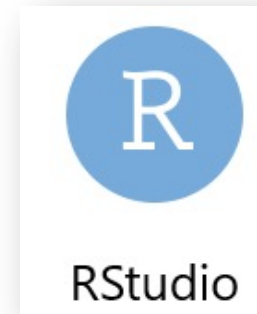
- In the lecture video, I showed the .RMD file:
  - [Basic Graphs RStudio and R Markdown.Rmd](#)
- For the above .RMD file I knitted into a Word and HTML file:
  - [Basic-Graphs-RStudio-and-R-Markdown.docx](#) ↓
  - [Basic-Graphs-RStudio-and-R-Markdown.html](#)

#### Data Files:

- [VRI\\_data.csv](#) ↓
- [vri\\_data-2.RData](#) ↓

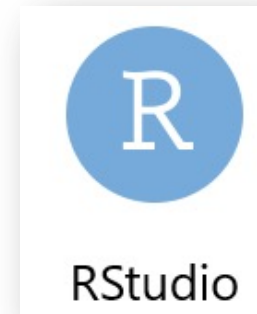
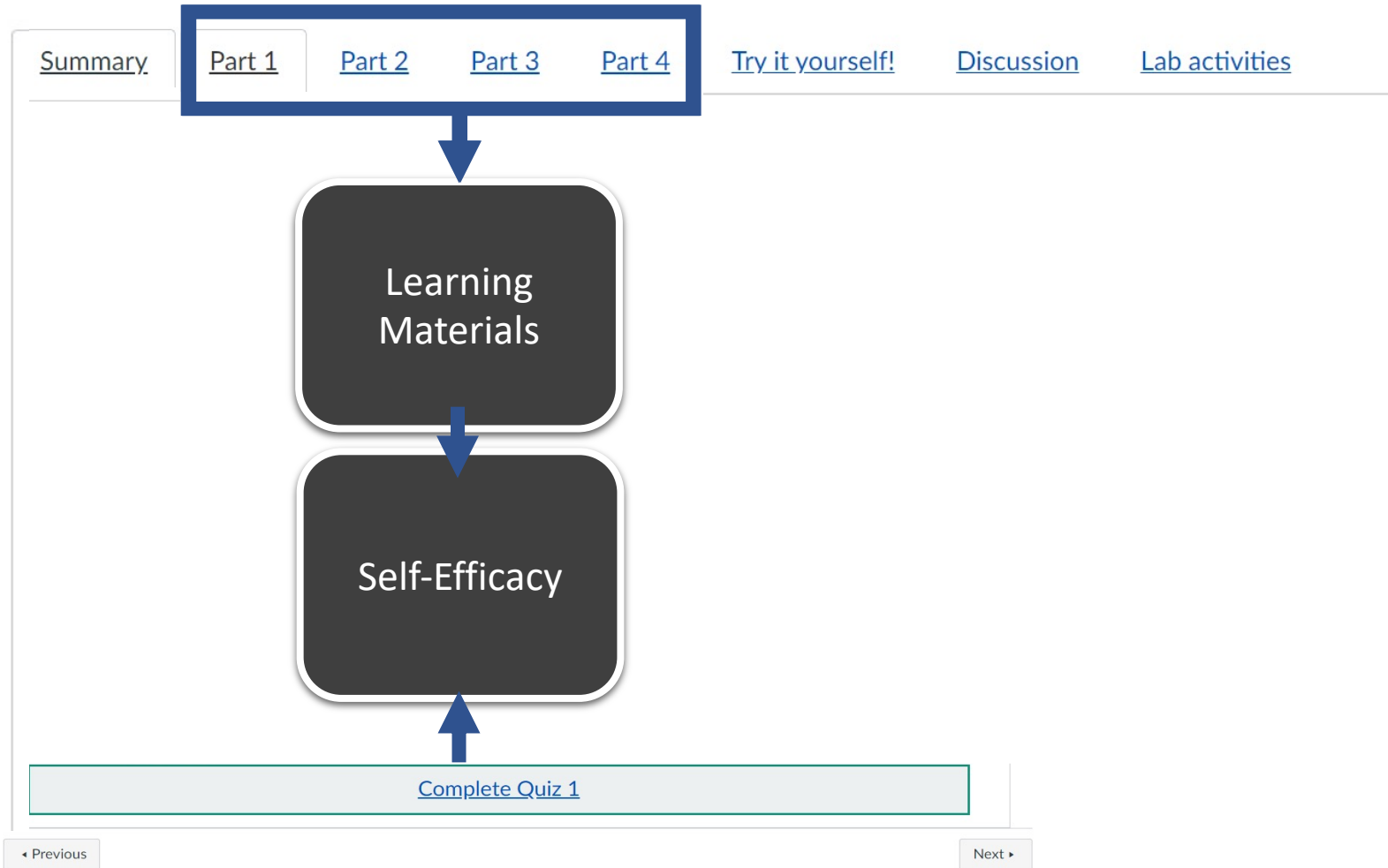
[Complete Quiz 1](#)

