Supplementary material for the article:

"Job demands and resources of information and communication technology use among teachers in Germany: A group concept mapping study"

Contents:

This supplementary material contains the complete list of statements generated by the recruited in-service teachers on the factors related to teachers' well-being in the context of information and communication technology use in schools.

Authors:

Malte Cramer & Ingmar Hosenfeld

Corresponding author:

Malte Cramer

Email: m.cramer@rptu.de, Phone: 0049 17656429070

Cluster 1: Challenges of Hybrid and Online Learning

ID	Statement	Mean	SD
S1	Lack of digital skills among parents	2.50	1.24
S9	Differences in students' conditions regarding homeschooling	2.83	1.19
S29	Lack of digital skills among students	3.09	1.04
S40	Students take distance learning less seriously	2.75	0.75
S52	Students get distracted and do something else with digital technologies	2.75	1.14
S68	Lack of control (e.g., playing games during class)	2.58	0.79
		2.75	**0.21**

Cluster 2: Communication Overload

ID	Statement	Mean	SD
S2	Too many emails	2.75	1.06
S13	High expectations of parents	2.83	0.94
S24	Challenges to work-life balance	3.42	1.00
S63	Constant availability	3.92	0.29
S70	Double inquiries by students (e.g., by email and via digital platforms)	2.55	1.21
S73	Too many channels are being used simultaneously (e.g., email, digital platforms)	2.83	1.27
		3.05	**0.52**

Cluster 3: Facilitation of Work

ID	Statement	Mean	SD
S3	Teachers can learn from students who, for example, introduce new apps	2.45	1.13
S6	Digitalized teaching materials can be stored more easily	3.17	1.19
S15	Conferences can be attended online from home	3.08	1.16
S19	Easier sharing of materials with colleagues	3.17	0.94
S31	Teachers have to carry fewer work materials to work	2.91	0.94
S49	Facilitation of administrative and organizational tasks	3.50	0.90
S51	Enabling of more intensive contact with parents	3.08	0.67
S55	Communication with parents becomes significantly easier	3.33	0.49

S56	Time savings through exchange of materials via online platforms	2.83	0.94
S61	Time saving in lesson preparation and follow-up	3.82	0.40
S62	Teachers support each other with lesson preparation	2.83	0.94
S66	Digital technologies facilitate the organization of work in the classroom	3.42	0.67
S72	More effective collaboration with parents regarding problematic students (e.g., school absenteeism)	3.17	0.83
		3.14	**0.35**

Cluster 4: Digital Stressors and Competence Gaps

ID	Statement	Mean	SD
S4	Feeling of self-exploitation due to new job demands	2.75	1.29
S7	Teachers' lack of skills in handling digital technologies	2.09	1.14
S8	Overwhelmed by students' better knowledge of digital technologies (compared to the teacher)	2.18	1.08
S18	Creating explanatory videos, podcasts, etc., on one's own is stressful	2.42	1.38
S26	Teachers with high digital competences are continuously driving digital transformation, while other teachers are lagging behind	3.33	0.98
S33	Confusion arising from the high number of different apps	1.82	0.98
S35	Pressure to teach students sufficient digital skills	2.92	0.90
S41	Use of digital learning platforms costs a lot of time	2.92	1.31
S45	The sheer quantity of training courses on digital technologies is overwhelming	2.42	1.08
S57	Lesson preparation takes more time with new digital technologies	3.00	1.26
S58	Health impairments (burning eyes, head and neck pain, insomnia, etc.)	2.58	1.16
S59	Doubts about own abilities when other teachers integrate digital technologies into their teaching	2.80	1.23
S74	Permanent tension that technical problems could occur	2.75	1.29
S75	Continuous, independent familiarization with new digital technologies is exhausting	3.08	1.00
S76	Doubt about the added value of digital technologies	2.11	1.45
S77	Stress when technology does not work	3.42	0.79
		2.66	**0.46**

Cluster 5: Educational Value through the Use of Digital Technologies

ID	Statement	Mean	SD
S5	High motivation of students through digital learning	3.50	0.52

S10	Messenger facilitates contact with students	3.66	0.49
S11	Increased variety of teaching methods in the classroom	2.50	1.24
S20	More efficient work in the classroom	2.92	0.67
S30	Information can be presented in a more accessible way for students	3.17	1.11
S34	New possibilities for lesson design	3.25	0.97
S37	Promotion of self-directed learning	2.08	1.00
S38	Students can be provided with materials at home (e.g., in case of illness)	3.33	0.65
S44	Utilization of apps (e.g., quiz apps) with a fun factor for everyone	3.08	0.90
S46	Digital platforms allow for flexible work, as access to materials is possible at any time	3.42	0.67
S47	New digital teaching methods are well received by students	3.25	0.62
S48	Increased control over learning outcomes and processes through digital technologies	3.09	1.04
S50	More interesting lessons through podcasts, quizzes, and videos	3.25	0.97
S65	Improved opportunities to provide individual support to students	3.58	0.51
S69	Digital technologies support students' learning	3.25	0.87
		3.16	**0.41**

Cluster 6: Unfavorable Framework Conditions

ID	Statement	Mean	SD
S12	Licenses for software programs need to be purchased privately	2.75	1.14
S25	Setting up and dismantling technology for teaching is time-consuming	2.92	1.31
S36	Persistent technical problems that are not resolved (e.g., by service providers or school authorities)	3.42	1.00
S39	Disruption of lessons due to technical problems	3.17	0.94
S42	Reliability of devices	3.59	0.51
S43	Uncertainty regarding data protection regulations	2.92	1.16
S54	Outdated operating systems	3.00	1.21
S60	Setting up and dismantling technology for teaching is physically demanding (e.g., heavy carts for transporting laptops)	2.42	1.38
S67	High costs of acquiring fee-based apps	2.50	1.31
		2.97	**0.39**

Cluster 7: Negative Aspects of Teacher Training in Digital Technologies

ID	Statement	Mean	SD
S14	Focus on promoting teachers' digital competences leads to the neglect of other important competences	2.83	1.19
S27	Training courses on digital technologies cannot always help with specific problems	2.83	0.94
S78	Insufficient number of training courses	2.18	1.08
		2.61	**0.38**

Cluster 8: Support and Recognition in ICT Integration

ID	Statement	Mean	SD
S16	Parent appreciation of the use of digital technologies	2.27	0.79
S21	Good introduction to the use of new digital technologies	3.58	0.67
S22	Participation in training courses on digital technologies	3.00	1.04
S28	Availability of technical support	2.58	1.08
S53	Appreciation by school administration of the use of digital technologies	2.73	1.01
S64	Support offered by colleagues in the event of technical problems	3.75	0.62
S71	Greater popularity of teachers implementing digital technologies in the classroom	2.50	1.00
		2.92	**0.56**

Cluster 9: Basic Requirements for ICT Use in Schools

ID	Statement	Mean	SD
S17	Good provision of digital devices in schools	3.67	0.78
S23	Competence in dealing with technical problems	3.55	0.69
S32	Stable Internet connection	3.33	1.07
		3.52	**0.17**