

# Self-Efficacy and Critical Thinking of Pre-Service Teachers

*Elements of a Study led in Wallonia,  
France, and Quebec*

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# The overabundance of information

- ▶ Massification of information
- ▶ Disintermediation (i.e. ability of users to bypass intermediaries to access information)
- ▶ Is the fact that knowledge comes “by itself” to the person through communication networks an opportunity?



# Distinguishing facts and opinions

Among OECD countries, less than 10% of adolescents can make this distinction



# Teachers (and prospective teachers') role

- ▶ Educational issues
  - ▶ Developing skills in educational contexts
- ▶ Having a degree doesn't immunize to "beliefs"



2

# Conceptual and theoretical framework

Metaliteracy, critical thinking and social cognitive theory



# Metaliteracy

- ▶ “Metaliteracy is an overarching and self-referential framework that integrates emerging technologies and unifies multiple literacy types.”



# Metaliteracy



Ability to produce and share content in a variety of formats

## 37 learning objectives

- ▶ 4 goals:
  - ▶ Actively evaluate content while also evaluating one's own biases
  - ▶ Engage with all intellectual property ethically and responsibly
  - ▶ Produce and share information in collaborative and participatory environments
  - ▶ Develop learning strategies to meet lifelong personal and professional goals
- ▶ Linked to 1 or many **domains**:
  - ▶ Affective
  - ▶ Cognitive
  - ▶ Behavioural
  - ▶ Metacognitive

# Critical thinking

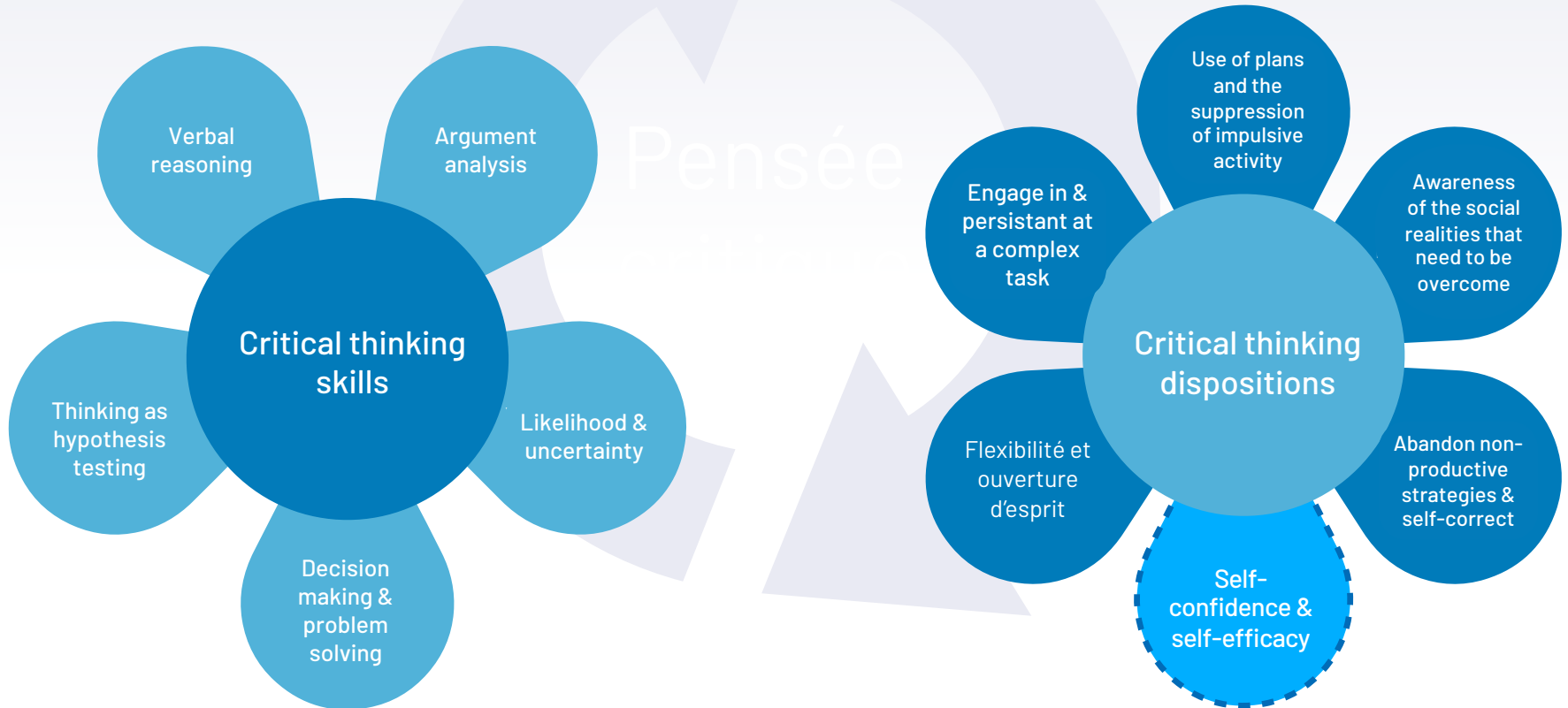
- ▶ **Critical thinking =**
  - + Knowledge
  - + Attitude
  - + Thinking skills



