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

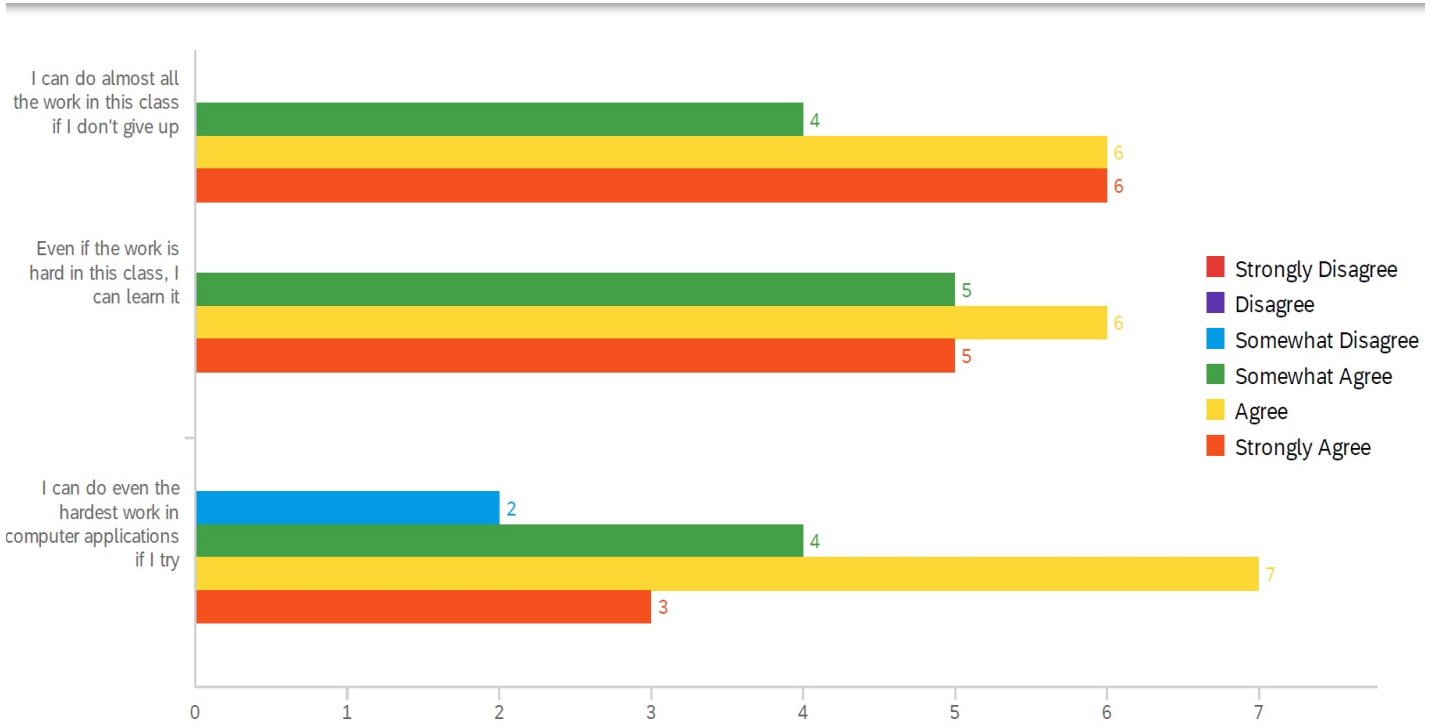
Suborna Ahmed, PhD

Zarah Chaudhary, PhD Candidate

Michelle Zhang, MS

Patrick Culbert, PhD

Department of Forest Resources Management
Faculty of Forestry, UBC



Hybrid Teaching and Learning Conversations: The Challenge of Flexibility

August 23rd 2021

Course Background

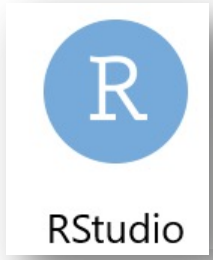
Computer Applications in Forestry

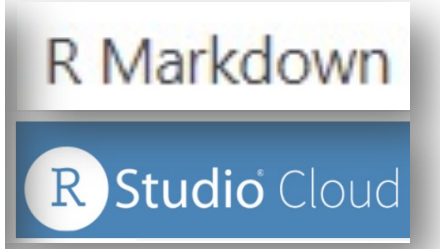
Preparing students to be proficient in high-level computing and analyze a wide variety of forestry-related data.

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

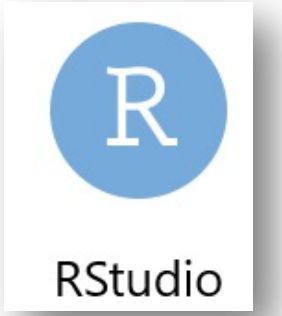
Lesson Objectives

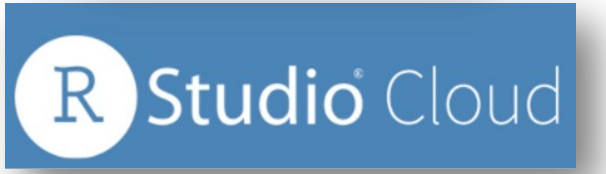
After studying this lesson you should be able to:

- 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

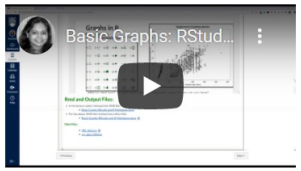
Lesson Objectives

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 ▸

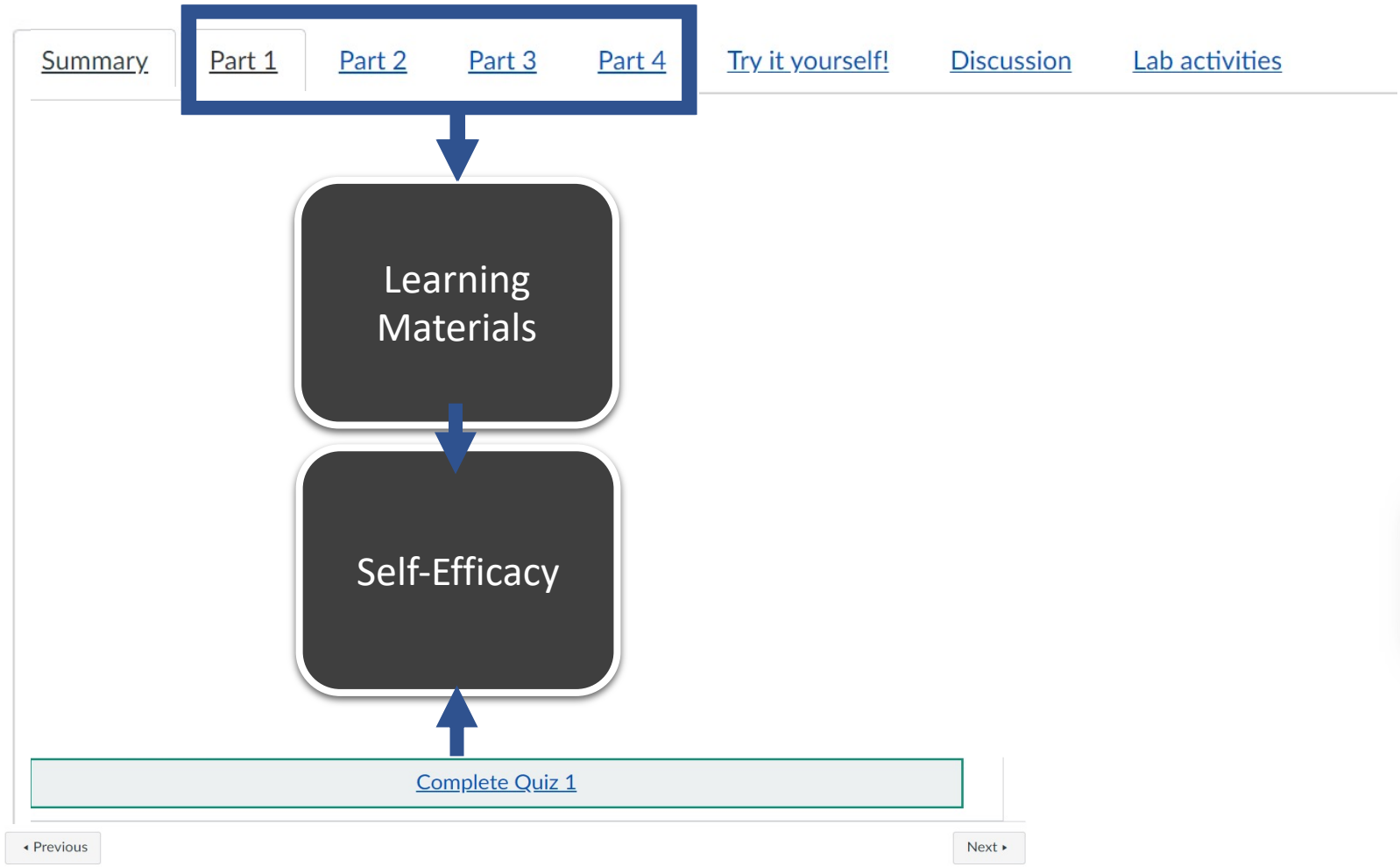
RStudio

R Markdown

RStudio Cloud

Learning Design

Graphical Presentation in RMarkDown



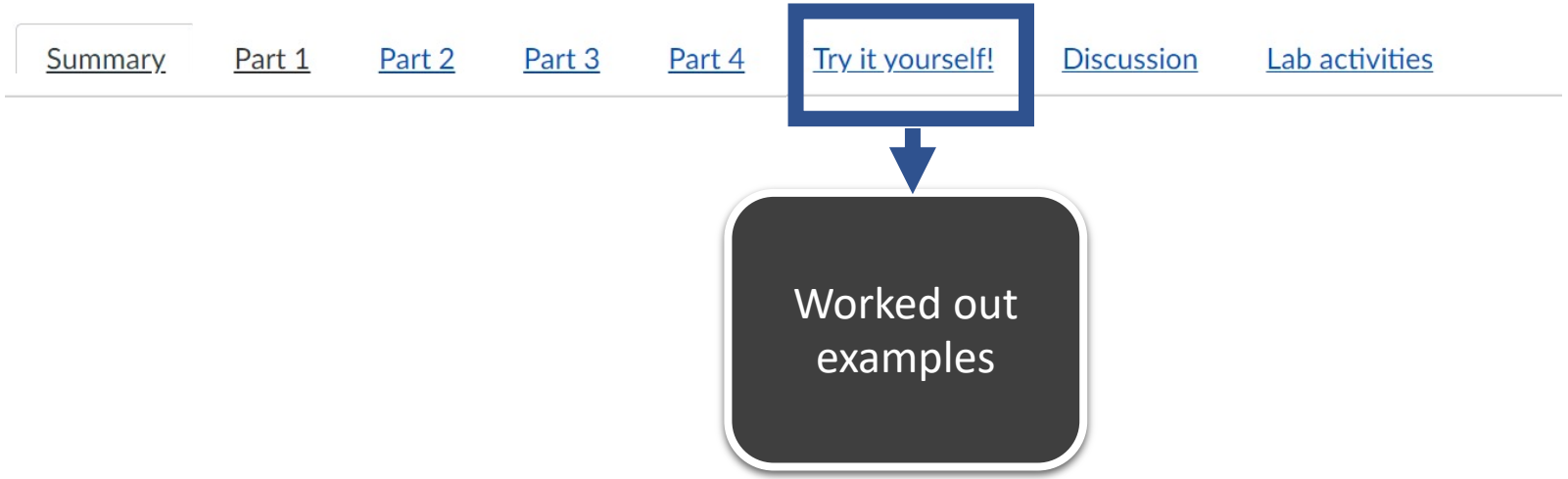
RStudio

R Markdown

RStudio Cloud

Module Structure

Graphical Presentation in RMarkDown



RStudio

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Module Structure

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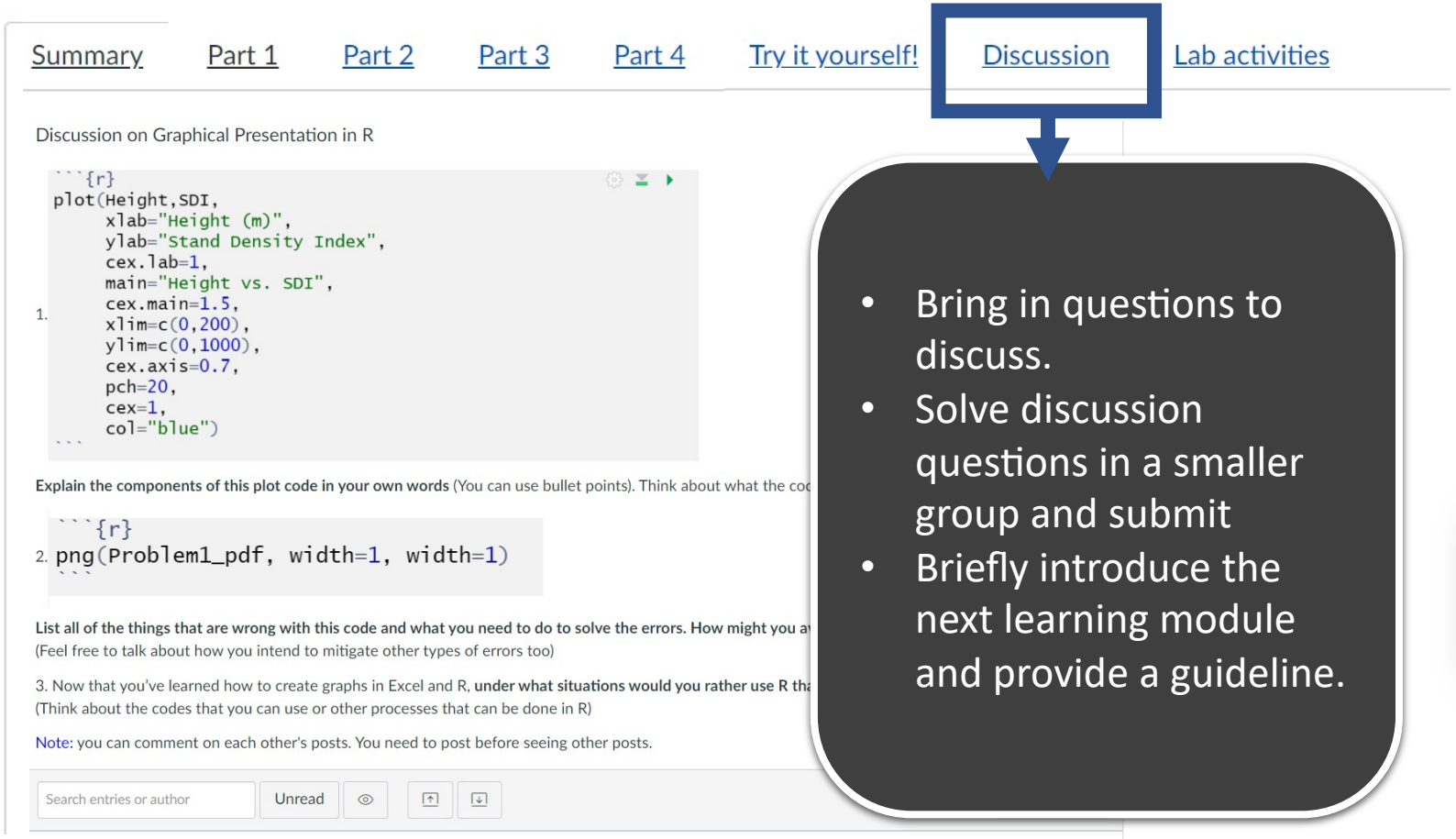


- Bring in questions to discuss.
