

The teacher educator as a role model for the use of technology for teaching and learning: what do they do and what do they need to learn?

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A. Research model and respondents

Figure 1 – Teacher educators' use of technology for teaching and learning and domains of competence

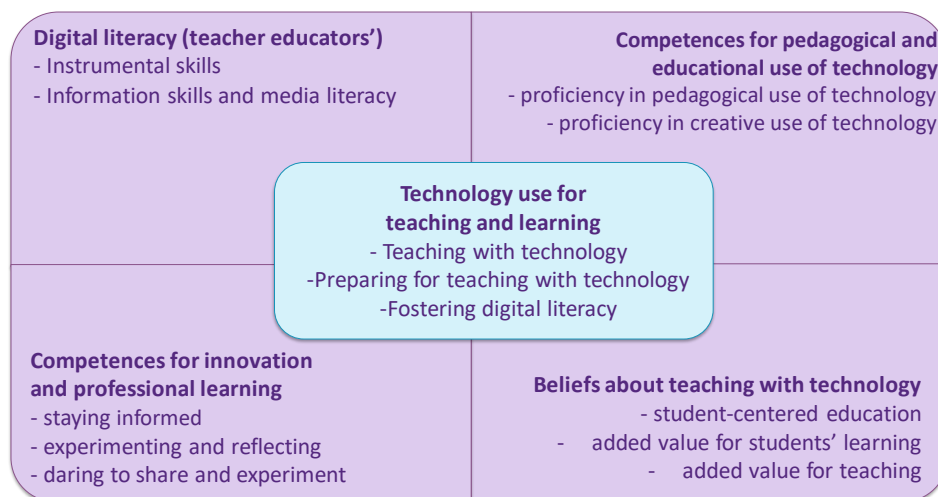


Table 1 – Response rate survey Teacher Education HAN University of Applied Sciences

	N	%
Teacher education for primary education	49	50.0
Teacher education for secondary education	52	31.7
Total	101	38.5

Table 2 – Respondents' characteristics (% , N=101)

	%
Gender	
male	34.7
female	65.3
Age	
34 and younger	8.9
35-44 years	27.7
45-54 years	30.7
54 and older	32.7
Years work experience	
0-3 years	1.0
4-10 years	12.9
11-20 years	44.6
21 years or more	41.6

B. Scales for teacher educators' use of technology for teaching and learning

Table 3 - Descriptive statistics and results of paired sample one-way ANOVA (scales from 1 to 5, N=101)

Scale	Mean	SD	Number of items	Cronbach's alpha	t-value	
S1 Teaching with technology	2.17	0.63	10	0.83	-2.58*	S1<S2
S2 Preparing for teaching with technology	2.30	0.74	10	0.91	4.24**	S2>S3
S3 Fostering digital literacy	2.09	0.72	8	0.88	1.65	S1=S3

* p <.05; **p<.001

Table 4 - Correlation coefficients between the scales of teacher educators' use of technology for teaching and learning (Pearson correlation; N=101)

Scale	S1	S2
S1 Teaching with technology		
S2 Preparing for teaching with technology	.733**	
S3 Fostering digital literacy	.761**	.769**

Figure 2a –Items for Teaching with technology S1 (percentages, N=101)
In my classes.....

