

KOREA NATIONAL UNIVERSITY OF EDUCATION

Colombian and Korean Teachers' Self-Efficacy and Digital Competencies: The Current Status and Changes from TALIS 2018

콜롬비아와 한국 교사의 자기 효능감 및 디지털 역량: TALIS 2018 현황 및 변경사항

Andry Bustamante

Master in Global Education Leadership

Advised by PhD. Yoo Jin Eun

Overview

In the equation for an effective and quality education, students are important, but also teachers are.

- PISA exam shows the performance of students globally in specific areas.

	Colombia	South Korea
Reading	412	514
Math	391	526
Sciences	413	519

Better results in Korea than in Colombia (OECD, 2018a)

- Teaching and Learning International Survey (TALIS): Questionnaire developed to understand the learning practices and learning environments from the point of view of educators (OECD, 2018)

Indicator	Colombia (%)	Korea (%)
Teachers feeling prepared to manage the classroom	77.3	56.4
Teachers feeling prepared for the use of ICT for teaching	58.6	48.0
Teachers feeling prepared to teach in multicultural settings	29.8	24.4
Teachers feeling prepared to teach in mixed-ability settings	53.5	49.6

Definition of Terms

Teacher Self Efficacy is the confidence or the capacity to reach their goals and improve student's learning through the implementation of different effective strategies.

Teacher Digital Competencies is the set of capacities, abilities, knowledge, or skills that teachers possess to solve educational problems by integrating ICT. At the same time, empowers the teacher for the use of the ICT not only as support for their existing practices but also to transform them.

Hypothesis



Hypothesis 1

There is a statistically significant relationship between teachers' sociodemographic variables, background, TDC, and TSE in Colombian and Korean teachers.



Hypothesis 2

There are differences in terms of TSE and TDC between Colombian and Korean teachers.

Significance

[Back to Overview](#)



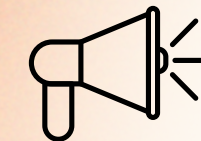
Torres-Hernández & Gallego-Arrufat, 2022

TDC is a topic that has been gaining importance because of the emerging use of ICT in the classroom, but, there is still too much to research in the field of DC, especially from the role of teachers.



International Relevance

This study addresses issues that are internationally relevant in the attempt to understand the relationship between TDC and TSE in two countries with different advances related to technological development and different access to ICT such as South Korea and Colombia.



(Mojavezi & Tamiz, 2012)

Provide a general profile about the impact of TDC and other variables like the sociodemographic and professional background in relation to the levels of TSE since this is an important predictor of students' achievement and motivation.

Data Collection Methods

TALIS - OECD
18 questions to measure TSE

Sociodemographic and
background questions

Digcompedu - EC
13 questions to measure TDC

Model fits indices and invariance tests (OECD, 2019b)					Panel of Experts (Cabero–Almenara & Palacios–Rodríguez, 2020) Full instrument α = .934 (Ghomi & Redecker, 2019)	
	SE classroom management	SE instruction	SE student engagement	TSE, composite		
Colombia	.812	.771	.774	.902	Professional Engagement	.779
					Teaching and Learning	.798
Korea	.884	.874	.801	.941	Facilitating Learners' Digital Competence	.823