◀ Previous | Next ▶



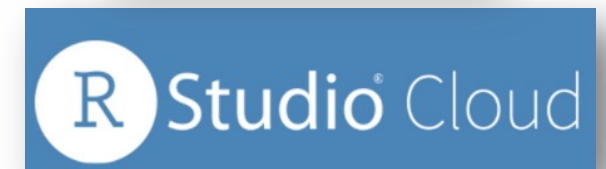
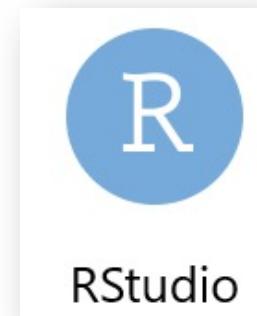
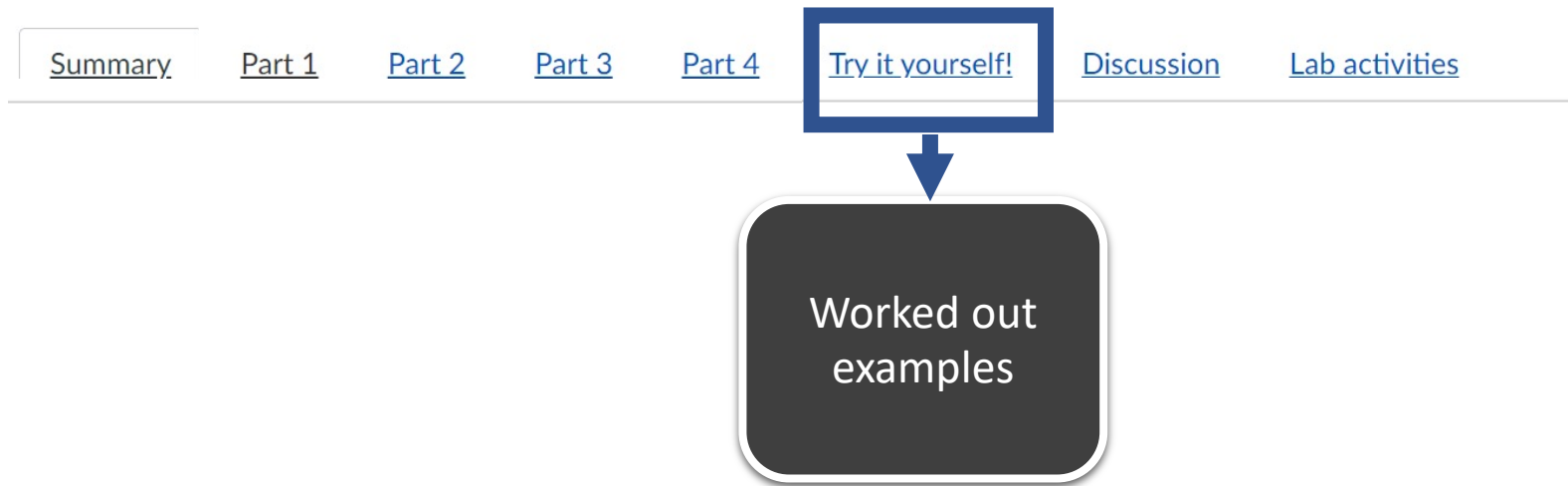
# Learning Design

## Graphical Presentation in RMarkdown



# Module Structure

## Graphical Presentation in RMarkdown





# Module Structure

## Graphical Presentation in RMarkdown

[Summary](#) [Part 1](#) [Part 2](#) [Part 3](#) [Part 4](#) [Try it yourself!](#) [Discussion](#) [Lab activities](#)

Discussion on Graphical Presentation in R

```
```{r}
plot(Height,SDI,
     xlab="Height (m)",
     ylab="Stand Density Index",
     cex.lab=1,
     main="Height vs. SDI",
     cex.main=1.5,
     xlim=c(0,200),
     ylim=c(0,1000),
     cex.axis=0.7,
     pch=20,
     cex=1,
     col="blue")
```
```

1. Explain the components of this plot code in your own words (You can use bullet points). Think about what the code does.

```
```{r}
png(Problem1_pdf, width=1, width=1)
```
```

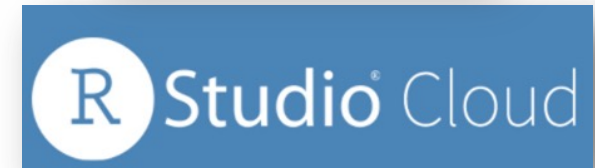
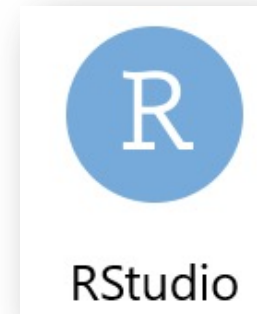
2. List all of the things that are wrong with this code and what you need to do to solve the errors. How might you avoid these errors in the future? (Feel free to talk about how you intend to mitigate other types of errors too)

3. Now that you've learned how to create graphs in Excel and R, under what situations would you rather use R than Excel? (Think about the codes that you can use or other processes that can be done in R)

**Note:** you can comment on each other's posts. You need to post before seeing other posts.

Search entries or author Unread

- Bring in questions to discuss.
- Solve discussion questions in a smaller group and submit
- Briefly introduce the next learning module and provide a guideline.



# Module Structure

## Graphical Presentation in RMarkdown

Summary Part 1 Part 2 Part 3 Part 4 Try it yourself! Discussion **Lab activities**

Lab Activities: Graphical Presentation in R Markdown

### Graphical Presentation in R Markdown

**Learning Objectives:**

- Create figures from data in R
- Control parameters, legends, and plotting windows of the figures in R
- Save the figures as an image file

**Platform: R/RStudio/R Markdown**

Please download the following file before coming to the lab:

CSV file: [airquality.csv](#) ↓

RMD file: [lab6.Rmd](#) ↓

Word file: [lab6\\_demo.docx](#) ↓

Output files: [Problem\\_1.png](#), [Problem\\_3.png](#)

**Schedule:**

| Time       | Activities   |
|------------|--|
| 45 minutes | • Demonstration  |
| Break      | • Break for 15 minutes                                     |
| 60 minutes | • Start working on your assignment with your group members |

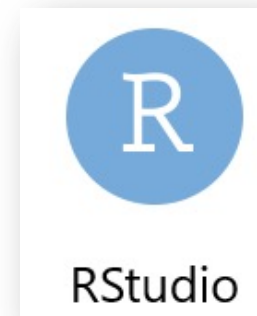
**Materials to be covered:**

1. Create point and line graphs using plot() function in R from different subsets of data
2. Adjust parameters in plot() function and add a legend
3. Create a side-by-side plot using par() function
4. Save graph as a .png file using png() function

