

# **Development of Parental Efficacy Scale for Measuring Parents' Involvement Capabilities in Elementary Education**

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#### Abstract

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Parental involvement had benefit for the education of elementary children. Yet, knowing parental efficacy was important factor to do such involvement. The purpose of this study was to design and examine a practical, valid, and reliable parental efficacy scale for measuring parents' capabilities to involve in elementary education. A total of 402 parents of elementary children participated in this study, consisting of 114 fathers (28.36%) and 288 mothers (71.64%). They were selected randomly from 10 elementary schools and fulfilled informed consent showing they participated voluntarily in the study. A Parental Efficacy Scale which had been designed was tested for its practicality, validity and reliability. This self-report instrument asked parents to respond 67 items containing six aspects, namely their belief to be able parenting children, communicating with the school, helping children learn at home, becoming school volunteers, making decisions, and collaborating with community. The results showed that the scale fulfilled all of three requirements in all six aspects.

## INTRODUCTION

The efforts of involving parents in education historically is not new. As described by Berger (1995), it had long story and evolved in diverse education system in many countries. In modern time parents' attention to education is higher compared to previous era. It relates to an assumption that children' dignity are determined by how high the degree they have. So, the higher a child has degree the more successful they may have. As discussed by Cheadle (2009), educating children is an educational investment for parents. At this point, parents have to spend their family budget for providing a conducive learning environment so that their children will be successful in school.

Urgency of involving parents in elementary education can be viewed from developmental approach. Parental involvement in education is needed across all ages, from children to adolescents. Ruholt, Gore, & Dukes (2015), for example, found parents play on the academic self-efficacy and self-esteem of their adolescent. Duvall & Miller (1985) identified encouraging educational attainment as one of parental development task when the eldest child began attending elementary school. Failure to carry out this task will have a negative effect on child learning. The implication of this importance is that parents are expected to be fully involved in children's education.

A number of studies, such as Voorhis et al. (2013), Caño et al. (2016), Park and Holloway (2017), McDowell, Jack, & Compton (2018), Hashim et al. (2018), and Marti et al.

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(2018), showed how positive parental involvement had positive impacts on children' academic achievement. The study of Lv et al. (2018) indicated that parent educational aspirations, father-child activity, mother-child activity and mother-child communication could lead to more favorable children children's self-efficacy.

Understanding parents and how they educate children before and during attending elementary school are not easy task for teachers. Parents of last ten years ago are not the same as today parents, so they will be in the future. These can make them hesitate to involve parent in educating children collaboratively. A number of factors such as socio-cultural, changes in family configuration, and the rapid development of information technology have deep impacts on family life and the way families educate children so that it is not surprising understanding of the family and the role of parents in the family is always developing (Collins, Madsen, & Susman-Stillman, 2002; Marti et al., 2018; Yulianti, Denessen, & Dropp, 2018). Sadly, teachers who are not eager to understand such family phenomena will not know how to start with.

Although parental involvement promises good news for children schooling, as reported by Đurišić & Bunijevac (2017), teachers, parents, and community members had different perceptions of how to involve parents precisely. It relates to what and how to involve. Epstein et al. (1997) intensely studied parental involvement and suggested six types of involvement, namely parenting, learning at home, communication, volunteering, decision making, and collaboration work. Their theory is most popular as proved by a number of positive responses (Goshin & Mertsalova, 2018) and is studied and discussed in many countries, such as Jabar (2010), Daniel (2015), Bartz et al. (2017), and Yosef et al. (2017).

The meaningful of parental involvement should be marked by parent eagerness to mobilize all capabilities to facilitate children learning. Referring to Bandura (1997), these capabilities are labeled as self-efficacy, "a person's beliefs about his ability to produce a specified achievement". It determines how people feel, think, motivate themselves and behave accordingly. In term of parental involvement in education, self-efficacy is considered as an important predictor of parent functioning in it. Moreover, it can be a target of intervention in order to increase their involvement in children's education as done by Mouton et al. (2018) who found that parenting program targeting parental efficacy had positive effect on improving child behavior.

