The Significance of Mentoring on Teachers' Beliefs and Teachers' Pedagogical Practices: A Comparative Analysis among 47 Countries Based on 2018 Teaching and Learning International Survey (TALIS)

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THE SIGNIFICANCE OF MENTORING ON TEACHERS' BELIEFS AND TEACHERS' PEDAGOGICAL PRACTICES: A COMPARATIVE ANALYSIS AMONG 47 COUNTRIES BASED ON 2018 TEACHING AND LEARNING INTERNATIONAL SURVEY (TALIS)

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Abstract. The growing number of literature on mentorship suggests that mentoring influences teaching outcomes and student learning thereby improving the quality of education. However, to which elements mentoring have impacts on and the dispositions by which mentors and mentees develop remain unclear. This paper investigated the 2018 Teaching and Learning International Survey (TALIS) teacher questionnaire from lower secondary school teachers from a worldwide sample of 47 countries and proved statistically that mentoring has significant impact on teachers' pedagogical practices and teachers' beliefs. It also examined whether teachers' belief has significant influence on teachers'

pedagogical practices. Drawing from previous studies, and two main conceptual models, this paper proposes a much clearer framework to better understand the dynamics of mentoring. The mentor-mentee relationship allows transfer of different fundamentals and factors such as pedagogical, academic knowledge, psychosocial, attitudes and behaviors throughout the mentoring process. This model accentuates the significance of an ongoing relationship between mentors and mentees that are reciprocally beneficial. Thus, when institutions design enabling environments that encourage and promote healthy and productive mentorship, this practice can play a key role in constantly nurturing professional knowledge, skills and attitudes that the teaching force needs for them to educate and eloquently prepare their students more effectively.

Introduction

Various literatures support that the very central mission of education is to deliver high quality teaching and is directly related to positive student learning outcomes[1,2] (Henard & Rosevear, 2012; Singh & Sarkar, 2015). In other words, delivery of the curriculum and teaching practices are equally important which puts teachers at the forefront to achieve this goal[2] (Alegado, 2018a; 2018b; Koki, 2000; Soe, 2018). However, attaining this mission whilst fostering teacher pedagogical beliefs, attitudes and professional learning practices do not come inherently to teachers pre and post their induction. Other factors, including mentorship, contribute to this effect and the need to examine it more profoundly is of great significance if we are to look at teachers as valuable resources in education, for which high-quality implementation and performance in teaching and learning serve as fundamental ingredients of educational advancement.

More recently, mentorship or mentoring has been gaining momentum in the field of educational research (Alegado, 2018a; Klinge, 2015; Scandura & Pellegrini, 2007; Soe, 2018). Mentoring can provide teachers' performance in the classroom with enormous support and aid at any period or time as teachers—whether it is pre, during or post induction. The kind of assistance in the form of effective mentoring programs have demonstrated critical effects in inducting teachers or even vice principals into the profession and keeping them in the educational career (Ingersoll & Strong, 2011; Zembytska, 2016; Langdon et al., 2011). Mentorship, furthermore, holds a strategic role in persistently cultivating professional knowledge, skills and attitudes that the teaching force needs for them to educate and articulately prepare their students.

Mentoring is a collective term used to describe any relationship usually between a more experienced individual known as a mentor and a less experienced individual, called a mentee or protégé. On one of the most prominent literature, Donaldson et al. (2000) defined mentoring as a dyadic, face-to-face connection between an adult to a student who supervises the latter to support the mentee's expertise, theoretical knowledge, and individual development. Likewise, in teaching, such relationship also materializes between a senior or a higher teacher and a beginning teacher. This type of mentoring can vary in the way it is interpreted whether informal or formally arranged by schools, long or short term and either convened in person or online (Kasprisin et al., 2003; Packard, 2003).

Recent scholarship has been increasingly dedicated to the results of mentoring in teachers' development in terms of theoretical, pedagogical and professional growth. With this as a starting point, this paper purposes to add new insights through quantitative evidence utilizing the international data from the 2018 Teaching and Learning International Survey, TALIS 2018. For this

analysis, we use the responses from lower secondary teachers worldwide. Furthermore, we isolate two important features of the survey- teachers' beliefs and teachers' pedagogical practices.