- Solve discussion questions in a smaller group and submit
- Briefly introduce the next learning module and provide a guideline.

RStudio

R Markdown

RStudio Cloud

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

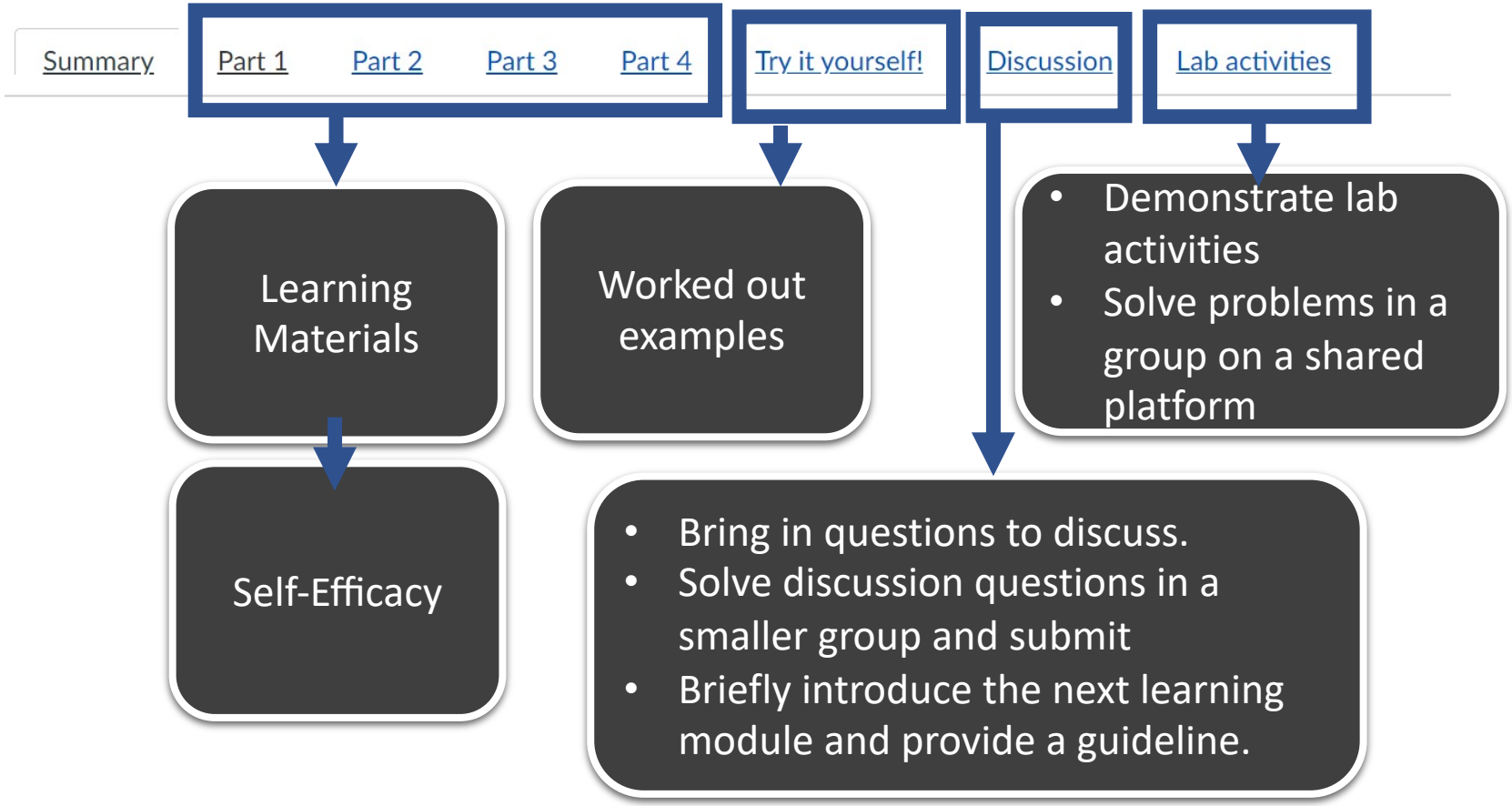
RStudio

R Markdown

RStudio Cloud

Module Structure

Graphical Presentation in RMarkDown



Education Modality?

Graphical Presentation in RMarkDown

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

Learning Materials

Worked out examples

strate lab

- Solve problems in a group on a shared platform

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.