Parental efficacy can actually be a sign of the possible capabilities of parents to involve in children education. Pennel et al. (2012) tried to describe the relationship between the sources of parental self-efficacy, parental self-efficacy expectations, and parental behavior, with an understanding that parenting behavior was an outcome of parental self-efficacy expectations, and parental self-efficacy expectations were sourced from perceived selfefficacy. The study of Mouton et al. (2018) found that parenting program targeting parental efficacy had positive effect on improving child behavior. It is assumed that strong parental self-efficacy will make them a time of confidence in helping children's learning within their limits. Such parents will approach difficult tasks as a challenge that must be mastered and not a threat that must be avoided. Such an effective view will foster intrinsic interest and deep involvement in various types of involvement. Moreover, a strong sense of parental efficacy can assist parents search out ways to work with their children on learning activities typically demanded of them by schools. The finding of Hoover-Dempsey & Sandler's (1995) study suggested that when a parent had a strong sense of self-efficacy, the child may also develop a similar strong sense of self-efficacy. This is due to the child observes what the parents did and would imitate those behaviors that are associated with a strong sense of self-efficacy.

#### **Rationale of the Current Study**

Elementary schools whose were eager to involve parents for the benefit of children education, for instance in six types of Epstein (1997), firstly should know the level of parental

efficacy in such types in term of its magnitude, strength, and generality (Bandura, 1997). By knowing such level, schools can design a parental involvement program that fulfill the needs both sides. Therefore, schools should do a need assessment in order to predict to what extent such involvement will be successful. To do such assessment, there are a number of instruments to measure parental efficacy from global, domain, and task-specific-self efficacy had been developed, such as Johnston & Marsh (1989), Kendall (2005), Holloway (2010), and Wittkowski et al. (2017). Unfortunately, since parental efficacy instruments that are appropriate for such need are limited, it is important to develop a fitter instrument. Having such instrument will help school to assess parental efficacy more accurately.

## Objective

This development research is intended to design and examine the practicality, validity, and reliability of parental involvement in education efficacy scale, abbreviated as PIEES.

### **METHODS**

#### Participants

A total of 402 parents of children age 6 to 11 years who were registered at 13 public and private elementary schools in Palembang City, South Sumatera, participated in this study. All of the elementary schools were affiliated schools of Sriwijaya University. 402 respondents were chosen randomly from each school. Each respondent was one parent, either father or mother. Demographically, they consisted of 114 fathers and 288 Mothers. The average age of parents was 38.7 years (SD=6.3). 11 of 402 parents reported had divorce status. Parent education level were 3.67% primary school graduates, 7% middle school graduates, 49.3% high school graduates, and 40% higher education graduates. Half of 402 respondents were housewives who were doing domestic job. The rest, 20% were government employees and 30% were private employees. The number of children belonging to parents was 2.05 in average. 48% among their children was the first-born children. In term of sample assignment, 30 of respondents participated in need assessment survey, 12 involved in practicality test, 60 involved in pilot test, and 300 participated in main test of validity and reliability.

#### Instruments

Following instruments were administered to respondents to obtained required data.

#### Parental Involvement Need Assessment Questionnaire

The questionnaire consisted 30 items requiring parents to rate the importance of parental involvement in six types involvement of Epstein et al. (1997): parenting (5 items), learning at home (5 items), communication (5 items), volunteering (5 items), decision making (5 items), and collaboration (5 items). The self-report questionnaire had parents to respond from very important=5 to very not very important=1 to the importance their involvement in education.

#### Parental involvement in education efficacy scale (PIEES)

This self-report questionnaire was intended to measure parental self-efficacy in 6 subscales which consisted of parenting children (12 items), communicating with the school/teacher (10 items), helping children learn at home (15 items), volunteering (11 items), decision making (10 items), and collaborating with the community (10 items). The scale asked parents to rate their self-efficacy by scoring 0-100 (0=cannot do at all and 100=highly certain can do).

## **PIEES Reviewing Sheet**

It required reviewers to judge each item in term of measure or not measure a proposed construct. They also rate between 0-4 score for the readability of rationale, goals, direction, scoring system, information validity and reliability, reporting, as well as overall display of the booklet, and additional comments wherever it was necessary.