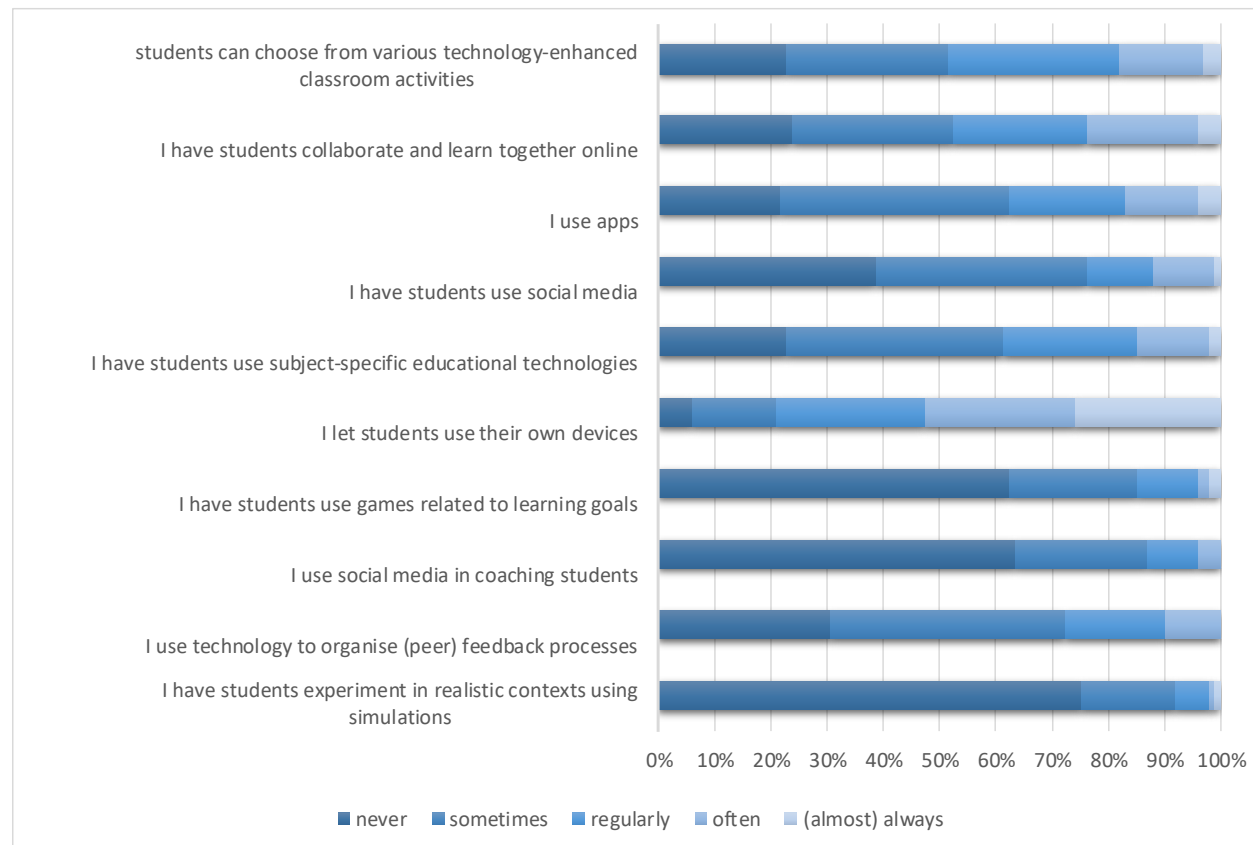


Figure 2b –Most and least frequent use in Teaching with technology S1 (percentages, N=101)

Most used	% never / sometimes
• I let students use their own devices	20.8
• students can choose from various technology-enhanced classroom activities	51.5
• I have students collaborate and learn together online	52.5
Least used	% never / sometimes
• I have students experiment in realistic contexts using simulations	92.1
• I use social media in coaching students	87.1
• I have students use games related to learning goals	85.1

Figure 3a –Items for Preparing for teaching with technology S2 (percentages, N=101)

In my classes I pay attention to.....