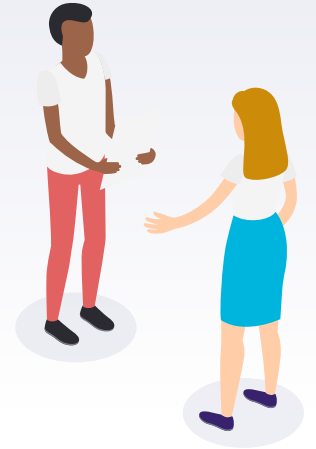
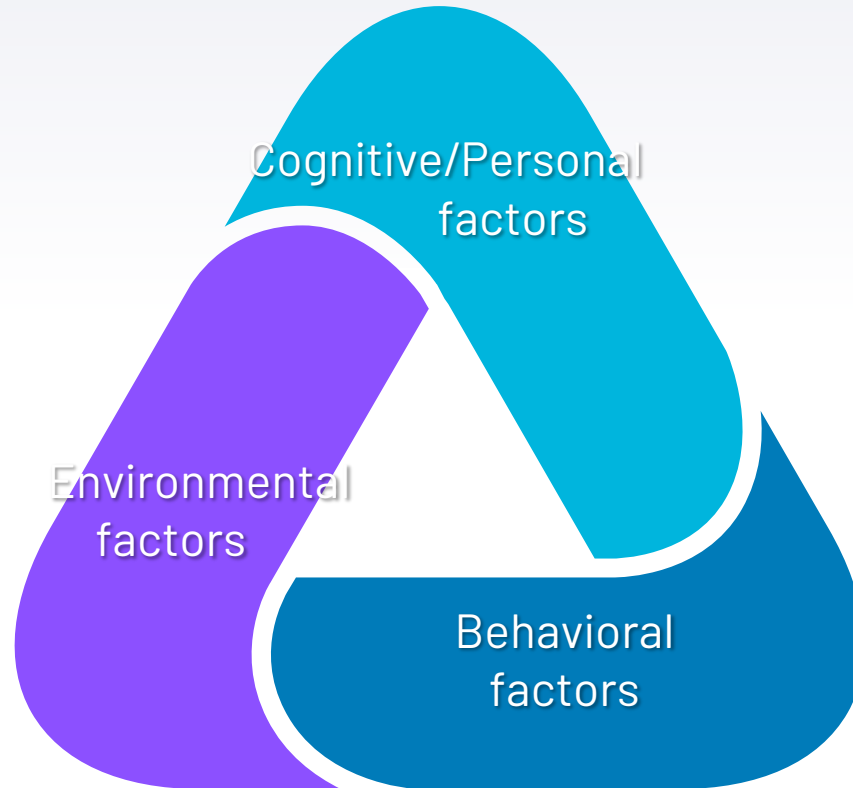


# Critical thinking

Pensée



# Social cognitive theory



3

# Research aims

Present a portrait of critical thinking and metaliteracy among these preservice teachers from the French-speaking world, in an era of social networks



# 4

# Methodology

Methodological tools



# Research design



## Mixed method design

- ▶ Explanatory design (explanatory sequence approach)

## Collective case study

- ▶ Study a few cases at the same time to study a phenomenon, a population, or a situation

