

# A collaboration model for the training of in-service secondary mathematics teachers

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## Training program

Master degree

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## Training program

- ▶ A Master's Degree in Mathematics Education at the Universidad de los Andes, Colombia
- ▶ It is designed to deepen the pedagogical content knowledge of in-service secondary mathematics teachers for planning, implementing and evaluating their maths lessons

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## Organization of academic activities

- ▶ The students are organised in groups of three or four people
- ▶ Each group works on a topic of school maths
- ▶ Each group analyses the topic it has chosen, produces a curricular design, implements it in the classroom, evaluates the implementation and then revises the design
- ▶ Each group is supported throughout the two years of the program by a mentor

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## Training program

Planning

Implementing

Evaluating

New Design

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# Training program



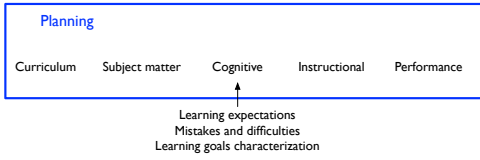
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# Training program



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# Training program



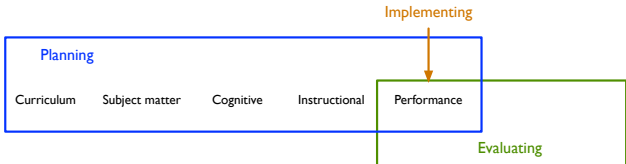
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# Training program



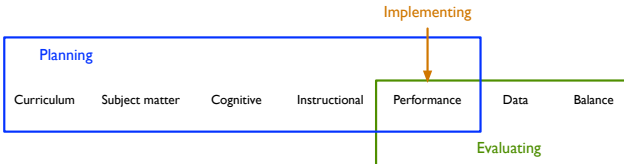
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# Training program



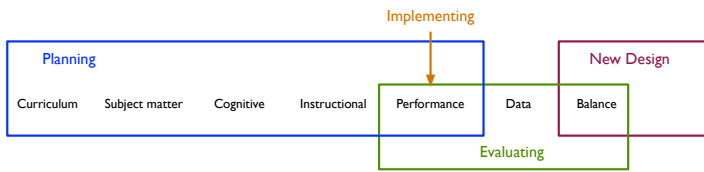
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# Training program



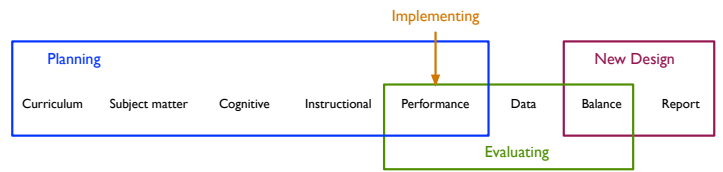
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## Training program



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## Training program



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## Organization of academic activities

## Organization of academic activities

- ▶ Each course consists of four activities
- ▶ Each activity lasts for two weeks and a half

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## Organization of academic activities

Week 1	Week 2	Week 3
Activity n		Activity n+1

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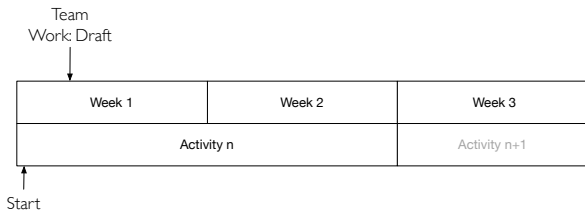
## Organization of academic activities

Week 1	Week 2	Week 3
Activity n		Activity n+1

↑  
Start

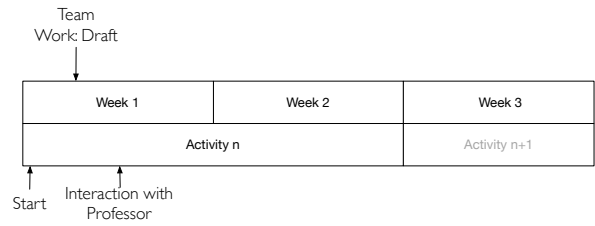
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## Organization of academic activities