PARTICIPANTS TALIS 2018

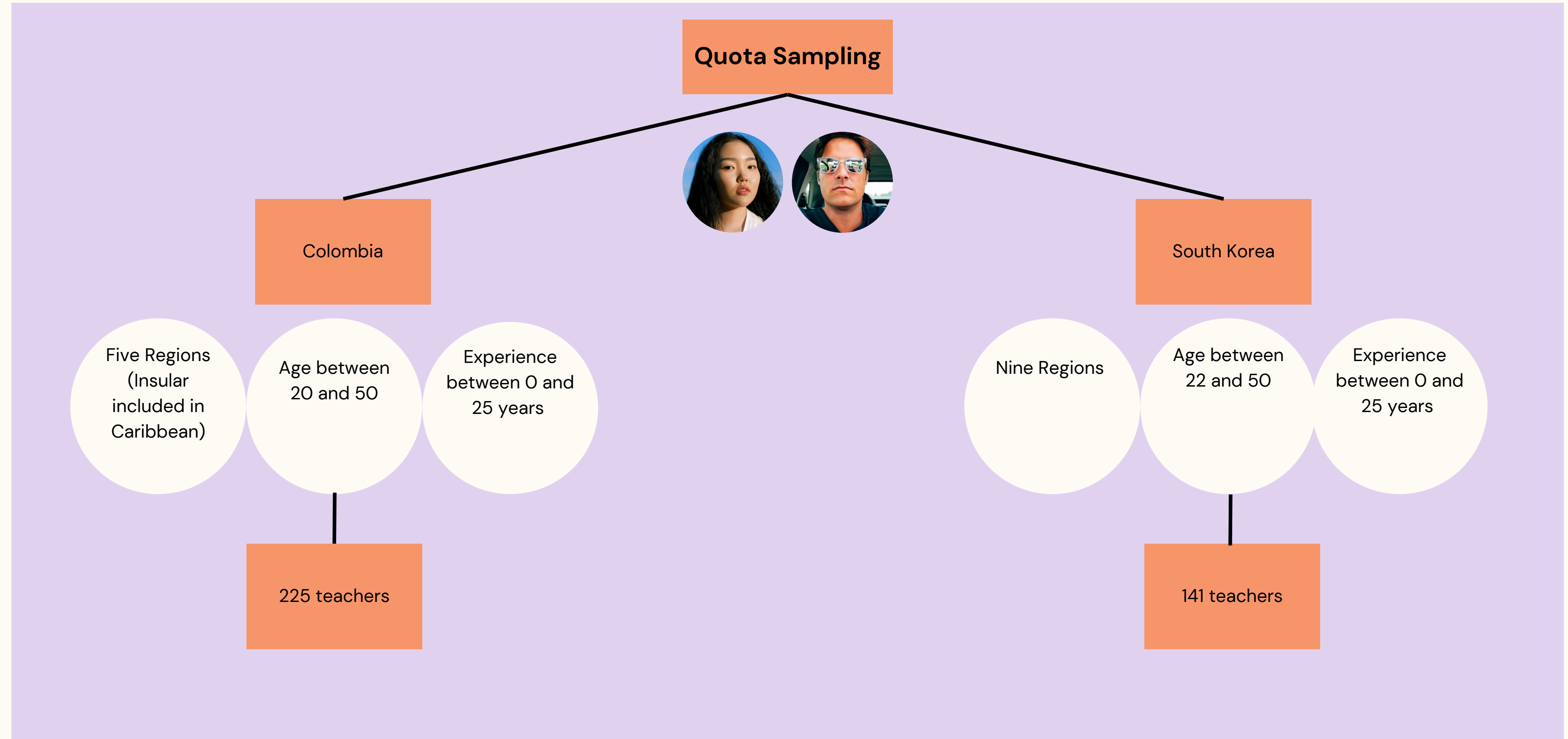
Colombian Teachers

- 2500 teachers from 157 schools

Korean Teachers

- 3029 teachers of Junior High Schools

Participants





Data Analysis Methods

For Question 1:

- Multiple regression analysis (analyze the relationship between a single dependent variable and several independent variables)

For Question 2:

- t test (compare the means of two groups)

Ethical Considerations

- Voluntary participation.
- Consent Agreement.
- Personal Data is not collected.
- Approved by the Institutional Review Board from KNUE

Results

Table 2. Mean and Independent Samples Test for Colombian and Korean teachers TALIS 2018

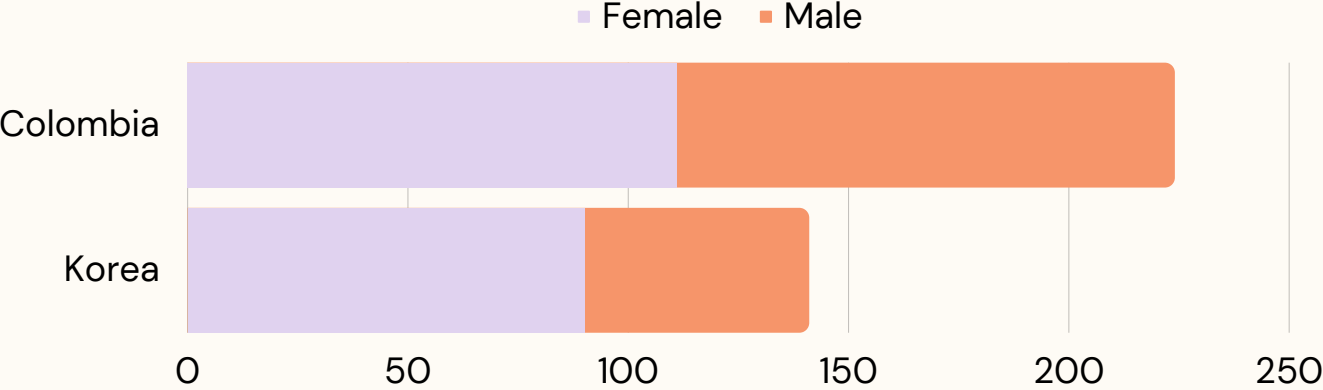
	Country	M	SD	SE Mean	t-test for Equality of Means				
					df	t	p	Mean Difference	SE Difference
Student	Korea	3.07	.58	.01	5042	43.15	.00	.60	.01
Engagement	Colombia	3.67	.42	.01					
Instruction	Korea	3.14	.56	.01	4956	43.02	.00	.57	.01
	Colombia	3.71	.39	.08					
Classroom	Korea	3.09	.60	.01	4872	46.43	.00	.65	.01
Management	Colombia	3.73	.39	.01					
Multicultural	Korea	2.40	.65	.02	1298	36.48	.00	1.09	.03
Classrooms	Colombia	3.49	.52	.02					
ICT	Korea	2.94	.78	.02	4687	10.30	.00	.24	.02
	Colombia	3.18	.87	.02					
TSE General	Korea	3.09	.53	.01	4874	47.21	.00	.58	.01
	Colombia	3.66	.34	.01					

*Listwise deletion done before analysis and unequal variances for all the scales, *df* were adjusted.

