Pratiche didattiche e soddisfazione dei docenti durante l'emergenza Covid-19: Alcune evidenze preliminari da una survey

Webinar INVALSI 03-02-2021

"L'importanza dei dati e delle metodologie statistiche di ricerca: l'emergenza Covid-19"

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Motivation

Research objectives

(i) Investigating **how Italian schools reacted to the COVID-19** emergency, collecting opinions and experiences of schools principals and teachers.

(ii) Investigating how a different reaction to the emergency may differently influence **students' performance** (measuring the middle term impact).

Today's presentation objective

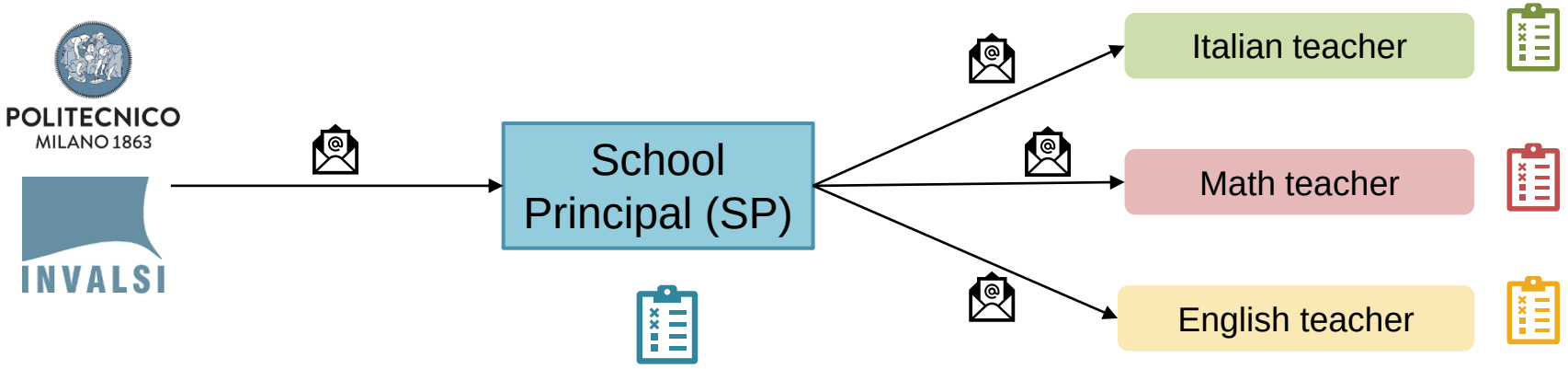
- Investigating and modelling the use of technology during the emergency, exploring the correlation between **teachers' satisfaction** and the **activities performed**.

Research design and organization

1st phase. INVALSI extracted a representative sample of schools – primary and middle

2nd phase. PoliMi sent two different questionnaires to school principals (SP) of selected schools: one for them and one for teachers of grade 4 and 7.

3rd phase. SP sent the questionnaires to teachers of Italian, Math and English of grades 4 and 7.



Structure of questionnaires

School Principals

The survey is organized into **4 sections:**

1. Demographics and contextual information
2. The strategy of digitalization process
3. The reaction to the emergency
4. The involvement of students and families during the emergency

Teachers

The survey is organized into **7 sections:**

1. Demographics and career information
2. Digital technologies' background
3. The reaction to the emergency
4. Distance learning activities (during emergency period)
5. Students' involvement
6. Working environment
7. Overall opinions about the experience of distance learning