Teachers' belief is an enormous concept that overlays other psychological characteristics like knowledge, ideologies and attitudes (Pajares, 1992). Although belief is a tangled construct, it can simply be implied as "*a game of player's choice at best*" (Pajares, 1992). Borg (2003) added that belief is a principal influencing factor in many facets of education and that teacher beliefs can influence the potential of students (Windschitl & Sahl, 2002). Teachers' beliefs and teachers' practices are highly intertwined (Lopes & Santos, 2013). Teacher's actions are considerably related and greatly attached with their personal and/or professional beliefs. It could be something about their belief on how classroom management should be, how teaching should be, the mission of their schools, and even how teachers should respond and manage teaching-related matters. (Evrim et al., 2009; Lopes & Santos, 2013; Shin & Koh, 2007; Yilmaz & Çavaş, 2008). Teachers' pedagogical practices dependably predict students' learning outcomes and their effects can be argued to have been influenced by their beliefs and attitudes (Muijs & Reynolds, 2002; Nye et al., 2004; Palardy & Rumberger, 2008). Specifically, teachers' beliefs on instructional practices can be influenced by mentors during their professional development process (OECD, 2009). In TALIS, teacher belief is measured through four constructivist statements: (1) most teachers in this school strive to develop new ideas for teaching and learning, (2) most teachers in this school are open to change, (3) most teachers in this school search for new ways to solve problems, and, (4) most teachers in this school provide practical support to each other for the application of new ideas.

On the other hand, teachers' pedagogical practices are simply understood as the things teachers bring to the classroom to enable students learning, classroom management and various instructional strategies (OECD, 2009).

Teachers' pedagogical practices are very broad in nature because its definition interlaces with other teachers' activities in classroom. However, it is an established fact that classroom practices teachers employ are important aspects for successful and efficient classroom learning and student outcomes (Wang et al., 1993). Such activities include classroom management, presentation skills, lesson organization, informative feedback and motivational strategies and are found to have affirmative influence on student achievement (OECD, 2009). It goes without saying that what teachers do in the classroom is an appropriate predictor of students' achievement (Creemers & Kyriakides, 2006; Seidel & Shavelson, 2007). In TALIS, teachers' pedagogical practices are described as follows: (1) get students to believe they can do well in school work, (2) help students value learning, (3) craft good questions for students, (4) control disruptive behavior in the classroom, (5) motivate students who show low interest in school work, (6) make my expectations about student behavior clear, (7) help student think critically, (8) get students to follow classroom rules, (9) calm a student who is disruptive or noisy, (10) use a variety of assessment strategies, (11) provide an alternative explanation, for example when students are confused, (12) vary instructional strategies in my classroom, and, (13) support student learning through the use of digital technology (e.g., computers, tablets, smart boards etc.).

Literature review

Ongoing definitions of mentoring

Alegado (2018a) highlighted that the normative meaning of mentoring historically is highly based on guidance and emotional support usually of an older to a younger individual. As briefly defined at the beginning, mentorship can be simply described as the relationship of a mentor and a mentee. But progressively in the past, the definitions of mentoring have become much more

distinctive and expansive. For instance, Zachary (2002) suggests that mentorship involves transfer of knowledge, empowers personal development, and helps mentees with their transition. Correspondingly, Blandford (2000) describes mentoring as more of an intricate process through which not only knowledge and expertise are passed on but also some other psychological behaviors like understanding and motivational skills. Furthermore, Harnish & Wild (1994) clarifies that mentorship does not only glorify the mentors but rather highlight the benefits that both mentees and mentors receive. The nature of this relationship is mutual in the sense that both mentees and mentors gain from one another. Even the characteristics of mentors and mentees have been explored. For example, Bell (2000) typifies a mentor as someone who assists a protégé to (re)learn things that he or she have learned less, slowly or have not studied at all.

Current models and studies of mentoring

Coaching, a similar form of mentoring, is well recognized and familiar in many professions such as social work and teaching (McKimm et al., 2007). This model of continuing support from the start of their careers is becoming more established as more organizations initiate this kind of mentorship. Entering the teaching practice poses some challenges to newly qualified teachers. It is a period that is so delicate and very critical in the sense that the kind of mentorship they get in the beginning can shape their perceptions and the direction of their future career. It is also where teachers' knowledge and skills acquired during their formative education are finally applied into practice. Moreover, it is a transitional period where stress can be experienced and most feel the challenges caused by the demands and expectations of the working environment. So, this stage is where one needs the most guidance and support for them to develop confidence and required competencies of the job. For example,

one can learn the history, values system, norms and ideologies of the organization through mentoring. Knowing them can prepare teachers and align their expectations appropriately.