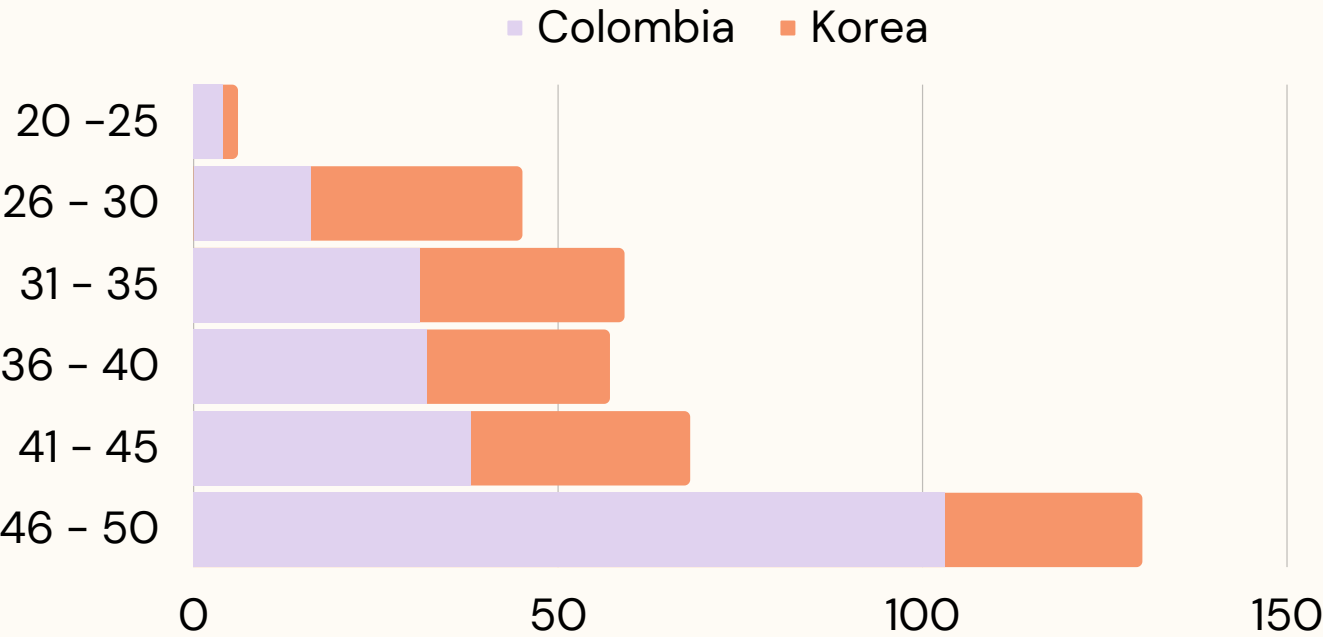
- Colombian teachers got higher scores compared to Korean teachers, and these differences were significative for each subscale.
- The smallest mean difference was related to the question about TSE in ICT.

