Motivational and Demotivational Factors Affecting a Teacher's Decision on Whether to Do Research

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∼   One of the teacher's basic tasks should be to ensure that the quality of his/her educational work is continually enhanced by the application of practitioner research, as a recognised genre of educational research. The aim of this study was to explore factors that can motivate or demotivate teachers to include research in their educational practice. An online questionnaire was addressed to all Slovenian primary and secondary school teachers and full responses were received from 325 teachers. Although the teachers expressed high perceived self-confidence in their research abilities, this did not transfer to research activity, as only about one quarter of the respondents reported that they performed research. The main drivers of research are an intrinsic motivation for research and career goal orientation, followed by the relatively low influence of important others. Practitioner research is highly valued among teachers, so there must be other factors at work preventing more teachers from starting research activities. Among the leading factors recognised as obstacles are those that can be regarded as facilitating conditions in terms of motivational theory. Work overload, lack of time, school bureaucracy and family life can be regarded as competing with research for the teacher's time, along with other important issues. The school climate cannot be regarded as the main obstacle to research. The findings call for the reallocation of at least some work duties in favour of research as part of regular employment.

Keywords: teacher-researcher, reflective practitioner, motivation for research

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Motivacijski in demotivacijski dejavniki, ki vplivajo na odločitev učitelja, ali bo raziskoval

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∼   Učiteljeva osnovna naloga bi morala biti stalno zagotavljanje dviga kakovosti izobraževalnega dela z vpeljavo lastnega raziskovalnega dela v prakso (»practitioner research«) kot priznane zvrsti raziskav v izobraževanju. Cilj te študije je bil raziskati vpliv dejavnikov, ki lahko motivirajo ali demotivirajo učitelje za vključitev raziskav v njihovo izobraževalno prakso. Spletni vprašalnik je bil naslovljen na vse slovenske učitelje osnovnih in srednjih šol, 325 učiteljev pa je prispevalo odgovore. Čeprav so učitelji izrazili visoko samozavest o svojih raziskovalnih sposobnostih, pa se to pozneje ni preneslo v njihovo raziskovalno dejavnost, saj je le približno četrtina anketirancev poročala, da so že raziskovali. Najpomembnejši spodbujevalci raziskovalnega dela so notranja motivacija za raziskovanje in karierni cilji, čemur sledi razmeroma nizek vpliv pomembnih drugih. Ker je raziskovalno delo med učitelji zaznano kot cenjeno, sklepamo, da morajo obstajati drugi dejavniki, ki preprečujejo, da bi se več učiteljev vključilo v raziskovalne dejavnosti. Med vodilnimi dejavniki, ki so prepoznani kot ovire, so tisti, ki jih lahko v smislu motivacijske teorije obravnavamo kot olajševalne okoliščine. Zato lahko preobremenjenost z delom, pomanjkanje časa, šolska birokracija in družinsko življenje skupaj z drugimi pomembnimi vprašanji tekmujejo z raziskovalnim delom za čas učitelja. Medosebnih odnosov v šoli ne moremo obravnavati kot glavno oviro pri raziskovanju. Če bi želeli vzpodbuditi avtentično raziskovalno delo učiteljev, bi to na osnovi ugotovitev, pridobljenih z raziskavo, zahtevalo prerazporeditev vsaj nekaterih delovnih nalog v korist raziskav v okviru redne zaposlitve.

Ključne besede: učitelj raziskovalec, refleksivni praktik, motivacija za raziskovanje

Introduction

Research activities are not regarded as a part of the teacher's regular work at primary and secondary schools in Slovenia. However, in order to avoid the trap of "cargo-cult" based education (Hattie & Hamilton, 2018), teachers should be an integral part of research and change (Borko, Liston, & Whitcomb, 2007; Hirsch, 2002). Such an approach can lead to evidence-based solutions that avoid the following situation: "The return of school reforms suggests that the reforms have failed to remove the problems they were intended to solve" (Cuban, 1990, p. 5). In the literature, there are many different perceptions of teacher research, ranging from informal research and solving practical problems (Cochran-Smith & Lytle, 2009), to "strict" academic research (Akerlind, 2003). Knowledge of and attitudes towards research in schools at all levels should therefore be given high priority.

