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ICT-based strategies for teaching and learning (T-L) in lessons and unit plans designed by Colombian teachers in a program of educational innovation

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Outline

1. Research contextualization
2. Methodology
3. Results
4. Conclusions

Colombia: the challenge of improving the quality of education

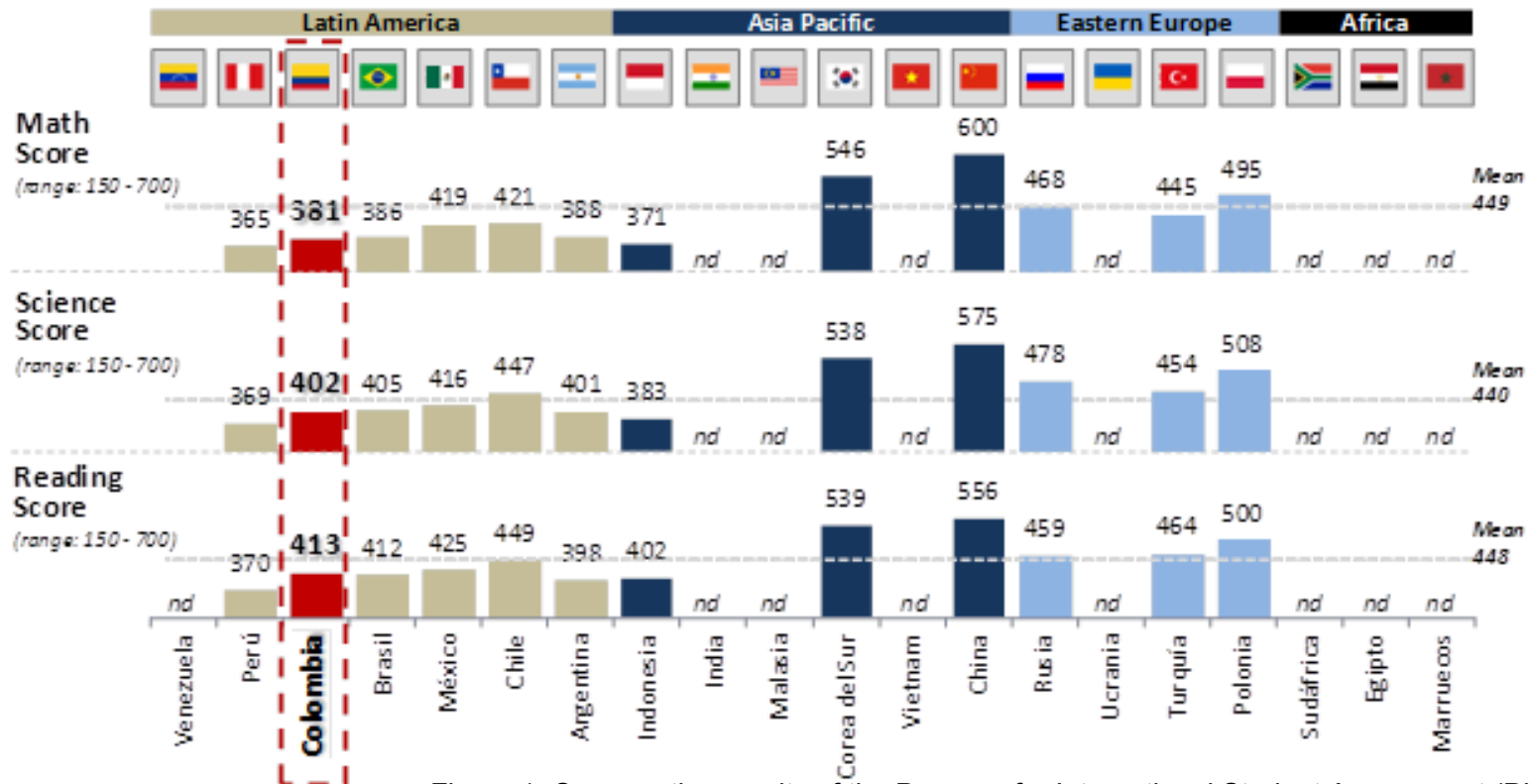


Figure 1. Comparative results of the Program for International Student Assessment (PISA), 2009
 Retrieved from: <https://desarrolloinclusivo.com/2012/05/19/colombian-childhood-1/>

CIER (Center for Regional Educational Innovation): improve the quality of education through the use of Digital Educational Resources