# 245 respondents in 3 nations

- ▶ Pre-service History Teachers
- ▶ First-year students
- ▶ 5 institutions in 3 French-speaking nations

Quebec



Wallonia



France



# Tools used



- ▶ Psychometric quality of French-language tests on
  - ▶ Translation of 2 CT test (skills and self-efficacy)
  - ▶ Development of a metaliteracy test (self-efficacy)

# French translated and reduced version Halpern Critical Thinking Assessment (HCTA)

	Complete version (20 items)						Reduced version (10 items)					
	$\omega$ :	IC 95 %		$\alpha$	IC 95 %		$\omega$ :	IC 95 %		$\alpha$	IC 95 %	
		Borne inf.	Borne sup.		Borne inf.	Borne sup.		Borne inf.	Borne sup.		Borne inf.	Borne sup.
Réflexion en test d'hypothèses	0,42	0,43	0,62	0,39	0,39	0,58	0,45	0,34	0,68	0,34	0,38	0,68
Raisonnement verbalisé	0,30	0,19	0,54	0,21	0,11	0,49	0,15	0,07	0,37	0,15	0,07	0,37
Analyse d'arguments	0,46	0,31	0,59	0,41	0,11	0,60	0,51	0,05	0,48	0,51	0,05	0,48
Vraisemblance et incertitude	0,37	0,20	0,52	0,32	0,03	0,43	0,50	0,16	0,48	0,50	0,16	0,48
Prise de décisions et résolution de problèmes	0,53	0,46	0,62	0,43	0,39	0,61	0,39	0,36	0,49	0,39	0,36	0,49
Ensemble de l'échelle (5 traits latents)	0,72	0,67	0,93	0,64	0,50	0,82	0,78	0,75	0,97	0,66	0,59	0,87



# French translated and reduced version Halpern Critical Thinking Assessment (HCTA)

	Complete version (20 items)		Reduced version (10 items)
$\chi^2(ddl)$	312,97/160	$\chi^2(ddl)$	31,41/25
Ratio $c^2/ddl$	1,96	Ratio $c^2/ddl$	1,26
$p(\chi^2)$	<0,001	$p(\chi^2)$	0,176
CFI	0,66	CFI	0,97
TLI	0,59	TLI	0,95
RMSEA	0,06	RMSEA	0,03
RMSEA IC [90 %]	[0,05 - 0,07]	RMSEA IC [90 %]	[0,00 - 0,06]
SRMR	0,07	SRMR	0,04

# Critical thinking self-efficacy, a scale based on CriTT

- ▶ Based on the idea that critical thinking is supported by attitudes.
- ▶ Result of an inductive definition
- ▶ Identifies 3 factors:
  - ▶ Confidence
  - ▶ Misinterpretation
  - ▶ Valuing