◀ Previous Next ▶

↓

- Demonstrate lab activities
- Solve problems in a group on a shared platform

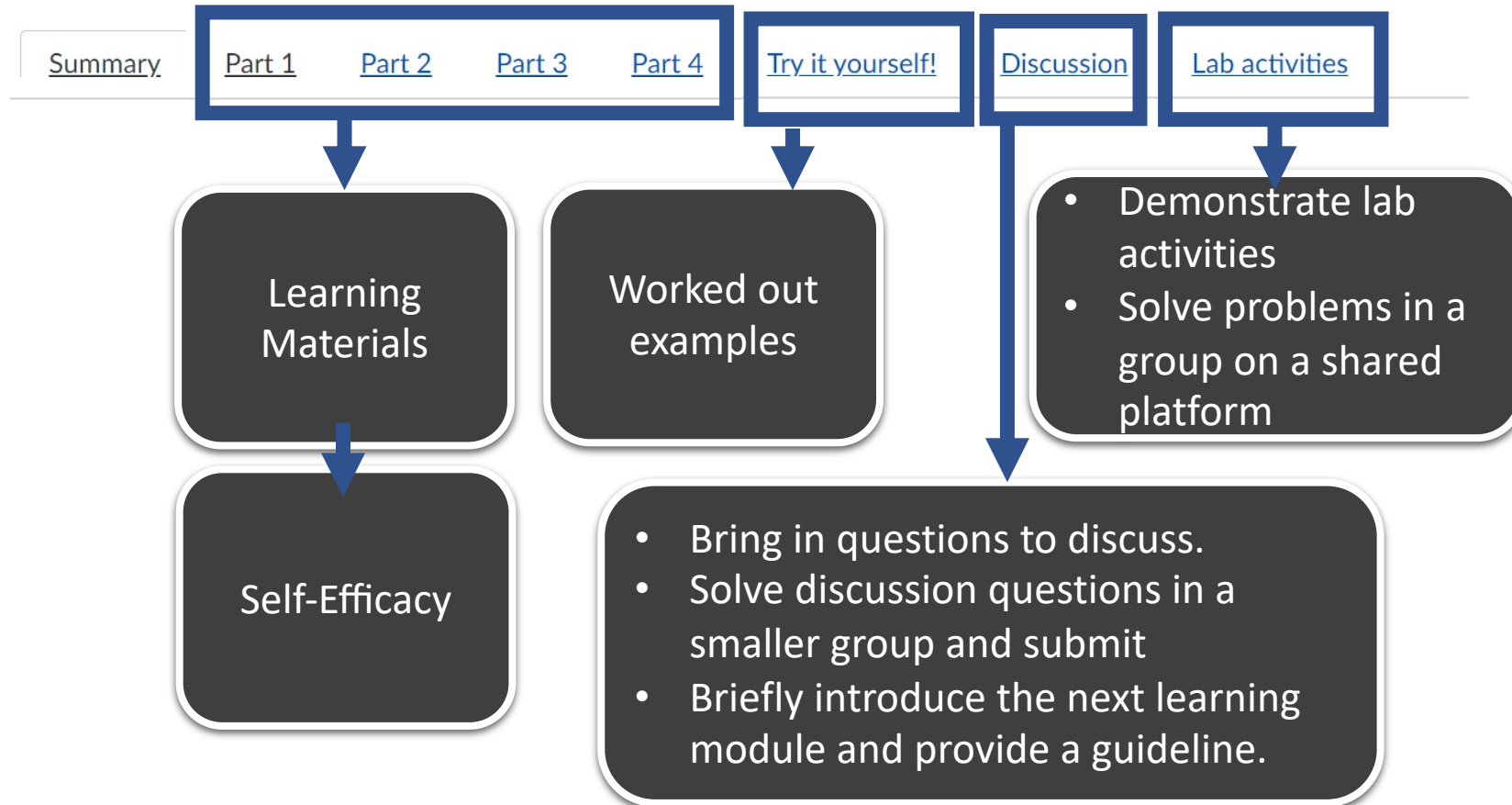




# Module Structure



## Graphical Presentation in RMarkdown





# Education Modality?



## Graphical Presentation in RMarkdown

[Summary](#)

[Part 1](#)

[Part 2](#)

[Part 3](#)

[Part 4](#)

[Try it yourself!](#)

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[Lab activities](#)

### Students' Presence

1. Online

2. Hybrid: Online and In-person

Self-Efficacy

- Bring in questions to discuss.
- Solve discussion questions in a smaller group and submit
- Briefly introduce the next learning module and provide a guideline.

# Hybrid Instructional Models

1. Concurrent Hybrid
2. Asynchronous Hybrid
3. Sequential Hybrid
4. Multi-Section Hybrid
5. Alternating Hybrid



Discussion Paper on Hybrid Teaching and Learning

[https://ctl2013.sites.olt.ubc.ca/files/2021/01/CTLT\\_HybridTeachingLearning.pdf](https://ctl2013.sites.olt.ubc.ca/files/2021/01/CTLT_HybridTeachingLearning.pdf)

