

## MEASURING THE SELF-EFFICACY OF IN-SERVICE TEACHERS IN SLOVAKIA<sup>1</sup>

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**Abstract:** *The paper describes the construct of teacher self-efficacy, which draws on Albert Bandura's social-cognitive theory. Self-efficacy is defined as teacher judgement about teacher's capacities to bring about the desired outcomes of instruction. It has been proved in many studies that high self-efficacy positively affects pupil's motivation and learning. The process of adaptation of the Slovak version of Gibson's and Dembo's Teacher Efficacy Scale (TES) is described in detail. The wording of scale items as used in our earlier research (Gavora 2009, 2010) has been altered to reflect the more internal/external orientation of TES dimensions rather than personal teaching efficacy/general teaching efficacy dimensions. The new version of the TES was factor-analysed to assess its construct validity, and reliability coefficients were calculated. A sample of 217 teachers in 5 regions of Slovakia filled in the TES. The data were categorized according to teachers' years of practice, gender, and the level of school (primary/lower secondary). The findings are not dissimilar from those in North American and Western European studies showing that (1) an above-average level (as assessed theoretically) of perceived self-efficacy of teachers is a characteristic of the majority of in-service teachers, (2) general teaching efficacy scores are lower than those of personal teaching efficacy, (3) in-service teachers are superior to the pre-service teachers in our previous sample (Gavora, 2009, 2010) in terms of personal teaching efficacy but not in general teaching efficacy, and (4) likewise, female teachers are superior to male teachers in personal teaching efficacy while no statistical difference was detected in general teaching efficacy.*

**Key words:** *self-efficacy, teacher self-efficacy, in-service teachers, the Teacher Efficacy Scale (TES)*

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<sup>1</sup> The study reported here was funded by grant No. 1/0026/11 from the VEGA agency in Bratislava.

## The Concept of Self-Efficacy

It is generally accepted that overt teacher behaviour in the classroom has an invisible complement – teacher beliefs. The latter constitute a very important determinant of the former, i.e., teachers' actions are influenced by their beliefs and assumptions about the school, teaching and pupils. A significant teacher characteristic within the area of beliefs and assumptions is *self-efficacy*.

The concept of self-efficacy was originally developed by Albert Bandura to constitute a part of his *social-cognitive theory*. Bandura defined self-efficacy as a belief in one's own ability to organize and perform a certain task (Bandura, 1997). As such, self-efficacy is a self-system that controls most personal activity, including appropriate use of professional knowledge and skills. Teacher self-efficacy is the belief that teachers have in their own abilities and skills as educators. Self-efficacy beliefs influence thought patterns and emotions, which, in turn, enable or inhibit actions.

According to social-cognitive theory, teachers who do not expect to be successful with certain pupils are likely to put forth less effort in preparation and delivery of instruction, and to give up easily at the first sign of difficulty, even if they actually know of strategies that could assist these pupils if applied. Self-efficacy beliefs can therefore become self-fulfilling prophecies, validating beliefs either of capability or of incapacity. (Tschannen-Moran & Woolfolk Hoy, 2007)

According to Bandura's theory, self-efficacy has two components: *efficacy expectation* and *outcome expectancy*. The former is the conviction that one has the ability, knowledge, and skills to perform successfully actions required to produce desired outcome(s). The latter represents a person's estimate of the likely consequences (impact) of performing a task at the self-expected level of performance. That is, outcome expectancy is the belief that a given behaviour or action will indeed lead to (an) expected outcome(s). To be successful, the teacher must have both high efficacy expectations and high outcome expectancy. If the teacher has the former but not the latter, it is unlikely that the teacher will be successful even if he/she is professionally well-qualified.

It should be stressed that self-efficacy judgements are examples of belief in one's own capabilities; they are not necessarily accurate assessments of these capabilities on the part of the teacher. In theory, if a teacher has good self-efficacy this may or may not coincide with his/her real teaching capabilities, and, ultimately, with his/her actions in the classroom. The actual relationship depends on the person and educational situation. However, as we shall show in the next section, it is not typical that good self-efficacy and ineffective teacher action should coincide: a strong sense of self-efficacy usually correlates positively with effective teacher action.