Students' Presence

1. Online
2. Hybrid: Online and In-person

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://ctlt2013.sites.olt.ubc.ca/files/2021/01/CTLT_HybridTeachingLearning.pdf

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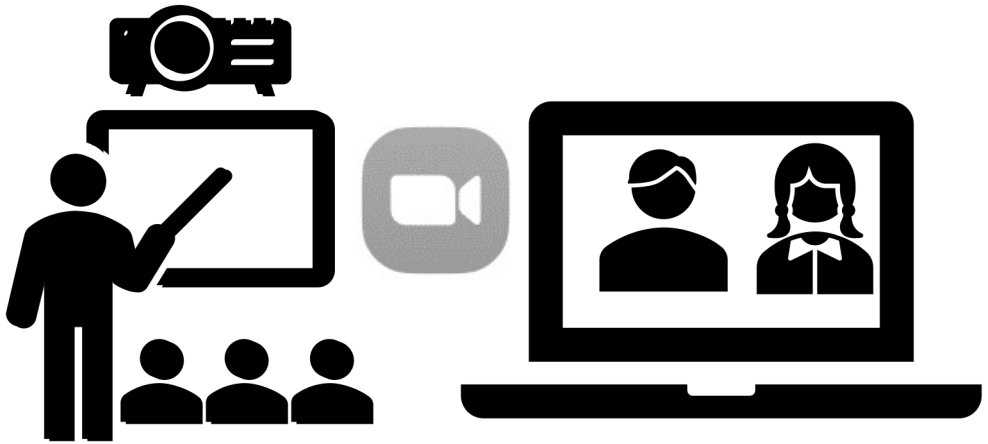

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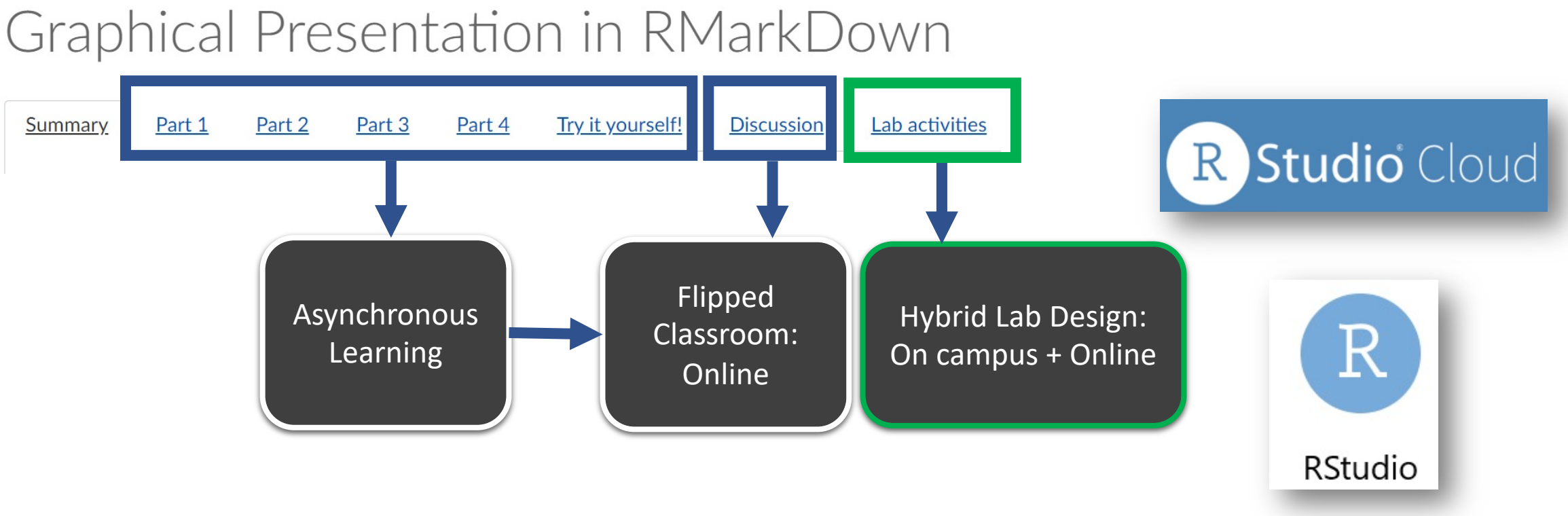
Instructional Approaches

