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## The Role of Pedagogical Practices in Novice Teachers' Work

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**Abstract:** Achieving educational goals is based on the skills and competence of teachers; therefore, professional development of teachers is important to policy and decision-makers. Worldwide, the percentage of teachers who leave the profession within their first years of teaching is high therefore, professional support is essential to ease on their integration. Previous research indicates a positive and significant correlation between teachers' self-efficacy and their attitudes toward the teaching profession. Our study included three hypotheses: 1) teachers' pedagogical applications serve as mediators for the relationship between teachers' self-efficacy and their attitudes toward the profession; 2) participating in a professional development school (PDS) training program interacts with teachers' self-efficacy in predicting their attitudes toward the profession; and, 3) participation in a PDS training program will positively affect the two variables. A close and open-ended questionnaire was replied by 300 novice teachers, some of whom participated in the PDS program and others who did not. Findings indicate that the relationship between teachers' sense of self-efficacy and their attitudes towards the teaching profession was partially mediated by: applying constructivist pedagogical practices; matching to differences between learners; collaboration between fellow teachers; accountability; planning and teaching management; and academy-community relationships. Participation in a PDS program was not found as a moderator variable for this relationship, but novice teachers who participated in this program had a significant higher sense of self-efficacy and more positive attitudes towards the teaching profession. Findings are important for designing novice teacher training programs with an emphasis on the implementation of specific pedagogical practices.

**Keywords:** Professional development school (PDS), teacher's sense of efficacy, attitudes toward the teaching profession, novice teachers, co-teaching.

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### Introduction

There is evidence in a large body of research that professional development affects teachers' attitude toward students, their teaching profession and identity as educators as well as their pedagogical knowledge and teaching skills (Jacob, Hill & Corey, 2017; Taylor et al., 2017). As part of education policies, it is accepted that teachers need to develop professionally in order to improve their teaching practice and to impart learning skills to students due to the constant changes in the development of societies (Vangrieken et al., 2017). Teachers are required to meet high standards in the classroom and therefore the success of educational reform initiatives is based on the skills and efficiency of teachers. This is one of the main reasons that professional development of teachers is important to policy and decision-makers (Garet et al., 2001). Research shows that there is a relation between the quality of the teacher's teaching practices and the number of hours of professional development (Luft & Hewson, 2014). Thus, for a teacher's professional development it is necessary to engage in many professional training and development hours. Teachers hold a key role in the success of educational reforms and this success depends on the correct implementation of new curricula at the classroom. Therefore, professional training and development programs aimed at assimilating the skills of classroom teaching methods are of high importance (Dori & Herscovitz, 2005). A meta-analysis investigating the impact of in-service teacher training programs on the quality of learning development in young children found that improvement in learning quality is the main factor in the acceleration of educational development in students. In other words, there is a connection between high pedagogical quality in education and developmental outcomes in students (Egert et al., 2018).

During their professional time course, teachers have to cope with different aspects, both emotional and physical. Such coping characteristics include heavy workload and high emotional demand, and constant professionalization (Richardson & Watt, 2006). As the educational system sets heightened curricula standards and require more stringent

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accountability, school staff, mainly the principal and teachers, sense a great pressure to stand up to such standards (Brown, 2015). Some of the difficulties pre-service teachers face as they begin their careers in teaching, are rooted in organizational and new work environment. It takes time to understand the basic organizational life of the school, deal with the challenges that the students provide and often these teachers may find themselves lacking tools to deal with the problems and difficulties they face in their work (Blomberg & Knight, 2015; MacPhail et al., 2019; Wolff et al., 2015). Novice teachers sometimes experience shock in their first year of work, usually because they find it hard to focus on difficulties and needs they encounter, while the school management lacks to provide support (Caspersen, & Raaen, 2014; Gagen & Bowie, 2005; Tschannen-Moran & Woolfolk Hoy, 2007). As Howes & Goodman-Delahunty (2015) note, support of experienced in-service teachers is essential to ease on school integration. In addition, new teachers often have to deal with limited knowledge in the various fields of teaching, such as in science, and therefore find it difficult to use practical techniques of transferring material in an efficient and clear manner in the classroom (Appleton, 2003). Novice teachers need to receive not only professional support, but also emotional support from colleagues (Gordon & Maxey, 2000).

Teachers are also required to be technological designers in the field of learning. Training teachers to use new technologies is a two-facet task for it requires the teachers to get familiar with the new technology and then to interpret it into practical and useful applications. Training programs that aim to direct the teachers to be technological designers in the field of learning encourage them to assimilate the skills they received in training and apply it in the classroom, which in turn, encourages the assimilation of innovative pedagogy (Kali et al., 2015).