Questionnaires' response rate

 # sent surveys:

SP: 856

Teachers grade 4: 3006

Teachers grade 7: 2235

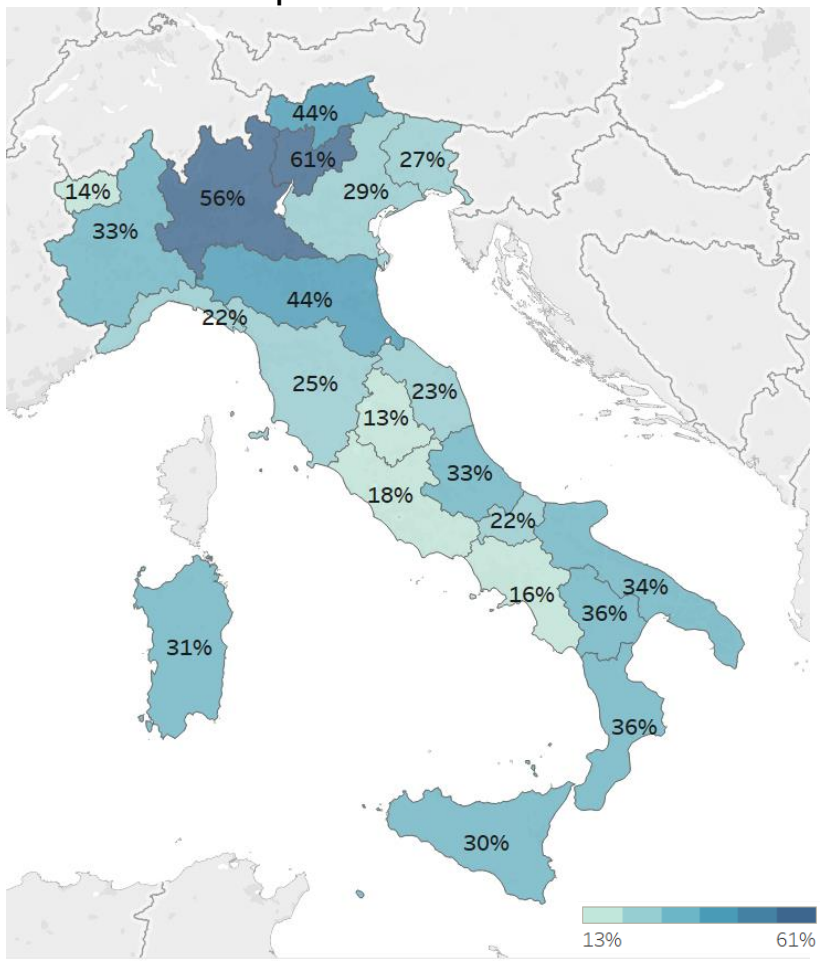
% received responses:

SP: 29.1%

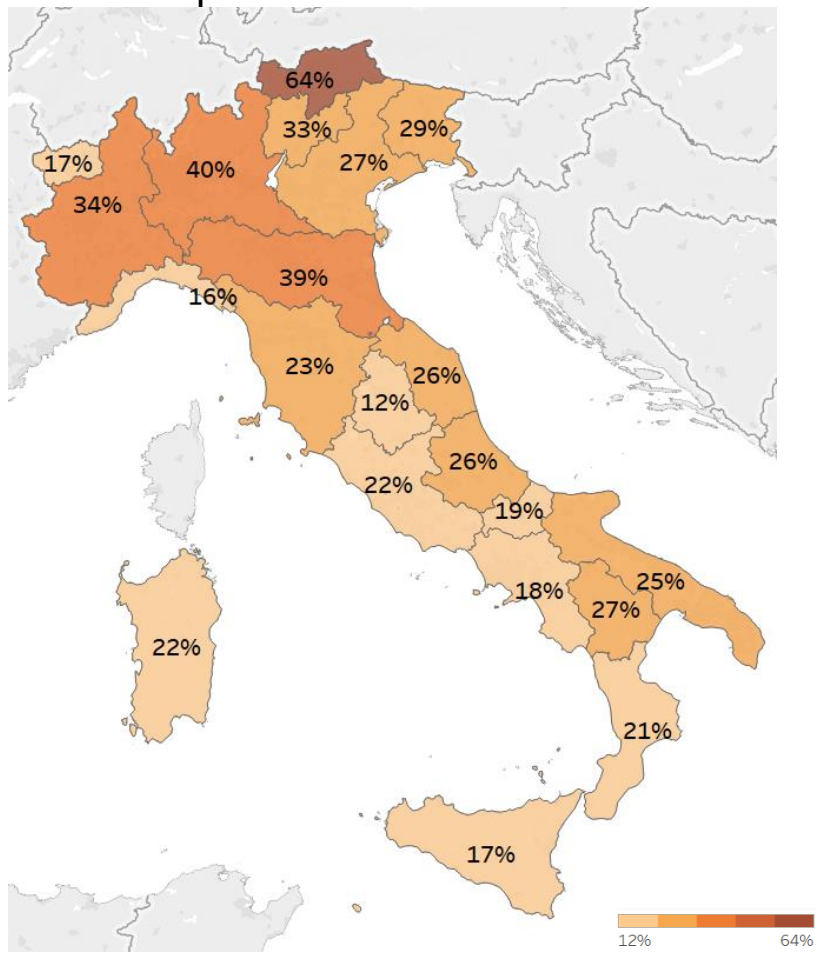
Teachers grade 4: 23.4%

Teachers grade 7: 30.6%

Response rates of SP



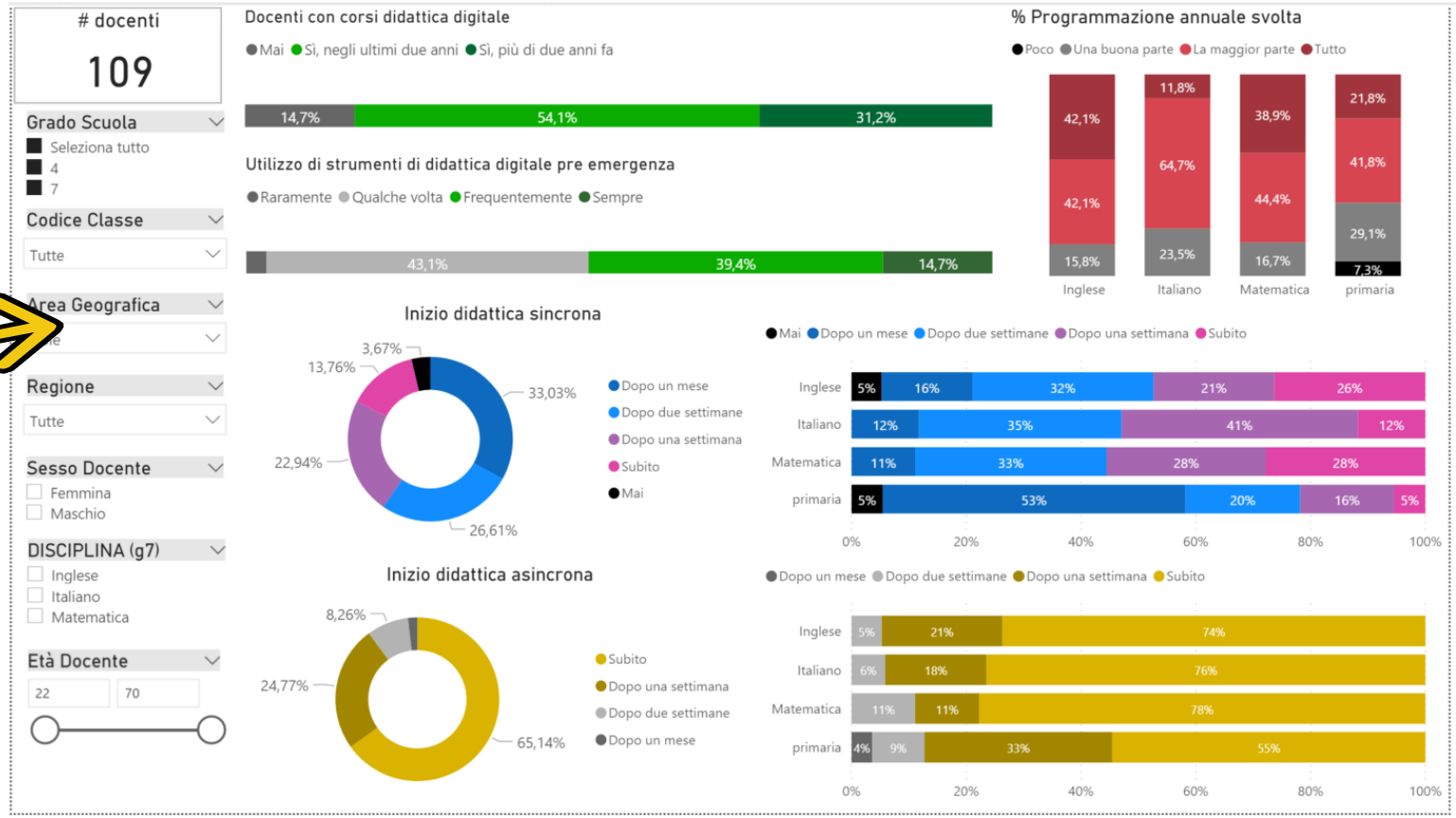
Response rate of teachers



Reporting descriptive analysis

Power BI

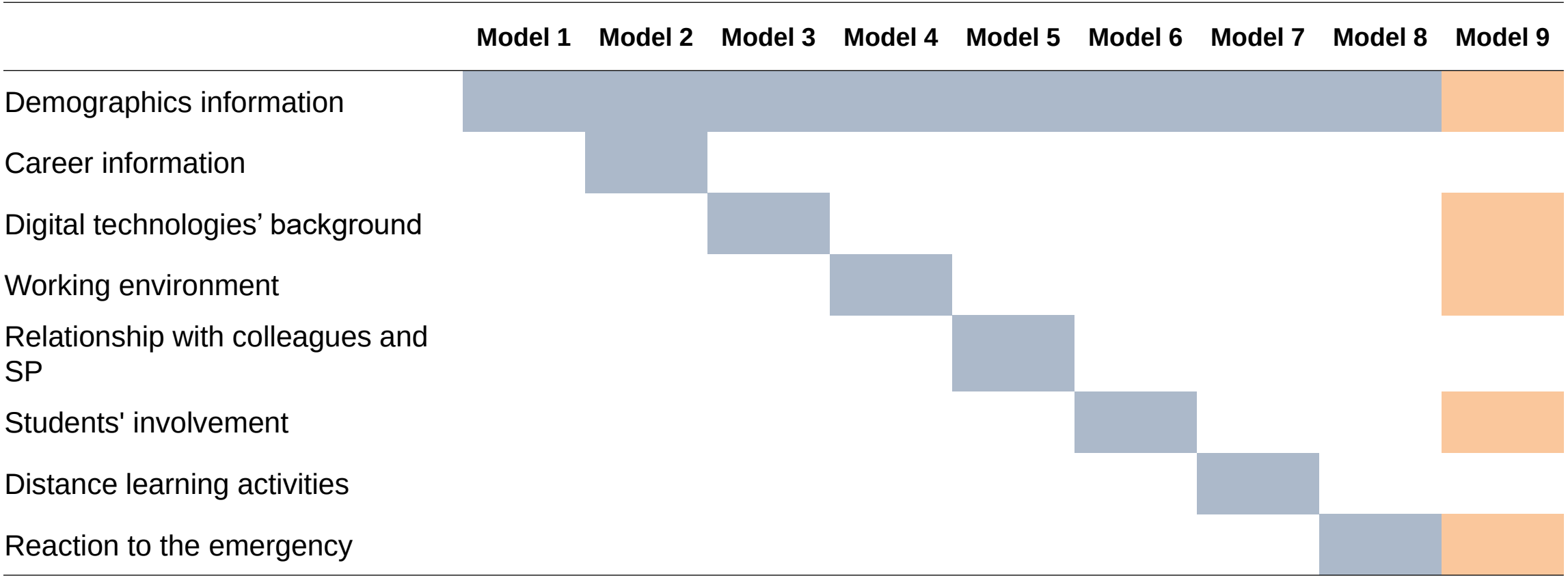
- **Dashboard Teachers**
- Dashboard SP



Methodologies and Objectives

- **Logistic regression** → Exploring the heterogeneity of teachers' satisfaction
- **Latent Class Analysis**
