

TEACHERS' MISCONCEPTIONS AND CURRENT PERFORMANCE IN IMPLEMENTING STUDENT PORTFOLIO ASSESSMENT IN ELEMENTARY SCHOOLS IN THAILAND

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Abstract. As a result of the enactment of the National Education Act B.E. 2542 in Thailand, teachers have been encouraged to employ various methods for students' learning assessment including student portfolio. Student portfolio is a collection of evidence that systematically reflects students' learning processes and their learning outcomes in various aspects. The purposes of this study were to examine teachers' misconceptions in implementing student portfolio assessment, and to compare teachers' current performance in implementing student portfolio assessment between teachers who had attended the training sessions concerning portfolio assessment and those who had not. Four hundred and fifty-four elementary school teachers were randomly sampled to be participants in this study. Questionnaires were employed to collect data on teachers' misconceptions about the principles of student portfolio assessment and the utilization of the results from student portfolio assessment, as well as their current performance in implementing four main steps of student portfolio assessment [i.e., (a) planning for portfolio assessment, (b) collecting created products, (c) selecting products and reflecting on selected products, and (d) revising and evaluating products]. Results revealed that, overall, teachers had misconceptions in nine concepts. Six concepts were about the principles of student portfolio assessment and three concepts were about the utilization of the results from student portfolio assessment. Performance, which consisted

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of implementing four main steps of student portfolio assessment, was higher for teachers who had attended the training sessions concerning student portfolio assessment than for those teachers who had not attended the training sessions. The findings of this study could help related public sector personnel and teacher trainers from universities change teachers' misconceptions more effectively.

Keywords: elementary school, misconception, portfolio, Thailand.

Educational reform in Thailand which includes (a) curriculum reform, (b) teaching and learning reform, and (c) assessment reform, was enhanced after the enactment of the National Education Act of 1999. In the assessment reform, teachers have been encouraged to employ various methods for students' learning assessment as mentioned in the Section 26 of the National Education Act. Authentic assessment, therefore, gained more interest from schoolteachers. Authentic assessment allows students to demonstrate the knowledge and skills learned from their lessons by creating a response or a task in real life situations (Cole, Ryan, Kick, & Mathies, 2000; Kinay, 2018; Mueller, 2005; Tangdhanakanond, Pitiyanuwat, & Archwamety, 2006a; Tangdhanakanond, 2016). Student portfolio is potentially an authentic assessment tool that teachers have been encouraged to use.

Student portfolio is a collection of evidence that systematically reflects students' learning processes and their learning outcomes in various aspects, such as achievement, skills, and characteristics (Chappuis, Stiggins, Chappuis, & Arter, 2012; Poowipadawat, 2001; Tangdhanakanond, 2016; Tangdhanakanond & Wongwanich, 2016; Tangdhanakanond & Wongwanich, 2012; Tangdhanakanond, et al., 2006a). In addition, portfolio could be used to monitor students' learning development continuously. Therefore, portfolio could be used for both formative and summative assessment purposes. Another advantage of portfolio is that its process could promote students' achievement (Sootthipong, 2000; Chinnawong, 2000; Tangdhanakanond, Pitiyanuwat, & Archwamety, 2006b), achievement motivation (Chinnawong, 2000), critical thinking (Koraneekid, 2007; Tyler & Dibble, 2019), analytic thinking (Tyler & Dibble, 2019), creative thinking (Sujarittanarugse, 2005), meta-cognition (Gencel, 2016), self-directed learning (Elango, Jutti, & Lee, 2005; Tomkins & Quette-Frenette, 2010), and self-efficacy (Nicolaidou, 2012). Moreover, while students create their portfolios

(especially in the step of selecting products and reflecting on selected products, as well as the step of revising and evaluating products), they are encouraged by teachers to analyze their strengths and weaknesses in learning (Tangdhanakanond, 2005; Priest & Robert, 1998 as cited in McMullan, 2006). Portfolio is also used as a tool for communication between teachers and parents about students' learning development and their characteristics (Kingkore, 1995; Benson & Barnett, 1999).

Literature proposes different steps in the portfolio process, depending on the learning activities, and portfolio purposes. Portfolio process is therefore flexible. However, the four common essential steps in the portfolio process are (a) planning for portfolio assessment, (b) collecting created products, (c) selecting products and reflecting on selected products, and (d) revising and evaluating products (Burke, Forgerty, & Belgrad, 1994; Epstein, 2001; Educational Technique Department, 1996; Moonkum, 2000; Morin, 1995; Pearson Education Development Group, 2001; Poowipadawat, 2001; Prawarnpruek, 1997; Punggam, 2000; Saer-eerat, 1997; Siladech, 1997).