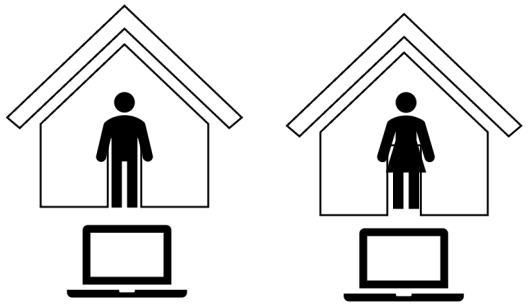


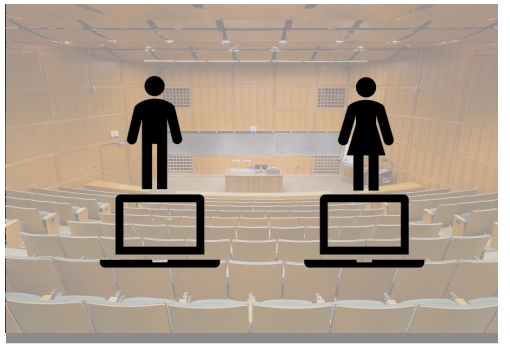
Essential Items for the Hybrid Class

Instructor

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

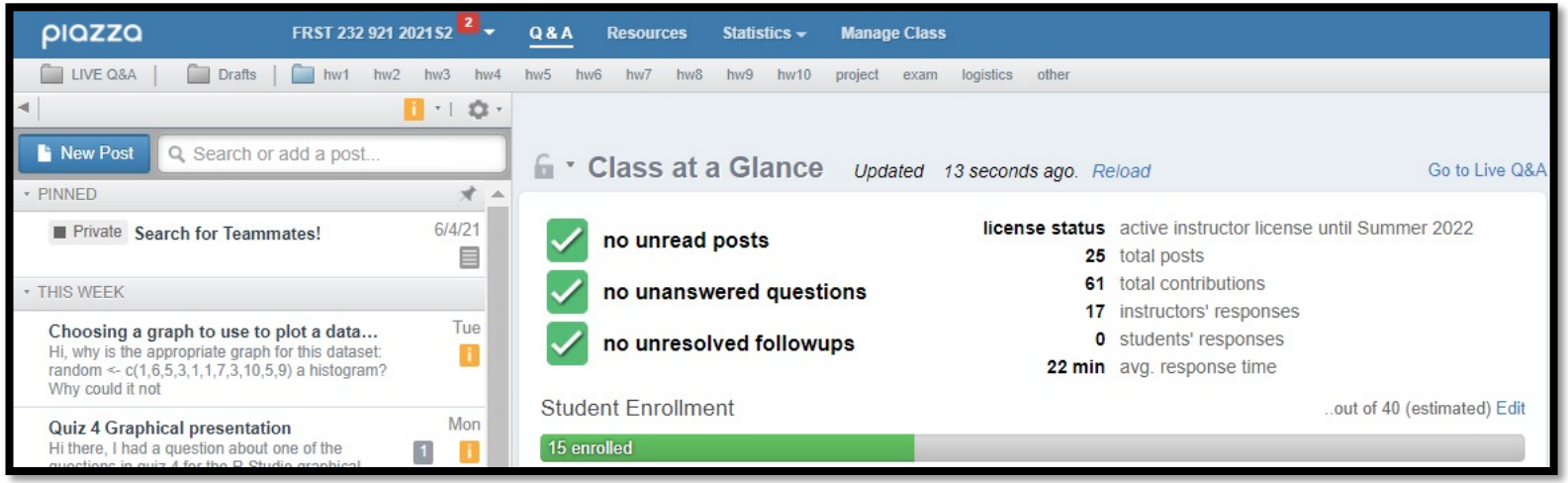
Teaching Assistants





Communication Tools

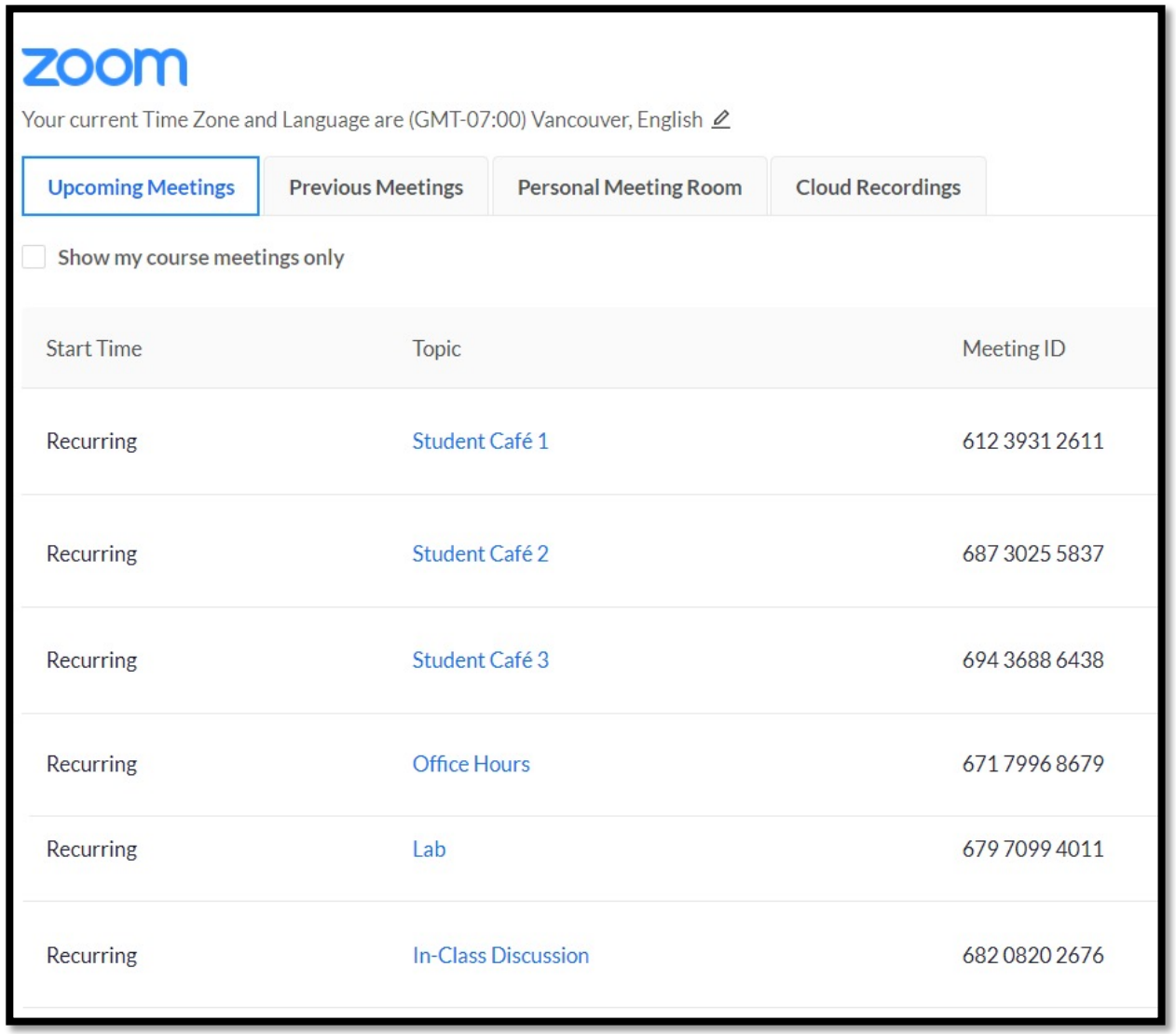
Microsoft Teams



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

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

Communication Tools



- 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:

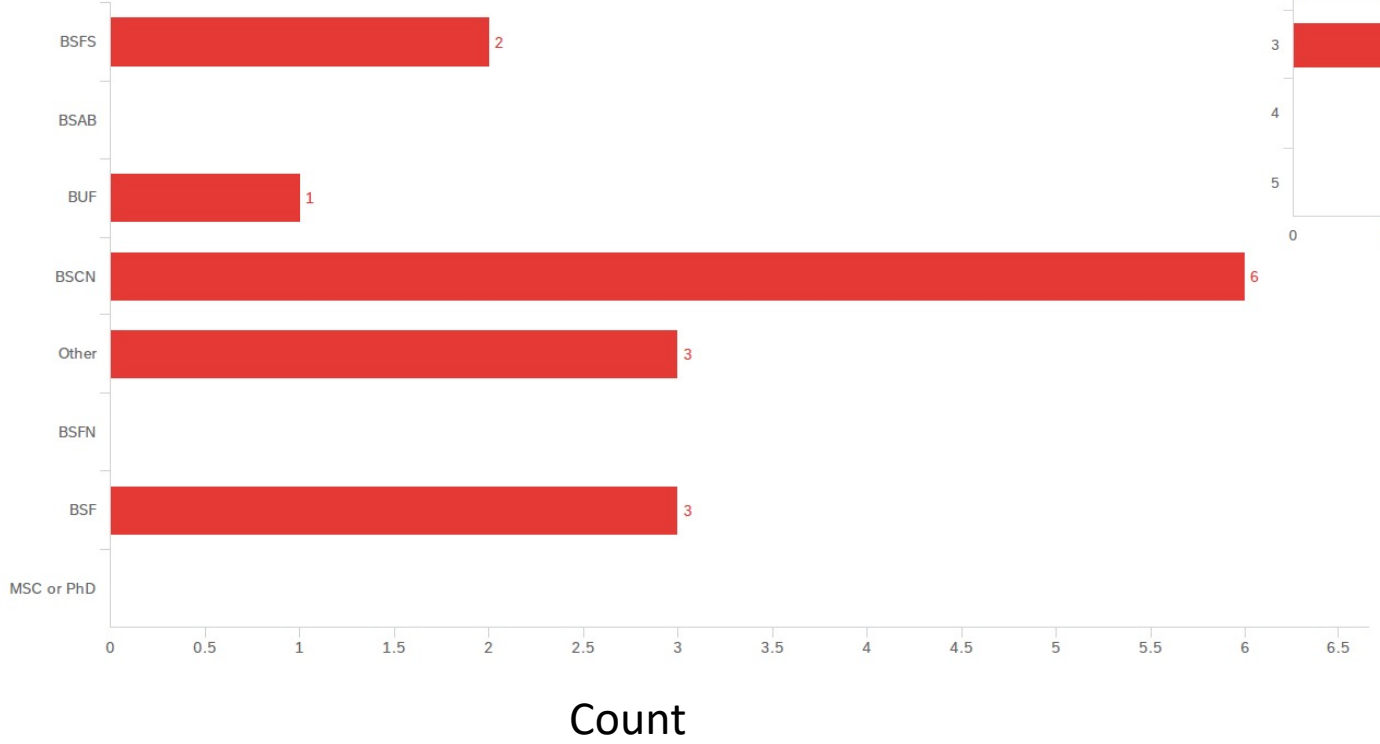
1. Beginning of the term → Learning goals, expectations and prior experience
2. Midterm → Self-efficacy, confidence in applying independently and engagement
3. End of the term → Self-efficacy, confidence in applying independently and engagement; Meeting the learning Goals