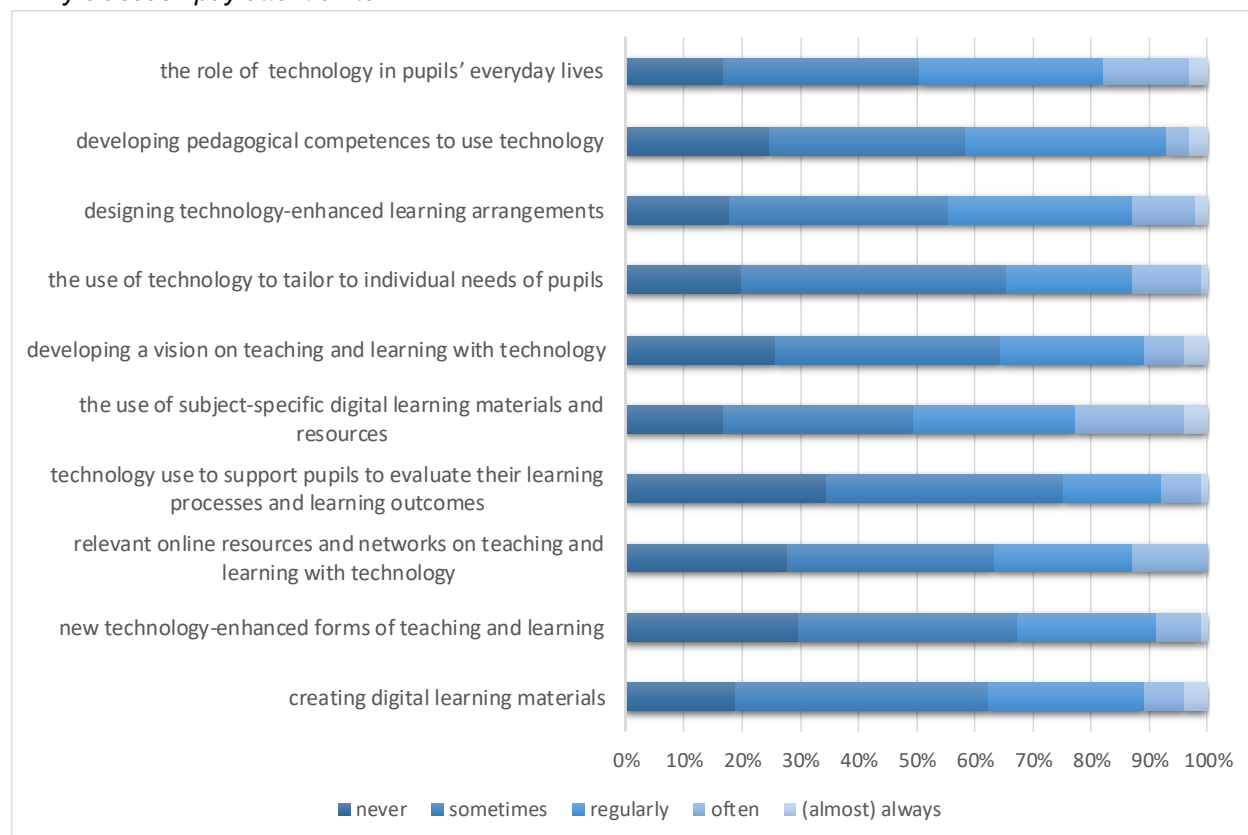


Figure 3b –Most and least frequent use in Preparing for teaching with technology S2 (percentages, N=101) In my classes I pay attention to.....

Most used	% never / sometimes
• the use of subject-specific digital learning materials and resources	49.5
• the role of technology in pupils' everyday lives	50.5
• designing technology-enhanced learning arrangements	55.4
Least used	% never / sometimes
• technology use to support pupils to evaluate their learning processes and learning outcomes	75.5
• new technology-enhanced forms of teaching and learning	67.3
• the use of technology to tailor to individual needs of pupils	65.3

Figure 4a –Items for Fostering digital literacy S3 (percentages, N=101)

In my classes I pay attention to.....

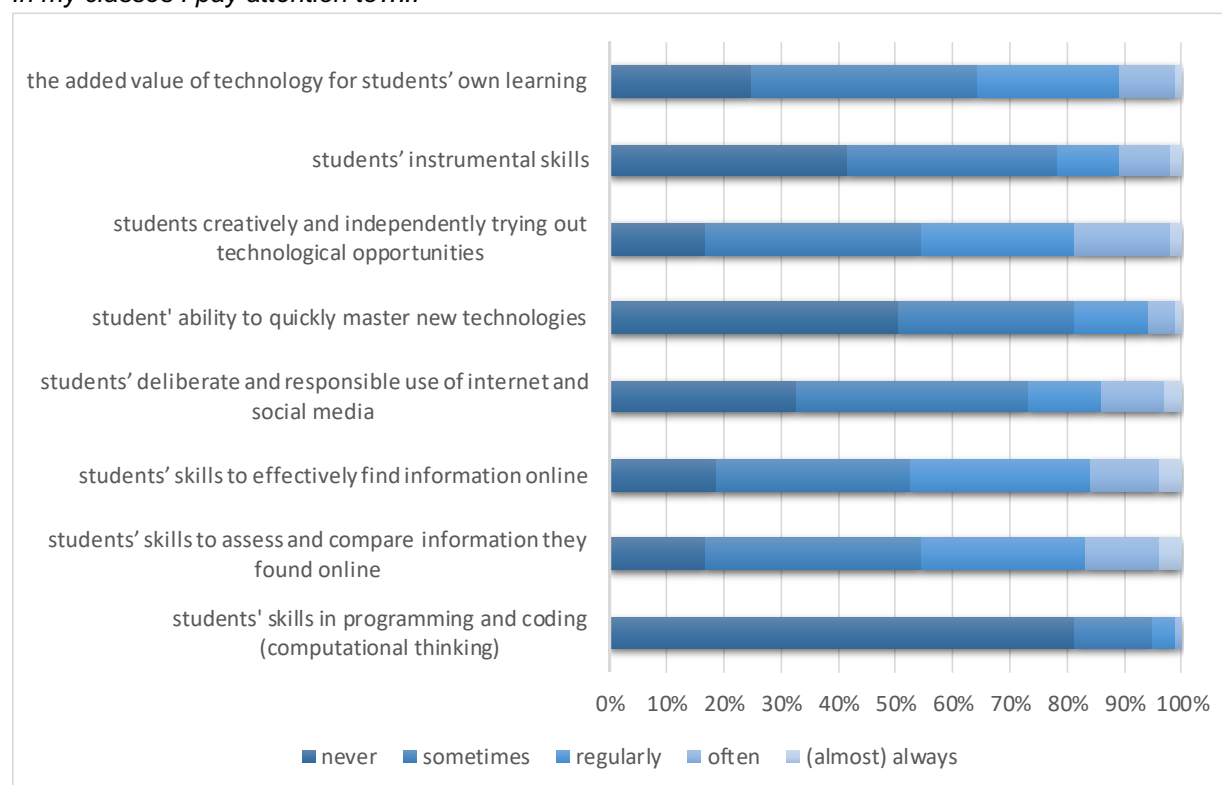


Figure 4b –Most and least frequent use in Fostering digital literacy S3 (percentages, N=101)

In my classes I pay attention to.....