One of the pre-university teacher's main occupations throughout his/her career should be continuous improvement of educational practices based on evidence. Regardless of whether the teacher merely wants to fix specific classroom problems, or whether s/he wants to compare his/her own practice with that of others, to test the added value of updated technology, or to test a workable proposal from curriculum reformers or a teacher conference, all actions should be based on evidence. The best evidence is provided by the application of a research methodology following qualitative, quantitative and mixed methods of inquiry. These are traditions adapted to practitioner research as a recognised genre among educational research traditions (Borko, Liston & Whitcomb, 2007), whereby teachers and their work are simultaneously objects and researchers. Teachers' inquiry and research efforts generally do not follow research methods designed for laboratory experiments in a controlled environment, nor do they include the recognition of possible bias. Thus, unidentified factors influencing results become increasingly important (Brown, 1992). On the other hand, "authenticity" represents the added value of such research (Del Carlo, Hinkhouse, & Isbell, 2010).

The fluid nature of education, where the only constant is change, brings insecurity to teachers' daily routines (Cuban, 1990; Tobin & McRobbie, 1996). As described by Šorgo et al., 2011, p. 306), teachers live "in an educational landscape, where beside tested traditional and new strategies of teaching, paths are covered with shards of temples of educational theories and raging prophets of instant education". Truths from the past, as well as the promises of reformers, should therefore be constantly tested (Cuban, 1990). The first major reason for repeated evaluation is the realisation that classroom education practices are conservative and

resistant to change, even when change is necessary (Tobin & McRobbie, 1996). On the other hand, conservative systems tolerant of change "can sometimes prevent damages with the introduction of untested solutions into teaching on a wide scale" (Šorgo, Usak, Aydogdu, Keles, & Ambrožič-Dolinšek, 2011, p. 306).

There are numerous studies of the connections between research and teaching among higher education personnel (e.g., Hattie & Marsh, 1996); however, higher education is beyond the scope of the present study. Therefore, whenever the word "teacher" is used in the present text, it should be understood in the sense of a pre-university primary or secondary school teacher with no official research duties. There are many published papers advocating the importance of research for teachers in three distinct contexts: (1) as a collaboration between teachers and researchers; (2) with teachers as the primary researchers; and (3) in teachers' study groups (Watts, 1985). It is beyond the scope of the present article to review this topic; however, a general conclusion is that practitioner research provides many benefits and does not harm the educational process.

It is probably wishful thinking to believe that the education of prospective teachers can provide all of the necessary lifelong competencies related to teaching in all possible varieties, while simultaneously allowing teachers to develop the ability to solve emerging problems (Del Carlo et al., 2010). However, at the beginning of their educational career, teachers who are prepared to accept the role of reflective practitioner (Schon, 1983) have an advantage, as they can recognise their teaching as an intellectual activity in which they can build a new understanding based on their own experiences and reflections on them. Nevertheless, such experiences, even if anecdotal, should be properly evaluated, and any consequences should be based on logical reasoning and formally correct procedures (Brown, 1992), even if a language different from that in academic institutions is used (Del Carlo et al., 2010).

The idea that teachers should research their own work stemmed from the reasoning that such activities can improve their professionalism and autonomy (Richards & Lockhart, 1994; Vogrinc, Zuljan, & Krek, 2007; Zuljan, Vogrinc, Bizjak, Krištof, & Kalin, 2007). Furthermore, these activities can be continued later in the teacher's career (Wilhelm & Fisher, 2019), when research work can be performed in partnership with professionals, individually or as group work with other teachers (Watts, 1985). According to Lewis and Munn (1987, p. 10), the main motivators for teachers to engage in research are:

(1)   to monitor and influence the direction of new developments;
(2)   to discover what is going on, recognising that what occurs is not always the same as what is thought to occur;
(3)   to evaluate what is already taking place.

There are many arguments for the importance of teacher research. It can help in the introduction of innovations in the classroom (Ermeling, 2010), increased efficacy (Henson, 2001), as well as improvement of the teacher's knowledge of research and his/her ability to perform research (Meijer, Oolbekkink, Meirink, & Lockhorst, 2013). Since research stems from professional concerns and beliefs, as well as from actual practice (Sande, 2018), teachers applying a bottom-up approach can warn authorities, supported by evidence, about flaws in regulations, expectations, curricula, syllabi, donated tools, work conditions, and similar (Dana, Thomas, & Boynton, 2011; Smith & Lytle, 1999).

Furthermore, individual research can provide the ability to read and understand terminology and statistics at the level of academic research (Kirkwood & Christie, 2006). By understanding cutting-edge research, teachers can help to overcome the missing transfer of academic research findings to the educational sector, where they can be tested in real settings (Johansson, Sandberg, & Vuorinen, 2007). With the inclusion of teachers as partners in research coalitions, and not only as objects of observation or providers of data, the teacher can provide valuable information and views from different perspectives (Peeters & Vandenbroeck, 2011).