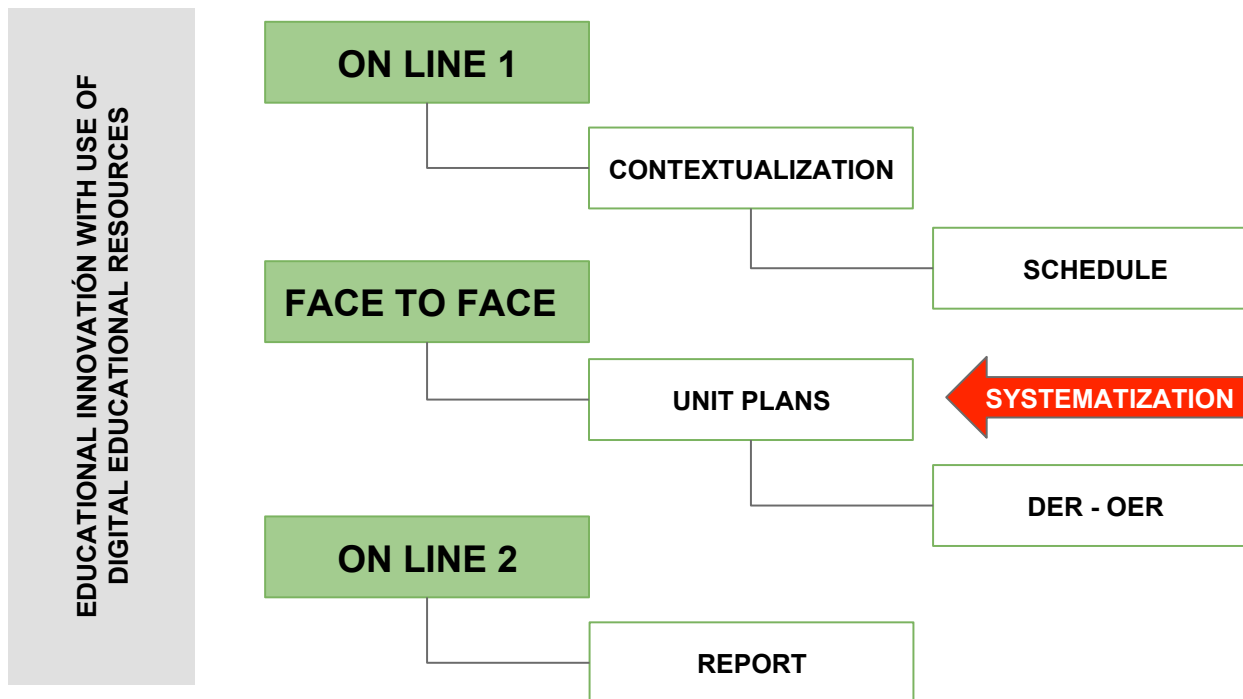


We specialize in training human capital in different levels through courses, modules and diplomas

We design, produce and implement digital contents of high quality in different formats, and develop distribution solutions through technological platforms

We formulate and implement research projects, impact evaluation; we support the construction of development plans and public policies on education and technology

CREATIC: State school teachers B-learning course.