## Procedures

In order to design and examine the PIEES, the researchers referred to Flagg (1990), Ellis & Levy (2010), Lee & Lim (2008), and Cohen et al. (2013). They were fitted to achieve research goals. The steps consisted of assessing parent needs for involvement, designing, producing, and testing the PIEES. Testing the scale consisted of peer reviewing, testing its practicality, validity, and reliability through administering the scale to the parents in pilot test and main test.

Prior designing the PIEES, researchers administered Parental Involvement Need Assessment Questionnaire to parents for need assessment purposes. Next, items of PIEES was selected by referring to parental involvement the six types of Epstein et al. (1997) and concept of Bandura's self-efficacy (1997). After designing and producing PIEES and its manual in booklet form, two peers who had expertise in the field were asked for examining its content validity and manual by filling out PIEES Reviewing Sheet. Revision was made for defective items and unclear manual parts.

For testing practicality of the scale, PIEES was administered to 12 parents. They were asked to fill out the full scale. In addition, they were also asked to respond a practicality questionnaire for rating its using in term of easiness to fill out, readability, and duration to response all of items. Referring to Lee & Lim (2008), the next steps were pilot test and main test for measuring the validity and reliability of the PIEES in a small and larger number of subjects. The pilot test was addressed to small number of parents (N=60). Parents were given two days to complete the PIEES and returned in sealed envelope. Following the pilot test, PIEES was administered to parents in larger number (N=300). In this main test, parents were given two days to returned it in a sealed envelope.

## **Data Analysis**

For practicality of PIEES, data obtained was describe by mean score and standard deviation. The validity and reliability of PIEES was analyzed by using Pearson's correlation and Cronbach's alpha formula (Hopkins et al., 1990; Borg et al., 2010; Cohen et al., 2013). An item was considered valid if its correlation coefficient surpassed .34 in which value categories would be moderate (.35 - .64), strong (.65 - .84), or very strong ( $\ge .84$ ) (Lodico et al., 2006). Meanwhile, the internal-consistency reliability of the scale was measured by referring to Cronbach's alpha in which value categories of Cronbach's alpha would be excellent (.93 - .94), strong (.91 - .93), and reliable (.84 - .90) (Taber, 2017). In addition, inter-subscale correlation was calculated properly where the correlation coefficient of correlation between subscale should reach > .30. SPSS Version 26 was utilized to analyze data.

# **RESULTS AND DISCUSSION**

## Results

Designing and validating the PIEES had been working accordingly. Table 1 displays the mean and standard deviation of need assessment for parental involvement in six types: parenting children, communicating with the school/teacher, helping children learn at home, volunteering, decision making, and collaborating with the community.

Types of Parental Involvement	Mean Score N=30	SD
Communication	4.28	0.46
Learning at home	4.20	0.47
Volunteering	3.96	0.56
Decision making	3.84	0.57
Collaboration	3.79	0.51
Mean	3.97	0.44

Table 1. Mean Scores and Standard Deviations of Need Assessment

#### Table 2. The result of peer reviewing to PIEES

Aspects	Reviewer 1	Reviewer 2
Rationale statement	3.7	3.8
Goal statement	3.8	3.8
Subscale		
Direction to use	3.8	4
Scale (content validity)		
Representativeness of construct	3.83	3.93
Relationship between indicators and construct	3.82	3.80
Item compatibility with indicator	3.83	3.78
Item number proportionality of each indicator	3.9	3.93
The simplicity of the item formulation	3.75	3.72
Scoring system	3.8	3.7
Information of validity and reliability	4	4
Reporting	3.8	3.8
Display of booklet	4.0	4.0

Table 1 shows mean scores and standard deviation of the importance of parental involvement according to parents' perspective. When the six types were compared, it seemed parents rate communication and learning at home as the most important types of involvement. The less important was parenting. Meanwhile decision making and collaboration follow the first two. The conclusion of the data are parents have positive perspective on their involvement in education as indicated by all of the types considered important.