# Hybrid Instructional Models

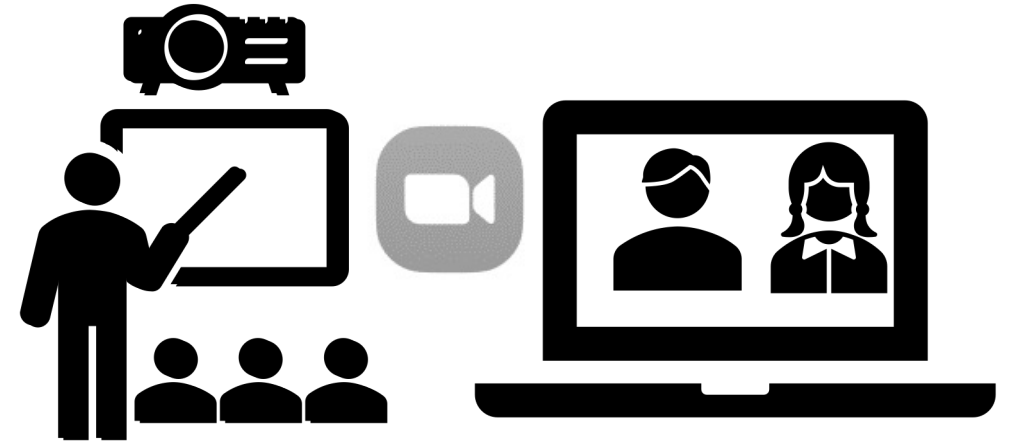
1. Concurrent Hybrid

2. Asynchronous Hybrid

3. Sequential Hybrid

4. Multi-Section Hybrid

5. Alternating Hybrid

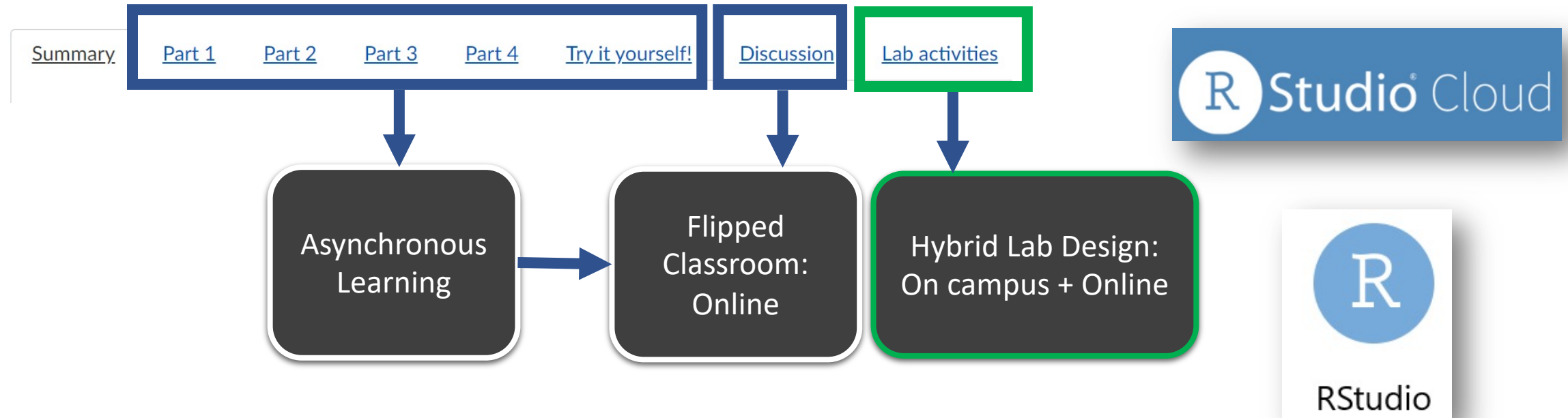


Discussion Paper on Hybrid Teaching and Learning

[https://ctl2013.sites.olt.ubc.ca/files/2021/01/CTLT\\_HybridTeachingLearning.pdf](https://ctl2013.sites.olt.ubc.ca/files/2021/01/CTLT_HybridTeachingLearning.pdf)

# Instructional Approaches

## Graphical Presentation in RMarkdown



# Essential Items for the Hybrid Class

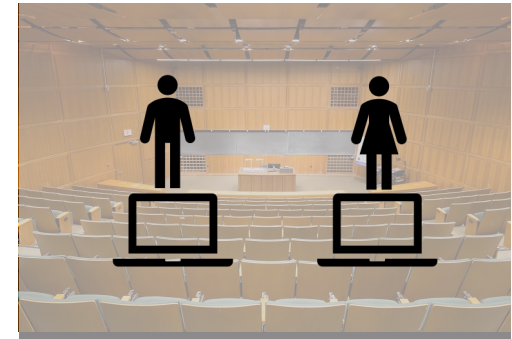
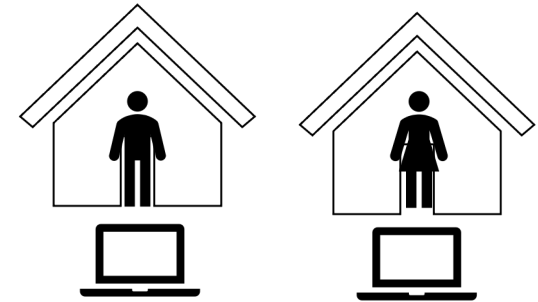
## Instructor



## Teaching Assistants



1. Laptop
2. Microphone that can cancel noise
3. Headphone
4. Mic for the classroom: lapel
5. Camera for live streaming
6. Wired internet

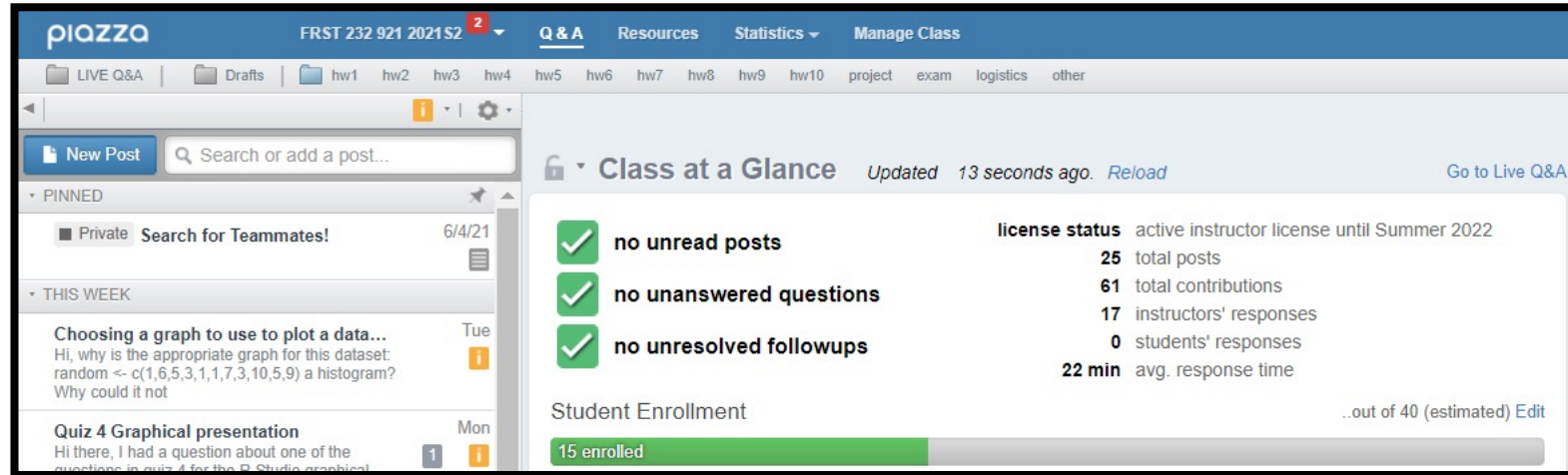




# Communication Tools



- Group discussion
- Solving Problems in a group
- Communicate with the teaching team and others