Most used		% never / sometimes
• students' skills to effectively find information online		52.5
• students' skills to assess and compare information they found online		54.5
• students creatively and independently trying out technological opportunities		54.5
Least used		% never / sometimes
• students' skills in programming and coding (computational thinking)		95.0
• student' ability to quickly master new technologies		81.2
• students' instrumental skills		78.2

C. Domains of competence for the use of technology for teaching and learning

Competences for pedagogical and educational use of technology

Table 5 - Descriptive statistics competences for pedagogical and educational use of technology (scales from 1 to 4, min N=100)

Scale	Mean	SD	Number of items	Cronbach's alpha
Proficiency in pedagogical use of technology in education	2.34	0.61	10	0.93
Proficiency in creative use of technology for teaching	2.08	0.69	6	0.95

Figure 5 –Items for Proficiency in pedagogical use of technology in education (percentages, N=101)

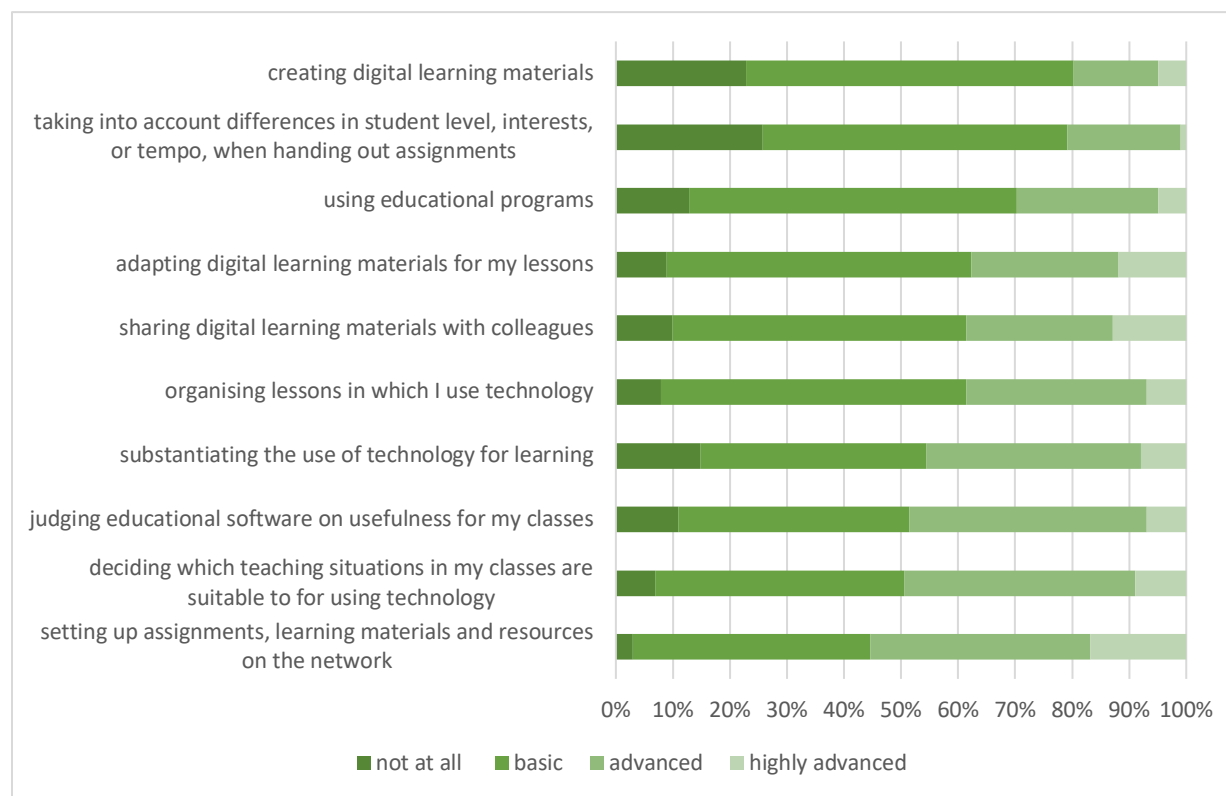
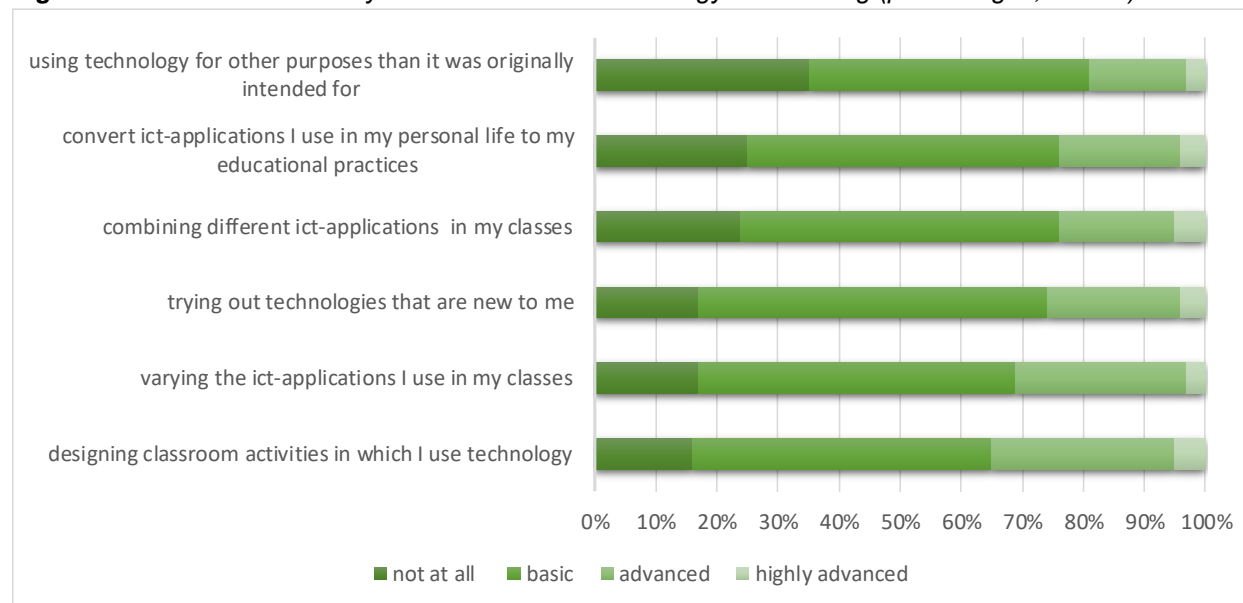