# Critical thinking self-efficacy, a scale based on CriTT

$\omega_t=0,92$  and  $\alpha=92$

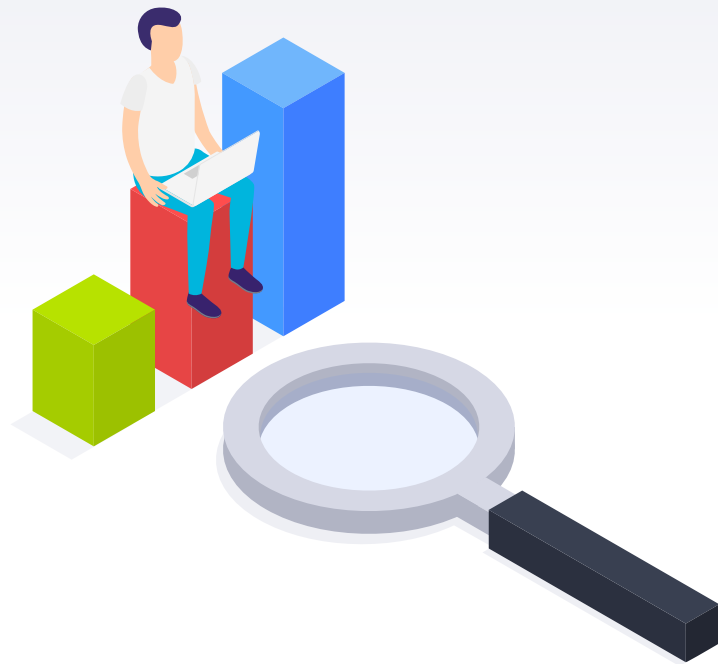
17 items	Fact. 1	$h^2$	16 items	Fact. 1	$h^2$
CriTT_Confia_01	<b>0,52</b>	0,27	CriTT_Confia_01	<b>0,53</b>	0,28
CriTT_Confia_02	<b>0,33</b>	0,11	CriTT_Confia_03	<b>0,66</b>	0,43
CriTT_Confia_03	<b>0,66</b>	0,43	CriTT_Confia_04	<b>0,64</b>	0,41
CriTT_Confia_04	<b>0,64</b>	0,40	CriTT_Confia_05	<b>0,59</b>	0,35
CriTT_Confia_05	<b>0,60</b>	0,36	CriTT_Confia_06	<b>0,77</b>	0,60
CriTT_Confia_06	<b>0,77</b>	0,60	CriTT_Confia_07	<b>0,66</b>	0,44
CriTT_Confia_07	<b>0,66</b>	0,44	CriTT_Confia_08	<b>0,62</b>	0,38
CriTT_Confia_08	<b>0,62</b>	0,38	CriTT_Confia_09	<b>0,60</b>	0,36
CriTT_Confia_09	<b>0,60</b>	0,36	CriTT_Confia_10	<b>0,72</b>	0,52
CriTT_Confia_10	<b>0,72</b>	0,52	CriTT_Confia_11	<b>0,68</b>	0,47
CriTT_Confia_11	<b>0,68</b>	0,47	CriTT_Confia_12	<b>0,62</b>	0,38
CriTT_Confia_12	<b>0,62</b>	0,38	CriTT_Confia_13	<b>0,68</b>	0,46
CriTT_Confia_13	<b>0,67</b>	0,45	CriTT_Confia_14	<b>0,54</b>	0,29
CriTT_Confia_14	<b>0,54</b>	0,29	CriTT_Confia_15	<b>0,65</b>	0,43
CriTT_Confia_15	<b>0,65</b>	0,43	CriTT_Confia_16	<b>0,58</b>	0,34
CriTT_Confia_16	<b>0,58</b>	0,34	CriTT_Confia_17	<b>0,62</b>	0,39
CriTT_Confia_17	<b>0,62</b>	0,39			

# A draft for a metaliteracy self-efficacy scale

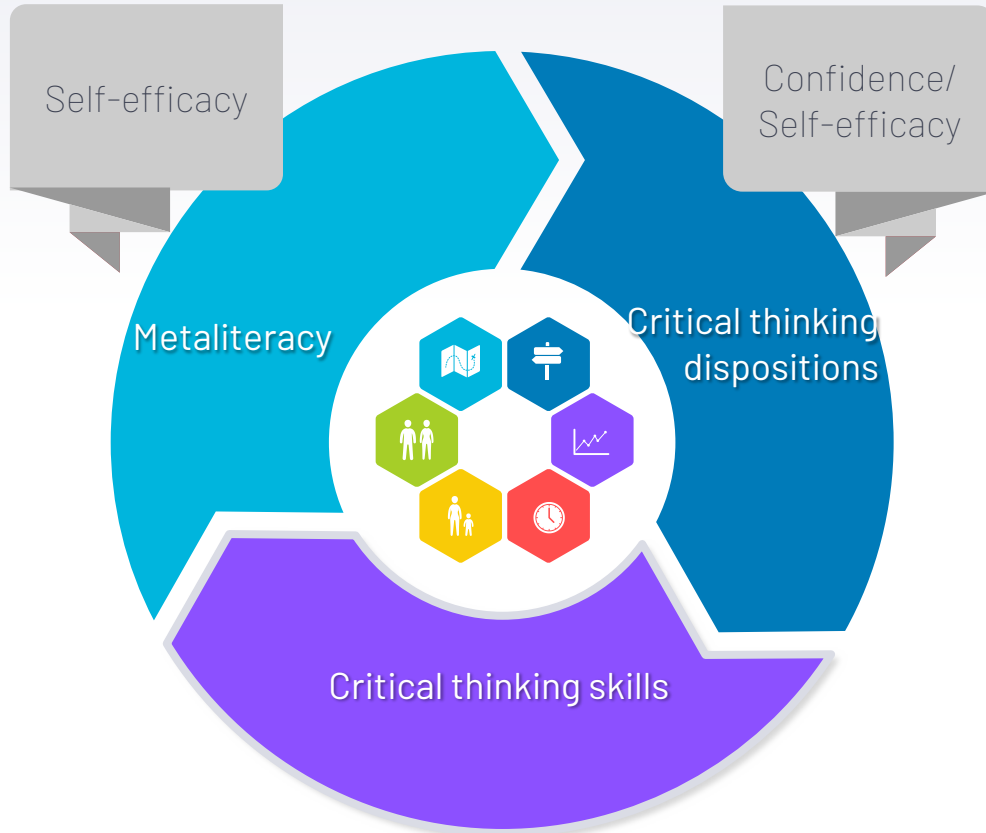
- ▶ 16 items selected (mostly in the first Goal, “Actively evaluate content while also evaluating one’s own biases”)
- ▶ “I feel confident and competent to...”
- ▶ Translation/Drafting
- ▶ Consultation of experts (professors-researchers and professionals,  $n=68$ )
- ▶  $\omega_t=0,92$  and  $\alpha=92$
- ▶ Criterion validation: positive correlation with information literacy self-efficacy ( $r=.53, p < .001$ )