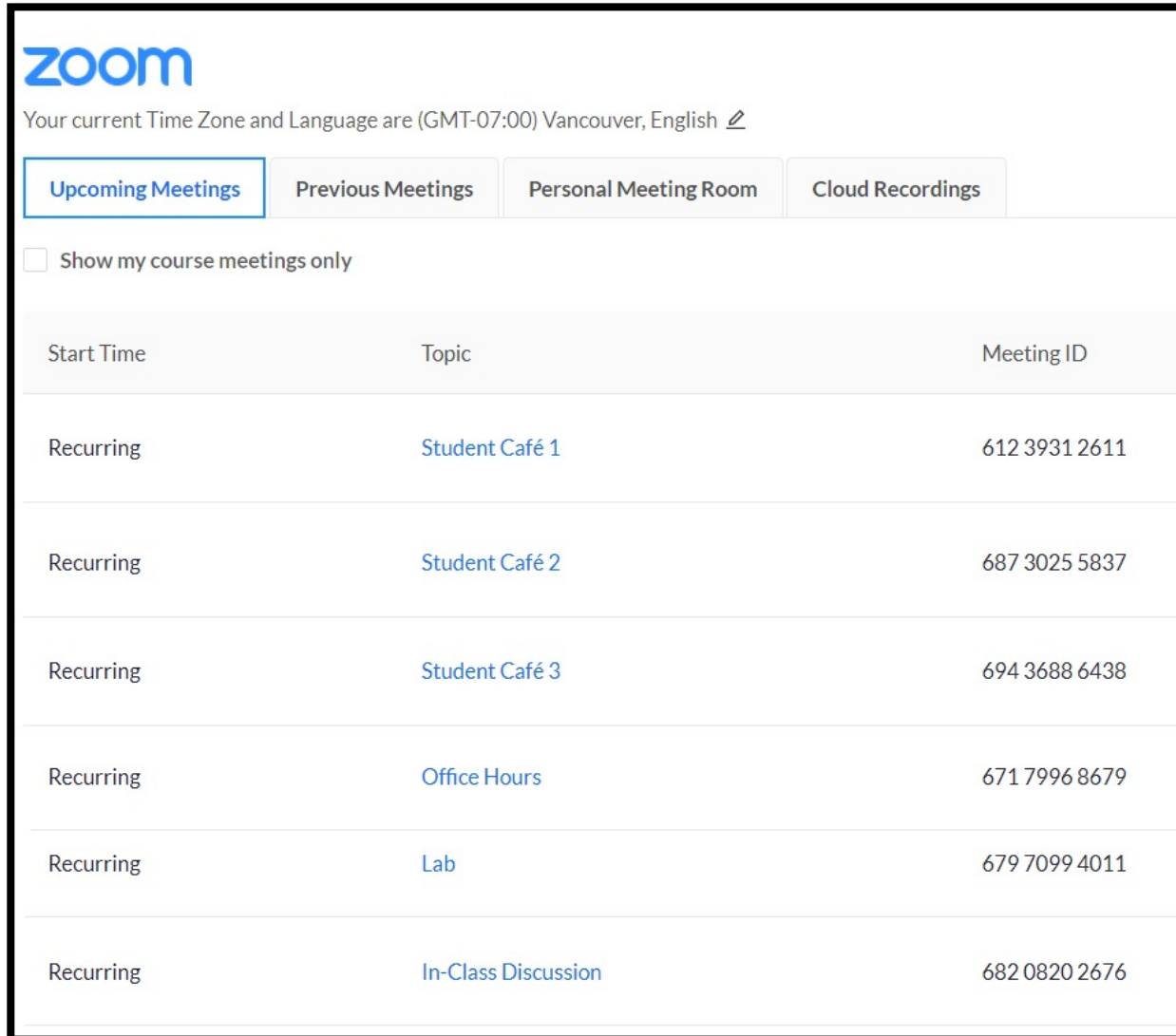
The screenshot shows the Piazza Q&A interface for a course titled "FRST 232 921 2021 S2". The interface includes a navigation bar with "Q & A", "Resources", "Statistics", and "Manage Class". Below the navigation bar, there are tabs for "LIVE Q&A", "Drafts", and a list of homework assignments (hw1 to hw10) along with "project", "exam", "logistics", and "other". The main content area is titled "Class at a Glance" and is updated "13 seconds ago". It features a "New Post" button and a search bar. The "Class at a Glance" section includes a "license status" table and a "Student Enrollment" bar chart.

| license status  | active instructor license until Summer 2022 |
|---|---|
| <input checked="" type="checkbox"/> no unread posts         | 25 total posts                              |
| <input checked="" type="checkbox"/> no unanswered questions | 61 total contributions                      |
| <input checked="" type="checkbox"/> no unresolved followups | 17 instructors' responses                   |
|   | 0 students' responses                       |
|   | 22 min avg. response time                   |

Student Enrollment: 15 enrolled (out of 40 estimated)

- Introduce themselves
- Post questions outside the class time
- Get help from the teaching team and peers

# Communication Tools



The screenshot shows the Zoom web interface. At the top left is the Zoom logo. Below it, a message states: "Your current Time Zone and Language are (GMT-07:00) Vancouver, English". There are four tabs: "Upcoming Meetings" (selected), "Previous Meetings", "Personal Meeting Room", and "Cloud Recordings". Below the tabs is a checkbox labeled "Show my course meetings only" which is unchecked. The main content is a table with three columns: "Start Time", "Topic", and "Meeting ID". The table lists seven recurring meetings.

| Start Time | Topic                               | Meeting ID    |
|------------|-------------------------------------|---------------|
| Recurring  | <a href="#">Student Café 1</a>      | 612 3931 2611 |
| Recurring  | <a href="#">Student Café 2</a>      | 687 3025 5837 |
| Recurring  | <a href="#">Student Café 3</a>      | 694 3688 6438 |
| Recurring  | <a href="#">Office Hours</a>        | 671 7996 8679 |
| Recurring  | <a href="#">Lab</a>                 | 679 7099 4011 |
| Recurring  | <a href="#">In-Class Discussion</a> | 682 0820 2676 |

- Group Discussion outside the class time
- Get help from the teaching team every weekdays

# Facilitation

1. Practice session: TAs and students

2. Specify hybrid design and expectation

3. Late arrival or quarantine period

# Evaluation Strategies

1. Evaluation of student's learning goals, expectations and prior experiences.
2. Evaluation of student's self-efficacy and confidence in applying learned modules independently.
3. Evaluation of engagement
4. Evaluation of meeting the learning Goals