Kornketkamon (2001) found that Thai teachers had some difficulties in the use of student portfolio assessment, especially in reminding students to organize the products in their portfolios, reflecting on the created products, as well as revising and evaluating products in the portfolios. Moreover, Tangdhanakanond and Wongwanich (2015) found that Thai teachers lacked knowledge and deep understanding in implementing student portfolio assessment. They also recommended that an analysis of misconceptions of teachers in implementing student portfolio assessment should be conducted. Therefore, an examination of teachers' misconceptions and current performance of teachers in implementing student portfolio assessment should be conducted. The purposes of this study were (a) to examine teachers' misconceptions in implementing student portfolio assessment, and (b) to compare teachers' current performance in implementing student portfolio assessment between teachers who had attended the training sessions concerning portfolio assessment and those who had not. Findings on teachers' misconceptions and current performance of student portfolio assessment would produce valuable information for related sectors and personnel to conduct a conceptual change in teachers in the use of student portfolio assessment in the future.

METHODS

Participants

Participants were 454 elementary school teachers (134 male and 320 female) from all regions (northern, middle, northeastern and southern parts) of Thailand selected by multi-stage random sampling. Participants included 66 Thai language teachers, 69 mathematics teachers, 59 sciences teachers, 58 career and technology teachers, 46 art teachers, 54 social study teachers, 56 English language teachers, and 46 physical education teachers. Two hundred and thirteen participants taught in the lower elementary school levels (i.e., grades 1 to 3), whereas 241 participants taught in the upper elementary school levels (i.e., grades 4 to 6). In these numbers of participants, 229 teachers had 20 years of teaching experience or less, while 225 teachers had more than 20 years' teaching experience. Two hundred and nineteen participants had attended the training sessions related to student portfolio assessment, while the other 235 participants had not.

Instrument

A survey questionnaire was employed in this research study. Before creating the questionnaire, related literature on portfolio process was studied (Burke et al., 1994; Educational Technique Department, 1996; Epstein, 2001; Moonkum, 2000; Morin, 1995; Pearson Education Development Group, 2001; Poowipadawat, 2001; Prawarnpruek, 1997; Punggam, 2000; Saereerat, 1997; Siladech, 1997). Subsequently, five experts in the field of educational measurement and evaluation were selected to be interviewed about teachers' possible common misconceptions in implementing student portfolio assessment. The survey questionnaire was divided into three parts. In part one, respondent gender, education level, teaching experience, as well as grades and subjects the respondents taught in schools were requested as the respondents' demographic information. Respondents were also asked whether they had attended the training sessions related to student portfolio assessment in part one of the questionnaire. In part two, teachers' misconceptions in implementing student portfolio assessment were examined. Teachers were asked

to rate their understanding of various statements about the principles of student portfolio assessment and the utilization of the results from student portfolio assessment on a five-point rating scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree). In part three, the respondents were asked to rate their current performance in implementing student portfolio assessment on a five-point rating scale (1=never, 2=rarely, 3=occasionally, 4= frequently, 5= very frequently). As mentioned earlier, student portfolio assessment was divided into 4 main steps, i.e., (a) planning for portfolio assessment, (b) collecting created products, (c) selecting products and reflecting on selected products, and (d) revising and evaluating products. The content validity of the questionnaire was examined by using the index of item-objective congruence (IOC). Five experts in the field of educational measurement and evaluation were asked as content experts to independently rate the individual items on the degree to which they do or do not measure the specific objectives listed earlier by the researchers. More specifically, the content experts evaluated each item, for each objective, by giving the item the rating (1 = clearly measuring; 0 = degree to which it measures the objective is unclear; and -1 = clearly not measuring). Experts also were asked to suggest wording changes to improve the items. Then, the questionnaire was distributed to 30 elementary school teachers to check the reliability of the questionnaire. The reliability of the questionnaire was determined by Cronbach's generalizability (G) coefficient in terms of internal consistency of the items in each separate part of the questionnaire, as well as the total items in the questionnaire. It was found that the reliability of the various sets of items in regard to the teachers' misconception in implementing student portfolio assessment (in the second part of the questionnaire) was 0.79, whereas the reliability of those in regard to the current performance in implementing student portfolio assessment (in the third part of the questionnaire) was 0.98. Overall, the reliability of this questionnaire (parts two and three combined) was 0.96.