5

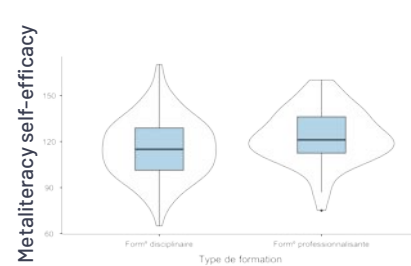
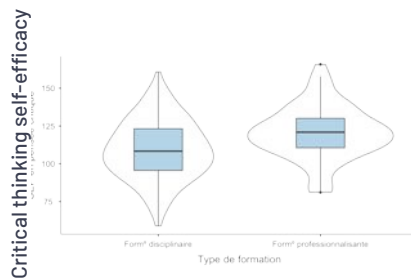
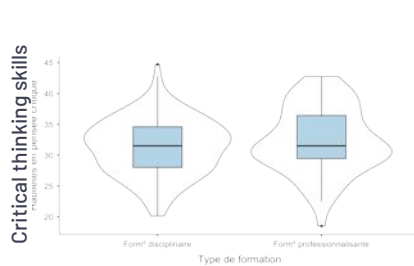
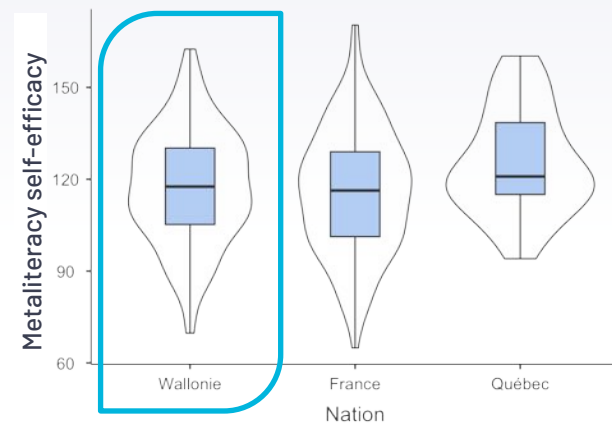
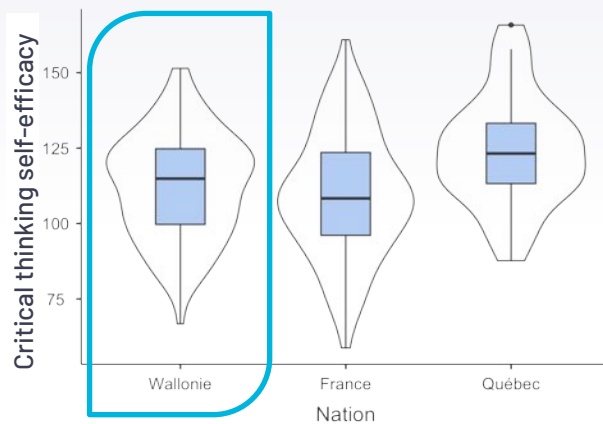
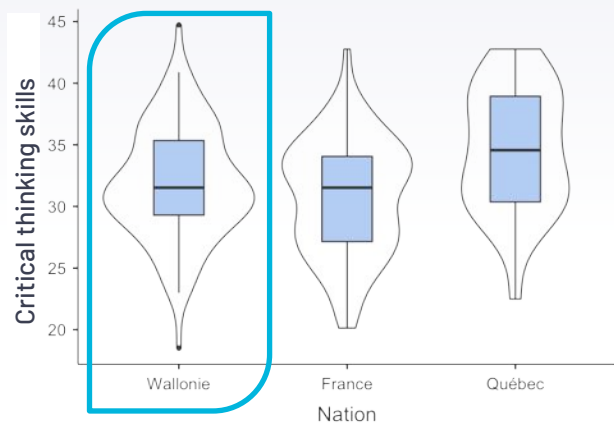
# Results