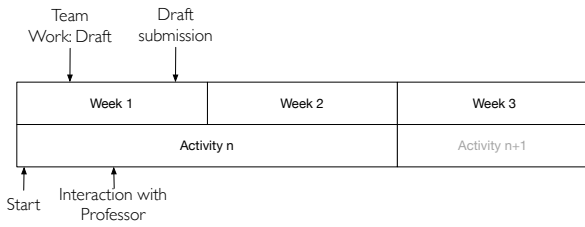
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## Organization of academic activities



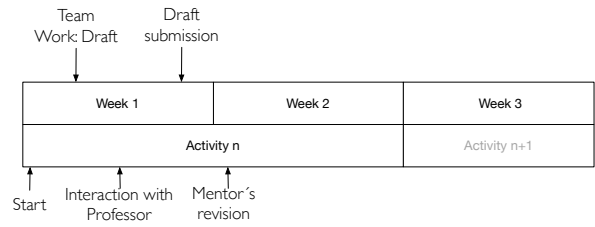
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## Organization of academic activities



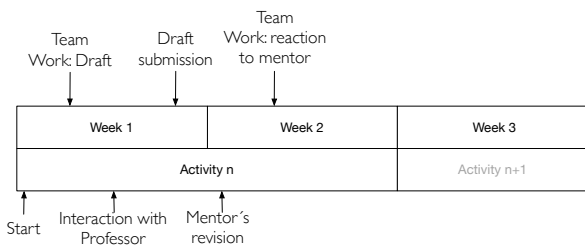
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## Organization of academic activities



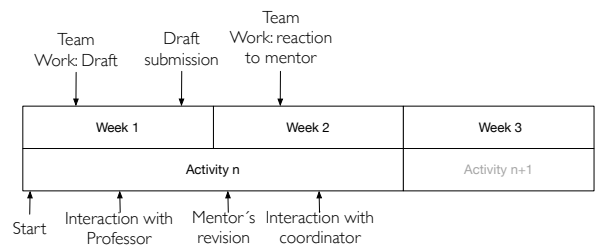
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## Organization of academic activities



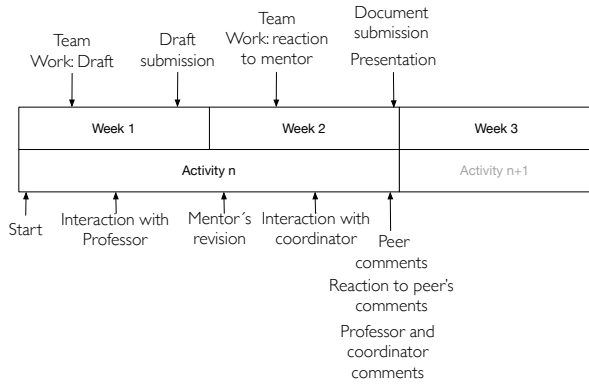
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## Organization of academic activities



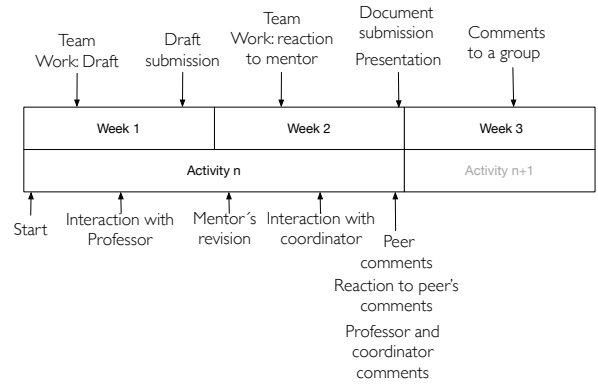
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# Organization of academic activities



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# Organization of academic activities



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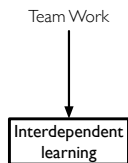
## Interdependent learning in the program

## Interdependent learning

Interdependent learning

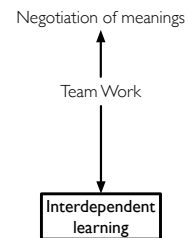
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## Interdependent learning



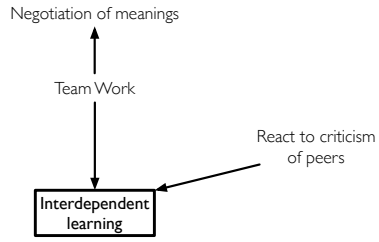
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## Interdependent learning