Procedure

The questionnaires were randomly distributed to 640 elementary school teachers in all regions (northern, middle, northeastern and southern parts) of Thailand in a month. Four hundred and seventy-three

questionnaires were returned. Then, the 454 completed returned questionnaires were analyzed. Means and standard deviations were employed to analyze teachers' misconceptions and their current performance in the use of student portfolio assessment. An analyzed mean of the misconception analysis of less than 3.50 was interpreted as misconception (according to Waedramae's (2004) study on the analysis of misconceptions in educational quality assessment), whereas the analyzed mean of the current performance rating in implementing student portfolio assessment was interpreted by following the labels (i.e., 4.50 - 5.00 = very high, 3.50 - 4.49 = high, 2.50 - 3.49 = medium, 1.50 - 2.49 = low, and 1.00 - 1.49 = very low). In addition, independent-sample t-test was also used to compare teachers' current performance in implementing student portfolio assessment between teachers who had attended the training sessions concerning student portfolio assessment and those who had not.

RESULTS

Teachers' Misconceptions in Implementing Student Portfolio Assessment

Teachers' misconceptions in implementing student portfolio assessment, measured by using the five-point rating scale, were as shown in Table 1. Overall, teachers (combining those who had attended the training sessions concerning student portfolio assessment with those who had not) had misconceptions in nine concepts (six concepts were about the principles of student portfolio assessment and three concepts were about the utilization of the results from student portfolio assessment). The most important teachers' misconception concerning the principles of student portfolio assessment was: (a) portfolio is a container of all of the exercises done by students in a whole course ($M= 2.24, SD=1.00$); followed by (b) the same format of portfolios (e.g., an introduction part, a table of contents) should be set among students to follow the same standards ($M= 2.35, SD=1.01$); (c) portfolio must only be used to assess students' learning separately for each course ($M= 2.41, SD=1.08$); (d) portfolio must only be used in a course that assigns students to

create learning products ($M= 2.58, SD=1.05$); (e) portfolio is consistent with a lecture style instruction method ($M= 2.94, SD=1.06$); and (f) it is not necessary that teachers plan the learning activities at the beginning of the courses ($M= 3.31, SD=1.18$). As for the misconceptions about the utilization of the results from student portfolio assessment, it was found that the most important misconception was: (a) after finishing the portfolio process, teachers should keep all of the students' portfolios to reflect the quality of their teaching ($M= 2.28, SD=1.98$); followed by (b) portfolio is better used for summative assessment rather than formative assessment ($M= 2.90, SD=1.04$); and (c) portfolio is a supplementary assessment method, therefore it is not necessary to utilize the results from portfolio assessment ($M= 2.83, SD=1.07$), respectively. As for considering each group of participants, it was also found that teachers in both groups had the same misconceptions about the principles of student portfolio assessment and the utilization of the results from student portfolio assessment as mentioned earlier. The above results are consistent with the results on the misconceptions of teachers who had attended the training sessions and those who had not attended the training sessions.

A two-way analysis of variance with repeated measure on one factor was also performed to compare teachers' score on the misconception in implementing student portfolio assessment between two groups. The independent factor was group (teachers who had attended the training sessions concerning student portfolio assessment and those who had not), and the repeated-measure factor was teacher's score on the misconception in implementing student portfolio assessment in two aspects [(a) principles of student portfolio assessment, and (b) utilization of the results from student portfolio assessment]. A teacher's score for each of the two aspects was calculated by averaging the two ratings of survey items corresponding to each aspect. It was found that overall mean ratings of teachers' scores on the first aspect of misconception (principles) in implementing student portfolio assessment by teachers who had attended the training sessions concerning student portfolio assessment and those who had not were not statistically significant different, $F(1,452) = 0.04, p > .05$. Moreover, there was no statistically significant difference between the mean ratings of the teachers' scores on the second aspect of misconception (utilization) in implementing

student portfolio assessment, $F(1,452) = 0.01, p > .05$. It was also found that there was no significant interaction effect between the group factor and the aspect of misconception factor, $F(1,452) = 0.90, p > .05$.

The independent-sample t-test was employed to compare teachers' scores on the misconception in implementing student portfolio assessment between teachers who had attended the training sessions concerning student portfolio assessment and those who had not. It was found that, mostly, the two groups of teachers did not have significant differences in the misconception scores. Among the few significant difference findings, the most notable is that there was one concept (i.e., the same format of portfolio should be set among students to follow the same standards) that teachers had not attended the training sessions had more misconception than those who had attended the training sessions ($t = 2.73, p < .01$).