Based on analysis of need assessment and reviewing the concept of self-efficacy, the researchers designed and produced the first version of PIEES and manual in form of booklet. A 12 page-booklet consists of rationale, goals, subscales and number of items, and information of its validity and reliability, direction for users, the scale itself, scoring system, and reporting. In order to have information of its content validity, PIEES was reviewed by two peers. They also rate the readability of rationale, goals, direction, scales, scoring system, information validity and reliability, reporting of the booklet as well as overall display of the booklet. The results of their reviewing as presented in Table 2.

The reviewers were in high agreement that 68 items of the PIEES fulfilled content validity requirement (mean=3.83 of 4.0), had good readability (mean=3.83 of 4.0) in terms of rationale and goal statement, direction for users, scoring system, information of validity and reliability, reporting results of scale administration, and had excellent display (mean=4.0 of 4.0). In addition, reviewers gave suggestion for defective items and manual parts. Two items on communication, one on volunteering, and one item on collaboration subscale were suggested to revise since they had ambiguous meaning for parents. They were shortened no more than 16 words and kept having similar meaning. On manual parts, both reviewers also gave suggestion to elaborate each subscale information for its clearness. Revision was made by adding short explanation to the six subscales. For instance, second subscale "communication" was added "be able to communicate with the school/school counselor/classroom teacher/subject matter teacher.

Table 5. Mean Score of Practicality Te	St		
Aspect of PIEES (N=12)	Mean	SD	
Content	3.47	0.51	
Readability	3.97	0.17	
Display	3.75	0.44	

Table 3.	Mean	Score	of Pra	cticality	Test
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Table 4. Value of the validity a	nd of Cronbach's A	pha of the PIEES
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Subscale	Number of Items	Practicality Test (N=12)	Pilot Test (N=60)		Main Test (N=300)	
Subscale		r	r	α	r	α
Parenting	12	.59	.91	.95	.70	.93
Communication	10	.74	.67	.93	.81	.93
Learning at home	15	.70	.78	.97	.81	.96
Volunteering	11	.83	.81	.97	.89	.95
Decision making	10	.70	.72	.96	.85	.96
Collaboration	10	.86	.80	.98	.86	.93

Table 5. Subscale Inter-correlations of PIEES in Main Test

	PR	CM	LH	VL	DM	CL
PR	-	.622*	.779*	.482*	.366*	.375*
СМ			.669*	.66*	.53*	.595*
LH				.64*	.475*	.492* .756*
VL					.77*	.756*
DM						.864*
CL						-

\*Correlation is significant at the .05 level

Note: PR = Parenting, CM = Communication, LH = Learning at Home, VL = Volunteering, DM = Decision Making, CL = Collaboration

Following revision after peer reviewing, a practicality test of the PIEES was conducted. 12 parents participated in administrating of the scale. Table 3 and part of Table 4 describe the results of practicality test.

The results of practicality test showed that the PIEES have fulfilled practicality requirement, however in term of the validity there was 1 item should be dropped since its coefficient validity was less than 0.40. It was item number 4 of communication subscale. The final number of items of the PIEES were 67. The next test of the PIEES were pilot test and main test. In pilot test, the PIEES administered to 60 parents. All of parents returned the scale on the second day. No item was skipped by them. Result of pilot test was displayed in Table 4. Since no suggestion from parents to the PIEES, no revision was made to the scale. The final step of the scale development was conducting main test. The PIEES was administered to 300 respondents. In main test, all returned the scale completely on the fourth day. It was longer than expected by the second day. Table 4 showed result of main test.

The above data show that there are slight differences between pilot test and main test of the PIEES. All of subscale validity of main test between .70 - .89 indicating that the PIEES is feasible to measure parental self-efficacy. Meanwhile the inter-subscale correlation matrix as displayed on Table 4 indicating the correlation coefficient among subscales of the PIEES are between .375 - .864 (M=.65). These values surpass critical value of .30 (p < .05) indicating that the PIEES fulfills reliability requirement of instrument.