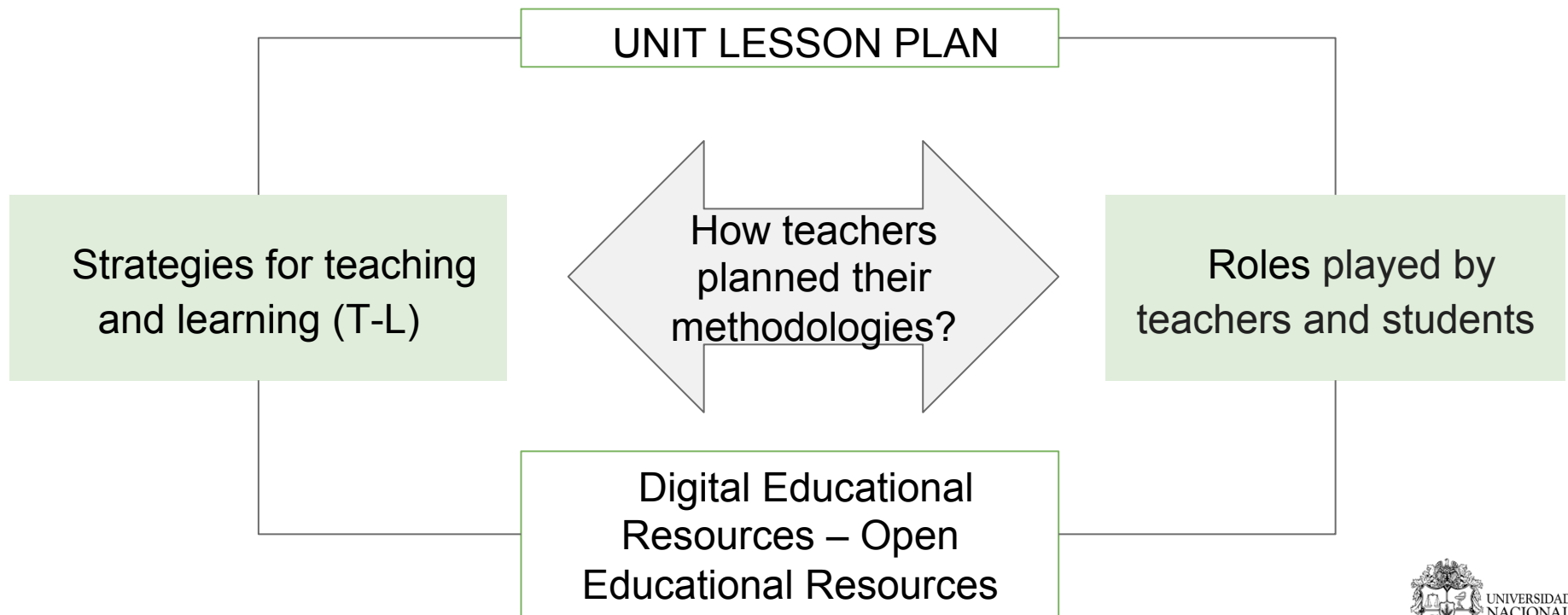
Training goal: 4000 teachers
Teachers registered: 6.146
Teachers certified by the Korean university: 4.548
Goal achieved at June 30, 2015

The illustration shows a teacher in a graduation cap and gown, holding a certificate with a red ribbon seal, symbolizing the completion of the training course.

Problem: the change does not necessarily produce innovation.

Several results suggest that “despite the availability of technological resources has increased in schools... teachers’ pedagogical practice in class does not always modify significantly the traditional teaching method”
(Moreira, M., Gros Salvat, B., & Marzal García-Quismondo, M. 2008) .