There are many factors that can influence teachers' intentions and actual research activities. Basically, these can be divided into personal characteristics and traits, on the one hand, and environmental factors, on the other, whereby the school climate, philosophy and culture can either support or hinder the research activities of an individual teacher or a collective (Richards & Lockhart, 1994).

According to motivational theories, behavioural intentions are a precursor of actual behaviour (Madden, Ellen, & Ajzen, 1992) and are moderated by a limitless number of factors and combinations of factors, which can be loosely grouped as follows: personal traits and characteristics tagging a person of interest (e.g., gender, personality); interpersonal relations (e.g., the influence of an important other); and factors pertaining to the immediate (school) and distant environment (e.g., the availability of a library, research funds and grants). It is far from easy to establish and cultivate a research culture in schools and upgrade it to the level where the findings and the quality of conclusions can be complementary to the research of academics and professional researchers (Mitchell, 2002; Stenhouse, 1975). Cencič (2001) emphasises the importance of openminded and supportive institutions that do not suppress practitioner research. If teachers face too many obstacles, the most probable outcome is accommodation to traditional and well-tested strategies.

A number of authors have outlined the importance of schools as learning communities where teachers can test their ideas, communicate them to

colleagues, and informally peer review each other's work (Schaap & de Bruijn, 2018; Vec, 2007). An important obstacle is the traditional organisation of school life, with fixed schedules and yearly planned activities within a fixed annual plan, a situation that does not often allow the flexibility needed for the introduction of novel methods. Since teachers are constantly inundated with tasks that need to be completed immediately, they come to identify research as something that will take them away from more important things in the classroom (Kennedy, 2016).

In Slovenia, the role of the researcher is the least interesting and the least abundant among the many roles of the teacher (Cencič, 1998). According to Cencič (1998), the unattractiveness of research activity to teachers can be attributed to:

(1)   the opinion that research and teaching are incompatible and that research is the exclusive domain of professionals;
(2)   the complexity of the research process and statistical methods;
(3)   the requirements of "traditional research" in terms of validity, reliability and objectivity;
(4)   a lack of the specialised knowledge, skills and attitudes needed for research.

Aims and scope of the research

The aim of the present research was to identify and explore the motivational factors that positively or negatively influence research activity among Slovenian teachers. Our interest lay in the identification of teachers' perceived motivation and demotivation, as well as their perceived self-confidence with regard to their individual research. For those who do not engage in research, our intention was to establish the major obstacles that prevent research activity.

Due to the exploratory and nonexperimental study design, formal hypotheses were not established prior to the research. However, in the search for differences between personal characteristics, a general hypothesis can be understood in the sense: "Differences between participants based on a characteristic (e.g., gender) are statistically significant" and are later the subject of an appropriate statistical test.

The research questions were:

(1)   What motivates teachers to do or not to do research?
(2)   Which factors are the main perceived obstacles for those who do not engage in research?
(3)   Are there differences between personal characteristics that influence participation in research?

Method

Research population and sample

The research population comprised all of those who can be identified as teachers at Slovenian nine-year basic school and upper secondary vocational, professional and general schools, representing a total of approximately 28,000 persons.

The invitation to complete the online questionnaire resulted in 1,872 visits to the application, of which 325 (17%) provided all of the required responses. The sample comprised 66 (20.3%) males and 259 (79.7%) females. Of the respondents, 122 (37.5%) reported 0–20 years of work experience, and 203 (62.5%) reported more than 20 years of work experience.

Sampling

The questionnaire was assembled on the Slovenian open survey system 1KA (Enklik, 2019). The link, accompanied by a short flyer with a brief description of the aims of the research and the survey instrument, was sent to the email addresses of all Slovenian schools. In addition, it was announced at teacher forums and on online social networks. Data was collected between October 2018 and January 2019.

Questionnaire

The initial version of the questionnaire was prepared by the authors as part of a master's thesis (Heric, 2019), and a draft version was validated by experts from the field of education and sent to a number of preservice teachers to be checked for comprehensibility and language. The pre-final version – in Slovenian, as the language of the survey – was checked by a proofreader. For the purpose of the presentation, it was translated into English and the translation checked by a bilingual native speaker.