Unlike most novice professionals, teachers are expected to perform well immediately, to take control of a classroom and to teach at the same level as experienced and expert teachers do. The pressure to perform well immediately affects their perception of the profession as well as their self-esteem (Sowell, 2017). Novice teachers face teaching reality which often differs from how they used to perceive the teaching profession during their academic studies. Worldwide, the percentage of teachers who leave the profession within their first 3-5 years of teaching varies between 30% and 50% each year (Darling-Hammond, 2010; den Brok et al., 2017; Papay et al., 2017). It is therefore important to understand the adaptive processes of novice teachers and the effective design features in the training programs that help them cope with the difficulties.

#### *Professional Development and Professional Development School (PDS)*

It is common practice that students in the field of education get involved and experience teaching in the education system during their studies. One of the most important characteristics of reflective models is practical teaching experience (Barnhart & van Es, 2015). This experience, while studying at the academy, enables students to become involved in the community and thus begin to shape their way as teachers while reflecting the theoretical material during the practical experience. The teaching experience raises their level of awareness in their perceptions and beliefs about teaching and how they can contribute to the improvement of society (Carrington & Selva, 2010). The ability of teachers to critically examine the way they teach in the classroom is very important. Teachers who have the opportunity to reflect their work in real terms, examine it in the face of practice and theory during their studies and succeed in identifying and responding during the practice of dilemmas, tend to take an analytical and less emotional stance toward their work and are willing to examine alternative pedagogic approaches (Bastick, 1999; Kali et al., 2015). One of the limitations of pre-service teachers is that in order to critically examine themselves, professional guidance is required to direct them in information processing. This guideline should be a structured support to students who otherwise dwell on actions and self-judgmental behavior instead of thinking, learning and raising insights (Barnhart & van Es, 2015). According to Kali et al., (2015) there are two significant elements in training programs: reflecting processes that teachers undergo during constructive training, and teamwork among teachers that encourages creativity and brainstorming as well as understanding the importance of teamwork among students. The educational community relies on connections through common interest and information, and the sense of sharing knowledge for the purpose of professional development (Vangrieken et al., 2017).

Teaching experience during studies, within schools and accompanied by an experienced teacher, provides support to the student while reflecting classroom teaching experience. The interaction between a veteran teacher and a pre-service teacher enables the pre-service teacher to receive immediate and real time feedback while it enables the veteran teacher to get a different perspective on the processes taking place in the classroom (Bastick, 1999). Accompanying a pre-service teacher by an experienced teacher during a classroom teaching experience is found to be very effective (Nagar, 2001). Often, new and inexperienced teachers dwell on superficial events of classroom interactions to conclude that students have really understood the information conveyed and are not actually focusing on the right kind of information of drawing meaningful conclusions about students' understanding. The result is that these teachers are left with an inaccurate sense of the effectiveness of the lesson (Barnhart & van Es, 2015).

professional development school (PDS) training program is based on active cooperation between an academic institution that trains the student and an educational institution where the student integrates practical experience and increases the scope of practical training (Mule, 2006). These initiatives should focus on collegiality and innovation (Adair-Breault, 2013). The PDS model was developed from the work of the Holmes Group during the 1980's, based on

the idea of teaching hospitals (Holmes Group, 1990, 1995). The goal of the PDS model is to improve the quality of teaching and learning for all stakeholders in the partnership. The partnership provides opportunities to connect the various members to discuss the issues, raise possible solutions, and implement wise use of resources that will improve the education system. This collaboration includes models of preparation of pre-service education students, continuing professional development of in-service teachers, and modelling best practices that will lead to higher school student achievements (Book, 1996; Adair-Breault, 2013; Lieberman, 1998). The expertise of university faculty, school administrators, and school teachers has the potential to greatly influence teaching and learning processes as well as the preparation of pre-service teachers (Polly, 2017).

The focus of this research is the relationship between teachers' self-efficacy and their attitudes toward the teaching profession, therefore the next section will provide a theoretical background on these two key concepts.

## Literature Review

### *Teachers' sense of self-efficacy*

Teachers' sense of self-efficacy is defined as a "teacher's beliefs in his or her own capability to organize and execute courses of action required to successfully accomplishing a specific teaching task in a particular context" (Tschannen-Moran et al., 1998, p. 233). Teachers' self-efficacy belief is rooted in the social cognitive theory that suggests four primary sources of influence that may strengthen or weaken an individual's self-efficacy beliefs: mastery experience (past successes or failures in similar situations), vicarious experience (as a result of observing peers' successes or failures in similar situations), verbal persuasion (the belief that those who doubt their own abilities in a situation can successfully accomplish the same task when someone else gives it to them), and physiological arousal (health status, stress, or fear conditions under which a person behaves) (Bandura, 1997).