Table 1. Mean (1=low, 5=high) and Standard Deviation of Teachers' Misconceptions in Implementing Student Portfolio Assessment by Teachers Who Had Attended the Training Sessions Concerning Student Portfolio Assessment and Those Who Had Not.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t
	M	SD	M	SD	M	SD	
1. Principles of Student Portfolio Assessment							
1.1 Portfolio is a container of all of the exercises done by students in a whole course.	2.31	1.07	2.17	0.92	2.24	1.00	1.40
1.2 Portfolio is one of the student learning assessment instruments.	4.04	0.81	4.03	0.71	4.04	0.75	0.04
1.3 Portfolio is a tool for developing students' learning.	4.02	0.79	4.03	0.75	4.03	0.77	-0.16
1.4 Portfolio is consistent with a lecture style instruction method.	2.88	1.09	2.99	1.03	2.94	1.06	-1.11
1.5 Portfolio could be used to assess students' cognitive learning.	3.79	0.84	3.71	0.93	3.75	0.89	0.85
1.6 Portfolio could be uses to assess students' practical skills.	4.00	0.74	3.84	0.96	3.92	0.86	1.95
1.7 Portfolio could be used to assess students' desirable characteristics.	3.90	0.74	3.74	1.01	3.81	0.89	1.98*

Table 1 cont.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t
	M	SD	M	SD	M	SD	
1.8 Portfolio is a container of students' artifacts that reflect students' learning outcomes.	4.09	0.81	4.07	0.86	4.08	0.84	0.24
1.9 Portfolio is a container of students' artifacts that reflect students' learning process.	4.18	0.76	4.00	0.80	4.09	0.78	2.45*
1.10 Portfolio must only be used to assess students' learning separately for each course.	2.47	1.04	2.35	1.12	2.41	1.08	1.20
1.11 Portfolio must only be used in a course that assigns students to create learning products.	2.57	1.04	2.59	1.06	2.58	1.05	-0.21
1.12 It is not necessary that teachers plan the learning activities at the beginning of the courses.	3.32	1.20	3.30	1.16	3.31	1.18	0.24
1.13 It is necessary that students understand each step of portfolio process at the beginning of the courses.	4.04	0.74	3.97	0.75	4.00	0.74	0.95
1.14 The same format of portfolios (e.g., an introduction part, a content table) should be set among students to follow the same standards.	2.49	1.06	2.23	0.95	2.35	1.01	2.73**
1.15 The most important activity of portfolio process is encouraging students to reflect about their learning and criticize their created products in the portfolios.	3.92	0.83	4.02	0.72	3.97	0.77	-1.43
1.16 Opportunities should be provided to students to revise or improve the products in their portfolios.	4.03	0.72	4.04	0.69	4.03	0.71	-0.16
1.17 Scoring criteria or rubrics for evaluating the products in portfolios should be provided at the beginning of the courses.	4.15	0.72	4.17	0.71	4.16	0.71	-0.36

Table 1 cont.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t
	M	SD	M	SD	M	SD	
1.18 The benchmark products for each evaluation criteria should be provided to students to make them better understand the evaluation criteria.	4.10	0.72	4.10	0.66	4.10	0.69	0.07
1.19 Opportunities should be provided to students to evaluate the products in their portfolios.	4.12	0.71	4.12	0.64	4.12	0.67	0.07
1.20 Other related people (e.g., peers, parents) should be given the opportunities in evaluating students' products in the portfolios.	3.91	0.76	4.01	0.78	3.96	0.77	-1.45
2. Utilization of the Results from Student Portfolio Assessment							
2.1 Portfolio is a supplementary assessment method, therefore it is not necessary to utilize the results from portfolio assessment.	3.18	1.02	3.15	1.11	2.83	1.07	0.34
2.2 Portfolio is better used for summative assessment rather than formative assessment.	2.92	1.03	2.87	1.05	2.90	1.04	0.51
2.3 Students' learning development could be monitored by implementing portfolio assessment.	4.13	0.69	4.19	0.59	4.16	0.64	-0.99
2.4 The results from portfolio assessment could be used in adjusting or improving teachers' instruction methods.	3.94	0.74	4.07	0.67	4.01	0.70	-2.00*
2.5 The results from portfolio assessment could be used to solve students' learning problems.	4.02	0.73	4.07	0.66	4.05	0.69	-0.69
2.6 The results from portfolio assessment could be used to support or enhance students' learning process.	4.11	0.67	4.14	0.61	4.12	0.64	-0.59
2.7 The results from portfolio assessment could be used as a basic information to plan for the instruction of the next grade level.	4.07	0.73	4.05	0.66	4.06	0.69	0.41

Table 1 *cont.*

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t
	M	SD	M	SD	M	SD	
2.8 After finishing the portfolio process, teachers should keep all of the students' portfolios to reflect the quality of their teaching.	2.33	1.01	2.24	0.95	2.28	0.98	0.94