  1. **Latent classes' profile** → Identifying latent groups of teachers with similar digital behaviors
  2. **Characterising the classes** → Describing groups with other teachers' features (demographics and career information, digital technologies' background, working environment)
  3. **Investigating the perceived satisfaction** → Correlating latent classes with teachers' satisfaction

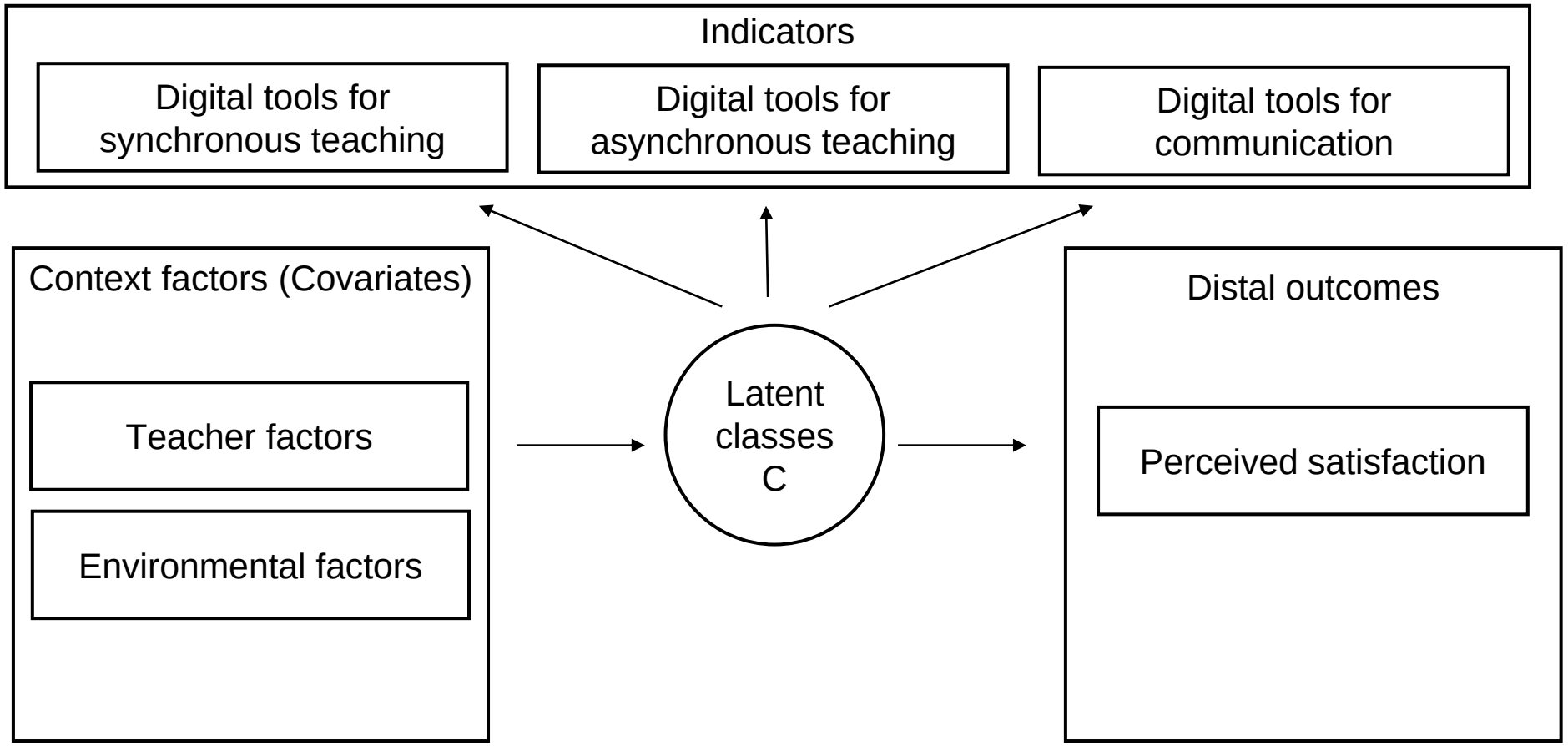
Exploratory Analysis: Logit
Which and how variables impacted on teachers' satisfaction?