The parts of the questionnaire considered in the present paper are as follows:

- *Demographics.* We asked about the teachers' gender and years of experience.
- *Self-report on research intentions and actual research practice.* We asked one question about whether, in addition to their pedagogical duties, the teachers also performed research. Five possibilities were offered (see Table 1).
- *Self-assessment of perceived research capability.* We asked about the teachers' perceived capability to do research in the domain of the discipline they teach, and in the domain of educational research. In both cases, the

report format was a 7-point Likert scale with the extreme options being 1 (completely disagree) and 7 (completely agree). Only numbers were offered, without a written description of their value (e.g., partially agree) (see Table 2).

- *Motivation for research.* We provided 19 items that could motivate teachers to undertake research work on a 7-point scale between 1 (completely disagree) and 7 (completely agree) (see Table 3).

- *Obstacles preventing research.* The question "What can be regarded as an obstacle that prevents you from doing research or from devoting more time to it?" was addressed to those who did not clearly declare that they did research. We provided 15 items listing obstacles on a 7-point scale between 1 (completely disagree) and 7 (completely agree) (see Table 4).

Statistical analysis

The data were exported from the 1Ka survey system as Microsoft® Excel files. They were scrutinised for outliers, missing data and patterns showing regularity (e.g., answers in diagonal). After clearing, the data table was imported into the SPSS® statistical package to undergo statistical procedures.

All variables were preliminarily checked for normality. Since the majority of the variables do not follow the assumption of normality (Kolmogorov – Smirnov test, at the $p < .05$ threshold level), and due to the ordinal nature of the items, the Mann-Whitney nonparametric test was used. Effect size r was calculated according to the formula $r = -z/\sqrt{N}$ as provided in Field (2009, p. 550). Threshold (margin) values were set as $r < .2$ for insignificant effect size, $r < 0.5$ for small effect size, $r < 0.8$ for medium effect size, and $r > 0.8$ for large effect size. Eta squared following the Wilcoxon signed ranks test was the choice when samples were related.

Reliability was calculated as Cronbach's alpha, and a value of alpha larger than .7 was set as a threshold margin.

Exploratory factorial analysis (EFA) followed standard procedures as proposed for such analyses (Field, 2009). Principal Component Analysis (PCA) with oblique (Direct Oblimin) rotation was chosen. Component loadings lower than .4 were not considered in component interpretation. Parallel analysis was chosen to reveal the number of components as extracted by PCA (Patil et al., 2017).

Results

In order to answer the research questions, the results are provided as tables and comments.

Self-report on research intentions and actual research practice

The results are given in Table 1 as the frequency of responses to the question: "*Along with your pedagogical duties, do you also perform research?*"

Table 1

Frequency of responses to the question: "Along with your pedagogical duties, do you also perform research?"

Response	f	f %
I do not perform research; however, I would if had the chance.	114	34.1
Yes, I do research.	82	24.6
I did engage in research, but not anymore.	70	21.0
I do not perform research, and I have no intention of doing so.	64	19.2
I am a student.	4	1.2

Note. N = 334.

Table 1 indicates that only about one quarter of respondents reported that they did perform research, and slightly less than one fifth maintained that they had no intention of doing research.

Perceived research capability

The results for perceptions of research capability on a 7-point scale (N = 504) are presented in Table 2.

Table 2

Frequency and measures of central tendencies of responses to the question: "Do you think that you possess enough professional knowledge to conduct research parallel to your teaching duties?"

Code	Discipline	f1 %	f2 %	f3 %	f4 %	f5 %	f6 %	f7 %	Mean	SD	Med
Q2b	In the core field of study.	1.6	1.8	4.4	14.1	24.8	37.5	15.9	5.35	1.27	6
Q2a	In the pedagogical/ didactic field.	1	2.8	5.4	17.5	32.3	29.4	31.5	5.12	1.25	5

Note. N = 334. Frequencies between f1 – completely disagree – and f7 – completely agree.

From the results presented in Table 2, it can be seen that on average the teachers expressed slightly greater confidence in research within their core discipline than in educational research. However, despite being statistically significant (Wilcoxon signed ranks test; Z = -4,7; p < .001), these differences are small in terms of effect size (η^2 = .04).

After applying statistical tests, we were unable to find statistically signifi-cant differences at the $p < .05$ levels in any of the personal characteristics under investigation. However, those who actually perform research evaluated their per-ceived capabilities in both variables more highly than those who, for whatever reason, do not (U (Q2a) = 6797.5, $p < .001$) η^2 = 0.06); (U (Q2b) = 7040, $p < .001$, η^2 = .06).