Figure 6 –Items for Proficiency in creative use of technology for teaching (percentages, N=100)



Competences for innovation and professional learning

Table 6 - Descriptive statistics competences for innovation and professional learning (scales from 1 to 5, min N=98)

Scale	Mean	SD	Number of items	Cronbach's alpha
Staying informed about technology use for learning	2.14	0.72	5	0.89
Learning by experimenting and reflecting	4.15	0.53	5	0.82
Daring to share and experiment with technology in education	3.15	.075	5	0.74

Figure 7 –Items for Staying informed about technology use for learning (percentages, N=100)

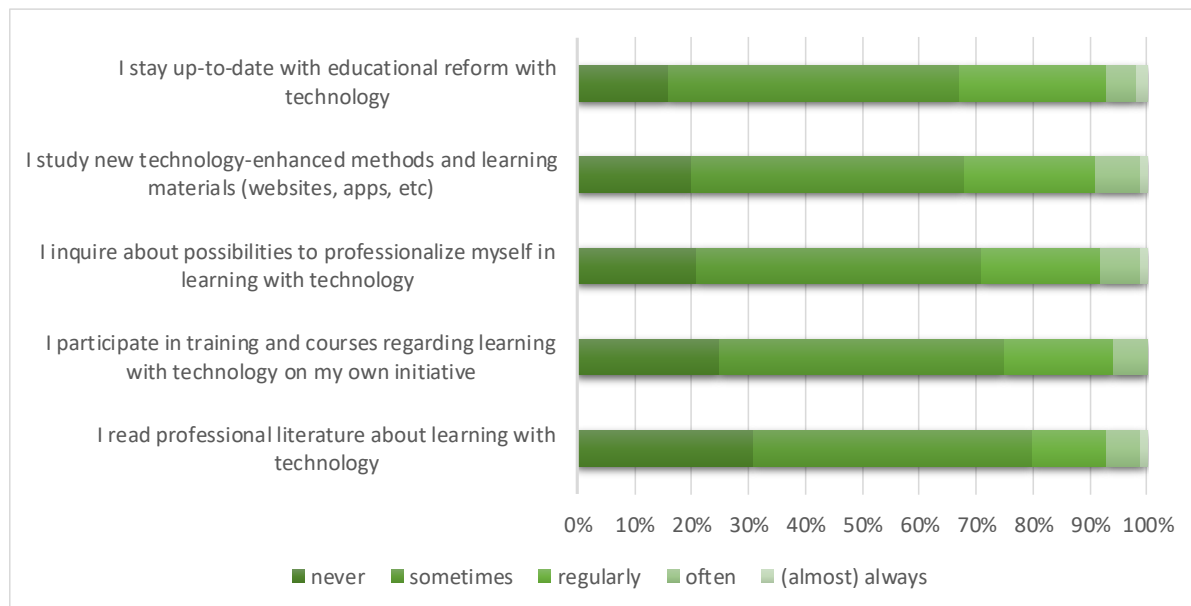


Figure 8 –Items for Learning by experimenting and reflecting (percentages, N=99)