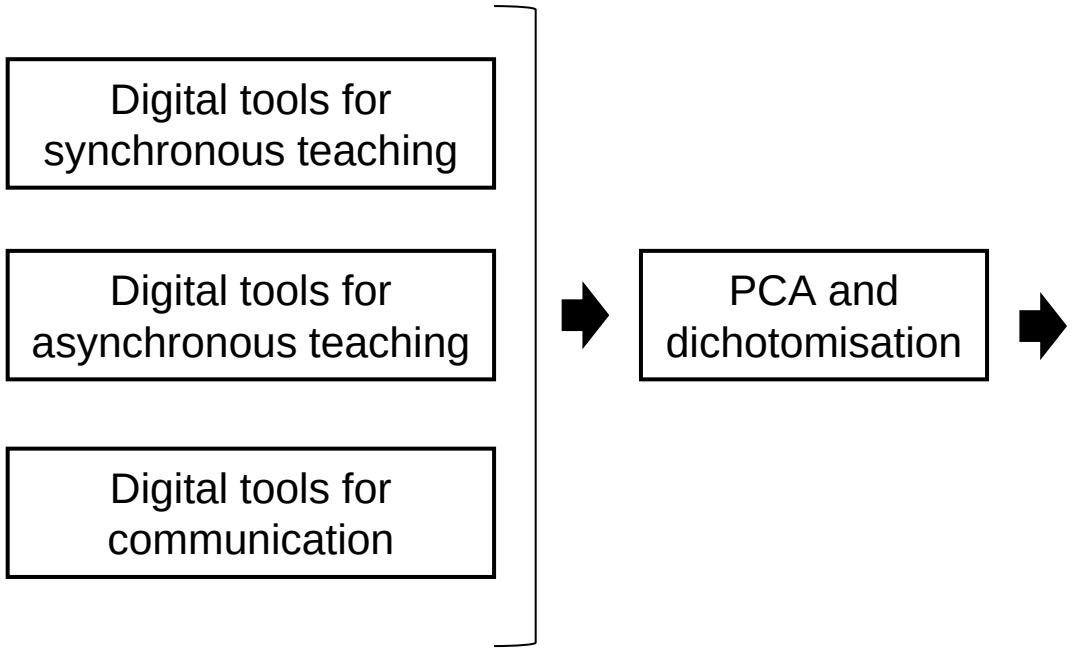
Exploratory Analysis: Logit
Which and how variables impacted on teachers' satisfaction?

Model 9	
Primary School	-0.2148
	(0.1743)
Age	-0.0133**
	(0.0055)
Gender (female)	-0.1772
	(0.2377)
Central Italy	0.1562
	(0.1783)
Southern Italy	-0.0913
	(0.1531)
Subject (English)	-0.2711
	(0.2017)
Subject (Italian)	-0.0852
	(0.2204)
Number Classes	-0.0472***
	(0.0134)
Previous exp. with digital tools	0.1737**
	(0.0766)
Quite place of work	0.1247
	(0.0794)
Quality connection	0.1474
	(0.0975)
Guidelines from SP	0.1216
	(0.0792)
Discussion with colleagues	0.7865***
	(0.1170)
Active students	0.3528***
	(0.1184)
Attention synchronous	0.8588***
	(0.0955)
Family involvement	0.2694***
	(0.1018)
Start synchronous	0.1553**
	(0.0651)
Start asynchronous	0.2401***
	(0.0836)
Observations	1,406
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Latent Class Analysis
Measurement model



Preliminary step
Descriptive statistics about the indicators



Category	Indicator	Obs	Mean	Std. Dev.	Min	Max
Digital tools for synchronous teaching	syn_survey	1,407	0.39	0.49	0	1
	syn_game	1,407	0.48	0.50	0	1
	syn_slide	1,407	0.10	0.30	0	1
	syn_video	1,407	0.21	0.40	0	1
Digital tools for asynchronous teaching	asyn_forum	1,407	0.42	0.49	0	1
	asyn_text	1,407	0.78	0.42	0	1
	asyn_video	1,407	0.77	0.42	0	1
	asyn_app	1,407	0.36	0.48	0	1
Digital tools for communication	com_wapp	1,407	0.42	0.49	0	1
	com_call	1,407	0.03	0.17	0	1
	com_social	1,407	0.08	0.27	0	1
	com_text	1,407	0.23	0.42	0	1