# Hypothesis



# Descriptive stats



# The effect of employment on scores



Critical thinking skills



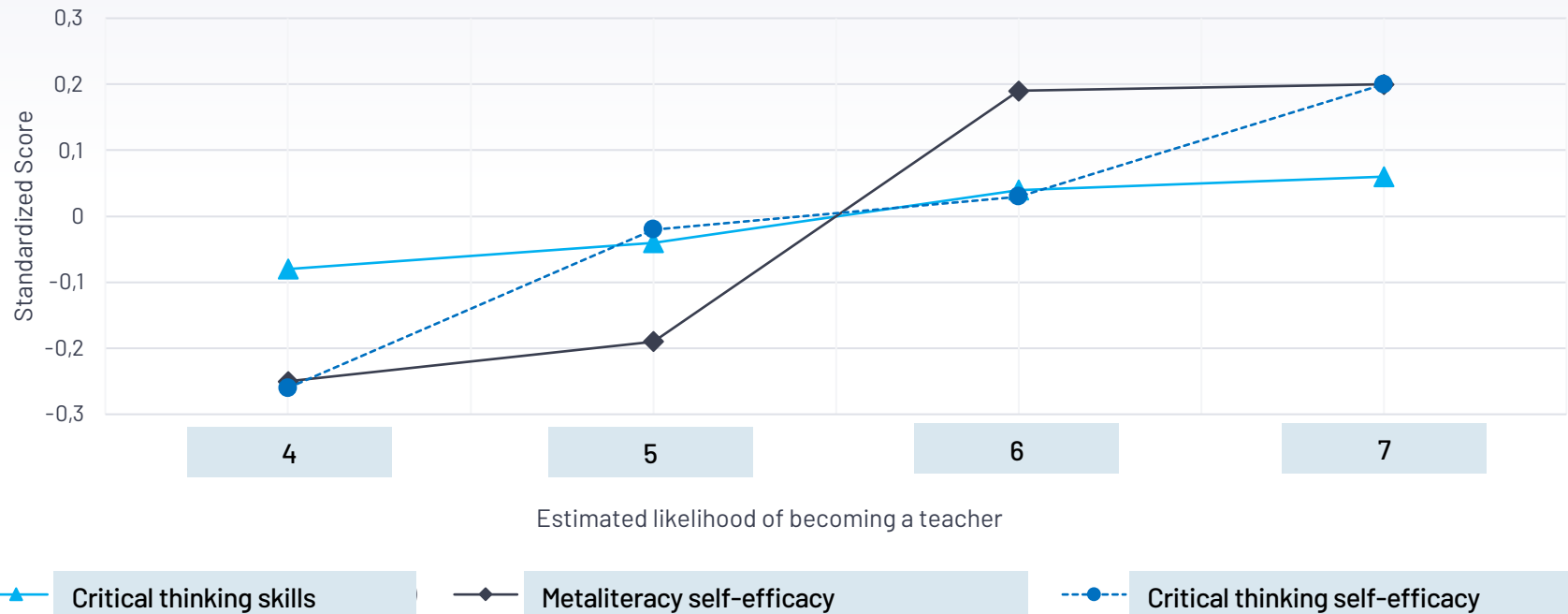
Metaliteracy self-efficacy



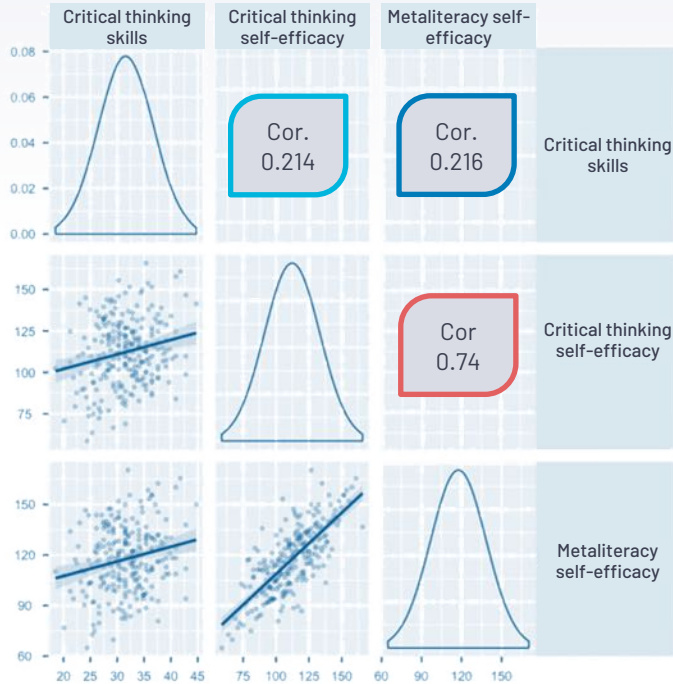
Critical thinking self-efficacy



# L'effet de la probabilité estimée de devenir enseignant.e sur le score aux échelles



# Inferential statistics



Main significant effects:

- ▶ Type of training (pro. vs. disc.) on CT self-efficacy
- ▶ Country and/or employment on CT skills and CT self-efficacy

No or small significant effect of age and gender

# An attempt of modelling

- ▶ **Critical thinking skills  $\approx$**   
( $R^2 = .152$ )
  - + Self-efficacy in
    - + Critical thinking
    - + Metaliteracy