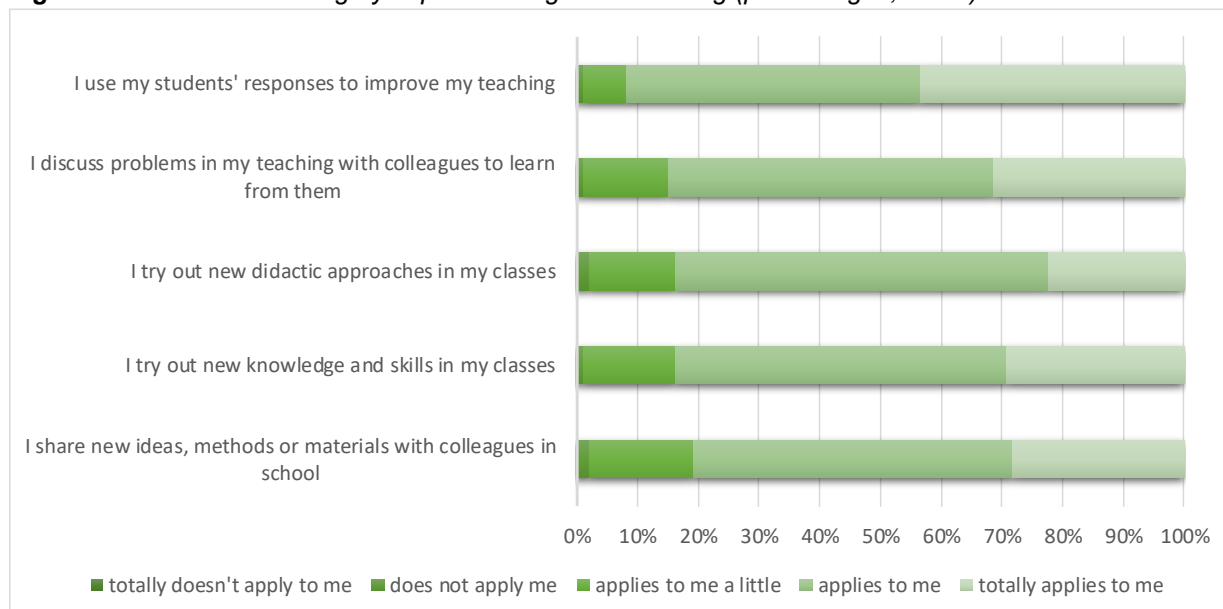
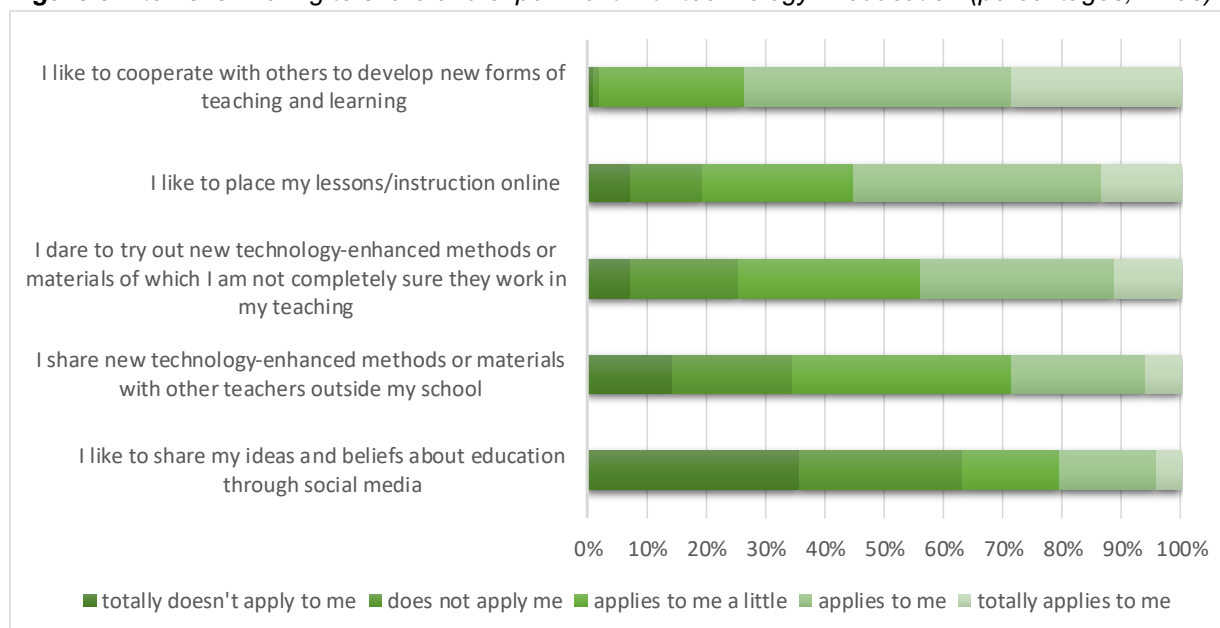


Figure 9 –Items for Daring to share and experiment with technology in education (percentages, N=98)