## Relationship of self-efficacy to teacher behaviour and pupils' learning

The construct of teacher efficacy has been a subject of broad research for approximately three decades. Ever since the theory of self-efficacy was first introduced, attempts have been made to identify its empirical value, i.e., to assess how it functions in the everyday practice of teachers and its impact on pupils' learning. A great many research projects have accumulated facts about the effects of teacher self-efficacy in various school situations and environments. It has been proved that teachers' belief in their own abilities positively affects the actions and efforts of teachers, as well as motivation, styles of teaching, classroom management, pupils' learning, and other teacher characteristics.

Research has shown that teacher efficacy has positive effects on:

- teacher effort and persistence in the face of difficulties (Podell & Soodak, 1993; Gibson & Dembo, 1984);
- the implementing of new instructional practices (Evers, Brouwers, & Tomic, 2002);
- pupils' academic achievement and success (Ross, 1992; Caprara et al., 2006).

Teachers with high levels of self-efficacy:

- frequently experiment with new teaching methods;
- have a tendency to be less critical of their students;
- are usually more supportive, both instructionally and emotionally;
- typically work longer with problematic pupils;
- are usually more enthusiastic;
- usually are more committed to the profession than other teachers (Ashton & Webb, 1986; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998);
- deal with the needs of low-ability students (Ross & Gray, 2006);
- exhibit greater levels of planning (Allinder, 1994);
- tend to be more open to new ideas (Cousins & Walker, 2000);
- use less teacher-directed whole-class instruction (Ashton & Webb, 1986);
- adopt a more humanistic approach to the classroom (Woolfolk, Rosoff, & Hoy, 1990).

In summary, a strong sense of self-efficacy in a teacher is a crucial factor in instruction. A teacher's personal beliefs and attitude relate to teacher success and use of effective teaching strategies, and they affect pupil performance. Effective teachers display behaviours which are typical for quality instruction. A highly effective teacher does not only believe that he/she can influence actions but also actually demonstrates this belief through his/her behaviour. To put it in Bandura's diction, teacher belief mediates teacher action.

## History of teacher self-efficacy measurement

Self-efficacy research has a thirty-year history. Its beginnings are very well documented in several review papers (e. g., Tschannen-Moran et al., 1998; Woolfolk Hoy & Spero, 2005). To outline the history, we should start with two Rand Corporation projects which evaluated innovative educational programs funded by the US federal government (Armor et al., 1976; Berman et al., 1977). In these studies, teachers' level of efficacy was determined in a questionnaire by computing a total score for their responses to two 5-point Likert scale items:

- (a) When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment.
- (b) If I try really hard, I can get through to even the most difficult or unmotivated students.

The theoretical basis for these items was Julian Rotter's (1966) *locus of control* theory. Teacher efficacy was seen as the extent to which teachers believed that factors which they could control had a larger impact on teaching outcomes than beliefs that the environment held greater power. Thus, the first-cited questionnaire item reflected an *external control* orientation, whereas the second one reflected an *internal control* orientation, emphasizing the power of the teacher to teach students regardless of environmental conditions.

To the great surprise of researchers, the efficacy items proved to be strongly related to pupil achievement, teacher behaviours which fostered this achievement, and teacher willingness to adopt innovative instructional proposals (Berman et al., 1977). As we shall see, the locus of control theory influenced developments in further research in teacher self-efficacy, and again surprisingly, caused some methodological confusion.

The second part of the story of empirical research in self-efficacy is linked to Bandura's (1997) *social cognitive theory*. To recapitulate, the concept of self-efficacy is considered by Bandura as the primary motivational force behind an individual's actions. As defined by the author (Bandura, 1977, s. 79), self-efficacy is "the conviction that one can successfully execute the behaviour required to produce outcomes". Based on his theory, two American authors, Gibson and Dembo (1984), developed a questionnaire called *The Teacher Efficacy Scale* (TES) which was intended to measure this construct. They designed a 30-item scale which when factor-analysed, yielded two dimensions. Though the dimensions were expansions of the RAND locus of control items, Gibson and Dembo interpreted them as faithful to Bandura's self-efficacy theory.

Gibson and Dembo labelled their first dimension personal teaching efficacy and assumed that this dimension assessed self-efficacy. *Personal teaching efficacy* (PTE) represents a teacher's belief that he/she possesses the skills and abilities to facilitate student learning. Examples of items:

- When the grades of a pupil improve, it is because I have found a way to teach him/her.
- If a pupil did not remember the information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.