From the emerging literature, studies have been very keen on scrutinizing mentoring as a form of professional learning[3]) (Hudson, 2013; Nel & Luneta, 2017). This is deeply rooted from the studies that capture the relationship between mentors and mentees where the latter need to acquire traditions, cultures, practices and habits of the 'community' they are about to join into (Merriam, 1982). Thus, understanding these habits, internal rules and tradition necessitate new comers to learn the specific language in that institution, their knowledge and patterns, or the type of learning called *'knowing-in-action'* (Schon, 1983). It is from this very foundation that mentorship in pre and post induction of teachers have been studied. Mentoring as professional development is centrally premised that most teachers greatly trigger learning process through observation then application, and commenting and enquiring, rather than purely listening (Nicholls, 2012). For example, facilitated mentoring schemes, when introduced to teachers can induct novice teachers swiftly, characterize individual 'potential' more proficiently, upturn teacher retention and stimulate self-development effectively (Jones & Jowett, 1997). Furthermore, work-based learning training programs such as continuous professional development also promote positive organizational change, inspire personal development by helping employees cope with the difficulties of transitions such as new teachers coming in the education sector etc.

Other related literature highlights the dynamics of mentoring and to which elements they have impact on each other. For example, Levinson et al. (1978) stress that mentees can categorically gain knowledge while mentors develop a strong sense of satisfaction and confidence by having been mentored the 'next in line' in the organization. The loyalty, trust and support are also some important psychological gains that mentors receive. When a teacher is

tasked to 'mentor', he or she tries to improve and develop to the highest level his performance, and therefore increases his/her visibility and value within the organization (Chao, 1997). In addition, mentored individuals are more highly likely to enjoy more career advancement and salary increase (Nemanick Jr., 2000). Overall, mentoring have progressive and prevalent influence on professional growth, career mobility and advancement. As Alegado (2018b) concluded, although not weighed exactly the same on both ends, mentoring benefits mentees and mentors in myriad of ways. Mentees significantly gain from this relationship the pedagogical knowledge, classroom management skills and psycho-behavioral aspects of teaching while mentors emphasized the influence on their leadership capacity and the sense of satisfaction and validation.
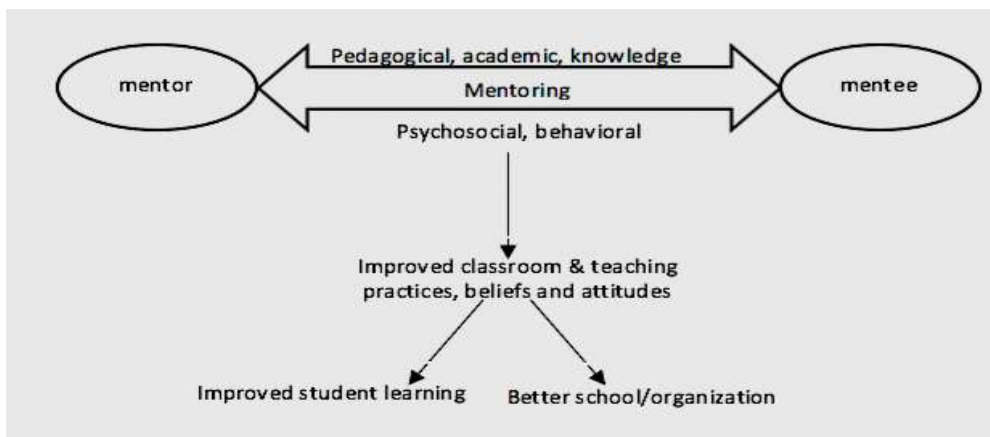
Theoretical framework

Figure 1. Theoretical framework predominantly based on Zey's (1984) Mutual Benefits Model and Yob & Crawford's (2012) Mentoring Framework

Previous literature suggests the effects of mentoring but as to how and what factors are affected is still very limited. Aligned with the aims of this study and with the prospects to further examine the mentoring process, we adopted two theoretical frameworks based on Zey's (1984) *Mutual Benefits Model* and Yob & Crawford's (2012) *Mentoring Framework* to support the significance of

mentoring in teacher's pedagogical practices and teachers' beliefs (Fig. 1). In TALIS, teaching practices are seemingly characterized as activities like functioning effectively in inclusive settings, student-centered pedagogies, and collaborative activities. While teachers' beliefs are described as teachers' perceptions and attitudes towards school, teaching, and learning.

Mentoring relationships are multi-layered and inherently dyadic (Ragins & Kram, 2017) with both mentors and mentees doing distinctive roles and duties. There are diverse theoretical models that mirror the dynamics mentor-mentee relationship and how it benefits them mutually. The premise of Zey's (1984) *Mutual Benefits Model* is that individuals enter and remain part of relationships to benefit certain needs which is typically the case from a mentor-mentee relationship. For example, the mentee generally acquires the demands of the job and its related administrative, organizational and cultural characteristics. The mentor then is normally the source of this kind of organizational information; therefore, the mentee's performance can have a positive impression on the mentor's reputation so to speak. This symbiotic relationship also underlines the benefits for the organization or the school as demonstrated through an efficient professional team with collaborative teachers at the forefront and, most notably, a distinctive model of professional supervisory succession which guarantees the handover of organizational values, norms and culture to the next generation. This model distinctively features to integrate the benefits exchanged between mentor and mentee and their organization.