Teachers' Current Performance in Implementing Student Portfolio Assessment

Teachers' current performance in implementing student portfolio assessment is as shown in Table 2 and Figure 1. It was found that overall (combining teachers who had attended the training sessions concerning student portfolio assessment and those who had not), teachers implemented the four main steps of student portfolio assessment at a medium to high level. The step of planning for portfolio assessment and the step of collecting created products were implemented at a high level ($M=3.50, SD=0.82$ and $M=3.52, SD=0.93$, respectively), whereas the step of selecting products and reflecting on the selected products as well as the step of revising and evaluating products were implemented at a medium level ($M=3.34, SD=0.95$ and $M=3.39, SD=0.96$, respectively). For the current performance of teachers who had attended the training sessions concerning student portfolio assessment, it was found that teachers also implemented the four main steps of student portfolio assessment at a medium to high level. The step of planning for portfolio assessment, the step of collecting created products, as well as the step of revising and evaluating products were implemented at a high level ($M=3.58, SD=0.79; M=3.66, SD=0.88$, and $M=3.52, SD=0.92$, respectively), whereas the step of selecting products and reflecting on the selected products were implemented at a medium level ($M=3.49, SD=0.90$). As for the current performance of teachers who had not attended the training sessions concerning student portfolio assessment, it was found that teachers implemented the four main steps of student portfolio assessment [(a) planning for portfolio assessment, (b) collecting created products, (c) selecting products and reflecting on selected products, and (d)

revising and evaluating products] at a medium level ($M=3.43, SD=0.84$; $M=3.39, SD=0.96$; $M=3.20, SD=0.97$; and $M=3.26, SD=0.97$, respectively)

A two-way analysis of variance with repeated measure on one factor was also performed to compare teachers' current performance in implementing student portfolio assessment between two groups. The independent factor was group (teachers who had attended the training sessions concerning student portfolio assessment and those who had not), and the repeated-measure factor was teachers' current performance in implementing student portfolio assessment [(a) planning for portfolio assessment, (b) collecting created products, (c) selecting products and reflecting on selected products, and (d) revising and evaluating products]. A teacher's score for each of the four performances was calculated by averaging the various ratings of survey items corresponding to each performance. It was found that overall mean rating of teachers' performance in implementing student portfolio assessment by teachers who had attended the training sessions concerning student portfolio assessment and those who had not were statistically significant different, $F(1,452) = 8.94, p < .01$. Moreover, there was a statistically significant difference among the

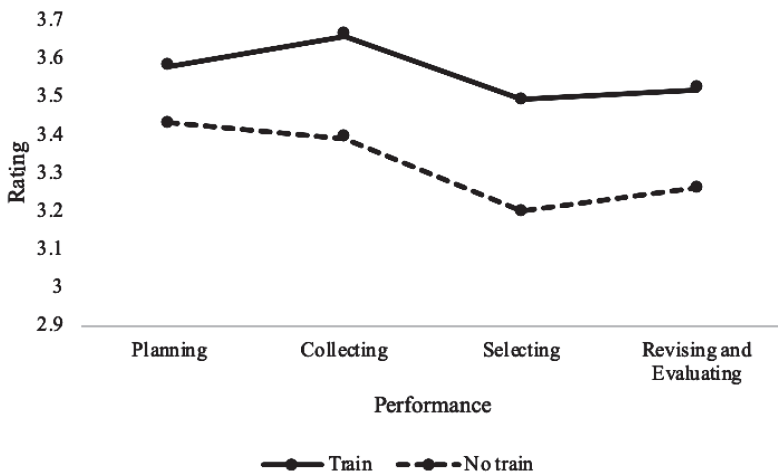


Figure 1. Teachers' performance rating of teachers who had attended the training sessions concerning student portfolio assessment and those who had not.

four mean ratings of the performance of teachers in implementing student portfolio assessment, $F(3,1356) = 29.76, p < .01$. It was also found that there was a significant interaction effect between the group of teachers and their student portfolio assessment performance, $F(3,1356) = 3.04, p < .05$. A simple effect analysis following significant interaction indicated significant differences ($p < .01$) in favor of teachers who had attended training in all four performances except “Planning” performance--(a) Planning, $F(1,557) = 3.48, p = .063$; (b) Collecting, $F(1,557) = 10.00, p = .002$; (c) Selecting, $F(1,557) = 10.83, p = .001$; (d) Revising, $F(1,557) = 8.95, p = .003$.

The independent-sample t-test was employed to compare teachers’ current performance in implementing student portfolio assessment between teachers who had attended the training sessions concerning student portfolio assessment and those who had not. It was found that, overall, teachers who had attended the training sessions performed at a higher level in implementing the four main steps of student portfolio assessment than those who had not. However, it is noted that the two groups of teachers did not have significant differences in performing some activities in the four main steps of portfolio assessment, i.e., (a) reviewing the learning standards and indicators of the courses, (b) identifying numbers of products required to produce in the courses, (c) informing students at the beginning of the courses about the use of student portfolio assessment, (d) allowing students to participate in setting the purposes of creating portfolios, (e) encouraging students to collect their created products in their working folders, and (f) providing students with opportunities to revise or improve the products/evidence in their portfolios.