The second factor, teaching efficacy, was assumed to capture outcome expectancy. *Teaching efficacy* represents the belief that teaching (as an organisational form of education) can affect pupils positively, even in the light of external factors or conditions such as the low motivation or poor home environment of a pupil. Examples of items:

- The amount the pupil can learn is primarily related to family background.
- If parents do more for their children, I can do more.

Teaching efficacy was later renamed *general teaching efficacy* (GTE) by Woolfolk and Hoy (1990) to be better distinguished from personal teaching efficacy (PTE).

General teaching efficacy is different from personal teaching efficacy. While PTE focuses on teachers' beliefs that they can complete tasks to initiate learning, GTE is the belief that teaching itself can initiate learning. Gibson and Dembo (1984) describe this as "the belief that any teacher's ability to bring about change is limited by factors external to the teacher". The distinction between the two types of efficacy is important. While it is one thing to believe in one's ability to teach, it is another to believe in the power of teaching. A teacher can have high personal teaching efficacy and low general teaching efficacy, and vice versa. However, as Bandura (1997) points out, PTE is a better predictor of teacher actions than outcome expectancy because the outcomes that teachers anticipate depend largely on their judgement of how they will be able to perform in a given situation.

The first version of the TES had 53 items. After factor analysis was performed, the instrument was reduced to 30 items only. Later the authors developed a short form with only 16 items but better psychometric qualities. Still later, other researchers developed a 10-item version that was found to have psychometric qualities roughly equivalent to those of the 16-item version. In the study by Gibson and Dembo (1984) the factors PTE and GTE explained 28.8% of the total variance, which is less than expected in an ideal research instrument. Other research studies produced similar – i.e., rather low – total explained variance.

The TES has been used in various forms in diverse school environments and types of schools; it has been administered to in-service teachers of a variety of school subjects, and it has also been used with pre-service teachers. In principle, the research supports the construct validity of the TES, i.e., it proves the existence of two dimensions, PTE and GTE, and their relative independence as documented by low correlation between them (usually below 0.20). On the other hand, a couple of studies conducted in a variety of environments showed that some questionnaire items were not consistent with the original dimensions, or that the factor structure of the questionnaire was different from the original assumption. In some studies factor

analysis produced one factor only (e. g., Deemer & Minke, 1999), or three factors (e. g., Denzine, Cooney, & McKenzie, 2005), or even four factors (e. g., Brouwers & Tomic, 2003). Some authors interpreted the factors of the results in a way different from Gibson and Dembo's (1984). This is true especially of GTE, which suffers from theoretical inconsistency, and in some situations yielded fluctuating data.

Several authors (Woolfolk & Hoy, 1990; Soodak & Podell, 1996) challenged the original conception of GTE, which Gibson and Dembo (1984) maintained was in agreement with Bandura's outcome expectancy. They found that GTE was different from Bandura's notion of outcome expectancy because it concerned teachers' belief that they could overcome external influences, and it did not concern the outcomes of their behaviours. Consequently, new models of self-efficacy were proposed. Soodak and Podell (1996) postulated a 3-factor model comprising (a) personal efficacy, (b) outcome efficacy, and (c) teacher efficacy. Personal efficacy pertains to a teacher's belief that he/she possesses teaching skills, while outcome efficacy refers to the belief that, when teachers implement these skills, they lead to desirable pupil outcomes. The third factor, teacher efficacy, is the belief that teaching can overcome the effects of outside influences.

Some authors (Guskey & Passaro, 1994; Deemer & Minke, 1999; Brouwers & Tomic, 2003) point out that the problem with GTE rests in the wording of its items. They have found that the items in PTE are worded in *the first person*, (*When a pupil gets better grades, it is usually because I have found better ways of teaching that pupil*), while items in GTE refer to a third person – *a teacher* (*A teacher is very limited in what he/she can achieve because it is the home environment that shapes a pupil's motivation.*). Furthermore they note that the majority of items in GTE are formulated in negative terms (*The hours in my class have little influence on students compared to the influence of the home environment*), while items in PTE are mostly worded in positive terms (*When a pupil does better than usual, often it is because I exert a little extra effort*). These are important objections to the conceptualisation of the original TES. However, subsequent research has not proved that either "I" versus "teacher", or positive versus negative orientation items play a decisive role in factor analysis of TES data (Guskey & Passaro, 1994; Deemer & Minke, 1999).