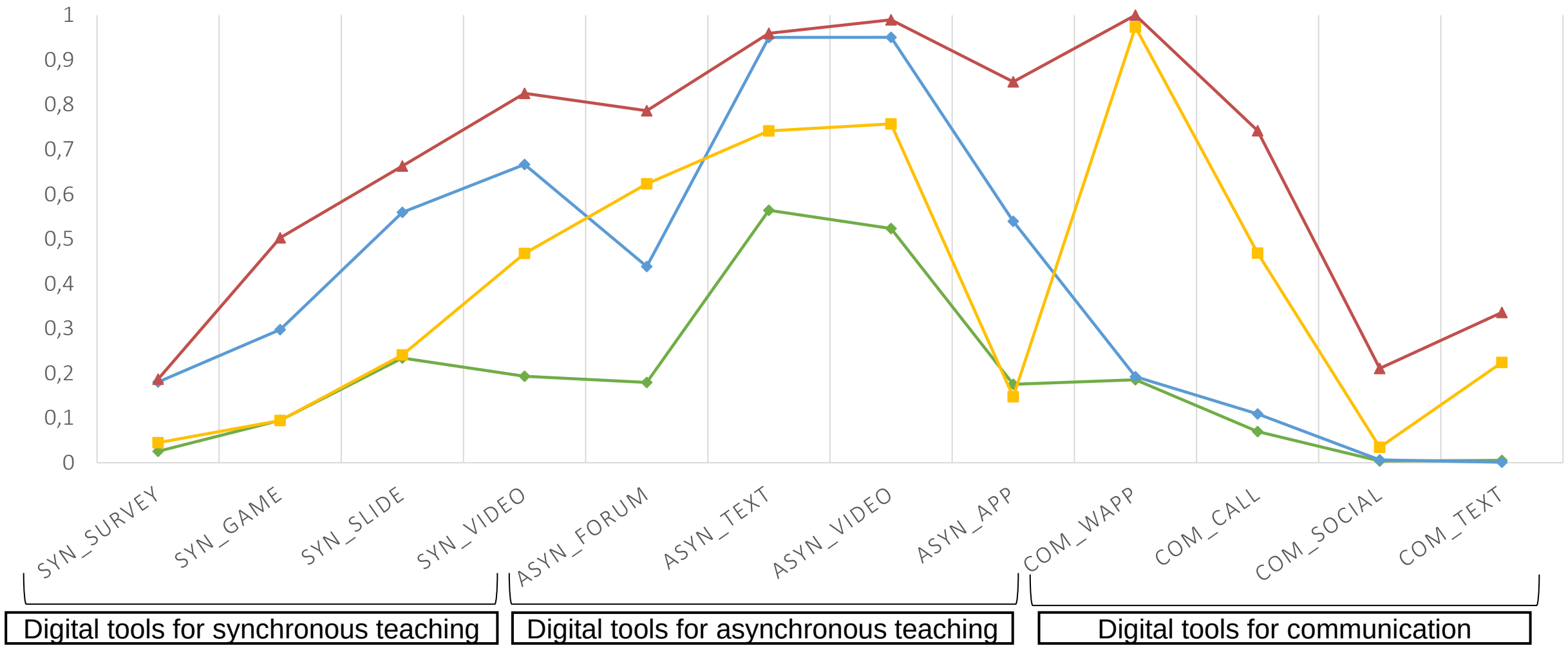
Number of classes	AIC	BIC	LMR test	p-value	Entropy
2	16883.8	17015.0	684.54	0.00	0.570
3	16530.7	16730.1	375.15	0.00	0.648
4	**16399.5**	**16667.2**	**155.49**	**0.00**	**0.666**
5	16303.8	16639.8	120.40	0.06	0.668
6	18267.8	16672.0	61.41	0.15	0.716

Fit indexes:

- LMR indicates a 4-class model (at 5% error)
- BIC indicates a 5-class model

Conservative approach: 4-class model selected

Latent Class Analysis
STEP 1: Latent classes' profile



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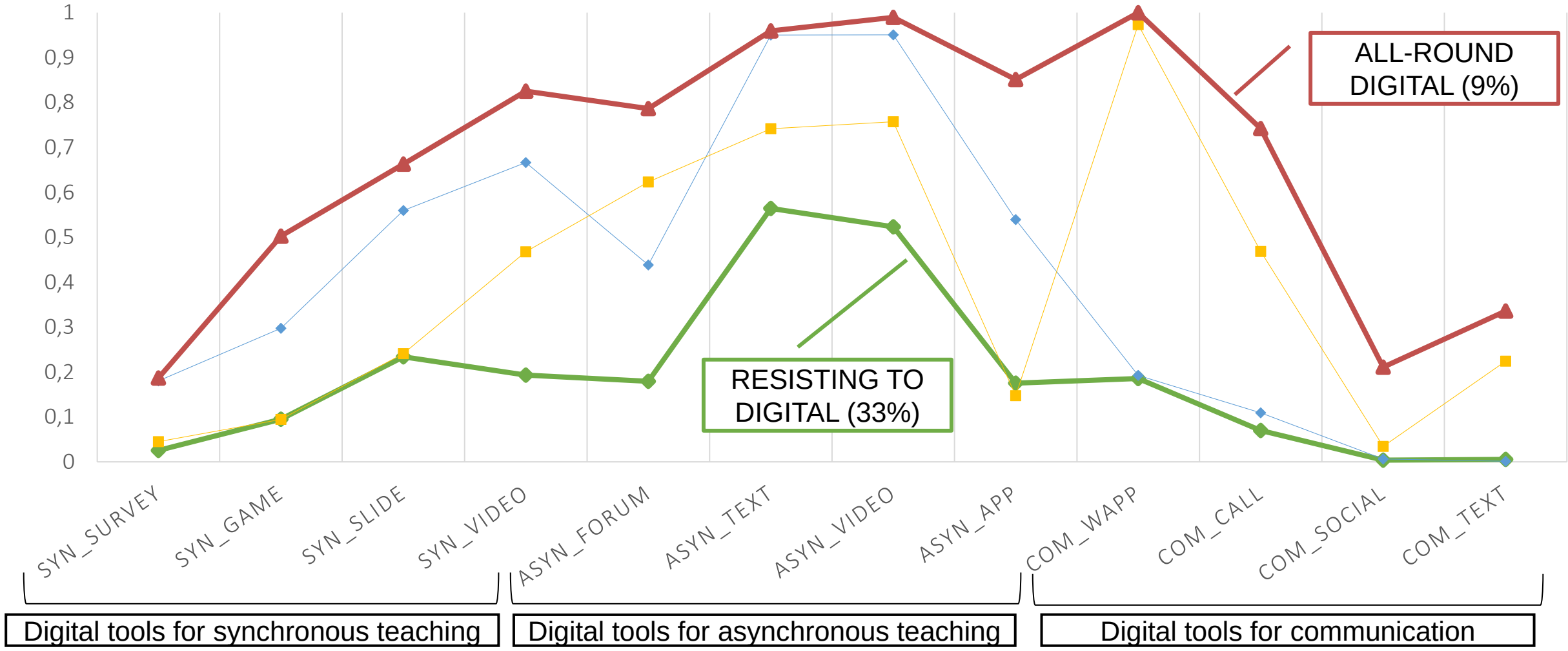
STEP 1: Latent classes' profile



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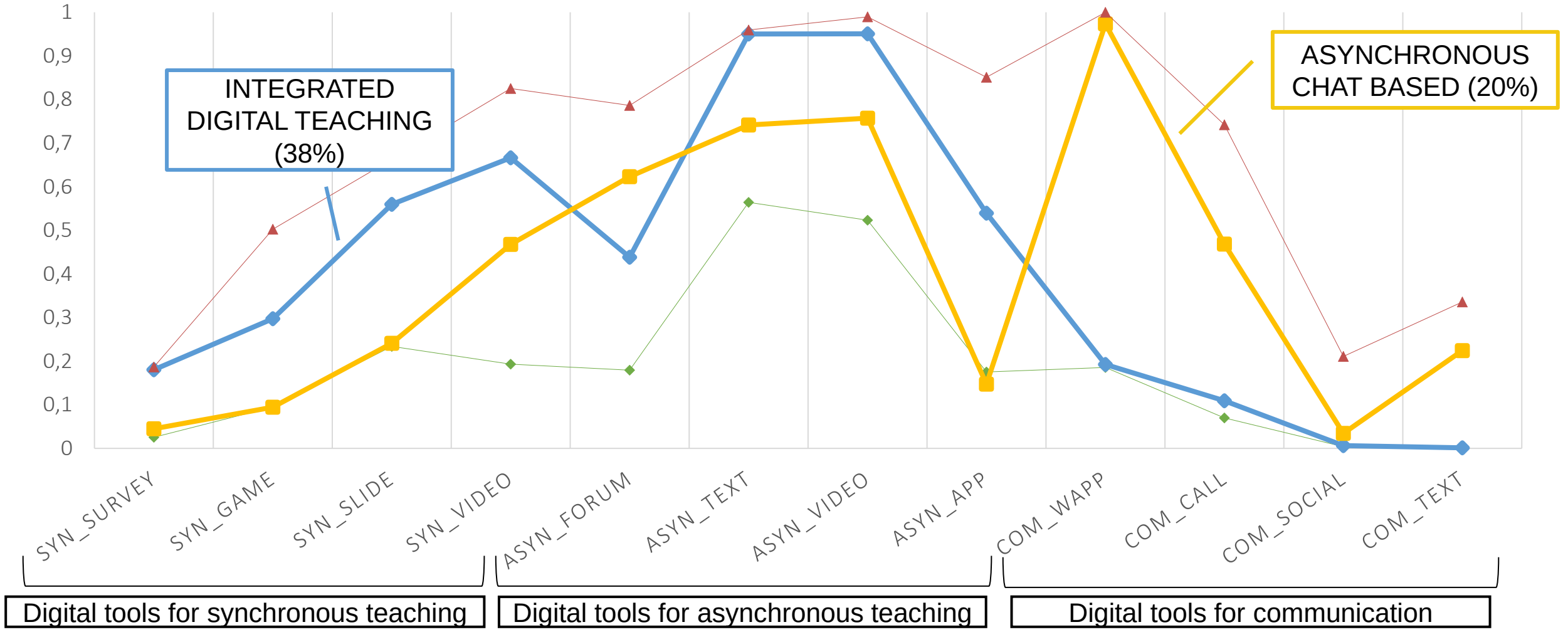
STEP 1: Latent classes' profile