  - + Nation of study
  - + Type of training
  - + Work

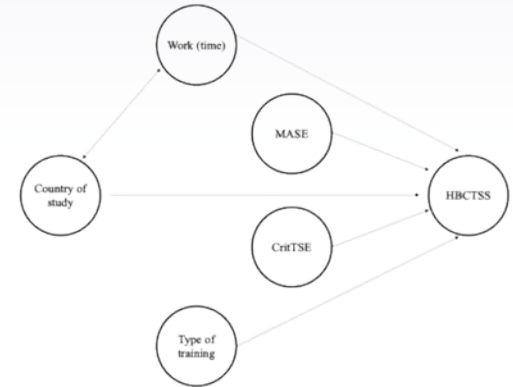


Illustration of the proposed linear regression model  
( $HBCTSS \sim MASE + CritTSE + Country*Work + TypeOfTraining$ ).

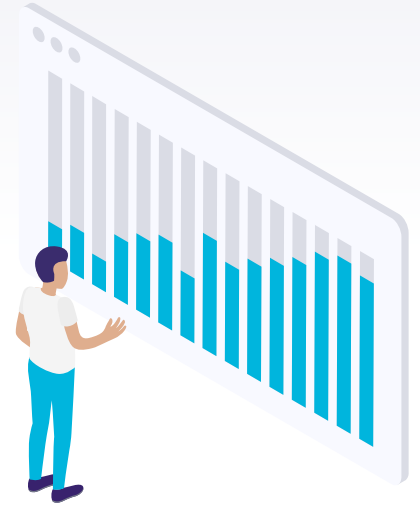
6

# Discussion



# Discussion

- ▶ Critical thinking and metaliteracy self-efficacy are significant, but weak, predictors of CT skills
- ▶ Relationship with Future Career: A Catalyst for Critical Thinking
- ▶ Career-related training can have a positive effect



# Conclusion

## Suggestions for the teaching community

- ▶ Encourage a professional focus
- ▶ Develop initial training in critical thinking and information literacy
- ▶ Supporting teachers in their daily work



