Structure of the Focus Group (4 sections):

1) **(5 minutes)** Introduction of R and Shiny

2) **(25 minutes)** Introduction of the Learning Analytics Package and its Shiny Interface

3) **(20 minutes)** User experience evaluation

4) **(10 minutes)** Open questions and suggestions

Objectives of Learning Analytics Package and Dashboard:

1) Understand the items in low-stake online quizzes to improve the design of future quiz items

2) Monitor the performance of the students in different levels: individual, per quiz and per group

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(5 minutes) Introduction of R and Shiny

In this section a brief introduction to R and Shiny will be given. Some of the packages and the basic structure of Shiny will be introduced.

(25 minutes) Introduction of the Learning Analytics Package

In this section, you will be presented with the Learning Analytics Package, the quiz object and the course object will be explained. Also, the tabs in Learning Analytics Dashboard will be explained. For each tab a brief question is asked:

- Do the figures in the **Individual analysis** help you to monitor how an individual students are performing? What else would you like to understand about the student?

- Do the figures in the **Group analysis** help you to monitor how the group is performing? What else would you like to understand about the group?

- Do the figures in the **Quiz analysis** help you to understand the difficulty of the items as well as the required time per quiz? What are the main points that you consider when designing an item of a quiz?

- Does the **Rasch model** help you to understand the easiness-difficulty of your items?

- Do the associated plots to the Rasch model **(ICC, Person-Item, Person-parameter)** gave you actionable information to improve the design of your quizzes?

(20 minutes) User experience evaluation

Now a dataset will be provided and 10 tasks will be given. This section is related to usability, so the central objective is to find if the design is easy to use rather than the interpretation of the plots and data. After completing the tasks a series of affirmations will be given. Please state if you are 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree or 5 = Strongly Agree with these affirmations

Learning Analytics Dashboard

Tasks:

Import quizzes tab

1) Upload the quizzes files
2) Upload the cognitive file and the final exam file
3) Remove the cognitive file and upload it again

Tab	Question	SD	D	N	A	SA
Import Quizzes	It is easy to upload files.	1	2	3	4	5
Import Quizzes	It is easy to remove files.	1	2	3	4	5
Import Quizzes	It is clear when a file is uploaded.	1	2	3	4	5
Import Quizzes	It is clear when a file is removed.	1	2	3	4	5

Display quizzes tab

4) View if the uploaded files are correct
5) Select the Item and the Cognitive level column for the cognitive file.

Tab	Question	SD	D	N	A	SA
Display quizzes	It is clear the format of the quizzes.	1	2	3	4	5
Display quizzes	It is clear how to select the columns of the cognitive file.	1	2	3	4	5

Individual Analysis tab

6) Search one student and view its grades.

Tab	Question	SD	D	N	A	SA
Individual analysis	It is easy to search for an student email.	1	2	3	4	5
Individual analysis	It is easy to visualize which quiz is displayed in the plot.	1	2	3	4	5
Individual analysis	The plot is easy to read.	1	2	3	4	5

Group Analysis tab

7) Select one quiz and view the guessers and order plot

Tab	Question	SD	D	N	A	SA
Group analysis	It is easy to visualize which quiz is displayed in the plot.	1	2	3	4	5
Group analysis	It is easy to identify possible guessing or cheating misconducts.	1	2	3	4	5
Group analysis	It is easy to understand the relation of time per question versus the grade.	1	2	3	4	5

Quiz Analysis tab

8) Observe the histogram and boxplot.
9) Observe the ET and ETL plot. Do you see some pattern with the cognitive level?

Tab	Question	SD	D	N	A	SA
Quiz analysis	It is easy to visualize which quiz is displayed in the plot.	1	2	3	4	5
Quiz analysis	It is easy to interpret the histogram and boxplot.	1	2	3	4	5
Quiz analysis	The ET and ETL plots are easy to interpret.	1	2	3	4	5

eRm package tab

10) Select one file and view the ICC, the person-item map and the person parameters plot.

Tab	Question	SD	D	N	A	SA
eRm package	The Item Characteristic Curve is easily understandable.	1	2	3	4	5
eRm package	The person-item plot is easily understandable.	1	2	3	4	5
eRm package	The person parameters are easily understandable	1	2	3	4	5

Learning Analytics Dashboard

Now please evaluate the following general affirmations (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree or 5 = Strongly Agree)

Tab	Question	SD	D	N	A	SA
General questions	In general the models agree with the general objectives	1	2	3	4	5
General questions	In general it is easy to use the buttons.	1	2	3	4	5
General questions	In general it is easy to navigate between tabs.	1	2	3	4	5
General questions	In general the colors of the dashboard are adequate.	1	2	3	4	5
General questions	In general the instructions are clear.	1	2	3	4	5

(10 minutes) Open questions and suggestions