Sociodemographic Information

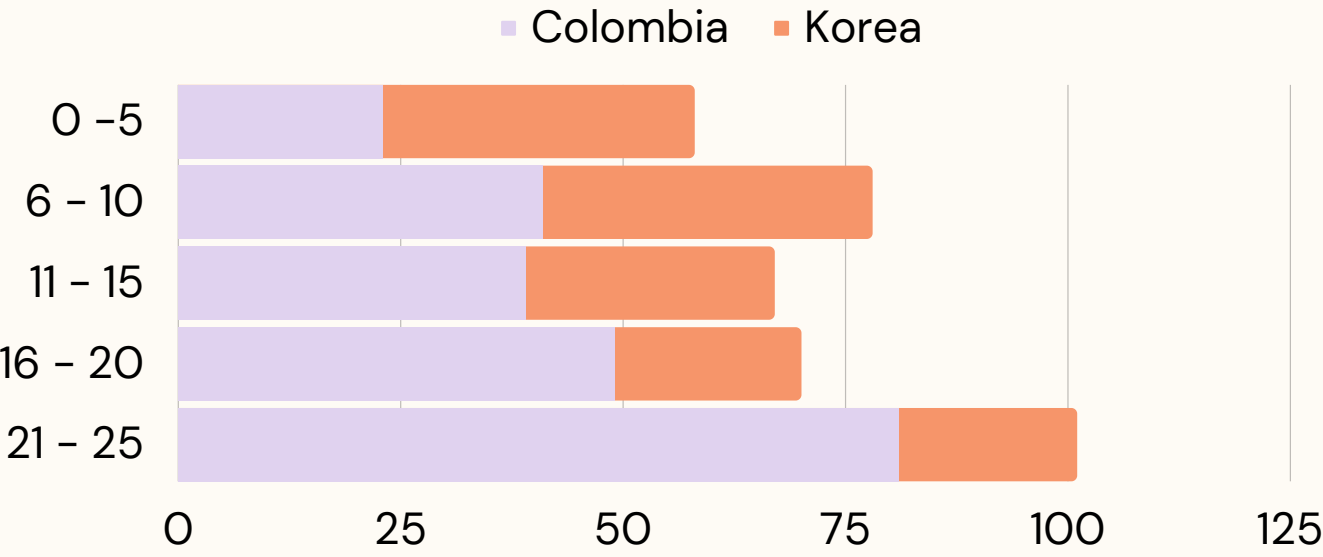
Gender



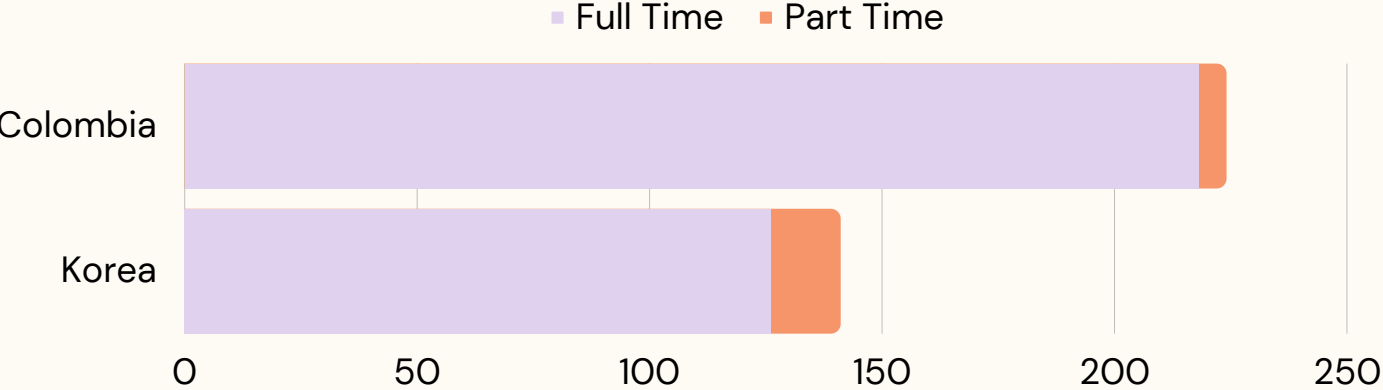
Age



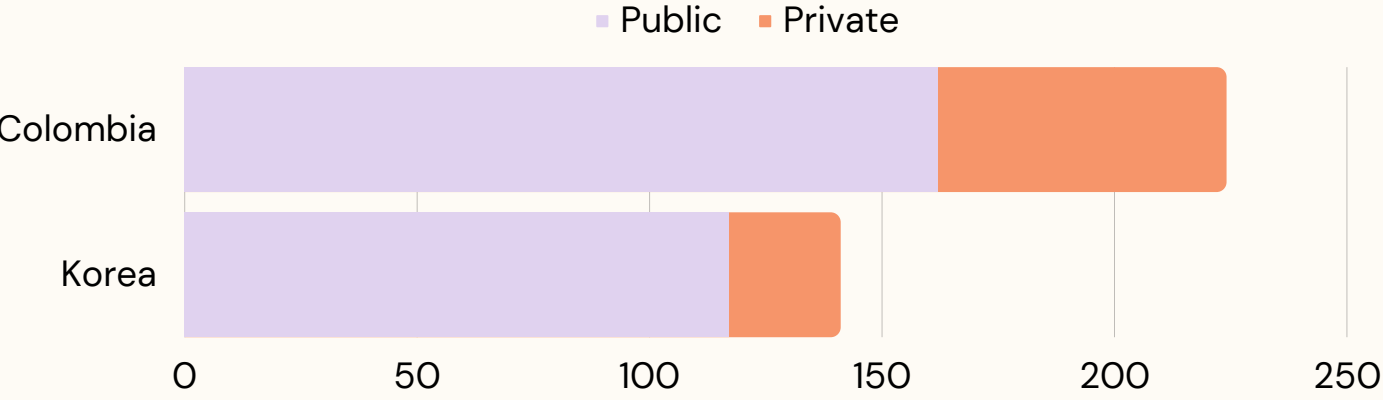
Professional Experience



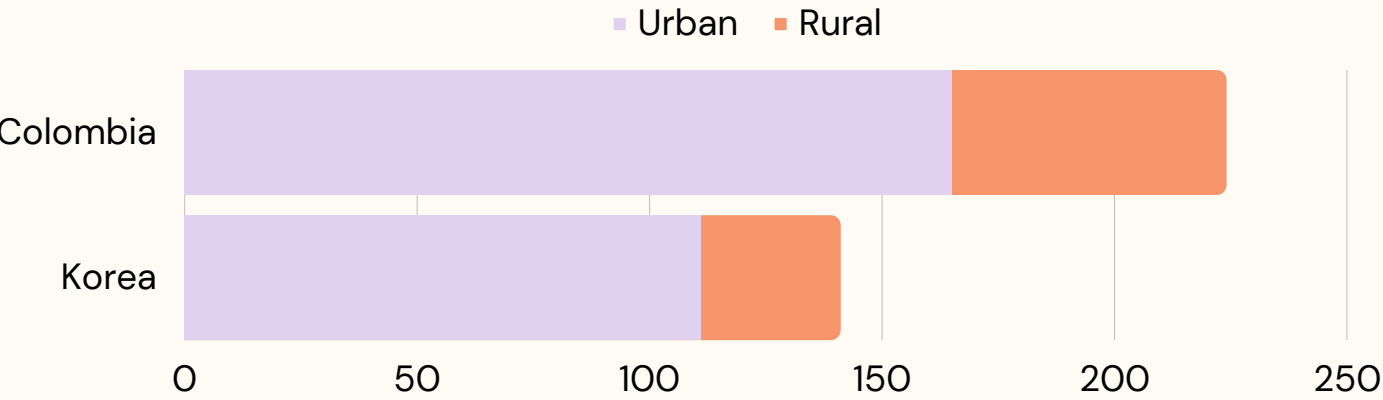