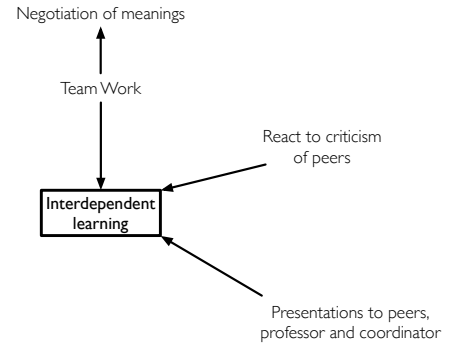
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## Interdependent learning



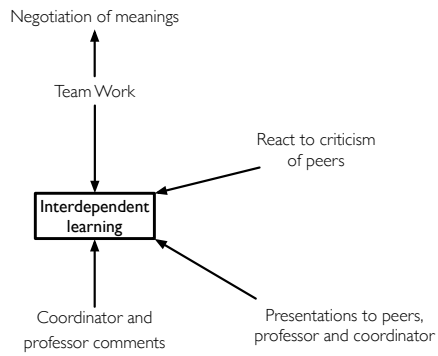
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## Interdependent learning



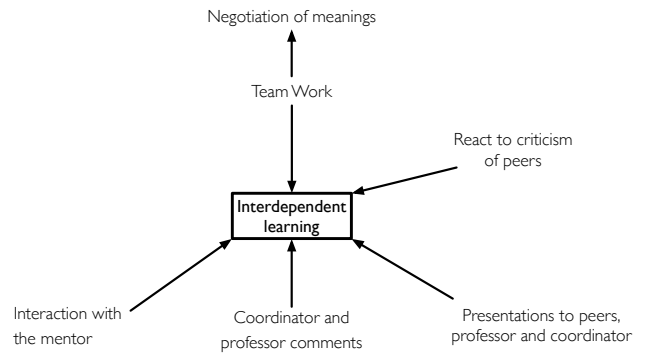
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## Interdependent learning



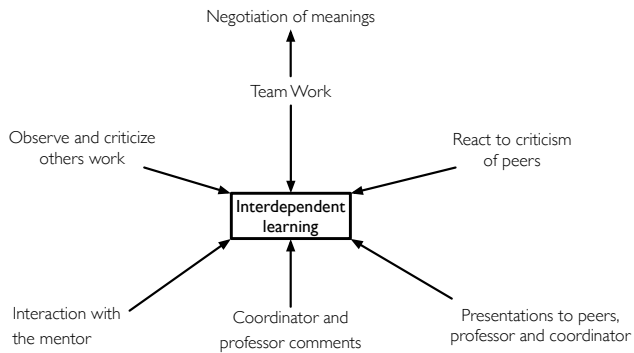
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## Interdependent learning



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## Interdependent learning



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## Research

What effect does the program have on teacher planning practices?

## Research

- ▶ Sample: A group of 23 in-service teachers
- ▶ We identified the curricular planning practices of these teachers through a survey that each teacher answered twice:
  - ▶ When entering the program
  - ▶ When finishing the program
- ▶ The survey asks in-service teachers to describe one of their most recent lessons
- ▶ The survey focuses on facts relating to the in-service teacher's current practice

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## Research

- ▶ We used the t-Student test for paired data to compare the responses of the teachers (exit - entry), to establish whether there are statistically significant differences ( $\alpha = 0.05$ ) and the effect size (Cohen's d)
  - ▶ In the use of curricular documents, we found a positive difference of 12.39 percentage units (P-value= 0.025) and a medium effect (d= 0.55)
  - ▶ Whole planning practices has positive difference of 5.06 percentage units (P-value= 0.01) and with a medium effect (d= 0.46)

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## Conclusions

- ▶ We have described a mathematics teachers' training program that promotes teachers' collaboration in order to contribute to their learning
- ▶ We have shown that teachers improve their planning practices
- ▶ How this type of collaboration enhance teachers' learning and contribute to teachers' practice is still an open question

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## Sponsor

- ▶ This study was carried out with the support of the Retos País Project (Colciencias, Colombia)

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