Evaluation Preliminary Report

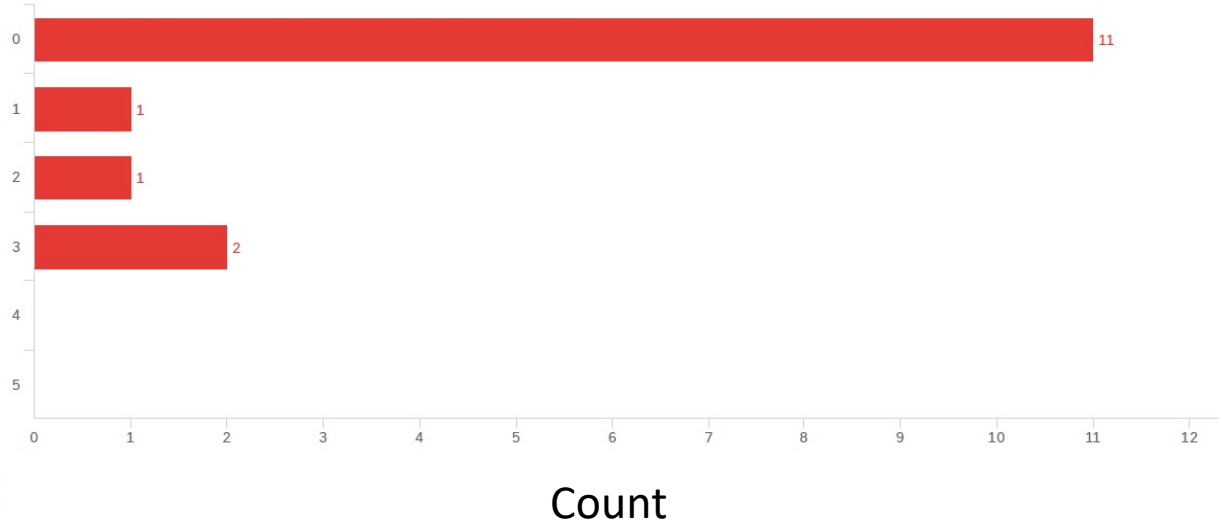
Summer Session: FRST 232 Section 921

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

Program of Study



Previous Experience in Computer Applications



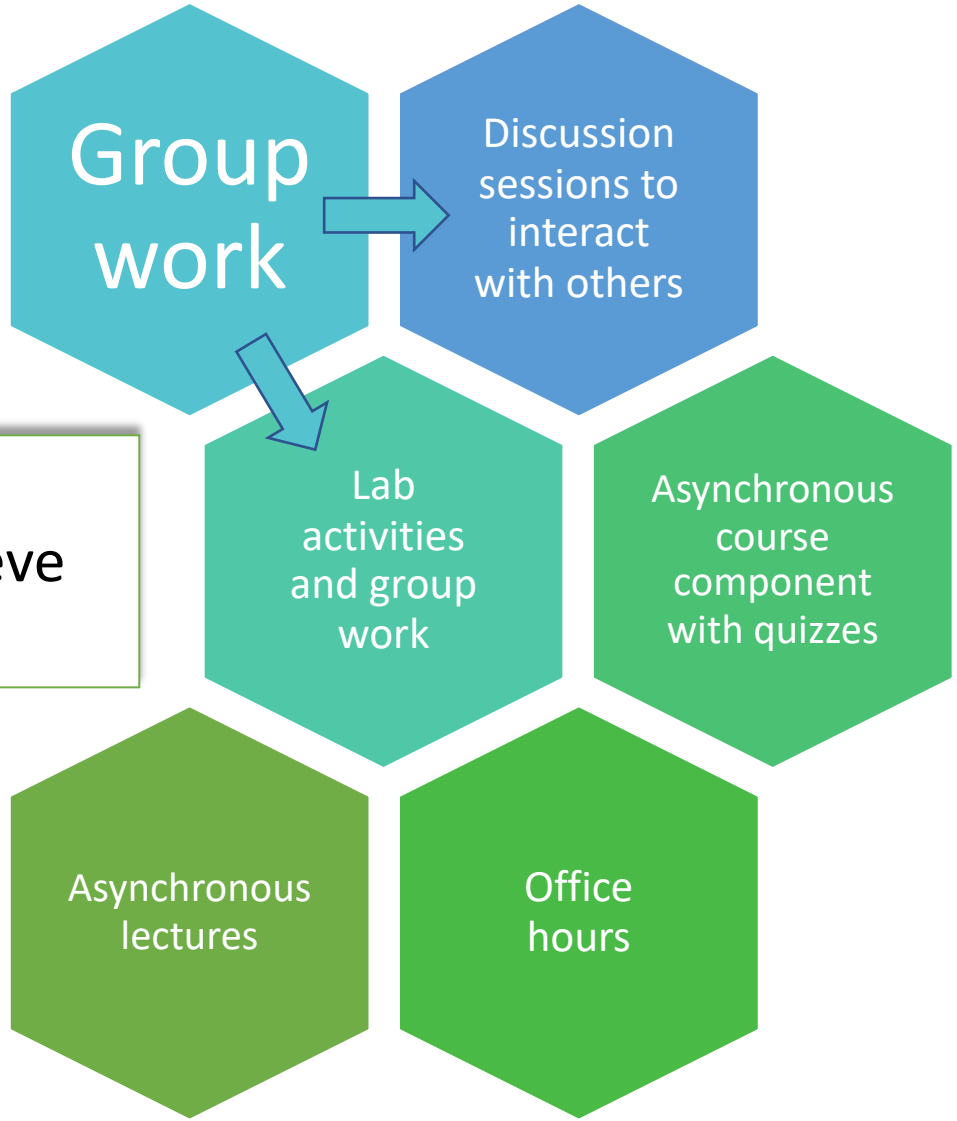
Evaluation Preliminary Report

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.