To sum up the research situation, the TES is based on an excellent construct – self-efficacy – but the instrument by which it is measured shows some instability and sometimes produces inconsistent results. This situation issues a challenge to researchers to discuss these inconsistencies and, in turn, improve the psychometric quality of the TES. The research reported in this paper represents a contribution to these efforts.

## Other instruments

Self-efficacy was researched in a variety of educational and cultural settings. For these reasons the authors developed specific instruments which were tailored for particular purposes. Below is a list of some of them. We shall refer to some of them in subsequent sections of this paper.



- Ohio State Teacher Efficacy Scale – OSTES, sometimes labelled TSES (Tschannen-Moran & Woolfolk Hoy, 2001) – concentrates on three kinds of efficacy: (a) for instructional strategies, (b) for classroom management, (c) for student engagement
- Bandura Teacher Self-Efficacy Scale – a 28-item scale which has six subscales measuring instructional efficacy (Bandura, 2006)
- Science Teaching Efficacy Belief Instrument – STEBI (Riggs & Enochs, 1990)
- Mathematics Teaching Efficacy Belief Instrument – MTEBI (Enochs, Smith, & Huinker, 2000)
- Teacher Self-Efficacy in Behaviour Management and Discipline Scale – SEBM (Emmer & Hickman, 1991)
- Teachers' Efficacy Beliefs System-Self – TEBS-Self (Dellinger et al., 2008) – intended to distinguish between efficacy and self-efficacy in the classroom context
- Culturally Responsive Teaching Self-Efficacy Scale – CRTSE (Siwatu, 2007) – intended to reflect cultural aspects of instruction
- Teacher Interpersonal Self-Efficacy Scale (Brouwers & Tomic) – consists of three subscales: (a) teacher-perceived self-efficacy in managing student behaviour in the classroom, (b) teacher-perceived self-efficacy in eliciting support from colleagues, (c) teacher-perceived self-efficacy in eliciting support from school principals
- Norwegian Teacher Self-Efficacy Scale – NTSES (Skaalvik & Skaalvik, 2010) – has 24 items in 6 dimensions
- Generalized Self-Efficacy Scale (Schwarzer & Schmitz, 2004) – a ten-item scale of German origin comprising four areas: (a) job accomplishment, (b) skill development on the job, (c) social interaction with pupils, parents and colleagues, (d) coping with job stress
- Collective Efficacy Scale (Goddard, 2002) – designed to measure the perceived collective efficacy of teachers
- Teacher Efficacy for Moral Education – TEME (Narvaez et al., 2008)
- Character Efficacy Belief Instrument – CEEBI (Milson, 2003)

This review shows that individual authors expanded the original concept of teacher self-efficacy, adopted it to specific conditions and environments, and added new dimensions to catch broader teacher roles and positions. Moreover, many of the instruments were used in studies conducted not only in the country of their origin but also in other nations of Europe and Asia. This practice produced important data for cross-country comparisons of the functioning of teacher self-efficacy, of both in-service and pre-service teachers.

## Research Purposes

This research had several purposes. First, it was our aim to adapt the TES for application to the environment of Slovak education and to gather data on the self-

efficacy of Slovak teachers. As no data on these teacher characteristics in Slovakia existed already, one purpose of our research was the initial effort to obtain these. In addition, we wanted to explore the relationships of the TES to teacher gender, level of school (primary or lower secondary) and years of practice in a sample of Slovak teachers. Furthermore, we wanted to examine empirically the construct of GTE as concerned its properties of internality/externality versus efficacy expectations/outcome influences.

## The sample

The sample consisted of 217 teachers from 5 regions of Slovakia. The average of their years of practice was 18.1 years (SD 11.1; range was 42 years). Teachers filled in the Slovak version of the TES with additional questions attached for the gathering of demographic information. The TES was administered by headteachers, staff of district education offices, and the author. Teachers filled in the instrument anonymously and on a voluntary basis. The structure of the sample is given in Table 1.

Table 1  
*The structure of the research sample*

category		n	%
school level	primary (grades 1–4)	27	12.4
	lower-secondary (grades 5–9)	179	82.0
	ns	11	5.0
gender	female	161	74.2
	male	40	18.4
	ns	16	7.3

## Adaptation of the TES

In this study we used the TES as the research instrument. We opted for this measure even though, as explained above, we were aware of its shortcomings, the reason being that it is the instrument used most frequently to measure the self-efficacy of teachers and is considered to be a standard instrument in efficacy investigations. As it has been used in many countries, it would be possible to compare the data from Slovakia with those collected in other locations. In addition, we wanted to contribute to an improvement in the conceptualisation of the TES, in particular by looking closely at its confounding properties related to internality-externality versus efficacy expectations/outcome expectancy.