# Evaluation Strategies

## Three Stages Surveys:

1. Beginning of the term

Learning goals, expectations and prior experience

2. Midterm

Self-efficacy, confidence in applying independently and engagement

3. End of the term

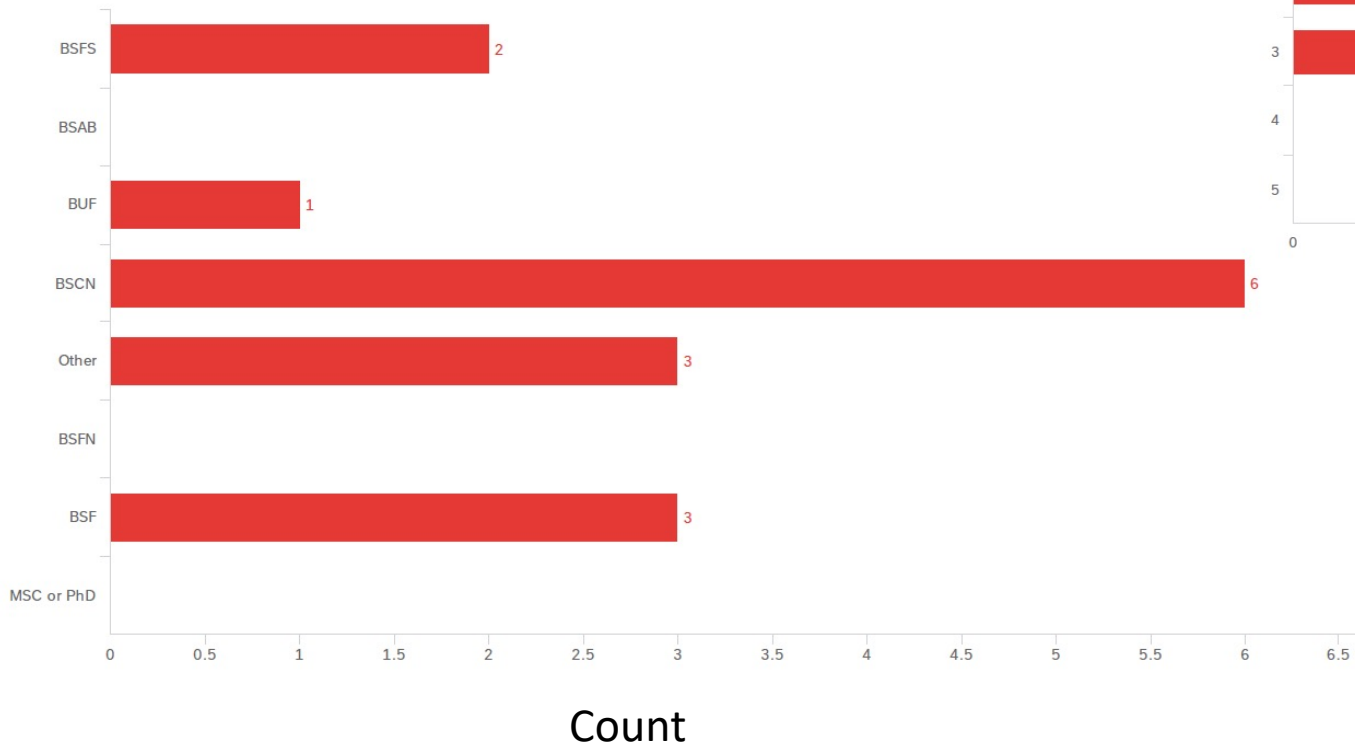
Meeting the learning Goals

# Evaluation Preliminary Report

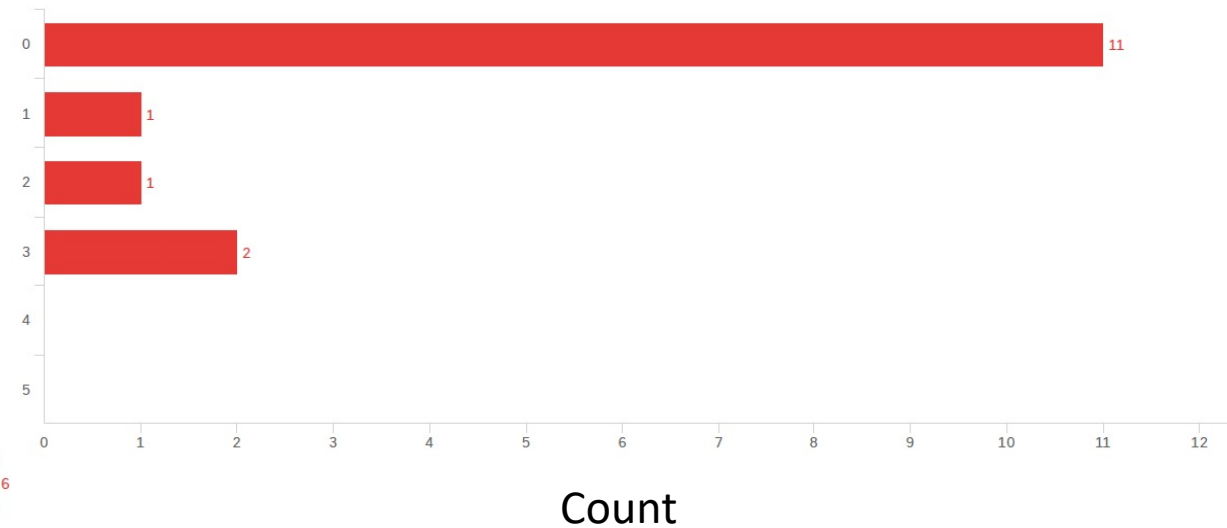
## Summer Session: FRST 232 Section 921

- In-person: 2 students
- Online: 13 students

## Program of Study



## Previous Experience in Computer Applications



# Evaluation Preliminary Report

## Achieving Learning Goals

good

The course is helpful in helping me to get familiarized with different applications that may be used in forestry field.

This course was definitely being very helpful by teaching me a lot of useful functions and features of Words and Excel. It also introduced Rstudio and QGIS which were very interesting as well.

This course helped me achieve my learning goals very well. I feel proficient in Word, more comfortable handling data in Excel, R, and QGIS, and now I know how to use PowerPoint.

I think most of goals have been achieved, especially in the use of word. I have learned many functions in word to format my essay.

Further consolidate my skills on R and GIS.

I think I have basically achieved my goal. For the application of a variety of softwares, I have a basic understanding and operation skills. More importantly, I have already known how to solve practical problems through these softwares.