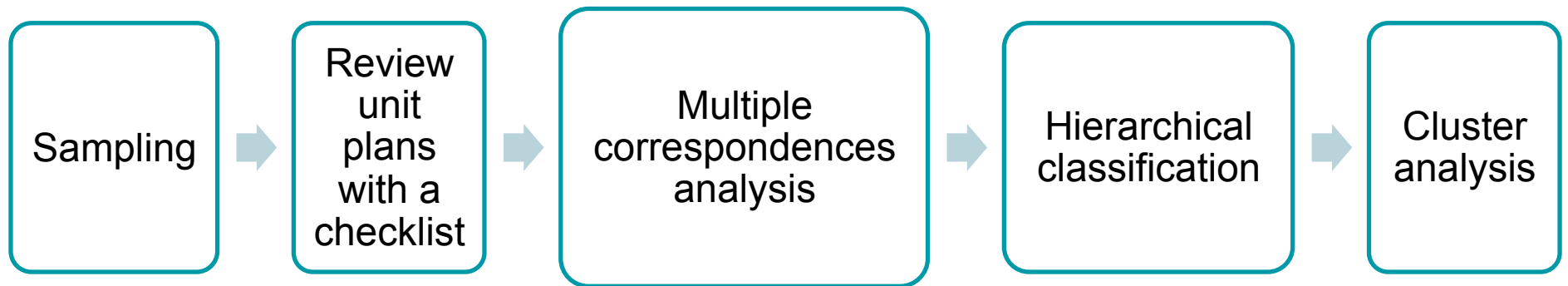
Systematization Axis: Methodologies



Systematization Axis

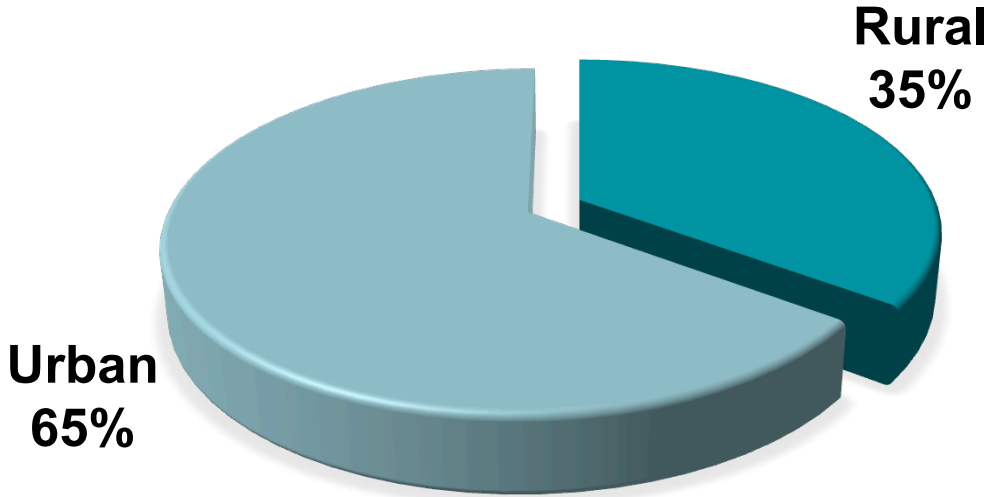
How are the roles of teachers and students articulated in the teaching and learning strategies, in the unit plans that include the use of Digital Educational Resources?

Methodology: the information processing is based on five stages

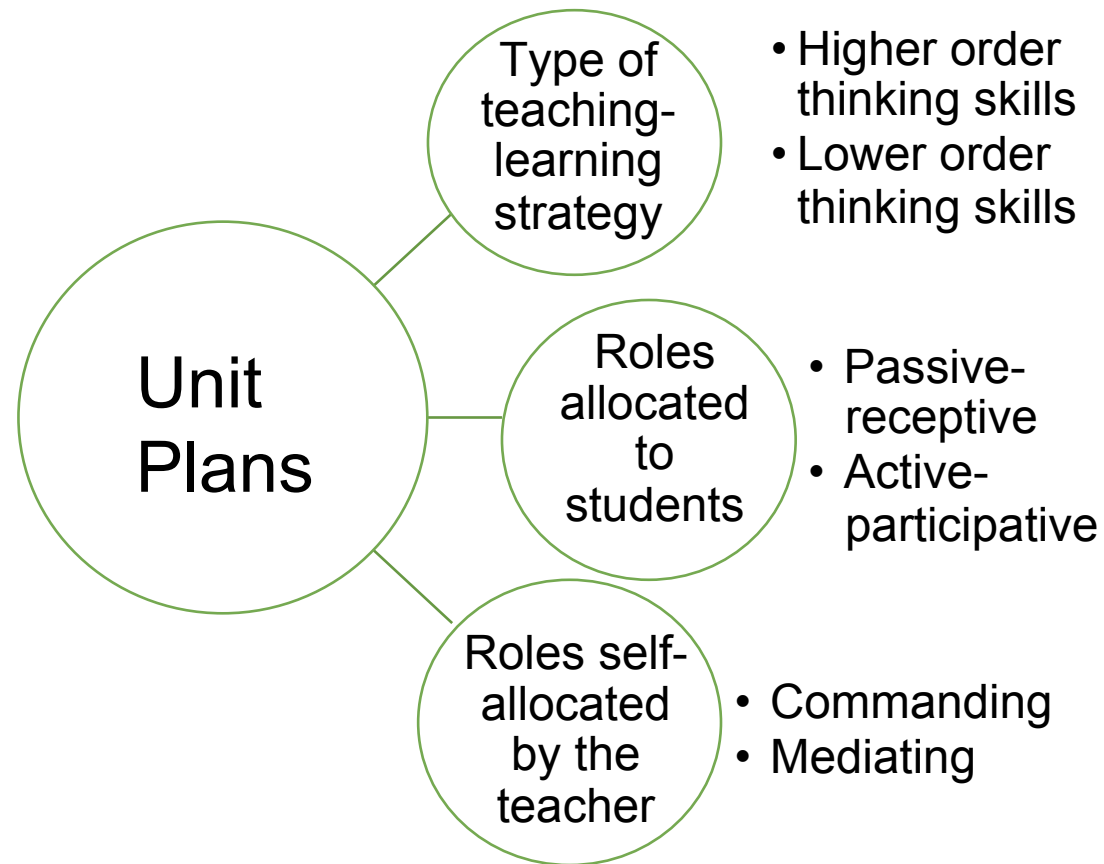


This research analyzed a sample of 538 Unit Plans

Educational Institutions



A checklist was used to collect information



Pedagogical approach: Developing Thinking Skills

Thinking Skills (Marzano's and Kendall's Taxonomy)	
HOTS (Higher-Order Thinking Skills)	Creating Evaluating Analyzing
LOTS (Lower-Order Thinking Skills)	Applying Understanding Remembering