# Conclusion

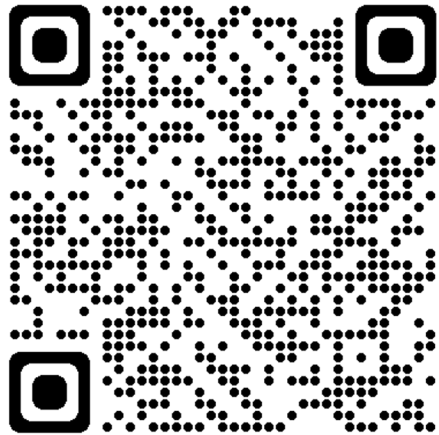
## Ideas for future research

- ▶ Continuing the conceptualization of CP
- ▶ Develop a holistic assessment instrument for critical thinking
- ▶ Discuss the links between literacy(s) and critical thinking
- ▶ Refine instrumentation to document critical thinking practices and literacy strategies



# Thanks!

## Questions and comments

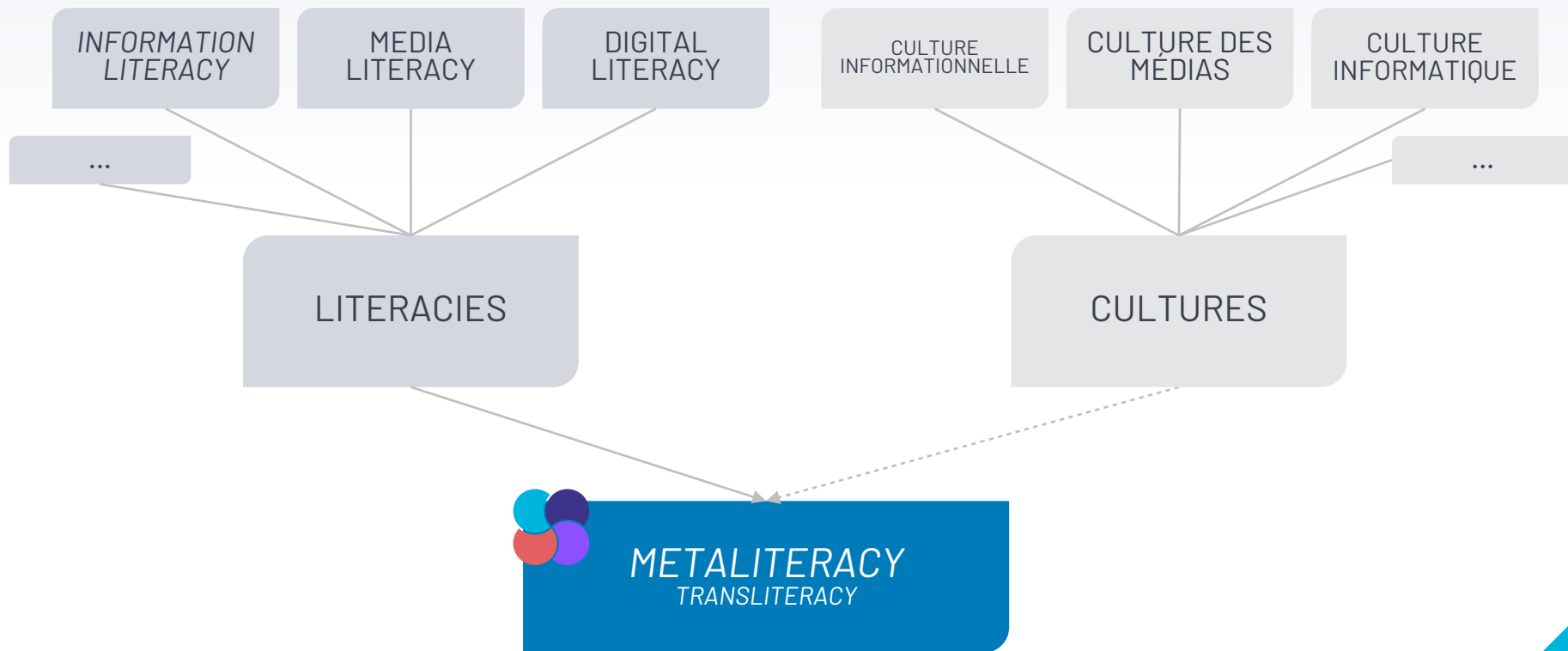


<https://doi.org/g58f>





# What is Metaliteracy?



# La catégorisation qui était anticipée