Table 2. Mean Ratings (1=low, 5=high) and Standard Deviation of Current Performance in Implementing Student Portfolio Assessment by Teachers Who Had Attended the Training Sessions Concerning Student Portfolio Assessment and Those Who Had Not.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t/F
	M	SD	M	SD	M	SD	
1. Planning for Portfolio Assessment	3.58	0.79	3.43	0.84	3.50	0.82	F = 3.48
0.1 Reviewing the learning standards and indicators of the courses.	3.78	0.86	3.76	0.97	3.77	0.92	t = 0.22

Table 2 cont.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t/F
	M	SD	M	SD	M	SD	
1.2 Identifying numbers of products required to produce in the courses.	3.59	0.86	3.61	0.88	3.60	0.87	t = -0.18
1.3 Informing students at the beginning of the courses about the use of student portfolio assessment.	3.50	0.98	3.39	1.03	3.44	1.01	t = 1.22
1.4 Allowing students to participate in setting the purposes of creating portfolios.	3.46	0.93	3.32	1.07	3.39	1.01	t = 1.42
1.5 Informing students at the beginning of the courses about numbers and attributes of products required to be produced.	3.53	0.99	3.40	1.01	3.49	1.03	t = 2.01*
1.6 Informing students at the beginning of the courses about portfolio process.	3.60	0.92	3.35	0.98	3.49	1.01	t = 2.74**
1.7 Explaining how to use evaluation forms in the portfolio process to students at the beginning of the courses.	3.57	0.97	3.36	1.04	3.47	0.96	t = 2.20*
1.8 Providing students with the benchmark products for each level of evaluation criteria to make them understand the evaluation criteria.	3.53	1.03	3.28	1.03	3.46	1.01	t = 2.57*
2. Collecting created products	3.66	0.88	3.39	0.96	3.52	0.93	F = 10.00**
2.1 Providing students with material for collecting their created products or evidence.	3.56	0.96	3.26	1.03	3.40	1.00	t = 3.25**
2.2 Encouraging students to collect their created products in their working folders.	3.69	0.96	3.52	1.07	3.60	1.02	t = 1.74
2.3 Providing students with opportunities to examine the completeness of their created products or evidence before collecting them in their working folders.	3.75	0.94	3.43	1.03	3.59	1.00	t = 3.41**

Table 2 cont.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t/F
	M	SD	M	SD	M	SD	
2.4 Providing students with opportunities to organize products or evidence in their portfolios to be consistent with learning objectives.	3.64	0.98	3.35	1.03	3.49	1.01	t = 3.13**
3. Selecting products and reflecting on selected products	3.49	0.90	3.20	0.97	3.34	0.95	F = 10.83**
3.1 Setting the specific times for selecting products and reflecting on the selected products.	3.51	0.99	3.22	1.03	3.36	1.02	t = 3.01**
3.2 Providing students with opportunities to select the created products from their working folders to be kept in their portfolios.	3.55	0.99	3.26	1.01	3.40	1.01	t = 3.03**
3.3 Encouraging students to use the evaluation criteria or scoring rubrics as a guideline for selecting the qualified products in their working folders to be kept in their portfolios.	3.60	0.99	3.25	1.03	3.42	1.03	t = 3.74**
3.4 Providing students with opportunities to put new selected products/evidence in their portfolios and take some earlier selected products out from their portfolios.	3.57	0.98	3.25	1.05	3.40	1.03	t = 3.40**
3.5 Encouraging students to make a record whenever they collect their learning evidence in their working folders.	3.37	0.98	3.16	1.10	3.26	1.05	t = 2.12*
3.6 Encouraging students to write down their opinions on the selected products in their portfolios.	3.43	1.00	3.13	1.10	3.27	1.06	t = 3.05**
3.7 Encouraging students to make plans for revising products in their portfolios.	3.40	1.02	3.14	1.10	3.26	1.07	t = 2.62**
4. Revising and evaluating products	3.52	0.92	3.26	0.97	3.39	0.96	F = 8.95**

Table 2 cont.