Teachers' self-efficacy beliefs have impact on teachers' goals, the efforts they invest in teaching, and their persistence when they face obstacles (Rimm-Kaufman & Hamre, 2010; Tschannen-Moran et al., 1998). Tindowen (2019) found that teachers' self-efficacy predicts organizational behaviours which include affective organizational commitment, continuance organizational commitment, normative organizational commitment, supervisory support, job involvement, organizational citizenship behaviour, teacher professionalism commitment, and professional commitment to teaching work.

Various studies point to factors that increase or decrease teachers' self-efficacy. Increasing opportunities for learning to teach (Rushton, 2003); successful experiences (Ross et al., 1997); coaching intervention (von Suchodoletz et al., 2018); professional development training (Hull et al., 2016); principal's work experience and the leadership style (Fackler & Malmberg, 2016) and autonomy support (Kanadli, 2017) were found as factors that increase teachers' self-efficacy. On the other hand, failure in implementing effective teaching practices (Wyatt, 2013); and children's behaviour problems (von Suchodoletz et al., 2018) were found as factors that decrease teachers' self-efficacy.

Several studies investigated teachers' self-efficacy and their pedagogical behaviours. Teachers with high self-efficacy show higher levels of planning and organizing educational goals (Allinder, 1994); are more likely to apply new pedagogical methods and to implement curriculum innovations (Cousins & Walker, 2000; Deemer, 2004); are more likely to invest time with students, particularly students who have difficult dispositions or students lacking motivation to learn (Tschannen-Moran & Woolfolk Hoy, 2001); and are more motivated to create a positive classroom climate (Fritz et al., 1995).

### *Attitudes toward the Teaching Profession*

Key factors in choosing a profession are composed of personal and professional attributes. Personal attributes include the person's knowledge of the profession, responsibilities, personality traits and skills, values and rewards; while the professional attributes include the degree of functionality of the profession, professional knowledge and training methods, social requirements, and the rewards on the side of the profession (Nagar, 2001; Schatz-Oppenheimer, 2017). In the education field, the dominant motive for choosing a profession as a teacher stems from the desire to be a partner in shaping the future and to be socially involved while contributing to society (Mukminin et al., 2017; Nagar, 2001). Pre-service teachers feel that they might have a significant influence on the development of their students' perceptions in regard to their community and society in general, which motivates them when entering their teacher education studies (Heinz, 2015). Other strong motivations include the knowledge that there is a strong demand for this profession everywhere and therefore it is characterized by high mobility, enables time to be with the family due to off-school breaks, enabling a people-oriented environment and providing employment security and stability with social benefits of pensions and insurance (Ewing & Manuel, 2005). Perceptions of the profession include, among other things, a high demand profession but with low wages, which is considered inferior to other professions in society, and mostly women are enrolled in educational studies and engage in the profession. Policy makers are aware of the importance of recruiting men to the teaching profession to convey an equal social message and to present role models for children. In England, for example, the Association of Teacher Education has embarked on an extensive publicity campaign to instill

the message that teachers are an intellectual group that implements its skills and abilities through teaching in an attempt to instill a stimulating social message (Richardson & Watt, 2006).

Previous studies such as Kanadli (2017), Elald and Yerliyurt (2016), and Eroglu and Unlu (2015) indicate a positive and significant correlation between teachers' self-efficacy and their attitudes toward the profession. We raised three hypotheses that are the basis of this research. We hypothesized that teachers' pedagogical applications will mediate this relationship. Based on previous studies (presented above) we refer to six pedagogical application: applying constructivist pedagogical practices; matching to differences between learners; collaboration between fellow teachers; accountability; planning and teaching management; and academy-community relationships.

Professional development programs have the potential to influence multiple outcomes, such as teachers' beliefs, knowledge, skills, instructional practices, and student learning outcomes. We hypothesized that participating in a professional development school (PDS) training program will interact with teachers' self-efficacy in predicting their attitudes toward the profession and will have a positive impact on teachers' self-efficacy and their attitudes toward the profession.