Digital literacy

Table 7 - Descriptive statistics digital literacy (scales instrumental skills from 1 to 5, information skills and media literacy 1 to 4, N=98)

Scale	Mean	SD	Number of items	Cronbach's alpha
<i>User profile (instrumental skills)</i>				
Consumer	4.02	0.68	3	0.57
Networker	2.59	1.07	4	0.88
Gamer	1.60	0.83	3	0.75
Producer	1.47	0.50	6	0.69
<i>Information skills and media literacy</i>	2.81	0.59	4	0.86

Beliefs about teaching and learning (wit technology)

Table 8 - Descriptive statistics digital literacy (scales from 1 to 5, min N=97)

Scale	Mean	SD	Number of items	Cronbach's alpha
Beliefs about student-centered education	3.68	0.54	5	0.68
Beliefs about the added value of technology for student's learning	3.93	0.52	7	0.85
Beliefs about the added value of technology for teaching	3.82	0.58	4	0.74

Figure 10 –Items for Beliefs about student-centered education (percentages, N=98)

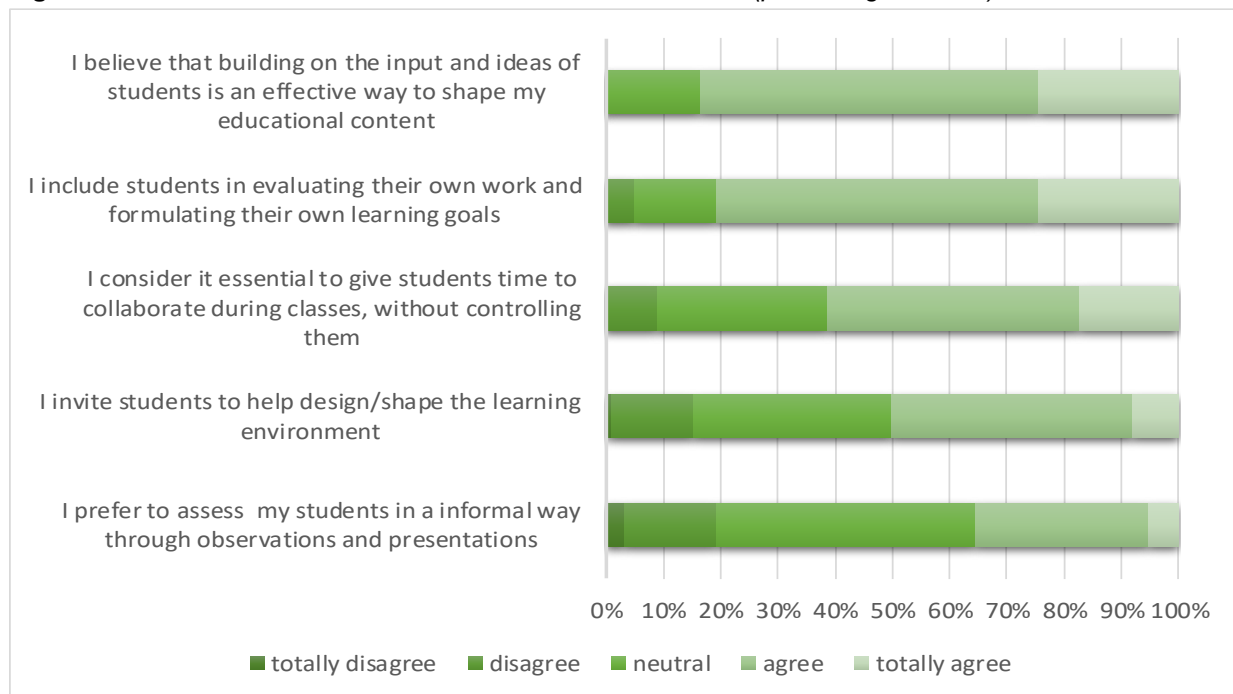


Figure 11 –Items for Beliefs about the added value of technology for student's learning (percentages, N=97). I feel technology has added value for....