Pedagogical approach: Learning and teaching strategies

Learning and teaching strategies and HOTS (Higher-Order Thinking Skills)

Creative projects,
Structuring information,
Inquiry projects,
Metacognitive.

Communication and
Collaboration Strategies

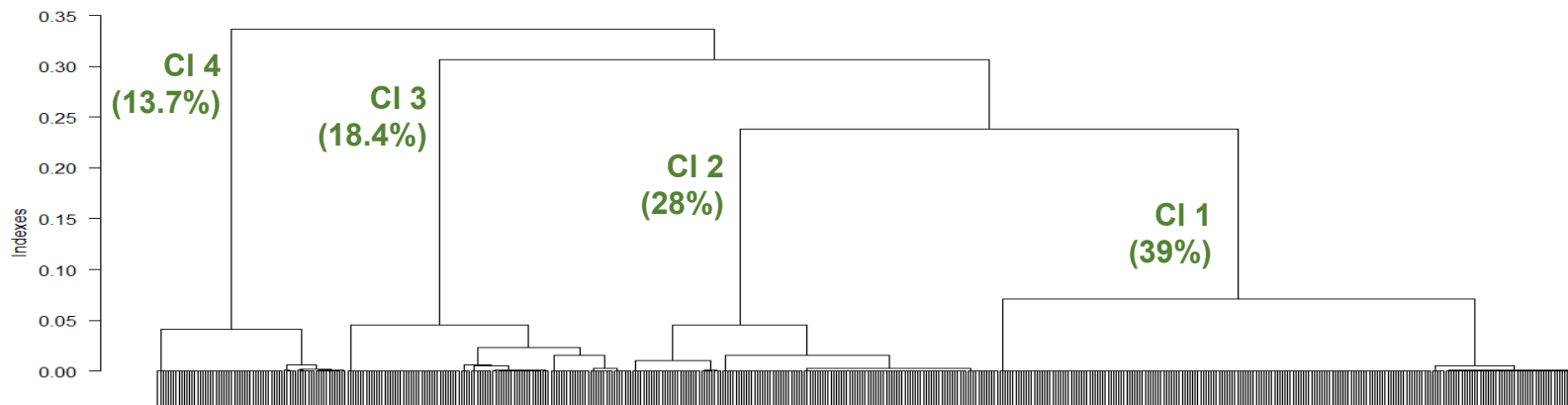
Pedagogical approach: Proactive Student Role

STUDENT ROLE	
Passive or receptive roles	Reproducing and applying the information and practicing skills or recognizing knowledge in hetero-assessment activities.
Participative and proactive roles	Contextualizing learning contents. Searching, selecting and structuring information, creative activities, problem solving. Self and peer assessment of learning