## Methodology

### *The investigated PDS training*

The national policy in professional development for novice teachers is that mentoring is obligatory. All novice teachers must participate in a mentoring training during their first year of studies. The present study focused on a new Professional Development School (PDS) training program for pre-service teachers. "Academy-classroom" is a new program of the Ministry of Education which aims to fully introduce the student to the school life as a proper preparation for entering the teaching profession. The first two years of the academic studies are theoretical while the third year focuses on the practical aspects of teaching. During the third year, pre-service education students join experienced teachers in schools and kindergartens for co-teaching two or three days a week (about 12-16 hours per week). The teaching subjects are in accordance with the academic training programs - language, mathematics, etc. Lessons integrate viewing of the veteran teacher and co-teaching in several modes such as station, parallel, or team teaching (Friend & Bursuck, 2012). Collaboration between the students and the veteran teachers encourages pre-shared preparation of lessons, co-teaching and shared student evaluation. The veteran teachers provide oral and written feedback to the students. The main objective of the program is to improve the teacher's training process by emphasizing their practical training.

### *Research questions*

- 1) Is there a mediating effect of pedagogical practices on the relationship between novice teachers' self-efficacy and their attitudes toward the profession?
- 2) Does participating in a PDS training program moderates the relationship between novice teachers' self-efficacy and their attitudes toward the teaching profession?
- 3) How does participating in the PDS training affects novice teachers' self-efficacy and their attitudes toward the profession?

The first two questions we raised aimed at revealing the nature of the relationships of intervening variables (mediating and moderating variables). The third question relates to the PDS training effects on novice teachers' self-efficacy and their attitudes toward the profession as individual variables and not on the relationship between them.

### *Research tools*

In order to answer the research questions, we used a close and open-ended questionnaire. The questionnaire included three parts. In the first part of the questionnaire the teachers stated whether they participated in the PDS training program. The second part of the questionnaire included 44 statements aimed at investigating the teacher's sense of efficacy (the general self-efficacy scale developed by Chen, Gully & Eden, 2001, was adapted to meet the context of teaching); attitudes toward the teaching profession (based on Kazir et al., 2004); and pedagogical applications (based on a the national test of the Ministry of Education). A five-point Likert scale was used, where 1 indicated complete disagreement and 5 indicated complete agreement. The third part of the questionnaire included three open-end questions. The first (*what are the most significant difficulties you face in teaching?*) was directed at all teachers. It was assumed that differences in coping with difficulties may indirectly indicate a sense of self-efficacy. The other two questions were referring only to the PDS program participants (*"in what way did the program affect your role as a new teacher?"* and *"would you recommend your colleagues to participate in the program? why?"*).

Table 1 presents the details of the categories and statements, and the reliability values of Alpha Cronbach.

Table 1: Categories and statements in the questionnaire

Category (No. of statements)	Sub-category (No. of statements)	Questionnaire statements - Examples	Reliability values of Alpha Cronbach
Teacher's self-efficacy (8)	-	"I can achieve most of my educational goals"	0.885
	Socio-economic security (4)	"The teaching profession provides professional-economic security"	0.746
Attitudes toward the teaching profession	Educational impact on the next generation (5)	"The teaching profession makes a contribution to the development of the society"	0.830
	Professional self-realization (5)	"The teaching profession gives expression to creativity"	0.765
	Attitudes toward the teaching profession -Total (14)		0.880
	Matching to differences between learners (4)	"In my class, different students learn through different learning tasks that suit them"	0.796
	Accountability (3)	"I personally explain to students what exactly they need to do in order to improve"	0.618
Pedagogical practices	Planning and teaching management (4)	"I set educational goals for myself in the teaching and learning processes and work to achieve them"	0.658
	Constructivist pedagogical practices (3)	"In most of my lessons, I implement pedagogical practices that encourage student collaboration"	0.696
	Collaboration between fellow teachers (3)	"I collaborate with fellow teachers at the school for developing and editing learning tasks"	0.601
	Academy-community partnership (5)	Academic resources (library, experts, etc.) are available to me if necessary"	0.812
	Pedagogical practices - Total (22)		0.849

### Participants

Participants were all novice teachers within their first five years of teaching (teaching experience range 1-5 years,  $M=2.53$ ,  $S.D.=0.926$ ) and ranged in age between 22-55 years ( $M=33$ ,  $SD=7.33$ ). A total of 300 teachers constituted the subject pool (Female =81%, Male= 18%; 1% no indicated gender), of them 61 teachers had participated in the PDS model and 239 had not.

### Data analysis process

The questionnaires were distributed in a computerized version to novice teachers by the academic institution where they underwent their academic training. The purpose of the study was presented to the teachers and they could choose whether to participate in the study. Teacher responses to the questionnaire were analyzed using SPSS 23.0.