Test of its validity of each subscale found that PIEES reached .70-.89 of Pearson's coefficient correlation. Meanwhile its of reliability level was .98 in Cronbach's Alpha test. These results prove the PIEES has good validity and excellent reliability and can be used to predict the intensity of parental involvement in the education of elementary school children.

The involvement of parents in their children education has theoretical and practical justifications. Elementary children are present in two different social environments, namely family and school. Both environments have different characteristics so that they ideally should collaborate in order to support maximum children development. Efforts to involve parents in children's education need to start from a basic understanding of their capability to involve. The majority of researchers attests to the types of parental involvement initiated by Epstein (1997), namely parenting, communication, learning at home, volunteering, making decisions, and collaborating. Furthermore, parental assistance for self-interest in children's education is agreed upon by their level of self-efficacy. Referring to Van der bijl & Shortridge-Baggett (2001) score obtained by parents measured by the PIEES can predict how parents function with regard to choices, actions and associated persistence, thought patterns, and emotional reactions.

The validity of PIEES based on Pearson Product Moment Correlation criteria is in a good level (rxy = .70). As expressed by McMillan & Schumacher (2001), one of the functions of correlation was for individual prediction of a phenomenon and the correlation coefficient below .35 had less predictive value. With a validity coefficient of .70, in the range of .60 < rxy .80 for its subscales, all of its items are coherence. In other words, the PIEES has a good validity value. Referring to Taylor (1990) this value was meaningful since to reach the value the samples involved in the study are large enough (n > 100). The conclusion that can be drawn is that this instrument can be used by school counselor and primary school teachers to predict the intensity of parental involvement in children's education in elementary schools.

In addition to the validity test, one of the requirements that should be met by one measurement instrument is reliability (Taherdoost, 2016). Testing for reliability of the PIEES is important since it refers to the degree to which separate items on the measuring scale related to each other consistently. The results of main test, involving 300 parents of elementary children, showed the PIEES value reaches  $.98 \ge .9$ , Cronbach's Alpha Coefficient). There are several methods of reliability testing, such as test and retest reliability, split-half reliability, reliability by Cronbach's (alpha), and reliability by Kuder-Richardson. Cronbach's Alpha internal consistency approach in this study was chosen because it involved a simpler procedure but the level of accuracy remained high. The use of Cronbach's Alpha is theoretically acceptable to determine the level of internal complexity of scale-shaped instruments such as PIEES. If we pay attention to the number of PIEES items, as many as 67 items have the advantage of achieving the desired magnitude of reliability, moreover a number of authors argue that a convincing level of reliability falls in alpha values of .90 to .95. In this alpha scale the items of an instrument are very high correlation. To prove reliability more precisely, inter-subscale correlation is calculated. As displayed on Table 4, the coefficient correlation is reaching among subscales falls between between .375-.864. In this sense, the PIEES confidently fulfills a measuring requirement although Lyons-Thomas (2014) reminds that utilizing a strong correlation may not be suitable for the intention of the scale since if there are separate subscales to begin with, the intention would be to measure separate constructs.

Based on pilot test and main test the PIEES meets validity and reliability criteria. In a number of instrument development studies, for example Goshin & Mertsaloba (2018), an instrument should meet validity and reliability requirement. Study of parents' self-efficacy instrument conducted intensively by Wittkowski et al. (2017) provided more elaboration regarding the requirements of good instruments. As summarized by Wittkowski et al., a measurement instrument should ideally fulfill attributes or criteria, namely content validity, internal consistency, criteria validity, construct validity, reproducibility, responsiveness, floor and ceiling effects (high dominant or low dominant scores), interpretability, time administration, ease of scoring, legibility and comprehensiveness and minimal clinically important difference (MCID). Of the 34 parents' self-efficacy instruments that were critically evaluated based on the 12 attributes, there was not a single instrument that had a perfect score. The score achieved is between 12-24 of 36 (36 highest scores). The PIEES is believed to have

fulfilled some of the criteria of Wittkowski et above, with an understanding that the PIEES can be parallelized with instruments that have been assessed by Wittkowski et al. (2017). The main criteria fulfilled by PIEES are content validity, construct validity, reproducibility, floor and ceiling effects (high dominant or low dominant scores), interpretability, administration time, ease of scoring, readability and comprehensiveness.