Portfolio Concepts	Train (n=219)		No train (n=235)		Combined (n=454)		t/F
	M	SD	M	SD	M	SD	
4.1 Providing students with opportunities to revise or improve the products/evidence in their working folders.	3.55	0.93	3.30	1.02	3.44	0.98	t = 2.35*
4.2 Providing students with opportunities to revise or improve the products/evidence in their portfolios.	3.54	0.96	3.37	1.09	3.45	1.03	t = 1.84
4.3 Providing students with a self-evaluation in evaluating their products.	3.55	0.97	3.23	0.98	3.39	0.99	t = 3.52**
4.4 Providing students with a peer-evaluation in evaluating their products.	3.47	1.01	3.20	1.02	3.33	1.03	t = 2.83**
4.5 Providing students with a teacher-evaluation in evaluating their products.	3.54	1.02	3.22	1.07	3.37	1.06	t = 3.24**
4.6 Providing students with a parent-evaluation in evaluating their products.	3.48	1.05	3.21	1.14	3.34	1.10	t = 2.64**

* p < .05, ** p < .01

DISCUSSION

Teachers' Misconceptions in Implementing Student Portfolio Assessment

The results of this study revealed that teachers in both groups had misconceptions in nine concepts concerning the principles of student portfolio assessment and the utilization of the results from student portfolio assessment. The most serious misconception concerning the principles of student portfolio assessment was that the portfolio is a container of all of the exercises done by students in a whole course. This is the most common misunderstanding among Thai teachers. The Thai teachers, generally, probably view that the portfolio is merely used to

keep all students' works together so that they do not get lost. Therefore, they do not pay enough attention to other steps of portfolio assessment, especially the reflection step which is essential. This is consistent with the finding of Saypetch's (2003) study which revealed that teachers had difficulties at the moderate level in monitoring students to reflect on their opinion of the products or artifacts in their own portfolios and to revise their products or artifacts in their own portfolios. Tangdhanakanond & Wongwanich (2012) also found that teachers had most critical needs in the use of student portfolio assessment in the step of selecting products and reflecting on the selected products, respectively. As for the misconception about the utilization of the results from student portfolio assessment, it was found that Thai teachers perceived portfolio to be better used for summative assessment than formative assessment. That resulted in teachers not putting enough emphasis on some important activities that provide students with learning feedback, such as encouraging students to do self-assessment, allowing students to revise the products in their portfolios. It was also found that overall, the two groups of teachers did not have significant differences in the misconception scores. This indicated that the current training sessions concerning portfolio assessment could not change teachers' misconceptions in this regard. The findings of this study could help related public sectors and personnel such as supervisors from the Ministry of Education and teacher trainers from universities change teachers' misconceptions on the issues more effectively.

Teachers' Current Performance in Implementing Student Portfolio Assessment

The findings of this study indicated that, overall, teachers in both groups (combining those who had attended the training sessions concerning student portfolio assessment and those who had not) implemented the four main steps of student portfolio assessment at a medium to high level. The step of planning for portfolio assessment and the step of collecting created products were implemented at a high level, whereas the step of selecting products and reflecting on the selected products as well as the step of revising and evaluating products were implemented at a medium level. This is consistent with the previous finding of this study that teachers had a misconception that portfolio

is better used for summative assessment rather than formative assessment. Therefore, they perform the step of selecting products and reflecting on the selected products as well as the step of revising and evaluating products merely at a medium level – not at a high level. The finding is also consistent with other previous research studies (Tangdhanakanond & Wongwanich, 2012; Tangdhanakanond & Wongwanich, 2015). It is also consistent with results from the study by Sripijitworasakul and Tangdhanakanond (2012), which indicated that the step of revising products, as well as the step of self-assessment and revising products was less frequently implemented by Thai language teachers. Similar findings were found in a previous research study of Kornketkamon (2001) which found that teachers had problems in some activities, such as giving students as well as parents a chance to express their opinion on students' artifacts. In addition, the present research findings are also consistent with research by Srirod (2002) which found that teachers have some difficulties in guiding students in selecting products for their portfolios, encouraging students to reflect on their products, as well as guiding them to evaluate their products and learning. Actually, those two steps (revising and evaluating products, as well as selecting products and reflecting on the selected products) are crucial to develop students' learning. While students are revising and evaluating the products in their portfolios, they could examine their strengths and weaknesses reflected by the quality of their products, as well as take responsibility for their own learning (Priest & Robert, 1998 as cited in McMullan, 2006; Tangdhanakanond, 2006; Tangdhanakanond, 2016; Tangdhanakanond & Wongwanich, 2015).

It was also found that, overall, the performance in implementing the four main steps of student portfolio of teachers who had attended the training sessions concerning student portfolio assessment was higher than those who had not attended training sessions. Teachers who had attended the training sessions had more opportunities to learn about the portfolio assessment process. Therefore, they performed the four main steps of student portfolio assessment at a higher level than the other group. However, it is noted that the two groups of teachers did not have significant differences in performing some specific activities in the four main steps of portfolio assessment, i.e., (a) reviewing the learning standards and indicators of the courses, (b) identifying numbers of products required to produce in the courses, (c) informing students at the