The first Slovak version of the TES was used in research applied to pre-service teachers in Bratislava (Gavora, 2009, 2010). For this purpose, the original, 30-item TES had been translated into Slovak by an experienced translator who rendered a substantive but not entirely literal version of the items; the items were adapted to reflect the Slovak educational environment. The translated version was then



reviewed by several university-based education professionals. Subsequently, some item wordings were modified to improve comprehensibility. As in the original version, we used two dimensions, PTE and GTE, and 6-point Likert scales from “strongly disagree” to “strongly agree”. For both dimensions, the higher the score, the better the sense of teacher efficacy. We factor-analysed both the 16- and the 10-item TES; the short version provided somewhat better validity and reliability.

In the research reported in this study we used the Slovak 16-item version from the previous research<sup>2</sup>, which we extended by adding three items to the GTE dimension with the hope of increasing its reliability. Another modification was the rewording of items in the GTE dimension. Following the procedure of Guskey and Passaro (1994) and Deemer and Minke (1999), all original items that referred to “a teacher” were converted to the first person singular (“I”). PTE items were originally worded in the first person singular and they remained unchanged in our instrument. With this arrangement we wanted to test the hypothesis that if GTE is worded in the first person singular, in the factor analysis only one factor will be extracted. This would be consistent with Rotter’s (1966) locus of control theory on which the TES was said to be constructed by Gibson and Dembo. However, Rotter conceptualised locus of control as a bi-polar continuum of internality-externality, not as two distinct dimensions. In accord with this theory we hypothesised that both the original PTE items and the reworded GTE items will load on one factor. In the case that this did not happen and we received two factors that were low-correlated, we would have a solution that the TES measured two dimensions and its conceptualisation, as described above, was not quite clear.

### Instrument validation

Before the analysis the scores of six items which had negative wordings (e.g., *Even if I have excellent knowledge and skills, it has little influence on pupils’ learning*) were re-coded to be in line with positively worded items, i.e., the score 1 was re-coded to 6, the score 2 was re-coded to 5, etc.

To examine the factor structure of the TES, a principal component factor analysis was conducted with varimax rotation. A cut-off load of 0.35 was used to identify items contributing to a given factor. Two criteria – Kaiser’s criterion of eigenvalues greater than one rule and the scree test – were used to determine the number of factors to be retained. Kaiser’s criteria showed 5 factors; the scree test indicated two or five factors. With five factors the total explained variance was 56.9%, which was a good result. Unfortunately, the loadings were difficult to interpret – some items were loaded on several factors, and the factor structure was unclear. Therefore, the option with five factors was refused. Likewise, solutions with four and three factors were not ideal. The best solution was with two factors, which yielded a total explained variance of 37.6%. For comparison: the overall total variance in Gibson

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2 The reason for returning to the 16-item version of the TES rather than using the 10-item version was simple: we wanted to begin validation anew. The 10-item version was the result of a validation procedure with pre-service teachers; in this research the sample is given by in-service teachers.

and Dembo's (1984) TES validation study was only 28.8%, which is considered less than a criterion for a good instrument. The usual standard for a good instrument is over 50% of overall explained variance. However, in the majority of studies the TES showed smaller total explained variance than the authors would have wished.

The two factors extracted showed a structure identical with the original PTE and GTE dimensions. With this solution three items had to be eliminated, two because they were crossloaded, the third because it was loaded below the cut-off load of 0.35. All of them belonged in the GTE dimension. Thus the final version of the instrument had 16 items, 10 for PTE and 6 for GTE.<sup>3</sup> We found a small correlation between the two dimensions (0.18), which shows that they are independent. The internal consistencies (Cronbach alpha) of the dimensions were 0.81 and 0.61 respectively. While the PTE reliability is satisfactory, the GTE reliability is only moderate, which may be caused by the small number of items retained in this dimension or by the low homogeneity of items. (The reliabilities of the two factors in Gibson and Dembo's (1984) TES validation study were 0.78 and 0.75 respectively.)