Instruments of measuring parental efficacy in education ideally may be applied across culture or similar settings. Balat, Zembat, & Acar (2010), Uyanik & Zembat (2015), and Azizi et al. (2008), for instance, had studied Barkeley parenting self-efficacy scale-second grade version. The results show that the scale was reliable and valid instrument for Turkish and Iranian family. Part of data analysis of the current research found the validity of parenting subscale was lower than the others. Further, the scores of fathers' self-efficacy are higher than mothers' scores. These findings are similar to the finding of Balat, Zembat, & Acar (2010). Since the PIEES is developed to respond parental efficacy in elementary education context, its application in other settings needs to explore.

Since, the reliability of the scale is high, there is a fair possibility of other elementary school using the scale to measure parental efficacy. This can be used by all the elementary teachers, school counselors, principals, and researchers who target parental efficacy, assessment of quality in parental involvement, and the impact up such involvement.

#### **Limitations and Suggestion**

Statistically the PIEES meets the criteria of practicality, validity, and reliability. Nevertheless the development of the scale still has some limitations. Despite a lot of respondents participated in the study, namely 402 parents, the majority of respondents are mothers (60%), while others are fathers (40%). These results certainly provide closed complete picture of the self-efficacy of parents represented by them. Time constraints and elementary school location of research are the main factors why this study limits itself to elementary schools affiliated with Sriwijaya University.

Second, this study has not distinguished firmly parent demographic according to children grade level, e.g. lower and upper, gender, or parent education level. As mentioned by Lawson (2015), as children get older their ability for independence increases, for this reason, at the younger, elementary grades a higher level of parental involvement is expected by children and teachers. By not examining the scales for measuring parental self-efficacy of lower graders and upper graders, gender of children, and parent education level proportionally, its application in other setting may be limited.

For these limitations, incoming research ideally encompasses more schools and more diverse parents so the conclusion will be more confidence. Future research is also expected to decrease a number of weaknesses so that the practicality, validity, and reliability of PIEES is increased. In order to obtain a higher level of validity, future research is expected to include both parents as respondents, each of whom fills out the instruments. Besides involving both parents, PIEES needs to be tested in a wider area, that is by involving more and more diverse respondents. This effort aims to make PIEES more accurate in predicting the intensity of parental involvement. To reach more respondents, future research should use information technology applications, such as Google Forms. Third, it needs to be considered to reduce the number of items on each subscale so that this instrument becomes more practical. The number of items as many as 67 items requires enough time to fill.

#### Implications

This development research has implication for guidance and counseling field in elementary school settings. First, although school counselors have not been parts of elementary school personnel related to government policy in education, classroom teachers are responsible to give the basic service. Involving parents will increase the educational service to students and at the end will contribute significantly to children learning. Second, parental involvement as research indicated have significant role in children education, yet not all parents have capacities to engage for a number of reasons. Elementary school have to measure parental self-efficacy in order to design a school improvement program which involves parents as active agents. The PIEES may facilitates those schools who want to involve parents in their children education.

# **CONCLUSIONS**

This developmental research contributes to the elementary school regarding the measurement of parents' self-efficacy in education involvement by using the PIEES. The importance of measuring parents' self-efficacy in relation to their possible level of involvement, schools can predict the intensity of parent involvement in terms of behavior, effort to do and persistence, thinking patterns, and emotional reactions to the involvement. Through designing and validating, the PIEES meets the practical, validity, and reliable criteria of feasible instrument. Although the PIEES developed and validated is not without limitations, this instrument provides a convenience for elementary school teacher and school counselors who wish to develop a parent involvement program both directly related to children (caring, communication, and learning at home) or even aspects that are not directly related to the child, namely volunteering, decision making, and collaboration.

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# AUTHOR CONTRIBUTIONS STATEMENT

YY developed research design, write and revise the article. HH helped data analysis, write, and revise the article. SDS helped data analysis write and revise the article.

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