Furthermore, *Mutual Benefits Model* provides a good basis to comprehend the intricacies of mentor-mentee relationship, and how mutual benefits are vital elements in such relationship. But, the subtleties that exist in the process used in this model is not adequate. Thus, we adopted another model by Yob & Crawford's (2002) *Mentoring Framework*. This model categorizes mentoring benefits in two significant areas—academic and psychosocial. The academic

element represents technical and informational functions of the mentor that support mentee development for the acquisition of knowledge, skills, and attitudes. In the academic domain, four primary qualities were recognized: (1) competence, (2) availability, (3) induction, and (4) challenge. Subsequently, psychosocial domain encompasses *"the qualities and skills in building and sustaining interpersonal relationships, and the values, attitudes, and affects involved in mentoring"* (p. 41). In this area, three qualities have emerged which includes (1) the faculty member's personal qualities, (2) communication, and (3) emotional support.

Likewise, Kram (1983) theorized mentoring to have influence on both career development and psychosocial aspects. She differentiates these two functions as:

> [c]areer functions those aspects of the relationship that primarily enhance career advancement," such as sponsorship, exposure-and-visibility, coaching, protection, and challenging assignments. Whereas, psychosocial functions are those aspects of the relationship that primarily enhance the sense of competence, clarity of identity, and effectiveness in the managerial role, such as role modeling, acceptance-and-confirmation, counseling, and friendship (p. 614).

These aspects describe to the nature of how mentors and mentees function. Overall, mentoring have a positive and prevailing impact on professional and personal growth. This model distinguishes the existing process and reciprocal benefits between mentors and mentee and to which this practice can have an impact on. Admittedly, this model is not in any way perfect, but when viewed through the lens of scope and approach to the effects of mentoring, it can provide a great connection to its significance in teachers' pedagogical practices and teacher's beliefs.

Hypotheses

The hypotheses of the study are as follow: (1) there is no significant difference in the teachers' beliefs between mentee and non-mentee; (2) there is no significant difference in the teachers' beliefs between mentor and non-mentor; (3) there is no significant difference in the teachers' pedagogical practices between mentee and non-mentee; (4) there is no significant difference in the teachers' pedagogical practices between mentor and non-mentor; (5) teachers' belief has no significant influence on teachers' pedagogical practices.

Sample

In this paper, the secondary data set (BTGINTT3) was used. "B": lower secondary education (ISCED level 2); "T": teacher-level data file. "G" is used for general questionnaire data. "IN": International and "T3" is used for the third round of TALIS conducted in 2018.

Source of data

For the purpose of this paper, the secondary data was used from the TALIS 2018 international data. In this questionnaire, the portion of teaching general especially in teachers' beliefs and teachers' pedagogical practices was used and the role of mentoring activities in teachers' belief and teachers' pedagogical practices was studied.

For the teachers' belief and teachers' pedagogical practices, the items are arranged with likert scale, and for the mentoring activities, the items are arranged with "yes" and "no". For the mentoring activities, the item numbers, TT3G21A and TT3G21B were used. For the teachers' pedagogical beliefs, TT3G32A to TT3G32D and for the teaching practices and behaviors in the classroom, TT3G34A to TT3G34M were used.

*Mentoring***:** The items are arranged with "yes" or "no".

1.   I currently have an assigned mentor to support me.

2.   I am currently assigned mentor for one or more teacher.

Teachers' belief: The items are arranged with "strongly disagree, disagree, agree, strongly agree".

1.   Most teachers strive to develop new ideas for teaching.

2.   Most teachers are open to change.

3.   Most teachers search for new ways to solve problems.

4.   Most teachers provide practical support to each other.

Teachers' pedagogical practices: The items are arranged with "not at all, to some extent, quit a bit, a lot"

1.   Get students to believe they can do well in school work.

2.   Help my students value learning.

3.   Craft good questions for my students.

4.   Control disruptive behaviour in the classroom.

5.   Motivate students who show low interest in school work.

6.   Make my expectations about student behaviour clear.

7.   Help students think critically.

8.   Get students to follow classroom rules.

9.   Calm a student who is disruptive or noisy.

10.   Use a variety of assessment strategies.

11.   Provide alt. Explanation e.g. when students are confused.

12.   Vary instructional strategies in my classroom.

13.   Support student learning via the use of digital technology.

Method of analysis

To analyze the quantitative data, the Statistical Package for Social Science (SPSS) version (20) was used. The data was analyzed by using descriptive statistics for each dimension. Mentoring activities is the independent variable and teachers' belief and practices are dependent variables. Independent variable item is composed of "yes" and "no", so the independent t test was used to test the hypothesis one to four. Teachers' belief and teachers' pedagogical practices are continuous variables; therefore, regression analysis was used for hypothesis five.