To sum up the results, the validation of the Slovak TES gave two dimensions which are consistent with the original structure of the TES as proposed by Gibson and Dembo (1984). The conversion of GTE items from "teacher" reference to "I" reference did not prove efficient, thus the hypothesis of internality-externality orientation was disproved. With these validation results we can proceed to a presentation of descriptive statistics.

## Results

The TES is scored on a 6-point scale; the higher the score, the better the self-efficacy. The basic descriptive statistics are given in Table 2. The mean score of PTE is higher than that of GTE, which means that the teachers in this sample have a greater belief in their ability to facilitate learning in pupils than in their power to overcome external factors of instruction such as low motivation or the poor home environment of pupils. This finding is in agreement with similar studies on the self-efficacy of both in-service and pre-service teachers, which consistently show higher scores in TES than in GTE. Both dimensions have a theoretical midpoint score of 3.5. As shown in Table 2, overall item means exceeded the midpoint for both dimensions, which indicates that the overall self-efficacy of teachers in this sample is quite good.

The minimum score in PTE was 2.29 (one teacher only). In this sample 33 teachers (17%) scored one standard deviation below the mean in PTE. On the other hand, there were 49 teachers (25.2%) who scored one standard deviation above the mean.

As concerns the minimum score in GTE, two teachers scored only 1.67; the low level of belief they show in their teaching abilities and skills is disappointing. There were 28 teachers (14.4%) in this sample who scored one standard deviation

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3 The Slovak version of the TES is available from the author on request.

below the mean in GTE. On the other hand, there were 22 teachers (11.3%) who scored one standard deviation above the mean. The range between minimum and maximum scores was much wider in GTE than in PTE.

Table 2  
*Scores on the Teacher Efficacy Scale (TES)*

Dimensions	valid n	mean	minimum	maximum	range	SD
personal teaching efficacy	194	4.47	2.90	5.80	2.90	0.63
general teaching efficacy	195	3.74	1.67	5.67	4.00	0.79

SD = standard deviation

As we had at our disposal the TES scores of Slovak pre-service teachers from our previous research project (Gavora, 2009, 2010), we were able to compare these with the scores of in-service teachers in this sample. The pre-service teachers were students in Years 2 through 5 at the Faculty of Education in Bratislava (n=135). Table 3 shows that in-service teachers outperformed pre-service teachers in both PTE and GTE. The difference between PTE and GTE scores in pre-service teachers is somewhat higher than in in-service teachers. This finding is in agreement with those of many studies of in- and pre-service teacher self-efficacy, which show higher scores in both PTE and GTE in in-service teachers when compared with pre-service teachers.

Table 3  
*Scores of in-service and pre-service teachers on the Teacher Efficacy Scale (TES)*

Dimensions	in-service teachers (this sample)		pre-service teachers (2009, 2010)	
	mean	SD	mean	SD
personal teaching efficacy	4.47	0.63	4.22	0.73
general teaching efficacy	3.74	0.79	3.69	0.87

SD = standard deviation

In further analysis we divided the in-service sample into two subsamples according to *years of teaching*. One subsample consisted of teachers with 1–5 years of practice, the other of those with above 5 years of teaching practice. Table 4 shows that in PTE the teachers with above 5 years of practice scored significantly higher than the subsample of teachers with 1–5 years of practice. In the GTE dimensions the scores were almost identical. It is interesting to note that the subsample of teachers with 1–5 years of practice scored very much like pre-service teachers in our 2009 and 2010 studies. Though the sample of novice teachers was small, which could affect the scores, this result was expected because teachers with few years of practice are less experienced than older teachers. Similar findings were obtained by Soodak and Podell (1996) when they used a modified version of the TES and by Tschannen-Moran and Woolfolk Hoy when they used the TSES. Tschannen-

Moran and Woolfolk Hoy found somewhat lower mean self-efficacy belief among novices (teachers with 1–3 years of teaching practice) than among career teachers. They concluded: “This lower assessment (of novice teachers) of their teaching capabilities is not surprising given the relative inexperience of these teachers. It is also possible that teachers who start their careers with low self-efficacy either tend to find better instructional strategies to improve their teaching performance over time, thus increasing their sense of efficacy, or, if they do not, leave the profession.”