## Findings

### RQ #1

To test our hypothesized mediation model, we used ordinary least squares path analysis with the PROCESS macro developed by Hayes (2013) in SPSS 23.0. A bootstrap procedure that resamples the data multiple times (5000 times in our study, as per Hayes' 2013 recommendations) and gives an estimate of the entire sampling distribution for the indirect effect was also performed. To test the null hypothesis regarding mediation effects, the bias-corrected percentile method generated 95% confidence intervals. The significance of the indirect effect is the only requirement for mediation (Zhao et al., 2010). We can account for a significant indirect effect when the bias-corrected confidence intervals do not include zero.

As a preliminary stage of our analysis, we ran Pearson bivariate correlations between the research variables (teachers' self-efficacy – TSE; teachers' attitudes toward the profession – TAP; applying constructivist pedagogical practices – CP; matching to differences between learners – DL; collaboration between fellow teachers – C; accountability – A; planning and teaching management – PM; and academy-community relationships – AC). Table 2 presents the findings.

Table 2. Pearson correlation coefficients between the research variables

	TSE	TAP	CP	DL	C	A	PM	AC
TSE	1							
TAP	0.543**	1						
CP	0.406**	0.367**	1					
DL	0.575**	0.547**	0.707**	1				
C	0.289**	0.340**	0.323**	0.648**	1			
A	0.323**	0.279**	0.408**	0.642**	0.221**	1		
PM	0.605**	0.583**	0.524**	0.830**	0.479**	0.387**	1	
AC	0.281**	0.337**	0.233**	0.369**	0.258**	0.154*	0.325**	1

\*\* p=0.000, \* p=0.014

The results indicate a positive and significant correlations between all variables. Some are weak, some are moderate, and some are relatively strong.

In the second stage of our analysis, we performed six mediation analyses (for each dependent variable) using the PROCESS macro (Hayes, 2013).

In line with our hypothesis, all the six pedagogical practices had a positive indirect effect on teachers' attitudes toward the profession (see Figures 1a to 1f and Table 3). Applying constructivist pedagogical practices; matching to differences between learners; collaboration between fellow teachers; accountability; planning and teaching management; and academy-community relationships were found as partial mediators in the relationship between teachers' self-efficacy and their attitudes toward the profession.

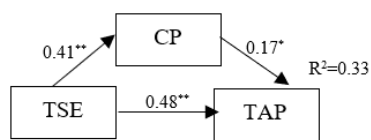


Figure 1a: Mediation model for constructivist practices

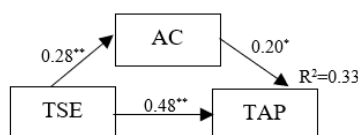


Figure 1d: Mediation model for academy-community relationships

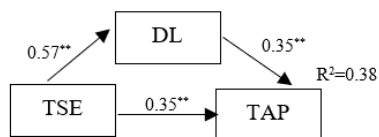


Figure 1b: Mediation model for differences between learners

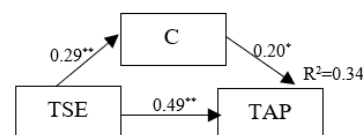


Figure 1e: Mediation model for collaboration

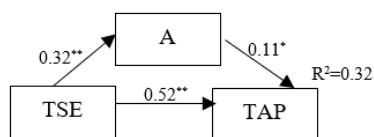


Figure 1c: Mediation model for accountability

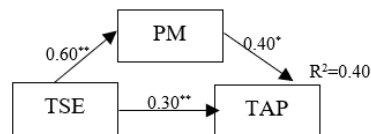


Figure 1f: Mediation model for planning and teaching management

Table 3. Direct, indirect and total effects of self-efficacy and pedagogical practices on teachers' attitudes toward profession