Motivation for research

Motivation and its opposite, demotivation, can be regarded as the strongest factors in any decision to engage in research or not. The results of the motivation questionnaire are presented in Table 3. The table shows the fre-quency, central tendencies (mean, mode and median) and component load-ings of the responses to the question about the importance given to a number of potential factors that can motivate teachers to do research work on a scale between 1 (completely disagree) and 7 (completely agree). The results are given as a percentage of the total sample (N = 325) and ordered by decreasing means.

Table 3

Descriptive statistics and results of EFA of responses to the question about the importance given to a number of potential factors that can motivate teachers to do research work.

Code	Statement	f1 %	f2 %	f3 %	f4 %	f5 %	f6 %	f7 %	Mean	SD	Med	PC1	PC2	PC3
Q3f	Own satisfaction	0.0	0.3	1.2	2.9	15	33.1	**47.5**	6.22	0.92	6	.77		
Q3b	Own professional development	0.0	0.3	1.8	3.8	10	41.3	**42.8**	6.19	0.92	6	.82		
Q3d	Own wish to research	0.3	0.6	1.8	4.4	10.9	34.9	**47.2**	6.18	1.03	6	.74		
Q3i	Gathering new knowledge	0.6	0.9	0.9	3.5	11.7	**40.2**	28.6	6.14	1.02	6	.79		
Q3j	Gathering new experiences	0.0	0.6	1.2	3.8	13.8	**41.1**	39.6	6.12	0.94	6	.81		
Q3o	Development of own ideas	0.3	0.9	1.8	3.5	15.8	**41.9**	35.8	6.03	1.02	6	.75		
Q3g	Overcoming new challenges	0.6	0.3	2.9	7.0	23.2	**40.8**	25.2	5.75	7.08	6	.73		
Q3e	Own entertainment	1.8	2.1	3.2	12	24.6	**33.7**	22.6	5.47	1.32	6	.56		
Q3a	Proof of own capabilities	2.9	2.1	4.4	13.5	18.8	**33.7**	24.6	5.43	1.45	6			.63

Code	Statement	f1 %	f2 %	f3 %	f4 %	f5 %	f6 %	f7 %	Mean	SD	Med	PC1	PC2	PC3
Q3p	Incentive of a school/collective	2.1	2.9	3.8	16.4	26.4	**33.4**	15.0	5.22	1.34	5		.58	
Q3s	Collecting points for promotion	5.9	4.4	6.7	14.7	23.2	**28.4**	16.7	4.97	1.65	5			.69
Q3m	Promotion of the school	4.7	5.9	6.2	15.2	**30.5**	25.5	12.0	4.86	1.55	5		.67	
Q3c	Own promotion	6.5	7.6	10.6	20.2	22.3	**23.5**	9.4	4.52	1.65	5			.73
Q3n	Research of other colleagues	7	7	7.3	**28.7**	25.5	19.9	4.4	4.36	1.52	4		.64	
Q3h	Gaining respect from colleagues	9.7	9.7	9.4	**31.1**	22.3	12.6	5.3	4.06	1.60	4		.63	
Q3q	Striving for professional rewards	13.8	11.4	8.5	**32.2**	21.1	16.1	5.9	3.98	1.78	4			.61
Q3r	Competitiveness between teachers	21.4	16.7	14.1	**28.7**	15	2.9	1.2	3.13	1.53	3		.63	
Q3k	Public pressure	22.3	16.7	12.9	**30.5**	12.0	4.1	1.5	3.11	1.56	3		.79	
Q3l	Pressure from colleagues	20.2	20.2	15.2	**29.9**	12.3	2.3	1.5	3.09	1.49	3		.77	

Note. N = 325. Frequencies in percentages between f1 – completely disagree and f7 – completely agree. Mean = arithmetic mean; SD = standard deviation, Med = median; Mode = values of mode are in bold type; PC1–PC3 = principal components.

Table 3 shows that the top three items can be attributed as factors of intrinsic motivation, while the bottom of the table contains those items belonging to extrinsic motivation. Statistically significant differences between genders were found in statements Q3b *(U = 6640.5; p = .002; r = .17)*, Q3f *(U = 7278.5; p = .03; r = .11)*, Q3i *(U = 6725.5; p = .004; r = 0,16)*, Q3j *(U = 6464.5, p < .001; r = .18)* and Q3s *(U = 6818; p = .009; r = .14)*. In all of these cases, agreement with the statements was higher among females. Statistically significant differences between ages were found for statements Q3q *(U = 9746.5; p < .001; r = .18)* and Q3s *(U = 10640.5; p = .03; r = .12)*, with higher agreement among younger teachers.