Table 4

*Scores of teachers on the Teacher Efficacy Scale (TES) according to years of teaching*

dimensions	n	1–5 years		above 5 years		signif.
		mean	SD	mean	SD	
personal teaching efficacy	32	4.21	0.70	4.52	0.61	p < 0.025
general teaching efficacy	156	3.72	0.85	3.75	0.78	p > 0.10

SD= standard deviation

Next we explored differences in self-efficacy between *female and male teachers* (Table 5). In both genders the scores in PTE were higher than those in the GTE dimension, which is consistent with the results presented above. Female teachers scored higher than male in both dimensions, but only differences in PTE were statistically significant. Higher scores by female teachers in self-efficacy instruments, and specifically in the TES dimension, is a frequent finding in literature. Probably the exception to this is in science teaching, which Riggs (1991) characterises as a male domain. In his study, in which the STEBI instrument was used, both pre-service and in-service men have significantly higher scores than women in efficacy belief, but this is not the case in outcome expectancy. In a Turkish sample (Azar, 2009) that used STEBS – with pre-service science teachers, however – no differences were identified between genders. Ross et al. (1996, p. 389) conjecture that women are more satisfied with their profession and thus develop a high sense of efficacy. Furthermore, they speculate that women teachers “are more in tune with the dominant ideology of schools”. However, results sometimes vary. Based on their findings with the TSES instrument Tschannen-Moran and Woolfolk Hoy (2007) claim that demographic variables such as race and gender were not found to be systematically related to the self-efficacy beliefs of either novice or career teachers. The authors probably refer to the US environment; other environments may differ in this regard. For instance, Kiviet (2006) in South Africa, who used STEBI, found significant differences in self-efficacy between rural and urban school teachers.

Table 5

*Scores on the Teacher Efficacy Scale (TES) according to gender*

dimensions	female		male		signif.
	mean	SD	mean	SD	
personal teaching efficacy	4.52	0.62	4.27	0.60	p < 0.05
general teaching efficacy	3.77	0.84	3.60	0.69	p > 0.10

Finally in this research we looked at the self-efficacy of teachers at different school levels. For this purpose we divided the sample into two subsamples. One consisted of primary teachers (grades 1–4), the other of lower-secondary teachers (grades 5–9). As Table 6 indicates, almost identical PTE scores were recorded in both subgroups and slightly higher GTE scores in the lower-secondary teachers subgroup than in the primary teachers subgroup, although this difference is not statistically significant. The primary-school teacher in Slovakia is a generalist teacher, whereas the lower-secondary teacher specialises in one or two school subjects. We had hypothesised that this could cause differences in favour of primary-school teachers, but this was proved wrong.

Table 6

*Scores on the Teacher Efficacy Scale (TES) according to level of school*

dimensions	primary		lower-secondary		signif.
	mean	SD	mean	SD	
personal teaching efficacy	4.46	0.62	4.45	0.60	p > 0.10
general teaching efficacy	3.70	0.77	3.94	0.77	p > 0.10

## Discussion

The findings gathered in this study are not dissimilar from North American and Western European studies showing that (1) an above-average level of perceived teacher self-efficacy is a characteristic of the majority of highly qualified in-service teachers, (2) GTE scores are worse than PTE scores, (3) in-service teachers with above 5 years of teaching experience are superior to pre-service teachers in PTE, and (4) female teachers are superior to male teachers likewise in PTE.

This research was based on an investigation performed by questionnaire, as were all the sources of literature we have referred to in this article. The self-rating of respondents has been the prevailing method in self-efficacy research since its very beginning. Such an investigation is relatively easy to administer, as it can cover a large sample and quantitative data analysis can be conducted routinely with standard software. However, questionnaire research also has significant drawbacks: it confines respondents to items prepared ahead, thus not permitting them to answer beyond the boundaries of the researcher's frame structure.

There is only a limited amount of research on teacher self-efficacy based on *qualitative methodology*. One of the few examples of such research is a study by Charalambous et al. (2004) in Cyprus. Using the constant comparative method with a small sample of pre-service teachers, they traced factors which affected the development of their self-efficacy beliefs in the course of fieldwork. Apart from being qualitative, this study was also longitudinal; the researchers interviewed the participants three times over a longer period. Such a research design produces different data and makes it possible to view teacher self-efficacy from different perspectives. In this research, data were obtained for how the self-efficacy of



pre-service teachers was affected during their own teaching and in interactions with mentors, tutors, and peers. Rather than providing a generalised picture, the researchers presented individual testimonies of how the participants overcame their initial concerns and uncertainties as they gained stronger self-efficacy beliefs.

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