Pedagogical approach: Mediating Teacher Role

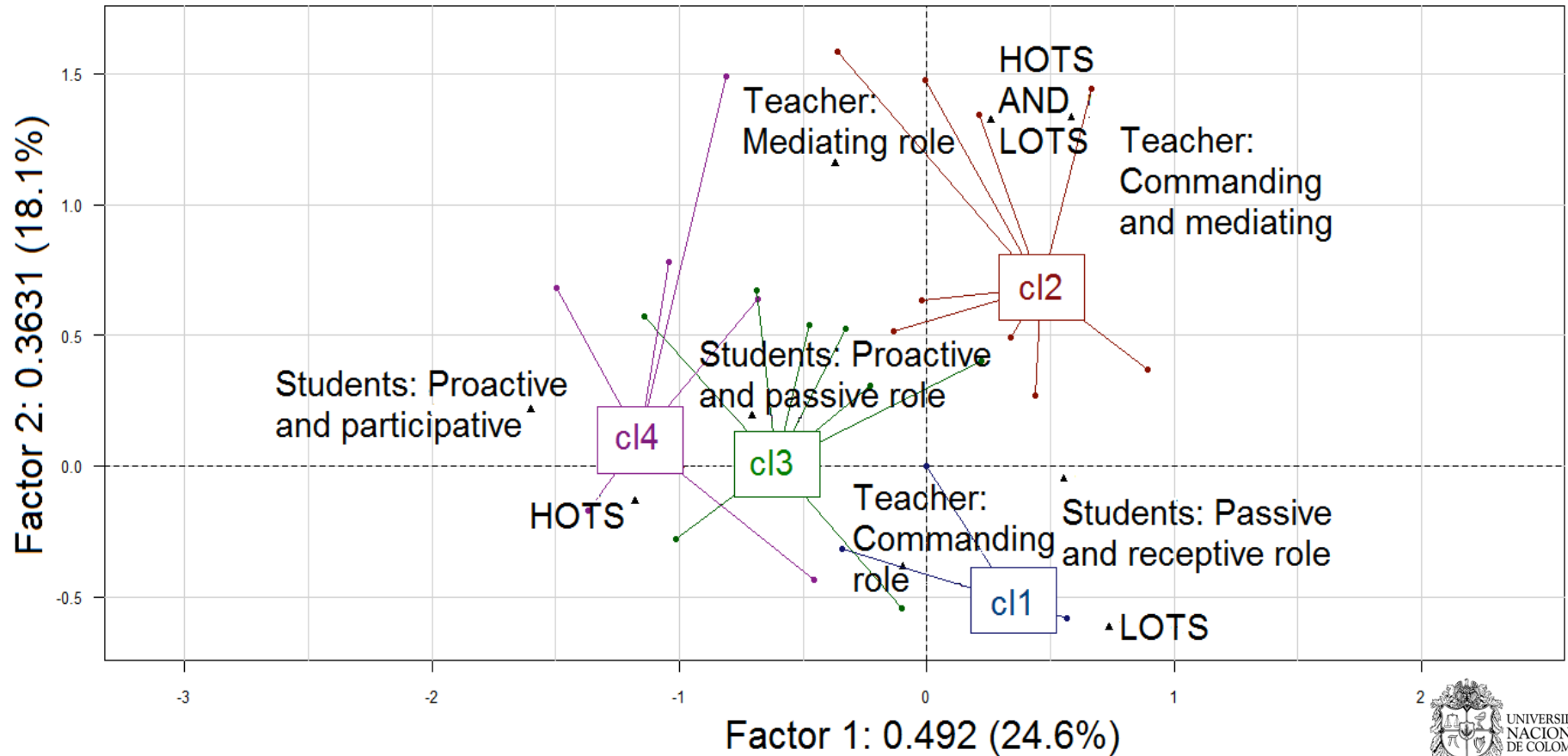
TEACHER ROLE	
Commanding roles	Expositive presentations and learning assessment based on the information.
Mediating roles	Interacting with students through questions, giving the students feedback of their performance in the tasks Helping the students be acquainted with significant resources for their activities

A clustering strategy was employed



Hierarchical classification based on a mixed algorithm, that includes Ward's method and K-means clustering; four classes with the lowest intra-class inertia were identified.

Results: factorial plane shows four clusters



		Class 1: Teachers do not encourage the students to cooperate/ collaborate	Class 2: Tendency for information structuring	Class 3: There is a higher participation, communication and collaboration	Class 4: The students plan, explain and predict through a work (using ICT)
Students	Passive-receptive	X	X	X	
	Proactive			X	X
Teachers	Commanding	X	X		X
	Mediating		X	X	
Thinking skills	Higher order		X	X	X
	Lower order	X	X		

Discussion

- We confirmed the initial conclusions that emphasize on the small impact when including ICT in innovation processes within teaching practices
- Only when a leading role is allocated to the student, a work purposely directed towards their HOTS, is produced
- Learning how to use ICT strengthen the traditional dynamics performed by teachers, and their avoidance to use this kind of resources

Conclusions and recommendations

- The conclusions of this study reinforce the need to strengthen the pedagogical component of the teachers training programs on the use of ICT.
- Regarding these results, it can be addressed that teachers start changing the methodology by blending traditional strategies.
- The results suggest the teachers that change significantly their own role and the role played by the students, favoring HOTS, are teachers that include digital educational resources

Thanks!

Questions?

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