Latent Class Analysis
STEP 2: Characterising the classes

	INTEGRATED DIGITAL TEACHING			ASYNCHRONOUS CHAT BASED			ALL-ROUND DIGITAL			RESISTING TO DIGITAL
	Coef.	Odds ratio	Mean	Coef.	Odds ratio	Mean	Coef.	Odds ratio	Mean	Mean
Central Italy	-0.349		0.13	1.036***	2.82	0.16	0.834*	2.30	0.16	0.16
Southern Italy	0.343		0.26	2.303***	10.00	0.55	2.166***	8.72	0.55	0.22
Subject (Italian language)	0.114		0.18	0.940*	2.56	0.17	0.575		0.18	0.12
Subject (Mathematics)	-0.844		0.15	0.416		0.19	-0.997		0.12	0.19
Primary school	-0.45		0.46	0.346		0.53	0.147		0.60	0.54
Number of classes	0.01		3.84	-0.018		3.17	-0.277**	0.76	3.05	3.52
Experience (years)	-0.024*	0.98	19.42	0.015		22.19	-0.035*	0.97	20.40	20.26
Tenured teacher	0.284		0.90	-0.464		0.92	-0.923*	0.40	0.89	0.88
Managerial role	0.225		0.43	-0.397		0.31	0.479		0.45	0.36
Age	0.011		48.18	0.008		51.14	0.028		49.76	48.24
Gender (female)	0.4		0.93	0.571		0.94	1.789*	5.98	0.96	0.91
Previous exp. with digital tools	0.59***	1.80	3.66	-0.065		3.29	1.198***	3.31	3.88	3.29
Quite place of work	-0.095		0.82	0.614		0.88	0.397		0.92	0.81
Personal laptop	-0.319		0.84	0.072		0.87	-0.016		0.90	0.83
Discussion w/colleagues	0.065		3.37	0.255		3.28	0.197		3.42	3.29
Guidelines from SP	-0.04		3.04	-0.078		3.08	0.225		3.30	3.03
Future use of digital tools	0.589***	1.80	3.17	-0.239		2.77	0.595***	1.81	3.20	2.85
Quick start of class (after lockdown)	0.242		0.27	0.287		0.31	0.156		0.36	0.22
Training on digital tools	0.474**	1.61	0.57	0.173		0.48	0.453		0.60	0.47

Note: ***p-value<.01; **p-value<.05; *p-value<.1.

Latent Class Analysis
STEP 3: Investigating the perceived satisfaction

STEP 3: Chi square test to investigate whether subgroups differ in their perceived satisfaction

	Mean	Std error	Statistically different from
RESISTING TO DIGITAL (1)	3.14	0.036	(2) (4)
INTEGRATED DIGITAL TEACHING (2)	3.31	0.037	(1) (3)
ASYNCHRONOUS CHAT BASED (3)	3.18	0.050	(2) (4)
ALL-ROUND DIGITAL (4)	3.37	0.066	(1) (3)

Integrated digital teaching and *All-round digital* groups are significantly more satisfied than the other two groups

Conclusions

- During the emergency, some digital tools were used more frequently than others
  - **Frequently used**: asynchronous text and videos
  - **Limitedly used**: synchronous games and surveys; social media and text messages for communication

- Teachers approached distance learning heterogeneously, but nearly **one third tended to resist to digital tools**
  - The **previous experience with digital**, **training** on digital tools and **confidence in the future usefulness** of these tools are important **predictors of a larger use of digital instruments**
  - The geographical component matters – possible self-selection?

- Teachers using a **larger spectrum of digital tools are more satisfied** with their teaching activity
  - Further development: what **implications for student learning**?

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