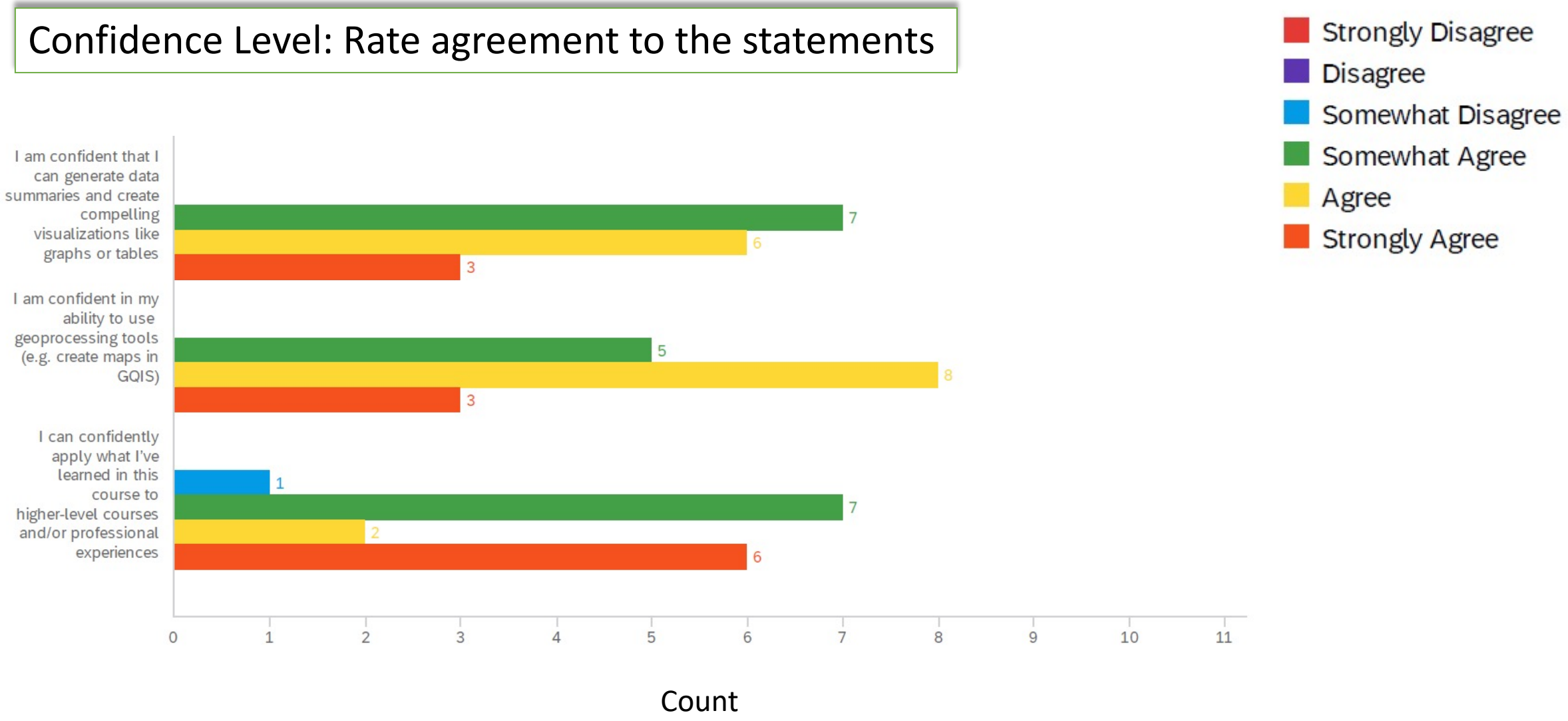
Evaluation Preliminary Report

Effective Course Component to Achieve Learning Goals



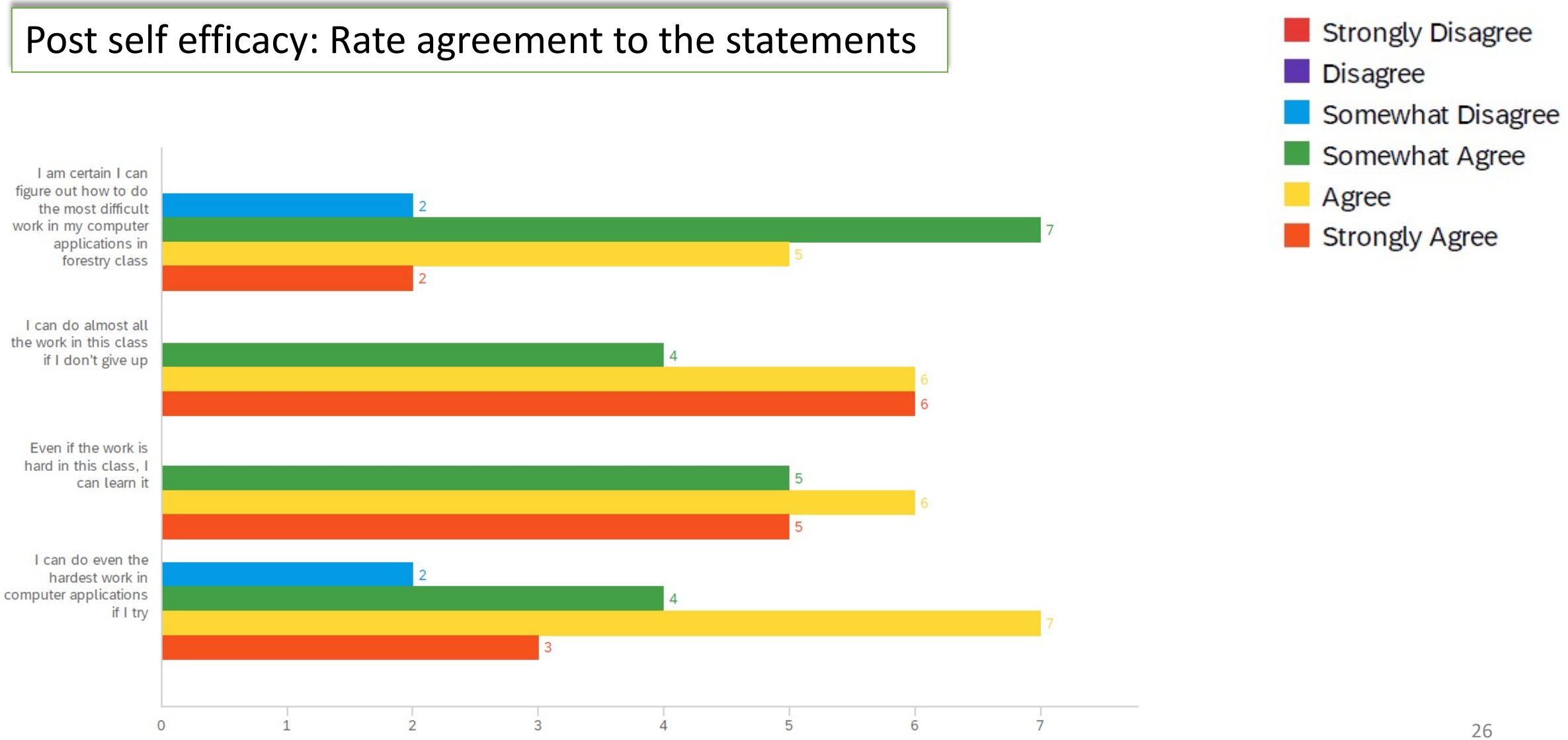
Evaluation Preliminary Report

Confidence Level: Rate agreement to the statements



Evaluation Preliminary Report

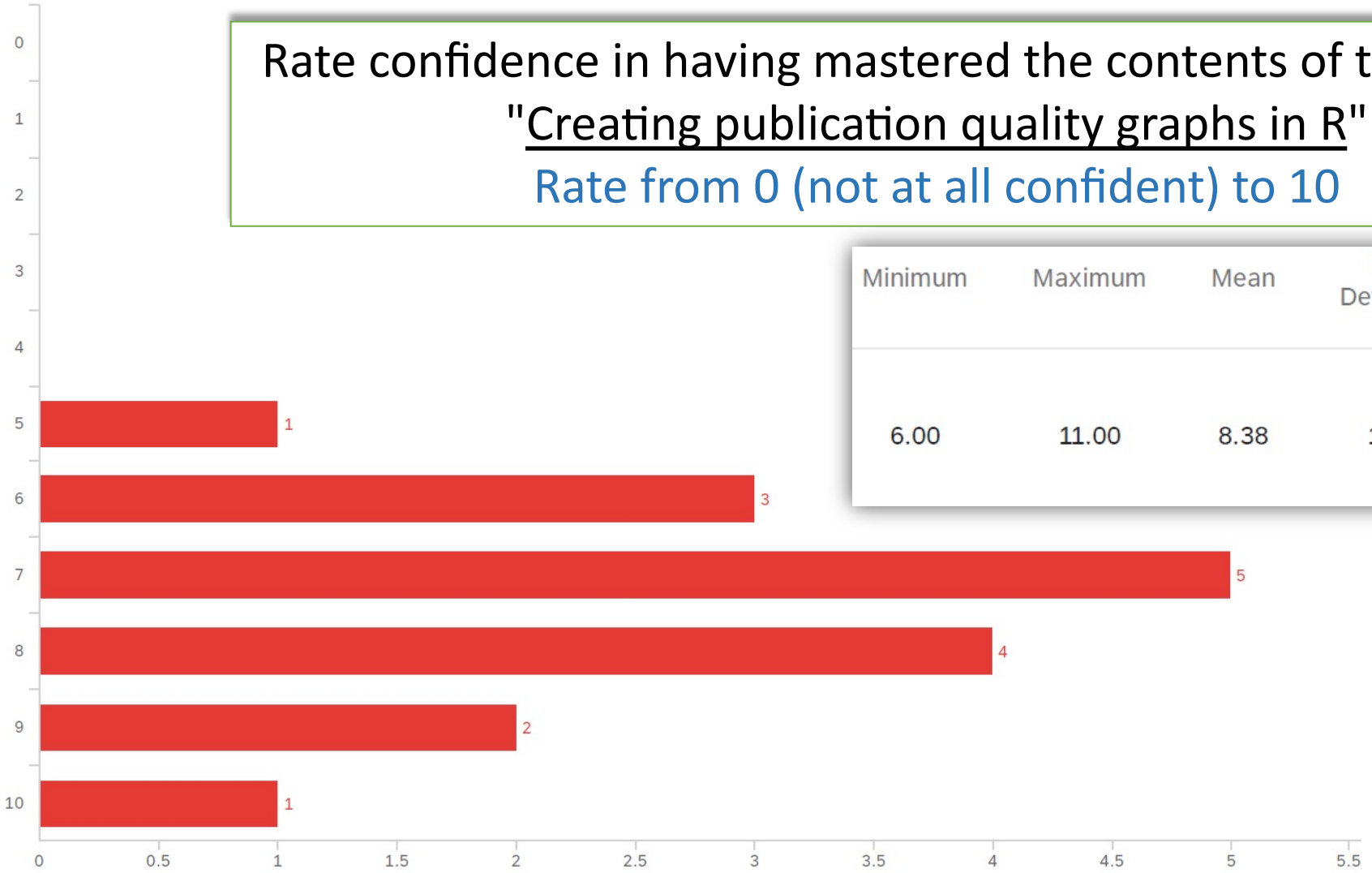
Post self efficacy: Rate agreement to the statements



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

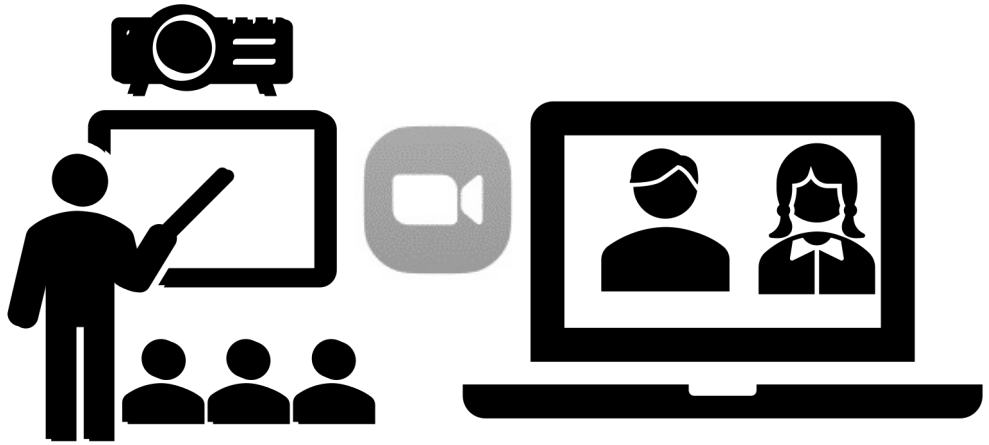
Minimum	Maximum	Mean	Std Deviation	Variance
6.00	11.00	8.38	1.27	1.61



Hybrid Again!!

Fall Session: FRST 232 Section 101

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



Acknowledgements

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Co-Applicants

Dr. Robert Kozak

Dr. Andres Varhola

Project Team Members

Dayana Gabriela Barragan

An Hoang

Vaniartha Vaniartha

Consultation Support

CTLT's Projects and Faculty Partnership Team

Jeff Miller

Nicole Ronan

Dr. Trish Varao-Sousa

Development Stage

An Hoang

Vaniartha Vaniartha

Sydne Guevara Rozo

Chrestecia Djap

Evaluation Team

CTLT's Research and Evaluation team

Dr. Briseno-Garzon, Adriana

Zarah Chaudhary

Dr. Patrick Culbert

Faculty of Forestry, TLS Team

Michelle Zhang

Yangqian Qi

Sally Lim

Juno Kim

Thank You!