Table 1. Number of participants in the BTGINTT3

Country	Male	Fe-male	Total	Country	Male	Fe-male	Total
Australia	2246	1327	3573	Malta	1140	516	1656
Austria	2955	1300	4255	Mexico	1625	1301	2926
Belgium	3639	1617	5256	Netherlands	1012	872	1884
Brazil	1621	826	2447	New Zealand	1483	773	2256
Bulgaria	2289	573	2862	Norway	2675	1479	4154
Chile	1276	687	1963	Portugal	2681	995	3675
Chinese(Taipei)	2606	1229	3835	Russian Federation	3422	589	4011
Colombia	1298	1100	2398	Saudi Arabia	1544	1200	2744
Croatia	2605	753	3358	Singapore	2102	1178	3280
Cyprus	1181	430	1611	Slovak Republic	2451	564	3015
Czech Republic	2607	840	3447	Vietnam	2517	1308	3825
Denmark	1203	798	2001	Slovenia	1650	444	2094
Estonia	2479	525	3004	South African	1226	820	2046
Finland	1985	866	2851	Spain	4625	2782	7407
France	1951	1055	3006	Sweden	1827	955	2782
Georgia	2625	476	3101	United Arab Emirates	5244	3404	8648
Hungary	2550	695	3245	Turkey	2286	1666	3952

Israel	1955	672	2627	United State	1717	837	2554
Italy	2809	803	3612	England	1537	839	2376
Japan	1510	2045	3555	Canada	680	397	1077
Kazakh-stan	5023	1543	6566	Romania	2650	1008	3658
Korea	2025	906	2931	Argentina	1442	657	2099
Latvia	2038	277	2315	China (Shanghai)	2941	1035	3976
Lithuania	3170	589	3759	**Total**	**106123**	**47551**	**153674**

Source: Teaching and Learning International Survey (2018)

Results and findings

The finding section includes descriptive and inferential results. In the descriptive results, the mean comparison for the teachers' belief and teachers' pedagogical practices in term of mentoring activities are conducted. To test the research hypothesis, the independent sample *t* test was used to test significant difference in the teachers' beliefs and pedagogical practices in term of mentoring activities. Regression analysis was used to test the influence of teachers' belief on teachers' pedagogical practices.

Table 2. Mean Score for Teachers' Belief and Teachers' Pedagogical Practices

Country	Teachers' Belief	Teachers' Pedagogical Practices	Country	Teachers' Belief	Teachers' Pedagogical Practices
Australia	2.8933	3.2385	Malta	2.8862	3.2771
Austria	2.9619	3.1151	Mexico	3.0009	3.2181
Belgium	2.6988	3.1478	Netherlands	2.6931	3.2838
Brazil	3.0309	3.3430	New Zealand	2.9005	3.2360
Bulgaria	3.1127	3.3100	Norway	2.9776	2.8700
Chile	2.9712	3.2956	Portugal	2.6672	3.5597
Chinese(Taipei)	2.8410	3.0394	Russian Federation	3.0009	
Colombia	3.0511	3.6631	Saudi Arabia	3.1428	3.4488
Croatia	2.8063	2.9898	Singapore	2.8447	3.1496
Cyprus	2.7377	3.3963	Slovak Republic	2.9500	3.1125
Czech Republic	2.7687	2.9497	Vietnam	3.2752	3.4012

Denmark	2.9662	3.4032	Slovenia	2.9990	3.1061
Estonia	2.9076	3.0493	South African	2.8917	3.4469
Finland	2.8467	3.1029	Spain	2.8777	3.0914
France	2.8339	2.9535	Sweden	2.9141	3.1213
Georgia	3.2124	3.3000	United Arab Emirates	3.2549	3.5725
Hungary	3.0404	3.3937	Turkey	3.0131	3.2774
Israel	2.8880	3.2351	United State	2.9212	3.2300
Italy	2.8294	3.3127	England	2.9055	3.3050
Japan	2.8435	2.4774	Canada	3.0081	3.2936
Kazakhstan	3.1324	3.1407	Romania	3.1761	3.2976
Korea	2.9287	3.0858	Argentina	3.0028	3.3125
Latvia	3.1183	3.1674	China (Shang-hai)	3.1737	3.2884
Lithuania	3.0834	3.1199			

Source: Teaching and Learning International Survey (2018).