Type of Contract



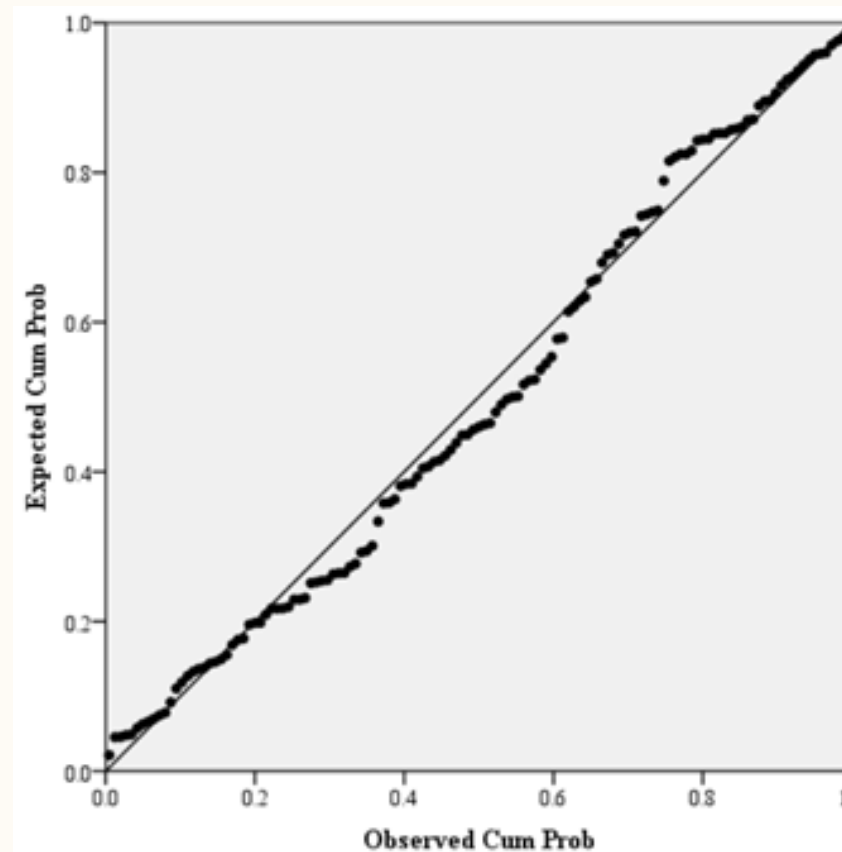
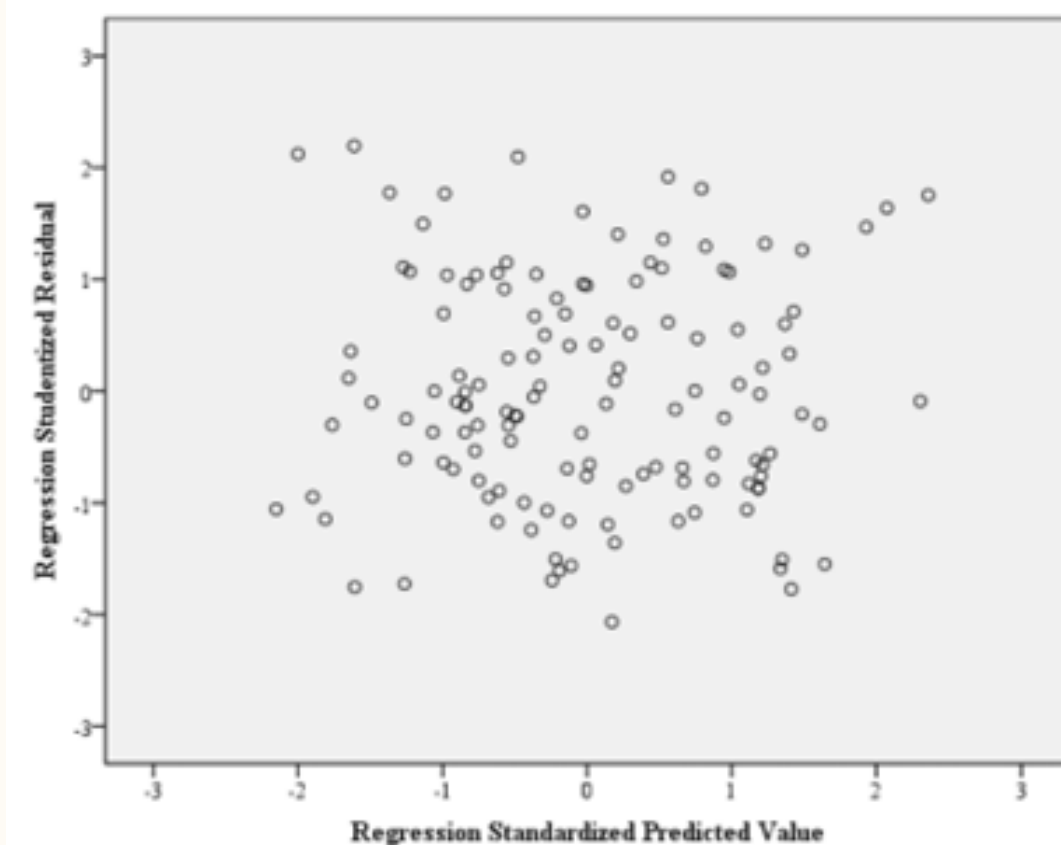
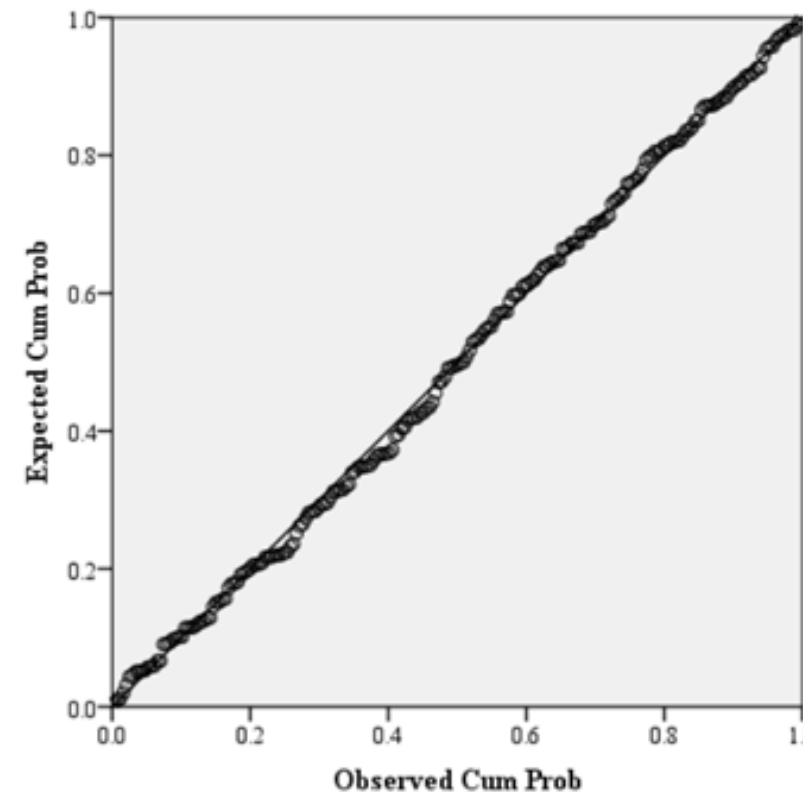
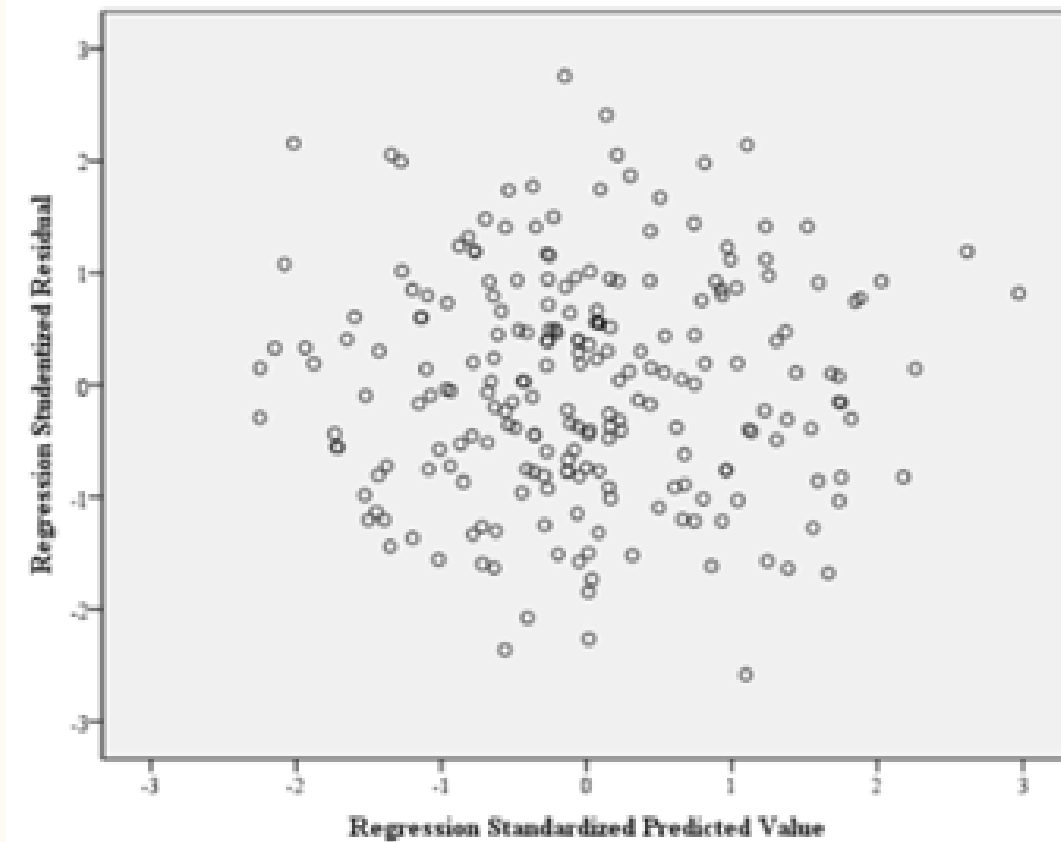
School Type