IV	DV	Effect Unstandardized			Bootstrap 95% CI (N=5000)	Total Coeff. (SE)	p
		Direct Coeff. (SE)	p	Indirect Coeff. (SE)			
TSE	CP	0.50 (0.07)	0.000			0.55 (0.05)	0.000
	TAP	0.48 (0.05)	0.000	0.07 (0.03)	0.02; 0.13		
CP	TAP	0.14 (0.04)	0.018				
TSE	DL	0.54 (0.05)	0.000			0.55 (0.05)	0.000
	TAP	0.35 (0.06)	0.000	0.20 (0.04)	0.12; 0.28		
DL	TAP	0.36 (0.06)	0.000				
TSE	A	0.43 (0.08)	0.000			0.55 (0.05)	0.000
	TAP	0.51 (0.05)	0.000	0.04 (0.02)	-0.003; 0.80		
A	TAP	0.08 (0.04)	0.033				
TSE	AC	0.55 (0.12)	0.000			0.54 (0.05)	0.000
	TAP	0.47 (0.05)	0.000	0.06 (0.08)	0.02; 0.09		
AC	TAP	0.10 (0.03)	0.002				
TSE	C	0.44 (0.09)	0.000			0.55 (0.05)	0.000
	TAP	0.49 (0.05)	0.000	0.06 (0.02)	0.02; 0.09		
C	TAP	0.13 (0.03)	0.002				
TSE	PM	0.73 (0.06)	0.000			0.54 (0.05)	0.000
	TAP	0.30 (0.06)	0.000	0.24 (0.04)	0.16; 0.33		
PM	TAP	0.33 (0.05)	0.000				

## RQ #2

To test our hypothesized moderation model, we used analysis with the PROCESS macro developed by Hayes (2013) in SPSS 23.0. Participating in the PDS training was not found as a moderate variable for the relationship between novice teachers' self-efficacy and their attitudes toward the profession. The effect of teachers' self-efficacy on their attitudes toward the profession is not different whether novice teachers participated or not in the PDS training.

## RQ #3

Table 4 presents the results of the t-test for comparing the means among the novice teachers who participated in the PDS program and those who did not.

Table 4. Means of categories – PDS programs' participants vs. non-PDS

Category	Sub category	Mean PDS N=61 Min=1, Max=5 (S.D.)	Mean non-PDS N=239 Min=1, Max=5 (S.D.)	t-test and effect size Cohen's d
Teacher's self-efficacy	-	4.26 (0.52)	3.94 (0.55)	t=4.185, p=0.000, Cohen's d=0.598
Attitudes toward the teaching profession	Socio-economic security	3.38 (0.85)	3.02 (0.82)	t=2.930, p=0.004, Cohen's d=0.431
	Educational impact on the next generation	4.58 (0.45)	4.46 (0.52)	n.s.
	Professional self-realization	4.21 (0.50)	3.95 (0.63)	t=3.326, p=0.004, Cohen's d=0.457
	Attitudes toward the teaching profession -Total	4.11 (0.50)	3.87 (0.55)	t=3.197, p=0.002, Cohen's d=0.454

The findings indicate that novice teachers who participated in the PDS training had a significant higher self-efficacy and more positive attitudes towards the teaching profession. Teachers who participated in the PDS program feel more confident about their teaching ability. Their perception of the teaching profession reflects more sense of economic security and a sense of professional fulfilment.

*Significant difficulties teachers face in teaching*

215 teachers responded to the question and reported on 254 difficulties in teaching. Ten different categories of difficulties were identified in the teachers' responses. Figure 2 presents the distribution of categories among all respondents to the questionnaire and among teachers who participated in the PDS training and those who did not.