Hypotheses (1)

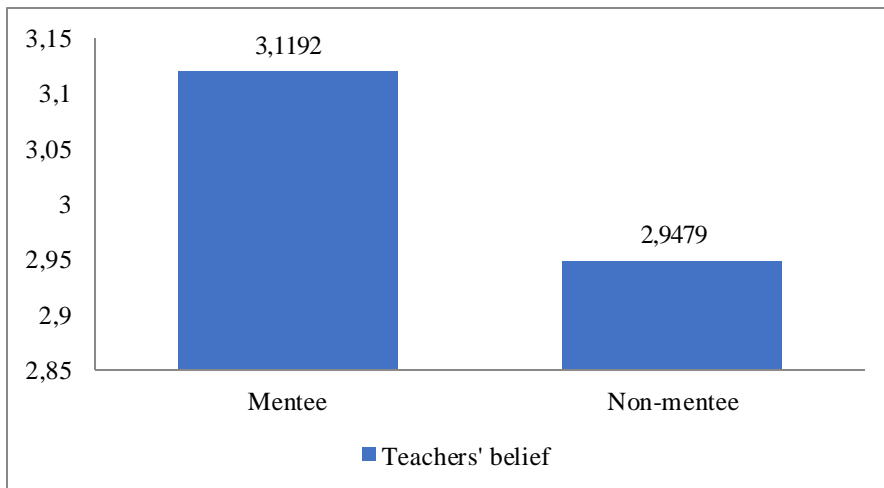There is no significant difference in teachers' beliefs between mentee and non-mentee.

Figure 2. The Comparison of Mean Scores for the Teachers' Beliefs in term of Mentee and Non-mentee

As shown in Table 3, there is a significant difference in the teachers' beliefs between mentee and non-mentee at the $p>001$ level. According to the result, it can be concluded that the teachers who had the training of mentee

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activities had better teachers' beliefs than those who did not had the mentee activities.

Table 3. t-Value for the Teachers' Beliefs between Mentee and Non-Mentee Teachers

No.	Dimensions	I currently have an assigned mentor to support me	N	M	SD	MD	*df*	*p*
1.	Teachers' Beliefs	Mentee	19093	3.1192	.61908	.17123	147001	.000***
		Non-mentee	127910	2.9479	.62224			

Note: *p<.05, **p<.01 and ***p<.001

Hypothesis (2)

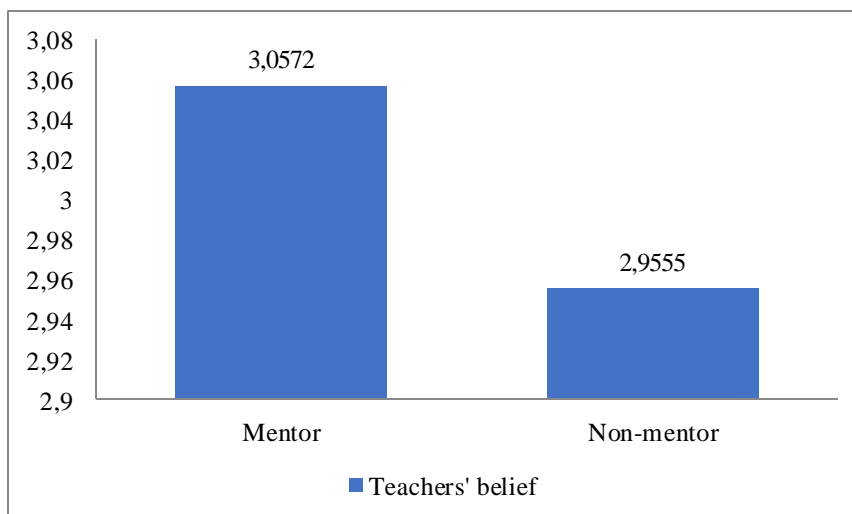There is no significant difference in teachers' beliefs between mentor and non-mentor.

Figure 3. The Comparison of Mean Scores for the Teachers Beliefs in term of Mentor and Non-mentor

According to the mean score comparison and independent t test result, as shown in Fig. 3 and Table 4, the mean value of teachers' belief of mentor is greater than those of non-mentor teachers. And t value for the teachers' beliefs between mentor and non-mentor teachers is significant at the (p>.001) level.

Table 4 Table t-Value for the Teachers' Beliefs between Mentor and Non-Mentor Teachers

No.	Dimensions	I am currently assigned mentor for one or more teacher	N	M	SD	MD	*df*	*p*
1.	Teachers' belief	Mentor	20911	3.0572	.62031	.10164	146747	.000***
		Non-mentor	125838	2.9555	.62360			

Note: *p<.05, **p<.01 and ***p<.001

Hypothesis (3)

There is no significant difference in teachers' pedagogical practices between mentee and non-mentee.