Zone



Analysis Assumptions H1



Cronbach's alpha

For the 18 items (α between .87 to .89 per item) related to TSE ($\alpha=.88$), and for the 13 items (α between .89 to .91 per item) related to TDC ($\alpha=.91$).

Collinearity

VIF Colombia between 1.04 and 3.24 for all the variables.

VIF Korea between 1.01 and 3.41, and all tolerance values for both samples were above 0.31

Homocedasticity and normality of the distribution

Demonstrated with the figures:
scatterplot of standardised predicted values

P-P plot of standardized residuals

Equation Model for H1

Dependent Variable: TDC

Independent variables: Teacher Self-Efficacy (TSE), Gender (G), Age (A), years of professional experience (P), school location (L), type of school (T), ε represents the error of the model.

$$Y = \beta_0 + \beta_{10}(TSE) + \beta_{11}(G) + \beta_{12}(A) + \beta_{13}(P) + \beta_{14}(L) + \beta_{15}(T) + \varepsilon$$

Colombian sample

$$Y = \beta_0 + \beta_{20}(TSE) + \beta_{21}(G) + \beta_{22}(A) + \beta_{23}(P) + \beta_{24}(L) + \beta_{25}(T) + \beta_{26}(R) + \varepsilon$$

Korean Sample

Region (R)

Results for Colombian Teachers

Table 3. Multiple Regression Analysis for TDC in Colombian Sample

Model	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	B	Std. Error	B		
(Constant)	.90	.47		1.91	.06
TSE	.45	.13	.22	3.54	.00
Gender	.27	.09	.19	3.02	.00
Age	-.04	.06	-.08	-.75	.45
Professional Experience	.12	.06	.23	2.11	.04
School Type	.46	.10	.29	4.48	.00
Zone	.20	.10	.13	1.96	.05

Predictors explained 24.8% of the variance ($R^2=.24$, $F(6,211)=10.95$, $p<.001$).