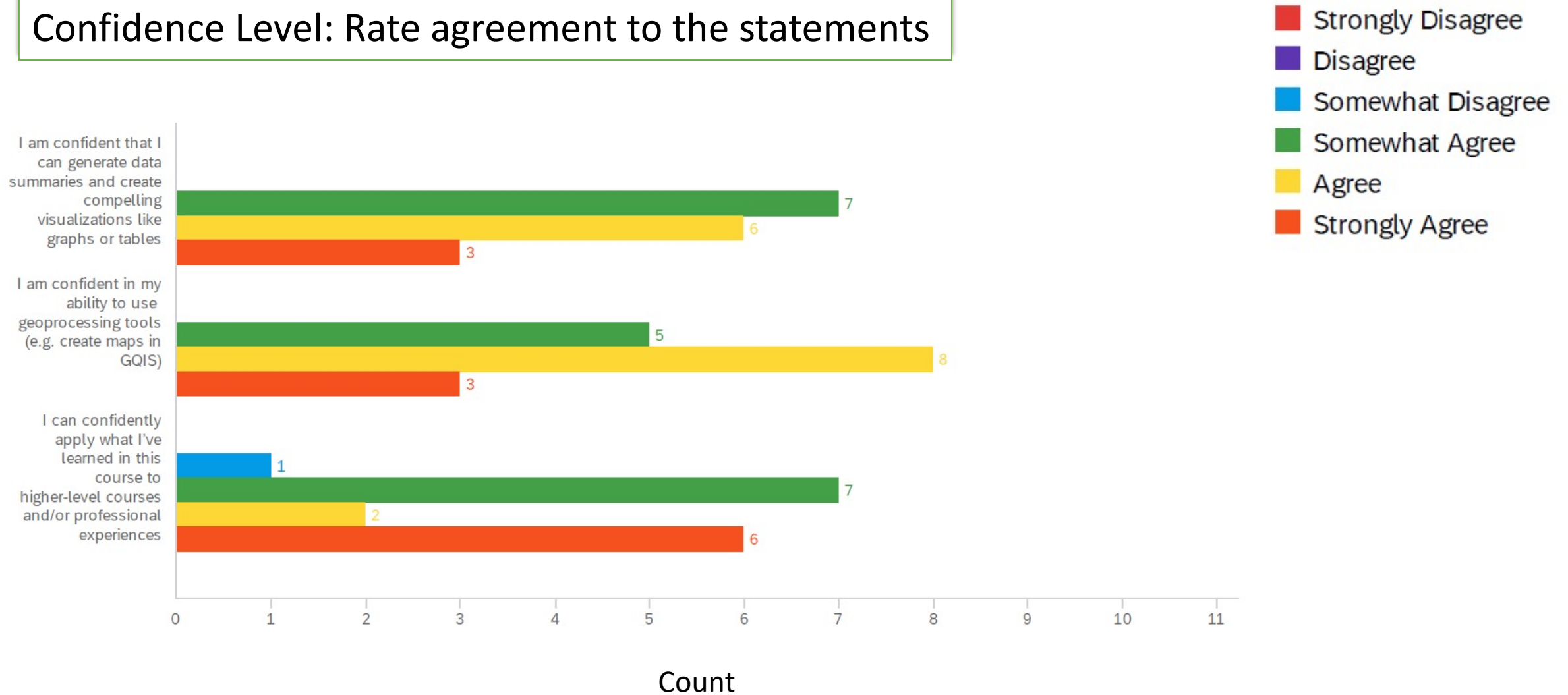
# Evaluation Preliminary Report





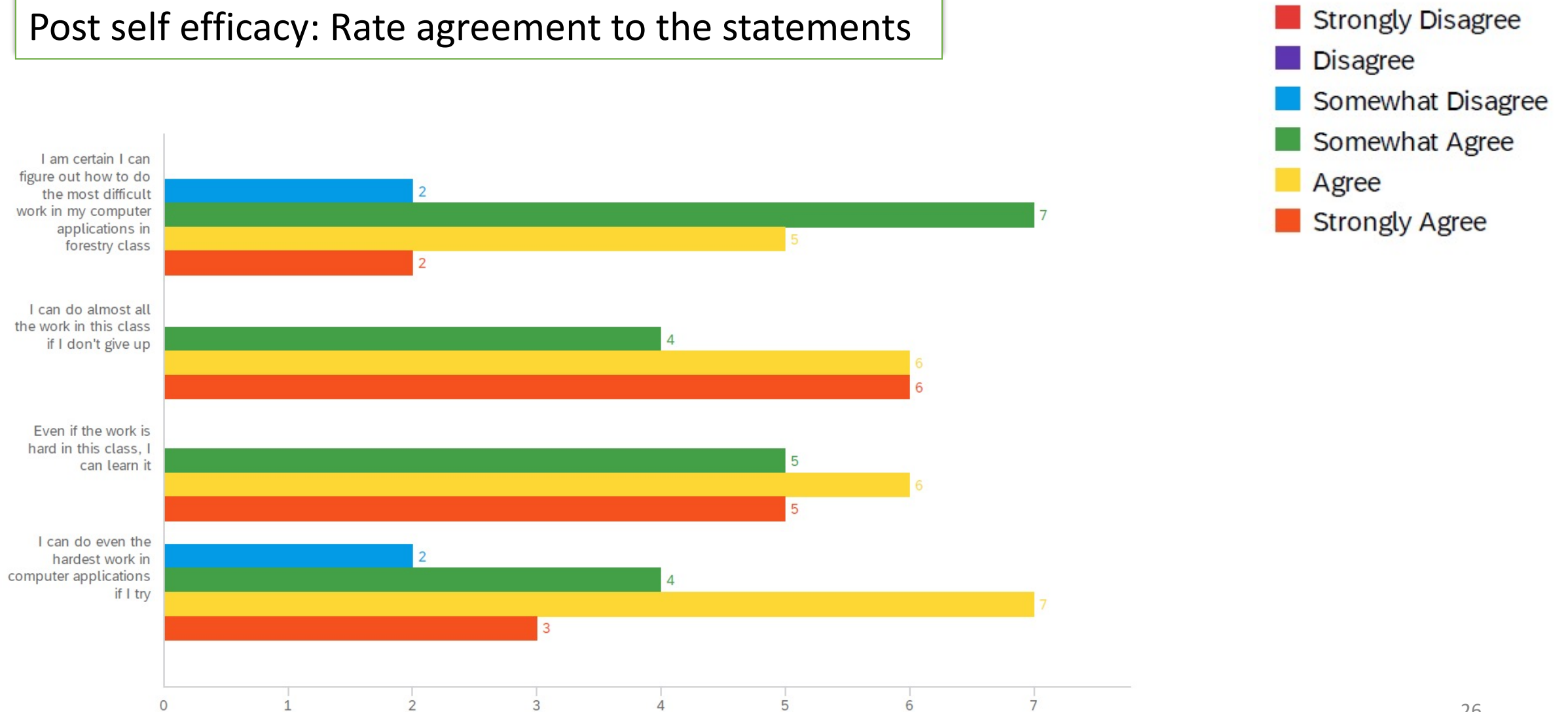
# Evaluation Preliminary Report

## Confidence Level: Rate agreement to the statements



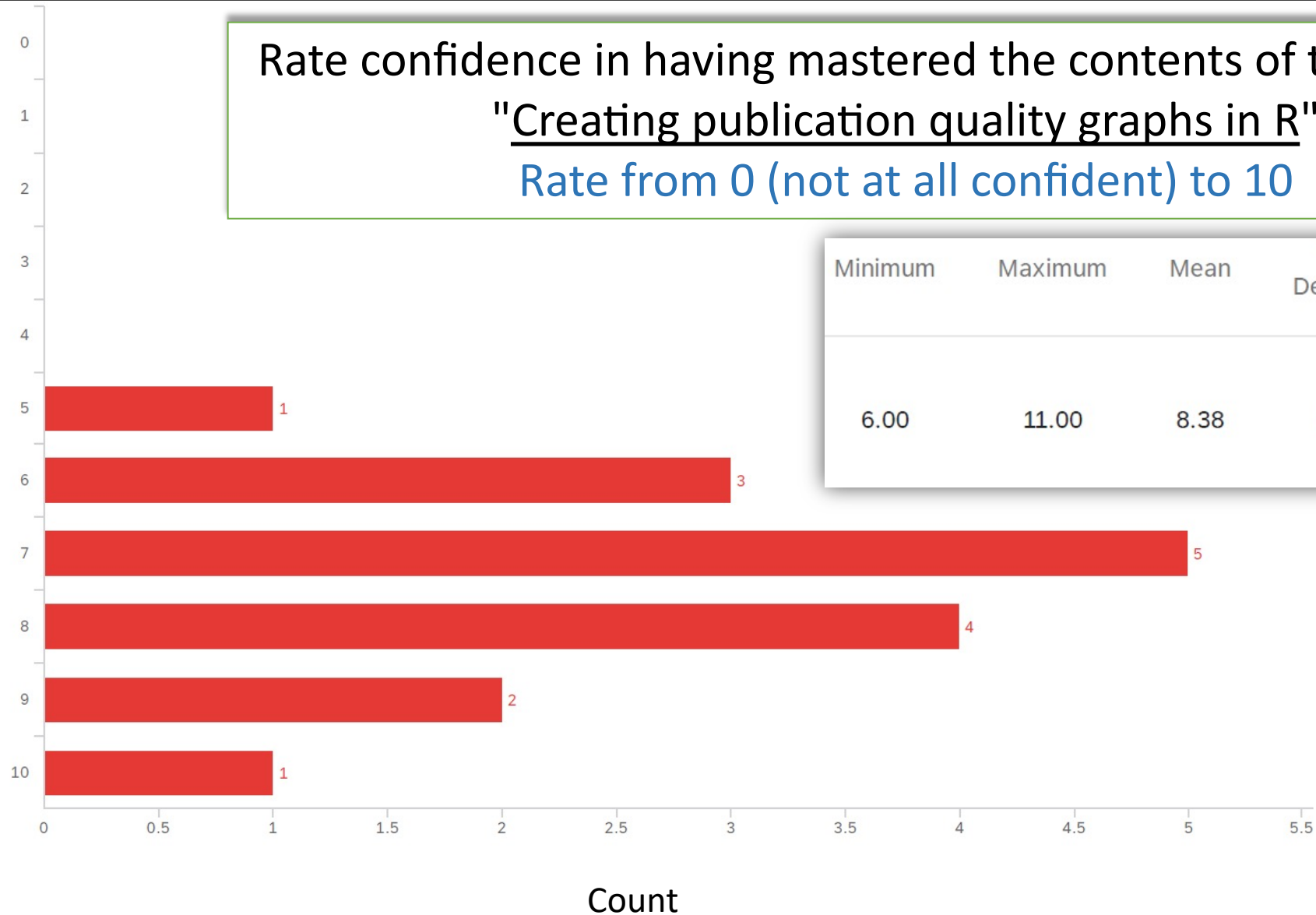
# Evaluation Preliminary Report

## Post self efficacy: Rate agreement to the statements



# Evaluation Preliminary Report

Rate confidence in having mastered the contents of the module:  
"Creating publication quality graphs in R"  
Rate from 0 (not at all confident) to 10

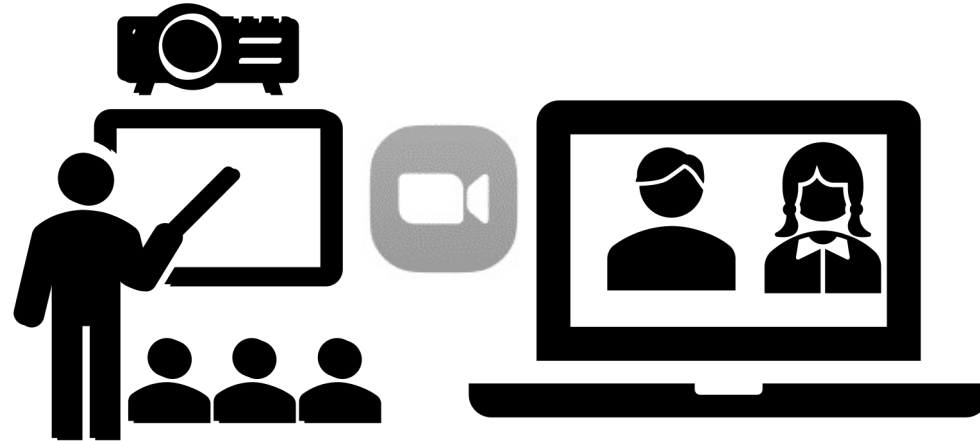


| Minimum | Maximum | Mean | Std Deviation | Variance |
|---------|---------|------|---------------|----------|
| 6.00    | 11.00   | 8.38 | 1.27          | 1.61     |

# Hybrid Again!!

Fall Session: FRST 232 Section 101

- In-person: 30 students registered
- Online: 30 students registered



# Acknowledgements

## **Funding**

Hybrid teaching pilot grant, Provost's office at UBC

## **Co-Applicants**

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Dr. Andres Varhola

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An Hoang

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Juno Kim

Thank You!