Exploratory factorial analysis

Cronbach's alpha of the entire instrument is .87. Values of KMO (.89) and Barlett's Test of Sphericity (Approximate Chi-square = 2882.5, *df* = 171, *p* < 0.001) allow the intended analyses. PCA analysis with oblique (Direct Oblimin) rotation revealed three components (C1–C3), explaining 58.1% of the variance. Statistical data, as well as component loadings, are provided in Table 3. The first component is a construct of eight statements (31.8% of the variance; Eigenvalue 6.05; Alpha = .890) showing internal motivation and positive attitudes towards research. The second component (19.8% of the variance; Eigenvalue = 3.77; Alpha = .847)

comprises statements that can be regarded as extrinsic motivation triggered by important others (public, collective, etc). The third component (6.5% of the variance; Eigenvalue = 1.23; Alpha = .740) comprises statements in which intrinsic motivation can be identified as a driver for goal orientation.

Teachers who do not perform research

The next pool of items, aimed at identifying reasons for teachers not engaging in research, was addressed to those teachers who responded that they did not do any research. The results are presented in Table 4. The table shows the frequency, central tendencies (mean, mode and median) and component loadings of the responses to the question about agreement with a number of obstacles preventing research. The results are given as a percentage of the total sample (N = 242) and ordered by decreasing means.

Table 4
Descriptive statistics and results of EFA of responses about obstacles preventing practitioner research.

Code	Statement	f1 %	f2 %	f3 %	f4 %	f5 %	f6 %	f7 %	Mean	SD	Med	PC1	PC2	PC3	PC4	PC5
Q8l	Too great a workload	1.7	1.2	3.7	11.6	14.9	**36.0**	31.0	5.69	1.33	6	.78				
Q8j	Lack of time	2.1	3.3	4.5	12.4	19.0	**31.0**	27.7	5.47	1.46	6	.88				
Q8a	Too much bureaucracy	2.5	2.1	4.1	19.8	15.3	**29.3**	26.9	5.39	1.47	6					.63
Q8b	Family responsibilities	2.9	4.5	7.0	15.3	24.0	**26.0**	20.2	5.12	1.54	5		.68			
Q8k	Lack of money in the school	7.0	7.4	6.6	**28.9**	15.7	22.3	12.0	4.54	1.69	4.5					
Q8c	I do not find a career in science attractive	9.9	13.2	8.7	**30.6**	18.2	12.8	6.6	3.99	1.68	4			.84		
Q8i	I am hindered by a lack of knowledge of a foreign language	16.1	14.9	7.9	**20.2**	20.2	14.5	6.2	3.82	1.86	4				.54	
Q8d	I do not think I would be accepted as a scientist or researcher.	12.0	19.4	12.8	**29.3**	14.0	6.6	5.8	3.57	1.65	4					.71

Code	Statement	f1 %	f2 %	f3 %	f4 %	f5 %	f6 %	f7 %	Mean	SD	Med	PC1	PC2	PC3	PC4	PC5
Q8g	I do not have enough professional expertise	10.7	21.9	9.9	**25.6**	21.9	8.3	1.7	3.57	1.57	4				.90	
Q8h	I am not interested.	16.1	17.4	12.8	**26.0**	14.5	10.7	2.5	3.48	1.67	4			.75		
Q8e	I think that teachers are not educated enough to do research.	12.8	**29.3**	12.4	23.1	16.9	4.5	0.8	3.19	1.49	3					.68
Q8f	The negative climate at school.	22.3	22.7	14.0	**25.2**	8.7	4.5	2.5	2.99	1.59	3	.80				
Q8o	The collective does not appreciate my research work.	24.8	21.1	6.2	**36.8**	4.5	4.1	2.5	2.98	1.59	3	.89				
Q8m	Research is not a job for teachers.	**33.1**	26.9	8.3	23.1	6.2	2.1	0.4	2.50	1.44	2	.46				
Q8n	I do not attach any importance to research.	**36.8**	27.7	9.9	14.0	7.9	3.3	0.4	2.40	1.48	2	.48			.43	

Note. N = 242. Frequencies between f1 – completely disagree – and f7 –completely agree. Mean = arithmetic mean; SD = standard deviation, Med = median; Mode = values of mode are in bold type; PC1–PC5 = principal components.

At the top of the reasons (Table 4) for not doing research are factors that can be recognised as perceived (actual) behavioural control. The items at the bottom of the table comprise disagreement with claims about the importance of research and claims that research is not for teachers.