TSE, gender, professional experience, school type, and zone significantly predicted TDC

Age was the only non-significant

Results for Korean Teachers

Table 4. Multiple Regression Analysis for TDC in Korean Sample

Model	Unstandardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	B		
(Constant)	.37	.45		.81	.41
TSE	.78	.14	.46	5.69	.00
Gender	.04	.14	.03	.30	.76
Age	.09	.07	.16	1.25	.21
Region2	-.09	.26	-.03	-.34	.74
Region3	.06	.23	.02	.26	.80
Region4	.34	.20	.15	1.69	.09
Region5	-.18	.19	-.09	-.98	.32
Region6	.18	.44	.03	.40	.69
Region7	-.20	.39	-.04	-.51	.61
Region8	-.10	.44	-.02	-.22	.83
Region9	-.04	.22	-.01	-.16	.87
Professional Experience	-.01	.08	-.02	-.17	.86
School Type	.04	.19	.02	.19	.85
Zone	.04	.16	.02	.29	.78

Predictors explained 27% of the variance ($R^2=.27$, $F(7,136)=6.56$, $p<.001$).

Only TSE significantly predicted TDC

Mean Analysis H2

For the highlighted subscales and scales, there are statistical significant differences in the scores between Korean and Colombian teachers.

- Colombian teachers have higher levels of Self-Efficacy compared to Korean teachers, also in each subscale, but for ICT this differences is not significative.
- Regarding TDC, Colombian teachers have higher levels of Professional engagement compared to Korean teachers.

There were unequal variances for some scales, df were adjusted.

Table 5. Independent Samples Test for Colombian and Korean Sample of Teachers

					t-test for Equality of Means				
		<i>M</i>	<i>SD</i>	SE				Mean	SE
				Mean	<i>t</i>	<i>df</i>	<i>p</i>	Difference	Difference
TDC									
Professional	Korea	2.87	.96	.08	-2.88	256.66	.00	-.28	.10
Engagement	Colombia	3.15	.79	.80					
Teaching and Learning	Korea	3.24	.93	.93	.28	363	.78	.03	.10
	Colombia	3.21	.97	.97					
Learners DC	Korea	3.10	.77	.77	1.10	326.94	.27	.10	.09
	Colombia	3.00	.88	.88					
TDC General	Korea	3.07	.80	.80	-.62	363	.53	-.05	.08
	Colombia	3.12	.77	.77					
TSE									
Class	Korea	3.05	.53	.53	-9.59	363	.00	-.51	.05
Management	Colombia	3.56	.47	.47					
Instruction	Korea	3.21	.56	.56	-7.77	223.97	.00	-.42	.05
	Colombia	3.62	.47	.39					
Student	Korea	2.97	.57	.58	-8.51	246.08	.00	-.48	.06
	Engagement	Colombia	3.46	.45					
Multicultural Classroom	Korea	2.62	.66	.66	-12.20	253.30	.00	-.81	.07
	Colombia	3.42	.54	.54					
ICT	Korea	3.21	.85	.85	-1.77	362	.08	-.15	.09
	Colombia	3.37	.76	.76					
TSE General	Korea	2.96	.47	.47	-11.93	238.10	.00	-.55	.05
	Colombia	3.50	.35	.35					

Discussion Hypothesis 1



For Korean Teachers

Statistically significant relationship between TSE and TDC



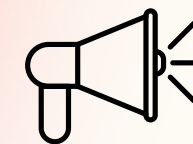
For Colombian Teachers

TDC is higher for male teachers, teachers that work in private schools and in urban areas, rural areas face problems to improve in TDC.



For Colombian Teachers

Higher levels of TSE related with a higher perception of TDC, years of professional experience related with a higher perception of TDC.



Teaching Profession

Quality of teaching differentiated by country, since there are many variables that affects colombian teachers' competencies but not for the Korean case.

Discussion Hypothesis 2



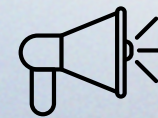
Results in line with TALIS 2018

Same patron, Colombian teachers have higher levels of TSE as in the general scale as in the subscales.



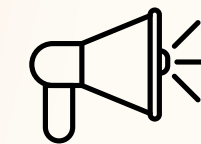
For Colombian Teachers

“Instruction” as the highest score, in second place is “class management” and in third place “student engagement”.