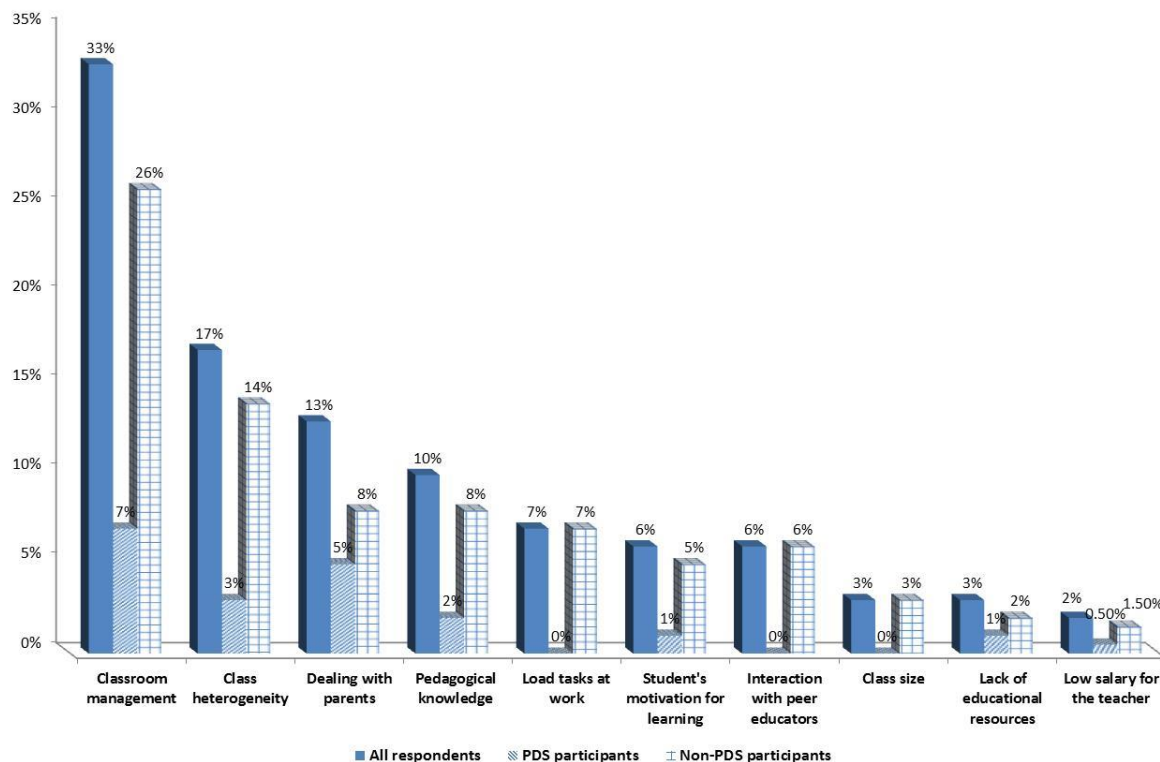


Figure 2. Distribution of categories of teaching difficulties among all respondents, teachers who participated in the PDS training, and those who did not

The most significant difficulty is classroom management. Two other common difficulties are class heterogeneity and coping with parents. Low frequency was found for the difficulties: low salary for teachers, lack of educational resources and class size. The findings indicate a higher frequency of difficulties among teachers who did not participate in the PDS training. A significant difference was found in chi-square test ( $\chi^2=22.004$ ,  $p=0.009$ , Cramer's  $v=0.294$ ).

*Program contributions to the role as a new teacher*

Forty-three of the program participants answered the question. Of them, 38 (88.4%) reported a positive effect, while 4 (11.6%) indicated a negative effect. Three categories were identified in the teachers' responses: *teacher's self-efficacy*; *pedagogical knowledge*; and *significant field experience*. Seven teachers (18%) noted that the impact of the program was positive but did not explain their response. Figure 3 presents the results. Three of the five teachers who reported negative impact noted that this was due to poor mentoring. Two teachers reported negative impact without explaining their answer.

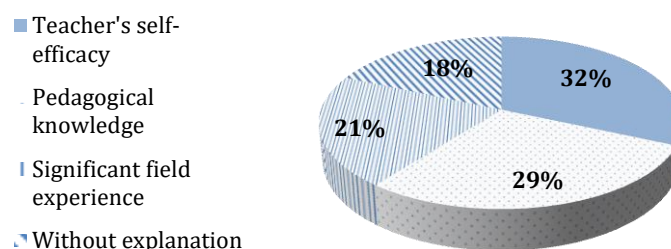


Figure 3. Distribution of categories for program contributions

86% of the PDS program participants will recommend their friends to participate in the program while 14% will not. The most common reason for recommending the program was the importance of the practical classroom experience.



Two other reasons were the pedagogical professional development and the increased sense of teaching efficacy. The most common explanation for not recommending the program was poor mentoring.

### Discussion

Previous research indicates a positive and significant correlation between teachers' self-efficacy and their attitudes toward the profession. Our study raised three hypotheses: 1) teachers' pedagogical applications will mediate the relationship between teachers' self-efficacy and their attitudes toward the profession; 2) participating in a professional development school (PDS) training program interact with teachers' self-efficacy in predicting their attitudes toward the profession; and 3) participating in a PDS program will positively affect teachers' self-efficacy and their attitudes toward the profession. We investigated six pedagogical practices: applying constructivist pedagogical practices; matching to differences between learners; collaboration between fellow teachers; accountability; planning and teaching management; and academy-community relationships. A questionnaire, answered by 300 novice teachers, served as a major research tool.

All the six pedagogical practices that were investigated were found as partial mediators in the relationship between teachers' self-efficacy and their attitudes toward the profession. These findings are of great importance in understanding the relationship between the two variables that were studied and high application value in designing training programs for novice teachers. Training programs should emphasize the development of the pedagogical practices explored in our research and to influence in this way the teachers' sense of self-efficacy and attitudes towards the teaching profession. The findings of the present study are in line with some of the practices investigated in a previous study by Hudson Hudson (2013). His study that was based on the perspective of the mentoring process revealed several desirable practices for preservice teachers: planned and preparation for teaching, reflective practices; understanding school and university policies, knowing students for differentiated learning, teaching strategies, behaviour management, content knowledge, and questioning skills.