Statistically significant differences between genders (higher agreement among male respondents) were found for statements Q8m *(U = 3332.5; p = .046; r = 0.22)* and Q8o *(U = 3237.0; p = .025; r = .25)*. Knowledge of a foreign language (Q8i) was recognised as a more important obstacle by older teachers *(U = 5023.5; p <= .001; r = .25)*, while lack of time (Q8j) *(U = 5166.0; p < .001; r = .24)* was a reported cause for a greater number of younger teachers.

Exploratory factorial analysis

Cronbach's alpha of the entire instrument is .75. Values of KMO (.73) and Barlett's Test of Sphericity (Approximate Chi-square = 909.7, df = 1051, *p* < .001) allow the intended analyses. PCA analysis with oblique (Direct Oblimin) rotation revealed five components (C1–C5), explaining 63.6% of the variance by the application of the criterion Eigenvalue > 1. However, after the application of

stricter criteria based on parallel analysis (Patil et al., 2017), only the first three components, explaining 48.5% of the variance, were revealed. Statistical data, as well as component loadings, are provided in Table 4. The first component is a construct of four statements (23.1% of the variance; Eigenvalue 3.47; Alpha = .73), showing that the school climate cannot be regarded as the main obstacle to research. The second component (15.7% of the variance; Eigenvalue = 2,36; Alpha = .73) comprises three statements that can be regarded as providing competition for research time with other more important issues (e.g., family, school workload). The third component (9.6% of the variance; Eigenvalue = 1.45; Alpha = .66) comprises three statements showing neutral interest in research.

Discussion

The discussion is organised as responses to the research questions. From the research findings, we can identify good news and bad news. The good news is that teachers express high perceived self-confidence about their research abilities (Table 2), both in their own discipline and in pedagogy. However, this does not transfer to actual research, as only approximately one quarter of the respondents reported that they actually do research (Table 1). Furthermore, it seems that even those who reported research activity only participate in research sporadically, and the major venue for publishing their work is the proceedings of teacher conferences. We did not ask about their mentorship of young researchers, an institution that is well established in Slovenia and can be recognised as individual research by a number of teachers. In bibliographical databases, most published material from teacher conferences is not indexed; therefore, the real numbers regarding visible research are inaccessible. When a search was performed in the academic database Web of Science under the category "Education and Educational Research", it became clear that teachers rarely publish in international peer-reviewed journals (data not shown). Most of the published articles were prepared in cooperation with professional researchers.

The best potential for change involves those (34%) who reported that they would participate in research should the opportunity arise. To test the honesty of their responses, they should be given an opportunity to begin research as partners in research projects of professional institutions or as members of *ad hoc* teacher research communities. Although the quality of practitioner research was not a concern of this study, it should be noted that only methodologically sound research, whether qualitative or quantitative, can count as evidence for change. To achieve the appropriate research levels, teachers need more than just support at the material level, although this, too, should not be ignored. For

example, teachers are regularly denied access to academic databases if these are behind a paywall, and the same is true of access to professional statistical packages. They also need supportive peer review of their work in all phases of research. Some concern could arise from the equal number of teachers who once performed research but no longer do so, and those who stated that they never do research and have no intention of starting. These two groups should be addressed in follow-up research to provide solutions for their (re)activation.

1)   *What motivates teachers to do or not to do research?*

There is no need for concern regarding self-reported motivation (Table 3) for research, as the top of the list is populated by statements forming the first principal component, which can be recognised as pristine representatives of intrinsic motivation as the most important driver of research activity. The second component can be regarded as important others, and at the end of the table are statements related to the material career aspects of research activity. The results are in line with a study by Muršak, Javrh and Kalin (2011), who found that most teachers are not career oriented. In our results, this was reflected in the finding that younger teachers are more oriented towards "token collection" and career building. Based on PCA, three components (C1–C3) were extracted, explaining 58.1% of the variance. The most important component is considered as intrinsic motivation and positive attitudes towards research. The second component comprises statements that can be regarded as extrinsic motivation triggered by important others (public, collective, etc); however, according to the ranking, it has the lowest scores. The third component comprises statements in which intrinsic motivation can be regarded as driven by goal orientation (DeShon & Gillespie, 2005).

After scrutinising the descriptive and PCA analysis, it can be stated that practitioner research is highly valued among teachers. There must therefore be other factors at work preventing a larger number of teachers from undertaking research activity. Some concerns remain about those who do not express any wish to do research.