For Korean Teachers

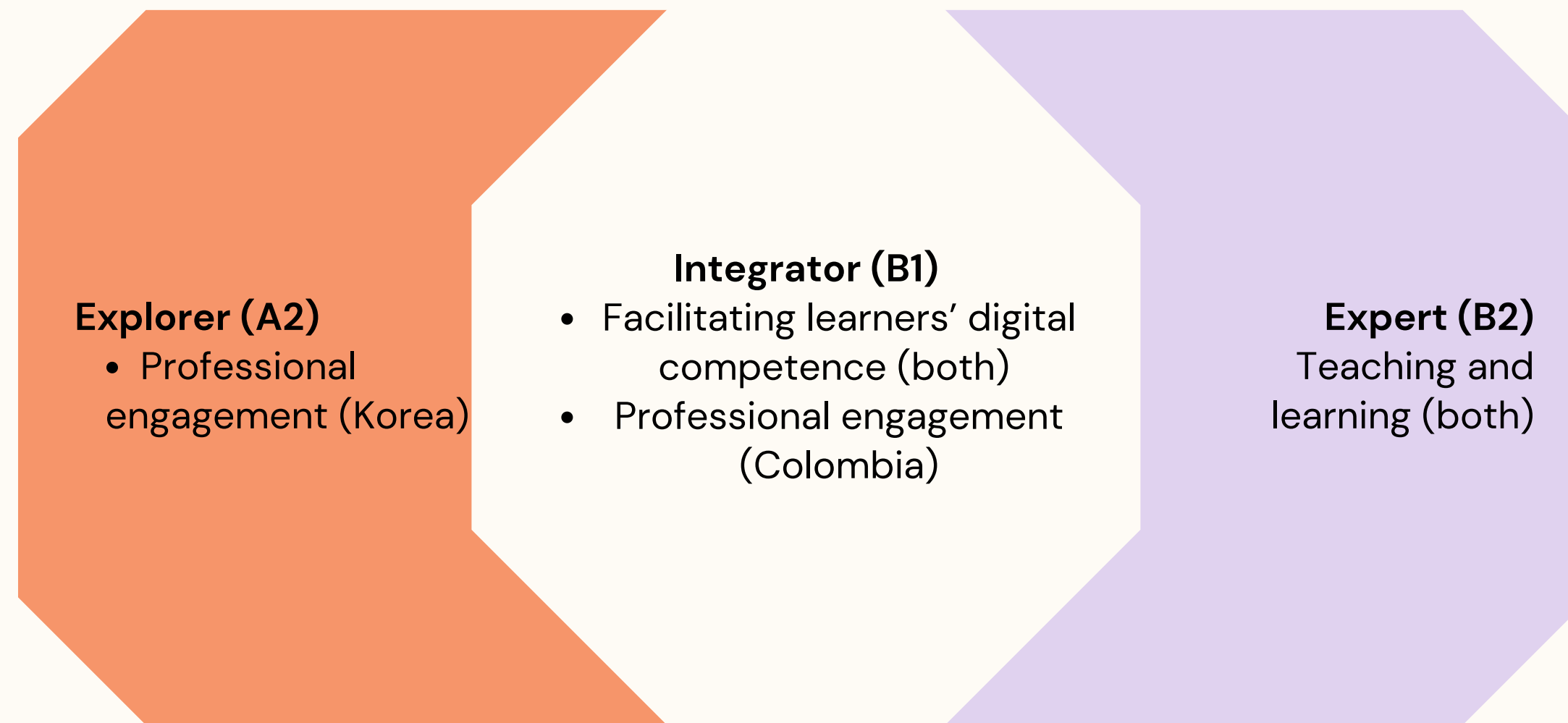
Despite having sufficient technology and access to training for improving their skills, their low levels of self-efficacy may be related to regular performance in their perception of TDC



ICT at classes

Colombian and Korean levels of TSE are similar in terms of ICT appropriation at classes

Results According to the DigCompEdu Framework



- Korean and Colombian teachers are placed in the Integrator (B1) level, although they use variety of technologies into their practices, they still need “more time for experimentation and reflection, complemented by collaborative encouragement and knowledge exchange to become Experts” (Redecker, 2017, p. 30).

Scale of Digcompedu goes from a newcomer level (A1) to a pioneer level (C2)

Trend Identification Finding

TSE

- Both samples of teachers had lower levels of TSE compared to 2018

Student engagement

- Both samples of teachers had lower levels of TSE compared to 2018

Class management

- Both samples of teachers had lower levels of TSE compared to 2018

ICT

- Both countries increased their mean compared to 2018.

Multicultural Classrooms

- Mean for the Korean sample of teachers increased in this subscale (public policies focused in multiculturalism), the mean decrease for the Colombian sample (increase of the migratory flow).

Limitations

TDC

- It would be desirable in future research to find a more objective measure of practical TDC rather than a self-report.

Korean Sample

- It was expected to collect more Korean teachers, to have a similar number with the Colombian sample, but due time and language barriers was not possible.

General Sample

- Increase the sample to make accurate comparisons with the reports of TALIS from previous years

Conclusion

Impact of this Research

- Provide an overview of the relationship between TSE, TDC and other variables at an international comparative level.
- Provide a general profile of TDC for Colombian and Korean teachers that can help in the future research.
- Urgency to work on homogenizing teaching quality in Colombia that can be reflected in better results in assessment tests.
- Contribute to bilateral relations between the two countries and the international cooperation work that KOICA and other organizations.

Moto of this research

Know the similarities and differences in terms of levels TDC and TSE in two different countries. Also, how these trends have been changing after the pandemic and how other factors influence the development of TDC, which has implications for student learning.

Opportunities

Improvement in perception of TDC as a consequence of the adaptation of new instructional methods and new pedagogical strategies.

References

[Back to Overview](#)

-
- Cabero–Almenara, J., & Palacios–Rodríguez, A.(2020). Digital Competence Framework for Educators «DigCompEdu». Translation and adaptation of «DigCompEdu Check–In»questionnaire. EDMETIC, Revista de Educación Mediática y TIC, 9(1), 213–234. <https://doi.org/10.21071/edmetic.v9i1.12462>
 - Ghomi, M., & Redecker, C. (2019, May). Digital Competence of Educators (DigCompEdu): Development and Evaluation of a Self–assessment Instrument for Teachers' Digital Competence. Proceedings of the 11th International Conference on Computer Supported Education (1) ,541–548. <https://doi.org/10.5220/0007679005410548>
 - Li, M., & Yu, Z. (2022). Teachers' Satisfaction, Role, and Digital Literacy during the COVID–19 Pandemic. Sustainability, 14(3), 1121. <https://doi.org/10.3390/su14031121>
 - OECD (2018a). PISA: Insights and interpretations. OECD Publishing, Paris. <https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf>
 - OECD. (2019b). TALIS 2018 Technical Report. Paris: TALIS, OECD Publishing. https://www.oecd.org/education/talis/TALIS_2018_Technical_Report.pdf

Thank you!

Thank you for listening!