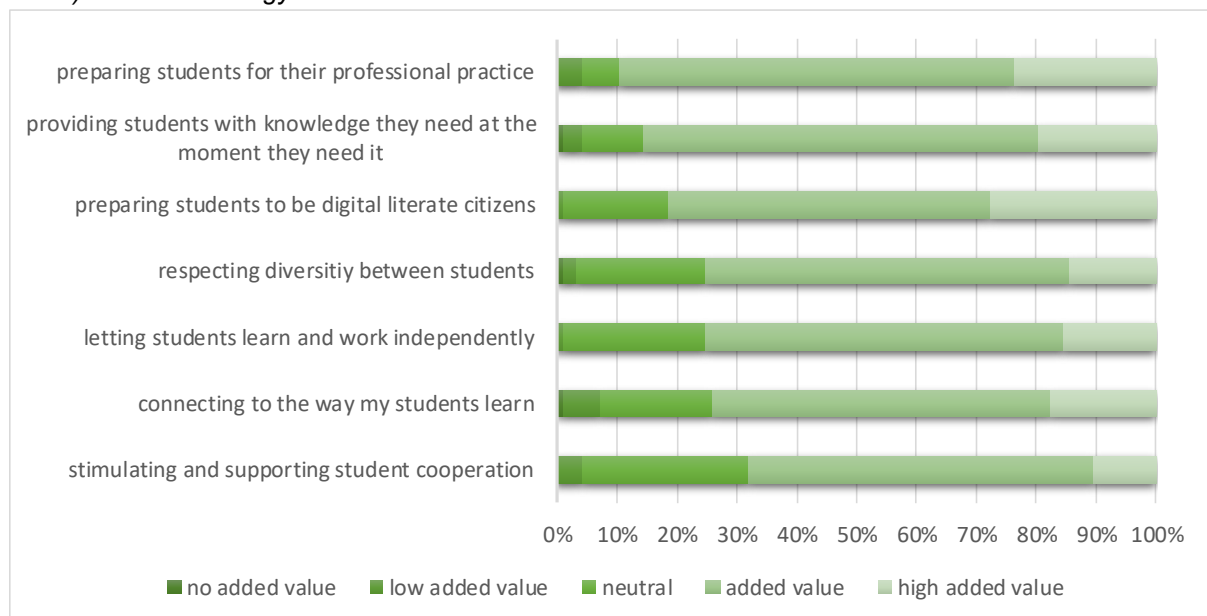
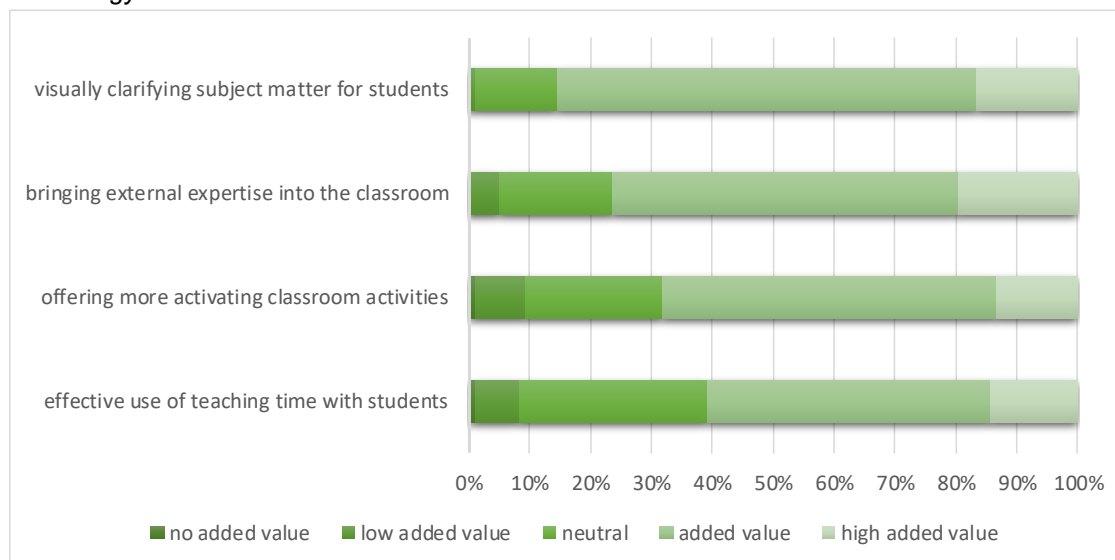


Figure 12 –Items for Beliefs about the added value of technology for teaching (percentages, N=97). I feel technology has added value for....



D. Correlations between Scales for teacher educators' use of technology for teaching and learning and their competences

Table 9 - Correlation coefficients between the factors of teacher educators' use of technology for teaching and learning and competences (Pearson correlation; min N=97)

	Teaching with technology	Preparing for teaching with technology	Fostering digital literacy
Competences for pedagogical and educational use of technology			
proficiency in pedagogical use of technology in education	.594**	.696**	.567**
proficiency in creative use of technology for teaching	.609**	.669**	.555**
Competences for innovation and professional learning			
staying informed about technology use for learning	.555**	.644**	.587**
learning by experimenting and reflecting	.139	.134	.192
daring to share and experiment with technology in education	.381**	.364**	.314**
Digital literacy			
consumer	.272**	.224*	.275**
networker	.291**	.276**	.310**
gamer	.286**	.146	.242*
producer	.432**	.409**	.353**
information skills and media literacy	.393**	.421**	.466**
Beliefs about teaching and learning (with technology)			
beliefs about student-centered education	.362**	.355**	.339**
beliefs about the added value of technology for student's learning	.370**	.394**	.277**
beliefs about the added value of technology for teaching	.307**	.294**	.246*

* p < .05; **p < .001