According to the mean score and independent t test result, as shown in Fig. 4 and Table 5, the mean value of teachers' pedagogical practices of mentor teacher is greater than those of non-mentor teachers. And t value for the teachers' pedagogical practices between mentor and non-mentor teachers is significant at the (p>.001) level. Therefore, mentoring activities has significant impact on the teachers' pedagogical practices.

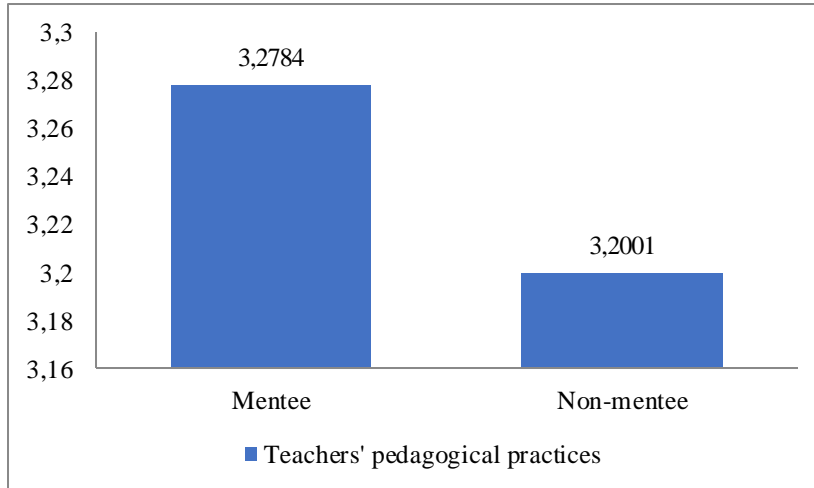**Figure 4.** The Comparison of Mean Scores for the Teachers' Pedagogical Practices in term of Mentee and Non-mentee

Table 5. Table t-Value for the Teachers' Pedagogical Practices in Class between Mentee and Non-Mentee Teachers

No.	Dimensions	I currently have an assigned mentor to support me	N	M	SD	MD	*df*	*p*
1.	Teachers' Pedagogical Practices	Mentee	18279	3.2784	.54192	.07827	140737	.000***
		Non-mentee	122460	3.2001	.48113			

Note: *$p<.05$, **$p<.01$ and ***$p<.001$

Hypothesis (4)

There is no significant difference in teachers' pedagogical practices between mentor and non-mentor.

According to the mean score and independent t test result, as shown in Fig. 5 and Table 6, the mean value of teachers' pedagogical practices of mentee teacher is greater than those of non-mentee teachers. And t value for the teachers' pedagogical practices between mentee and non-mentee teachers is significant at the ($p>.001$) level. Therefore, the teachers who had the training of

mentee activities can implement the teachers' pedagogical practices more effectively than those of teacher who didn't have the mentee training.
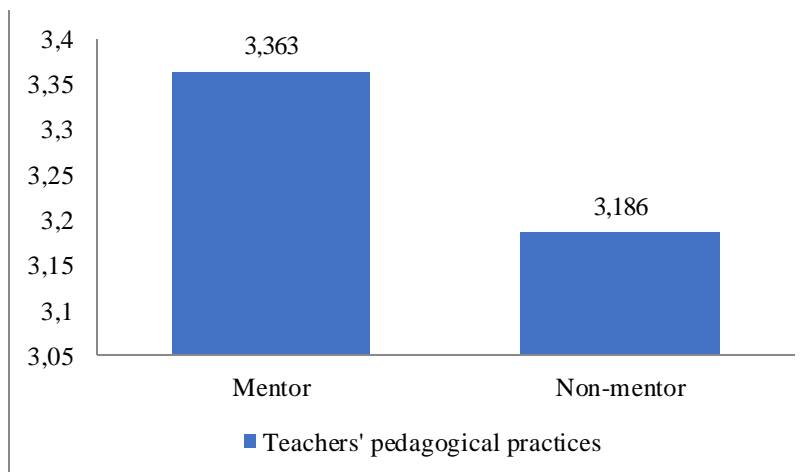

Figure 5. The Comparison of Mean Scores for the Teachers' Pedagogical Practices in term of Mentor and Non-mentor

Table 6. Table t-Value for the Teachers' Pedagogical Practices between Mentor and Non-Mentor Teachers

No.	Dimensions	I am currently assigned mentor for one or more teacher	N	M	SD	MD	*df*	*p*
1.	Teachers' Pedagogical Practices	Mentor	19841	3.3630	.48465	.17700	140576	.000***
		Non-mentor	120737	3.1860	.48601			

Note: *p<.05, **p<.01 and ***p<.001

Hypothesis (5)

Teachers' belief has no significant influence on teaching practices. In hypothesis (5), teachers' belief and teachers' pedagogical practices are continuous variables; therefore, regression analysis was conducted.

Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	197[a]	.039	.039	.48024

a. Predictors: (Constant), Teachers belief

Table 8. ANOVAs

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1320.610	1	1320.610	5725.992	.000[a]
	Residual	32584.471	141282	.231		
	Total	33905.081	141283			

a. Predictors: (Constant), Teachers' belief

b. Dependent Variable: Teachers' pedagogical practices

Table 9. Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.754	.006		445.122	.000
	Teachers belief	.154	.002	.197	75.670	.000

a. Dependent Variable: Teachers' pedagogical practice

Based on Tables 7, 8, and 9, the overall regression model is significant (F=5725.992, P < .001, teachers' belief is a variable which could be used to predict teachers' pedagogical practices (t =75.670, P <.001).

The correlation between the true Y and the predict Y is .197, the coefficient of the determinant .039, which indicated that the regression model could explain 3.9% of the total variance among the teachers' pedagogical practices.

Teacher pedagogical practices =2.754 + .154* Teachers' beliefs.

Summary of the findings

(1)   There is a significant difference in teachers' beliefs between mentee and non-mentee.

(2)   There is a significant difference in teachers' beliefs between mentor and non-mentor.

(3)   There is a significant difference in teachers' pedagogical practices between mentee and non-mentee.

(4)   There is a significant difference in teachers' pedagogical practices between mentor and non-mentor.

(5)   Teachers' belief has significant influence on teachers' pedagogical practices.

The objective of the study is to test the impact of mentoring activities on the teachers' belief and teachers' pedagogical practices based on the TALIS (2018) international data. There were four research hypotheses. Based on the results, it can be concluded that the teacher who were trained with the mentoring training activities had better teachers' belief and could implement teaching learning activities more effectively. And Teachers' belief is a predictor for teachers' pedagogical practices. Research finding proved that the theoretical model as shown in Fig. 1. Therefore, mentoring activity is an important professional development activity for effective teachers.

Discussion and conclusion

The result indicates that mentoring is important for teachers in schools in light of the statistical nature of analysis of this paper. We reviewed the significance of mentoring in two aspects: (1) teachers' beliefs and (2) teachers' pedagogical practices and therefore found that they both have positive relationship. We expect that the findings on this paper to help institutions design and align new mentoring programs, framed in the context of teachers' beliefs and teachers' pedagogical practices. Teachers' beliefs and teachers' practices are highly intertwined (Lopes & Santos, 2013).

For many years, known literatures on teaching and mentoring have developed frameworks of classroom management and models of students' behaviors which cautiously integrate teachers' beliefs, teachers' values, and teachers' principles (Livingstone et al., 1995; Lopes & Santos, 2013; Sato & Kleinsasser, 2004). These researches elucidate teachers' actions are deeply rooted from teachers' beliefs about learning and educational goals, beliefs about what is deemed good or bad teaching, and their individual theories about their roles teachers and their students. Congruently, teachers' beliefs and theories about teaching are understood to intercede teachers' actions and behaviors in class, and when viewed from a bigger picture can in turn model students' behavior and academic performance (Elias & Mace, 2005; Lopes & Santos, 2013).

Competent and effective teaching requires all teachers to employ a broad spectrum of skills, have innovative access to rich teaching repertoires and have a closer look at his/her own teaching. These capabilities do not come naturally to teachers and therefore must be developed through other means like mentoring. Mentoring activities and approaches can be beneficial for both mentees and mentors as proven with this quantitative analysis of TALIS 2018 with respect to their teachers' pedagogical practices and teachers' beliefs. The results of this paper have further implications mainly in organizations like

schools. For instance, formal mentoring programs develop future mentors and an organizational mentoring culture (Ragins & Scandura, 1999). Organizations that enthusiastically cultivate novice teachers are also developing future mentors. For schools that have not taken on promoting this kind of mentoring relationships as part of their organizational culture, this paper recommends to take an affirmative role to tap potential mentors who have not been in a mentoring role. These schools should also endorse the development of mentoring by incorporating them in and career development programs and performance appraisals. School leaders and administrators need to realize that creating an environment that allows experienced teachers to mentor with novice or less experienced teachers will for sure profit the students and the overall organization will be better as a result of the increased capacity of teachers serving of mentors and mentees. The theoretical framework we presented support mentoring as a professional development and should come as a precedence for education sectors and leaders. Capitalizing in teachers' professional development can build system capacity through mutually beneficial exchange, transfer and/or acquisition of pedagogical practices and positive beliefs.

NOTES

1. http://www.oecd.org/education/imhe/41692318.pdf
2. https://www.oecd.org/education/school/43023606.pdf
3. https://files.eric.ed.gov/fulltext/ED460125.pdf

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