Participation in the training program was not found to be a moderating variable in the relationship between teachers' self-efficacy and their attitudes toward the profession. One of the explanations that might explain this finding is related to the design features of the two training programs that the novice teachers in our study participated in. Both training programs included practical teaching experience and an experienced teacher as a mentor. The main difference between the two programs is the experience of teachers in the PDS program in co-teaching during their academic studies. No special emphasis was placed in both programs on the development of the pedagogical practices investigated in our research.

Although participation in the PDS program is not a moderating variable between the two variables: self-efficacy and attitudes toward the profession, the findings in our study indicate a positive effect of the PDS program on each of these variables. The findings correspond to the literature. Epstein and Willhite (2015) investigated an early childhood professional development program and found that the PDS model led to a strong efficacy across instructional and management aspects of teaching but relatively weaker efficacy in assisting families to support their children's success. Helms-Lorenz et al. (2018) also reported higher levels of self-efficacy among PDS teachers compared to non-PDS-based teachers.

The novice teachers in our research point to a number of difficulties in their work. These difficulties are in line with previous investigations (e.g. Kyriacou, 1993; Liga Grinfelde, 2018; Talbert, 1994) who reported complications in adapting to the educational system, concerns that they cannot meet the requirements, difficulties in classroom management, difficulty in communicating with other teachers, time management, and organization of the lesson. In Rees's (2015) study, novice teachers also noted similar difficulties, as well as the work with parents and families, and the need for individual teaching methods that provide a solution to the diversity of learners. This issue is reported in various studies in the context of special education (e.g. Kilgore et al., 2003; Romano & Gibson, 2006).

If the main difference between the training programs that the novice teachers in our study participated in is the co-teaching experience, the findings of the study reinforces the importance of co-teaching in the process of training new teachers. There are diverse teaching opportunities and personal access to students, facilitation of teaching loads, professional collaborations, and an additional pair of eyes that aware of the classroom functioning (Austin, 2001; Jurkowski & Muller, 2018; Pratt, 2014). When a veteran in-service teacher is standing next to a novice teacher, not only the novice teacher is enjoying the advantages by the expert, but the veteran teacher is also able to be exposed to innovative teaching methods and pedagogic initiatives (Rytivaara & Kershner, 2012). Co-teaching may have many advantages for the teachers themselves, such as deepening teacher collaboration, promoting creativity and innovative teaching methods, and improving teachers' satisfaction with their work (Cacciatore & Morey, 2017). In addition, Groothuijzen et al. (2019) claim that lead teachers who provide professional development for peer teachers is a promising strategy for large-scale implementation of curriculum innovations.

Co-teaching in inclusive classrooms where students with special needs are integrated in general classes do take place; but several researchers like Scruggs, Mastropieri and McDuffie (2007), Murawski and Swanson (2001), and Jackson, Willis, Giles, Lastrapes and Mooney (2017) call for more research on the effectiveness of co-teaching in general context.

### Research limitations

The level of performance of teaching in the classroom was not investigated in our study. Professional development school-university partnership is perceived as having advantages in this performance aspect as well. Ridley, Hurwitz, Davis-Hackett and Knutson-Miller (2005), for example, conducted a study comparing PDS and traditional training and found higher performance by PDS students. They used blind scoring of lesson planning, lesson reflections, overall teacher effectiveness, and content retention. Other limitations may include the lack of evaluation of classroom performance and the relationships between teachers' work and students' achievements.

### Recommendations for further research

In further research, it is recommended to expand understanding on the aspects that constitute the limitations in the present study. It is important to examine the level of performance of teaching in the classroom and students' outcomes in a follow-up study.

Despite the limitations mentioned, the present findings provide new insights into the relationship between the novice teachers' sense of self-efficacy and their attitudes toward the teaching profession that can be applied while designing the process of training programs.

The general goal of the PDS model is to improve school practice: pre-service, novice and experienced teachers, and school leaders. As of yet, there is not enough quantitative evidence available to support the claim that PDS programs provide better learning environments for teacher training (Helms-Lorenz et al., 2018). This highlights the importance of this study. In addition, little value has been published regarding the complex nature of PDS partnerships and the conditions needed in order to sustain the model (Adair-Breault, 2013). There is a need to address research to the type and amount of change that must take place, the degree to which change must be sustained, and the capacity stakeholders need in order to support these changes.

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