2)   *Which factors are the main perceived obstacles for those who do not engage in research?*

Those who do not participate in research reported factors that can be recognised as facilitating conditions in terms of motivational theories (Madden et al., 1992). The respondents report work overload, lack of time, school bureaucracy

and family life as the major obstacles. These items form a component comprising statements that can be regarded as identifying competition for time between research and other more important issues. We can agree with Muršak, Javrh and Kalin (2011) that family life strongly affects the careers of teachers. One reason could lie in the empirical observation that a teachers' duties are not well defined, and that inquiry and research activities are mostly only tolerated and shifted to the shoulders of those with the ambition to do research, who do it in the time dedicated to preparation or administrative work. With such an approach, however, the adoption and critical evaluation of innovations is hindered. According to Kirkwood and Christie (2006), teachers should know at least the basics of research in order to be able to understand and evaluate their own work and the work of others. The message to regulators could be that they should not define any moment of a teacher's time, and not overload teachers with administrative work, especially with work that provides no evidence of benefit to school quality.

The good news is that school climate cannot be regarded as the main obstacle to research. This situation calls for a reallocation of workload in order to allow research to count as at least part of the teacher's regular workload. From the point of view of motivation, this group shows a neutral interest in research, which can be changed by means of extrinsic motivation.

3)   Are there differences between personal characteristics that influence participation in research?

Differences between different groups in terms of effect sizes are small and for practical purposes insignificant. Younger teachers are slightly bit more enthusiastic, which can be associated with a desire for career progression and the concomitant benefits. In the opinion of the authors, there should be a balance between the enthusiasm of younger, inexperienced teachers and the wisdom and experience of older teachers, resulting in informal learning communities in which the potential output could be much greater than from work by any single teacher in isolation.

Limitations of the study

Despite the fact that all conceivable measures were taken to ensure awareness of the study and to make the public survey instruments available to the entire teacher population from all Slovenian regions and types of schools, the sample is probably biased towards those with some interest in research who were willing to answer. All of those who responded did so voluntarily and were guaranteed anonymity. No benefits were offered to the respondents. However,

within the limitations of the online sampling, all measures were taken to ensure the representativeness of the sample.

In spite of all of the measures taken to prevent them, the study still has a number of limitations. The main limitation is the lack of responses from the invisible majority of teachers, who may or may not hold the same opinions as those who responded. The other problem is the large dropout of those who visited the leading page of the instrument. We can only speculate about the reasons for the failure to continue responding. However, within the design of the study, it is impossible to make corrections for these potential errors. Therefore, the transferability of the results to non-responders and the global teacher population has certain limitations, which could be resolved with follow-up studies using stricter sampling procedures, and by including teachers from other countries.

Conclusions

Taking into account the limitations of the study, associated with the possibility of self-selection with regard to whether or not to commence and continue the questionnaire, several conclusions can be made. From the research results, we can conclude that there is no need for the majority of the respondents to change their opinion of research, which is mostly positive. The same applies to school climate, which is mostly positive towards research activities. We do, however, propose that research activity should be recognised as part of the workload of teachers and not perceived as belonging to the leisure-time activities of teachers. Although we are not in favour of making practitioner research obligatory, research should be promoted at every step of the career path as something positive, starting with education faculties helping preservice teachers to recognise the importance of practitioner research work for the improvement of school practice and providing student teachers with courses and opportunities to learn research methods and procedures (Sande, 2018; Wilhelm & Fisher, 2019). Teachers in schools should not be left to their own devices and should be able to form school learning communities with the material and moral support of the authorities.

As teacher educators, we have only limited opportunities to act directly in schools. However, there are a many opportunities to help teachers from the field. The first line should be in the recognition and introduction of practical research in prospective teacher education. Provision of a theoretical course on research methods with elementary statistics is simply not enough. Students should get research and investigation tasks throughout their study and not only as a diploma or master's thesis, if at all.

The second line should be the inclusion of teachers in own research or research designed for them, not only in the role of data providers, but as research partners. The third line should be encouraging practitioners to establish learning communities (research circles) and later helping them by mentoring and supervising their work. Last but not least, there is a need to help teachers to upgrade their work presented in teacher conferences to the level of being publishable in peer-reviewed journals.

The idea of recognising research as a part of work time is plausible, but at this time can only be a suggestion, as it will require a redefinition of the traditional roles of the teacher.

The major aim of the EFA was to explore the obtained responses for underlying components (constructs) and their absolute and relative importance for practitioner research. Based on their identification, two possible opportunities to use the constructs were identified: (1) to use them as theoretical constructs in follow-up studies following Confirmatory Factorial Analysis (CFA) traditions, and (2) to use them as overlying concepts in preservice and in-service teacher education, in order to intensify this education on issues where obstacles were identified.

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