beginning of the courses about the use of student portfolio assessment, (d) allowing students to participate in setting the purposes of creating portfolios, (e) encouraging students to collect their created products in their working folders, and (f) providing students with opportunities to revise or improve the products/evidences in their portfolios. That could be because those six activities are basic to the portfolio process and well-known among teachers in both groups. Therefore, teachers in both groups perform those activities equally well. It is also interesting to note that the only step of the portfolio process that teachers in both groups performed differently in every specific activity was the step of selecting products and reflecting on selected products, which is a very important step in the portfolio process (Tangdhanakanond & Wongwanich, 2015; Pasiphol, Koraneekij, & Sotthayakom, 2015; Tangdhanakanond & Wongwanich, 2012; Pearson Education Development Group, 2001; Poowipadawat, 2001; Prawarnpruek, 1997; Punngam, 2000; Saereerat, 1997; Siladech, 1997). This should not be surprising considering the fact that teachers who had attended the training session had more opportunities to learn and practice the complete process and the crucial step of the portfolio assessment.

Further Consideration

Only elementary school teachers were studied in this study. Further research with middle and high school teachers should be conducted. Examining their misconceptions and current performance in implementing student portfolio assessment would also be a helpful plan for changing the misconceptions of middle and high school teachers in this issue in the future.

CONCLUSION

The key concept in the present study (Portfolio Assessment) is an important topic in the field of Educational **Psychology**. As shown in the definition of “Educational Psychology” given by Ausubel, Novak, and Hanesian (1978), **evaluation** (or assessment) of school learning is an important area in the field of educational **psychology**. The purposes of this study were (a) to examine teachers’ misconceptions in implementing

student portfolio assessment, and (b) to compare teachers' current performance in implementing student portfolio assessment between teachers who had attended the training sessions concerning portfolio assessment and those who had not. Results revealed that, overall, teachers had misconceptions in nine concepts. Six concepts were about the principles of student portfolio assessment and three concepts were about the utilization of the results from student portfolio assessment. Performance which consisted of implementing four main steps of student portfolio assessment was higher for teachers who had attended the training sessions concerning student portfolio assessment than for those teachers who had not attended the training sessions. Findings on teachers' misconceptions and current performance of student portfolio assessment could help related public sectors and personnel such as supervisors from the Ministry of Education and teacher trainers from universities change teachers' misconceptions on the issues more effectively in the future. In this study, only elementary school teachers were studied. Middle and high school teachers should be studied in further research.

REFERENCES

- Ausubel, D. P., Novak, J. D., & Hanesian, H. (1978). *Educational Psychology: A Cognitive View* (2nd ed.). New York: Holt, Rinehart and Winston.
- Benson, B., & Barnett, S. (1999). *Student-Led Conferencing Using Showcase Portfolios*. Thousand Oaks, CA: Corwin Press Inc.
- Burke, K., Forgerty, R., & Belgrad S. (1994). *The mindful school: The portfolio connection*. Palatine, IL: Skylight.
- Chappuis, J., Stiggins, R., Chappuis, S., & Arter, J. (2012). *Classroom assessment for student learning: Doing it right- Using it well*. (2nd ed.). New Jersey: Pearson.
- Chinnawong, S. (2000). *Effects of portfolio assessment on mathematics achievement, achievement motivation and attitude toward mathematics of prathomsuksa four students*. Unpublished Master's thesis, Prince of Songkla University, Pattani, Thailand.
- Cole, D. J., Ryan, C. W., Kick, F., & Mathies, B. K. (2000). *Portfolio across the curriculum and beyond*. Thousand Oaks, CA: Sage.
- Educational Technique Department. (1996). *Authentic assessment*. Bangkok, Thailand: Office of National Education Commission.
- Elango, S., Jutti, R. C., & Lee, L. K. (2005). Portfolio as a learning tool: Students' perspective. *Annals Academy of Medicine*, 34(8), 511–514.

- Epstein, A. (2001). The portfolio process. Retrieved June 4, 2002, from <http://www.teachervision.fen.com/lesson-plans/lesson-4537.html>
- Gencel, I. E. (2016). The effect of portfolio assessments on metacognitive skills and attitudes toward a course. *Education Sciences: Theory and Practice*, 17(1), 293–319.
- Kinay, I. (2018). Investigation of prospective teachers' beliefs towards authentic assessment. *World Journal of Education*, 8(1), 75–82.
- Kingore, B. (1995). Introducing parents to portfolio assessment: A collaborative effort toward authentic assessment. *Gifted Child Today Magazine*, 18(4), 12–13. <http://dx.doi.org/10.1177/107621759501800406>
- Koraneekid, P. (2007). *Development of electronic portfolio model using self-assessment to enhance student teachers' critical thinking*. Unpublished Doctoral dissertation, Chulalongkorn University, Bangkok, Thailand.
- Kornketkamon, D. (2001). *A study of problems and opinions of teachers concerning portfolio assessment in basic expansion school in Bureerum province*. Unpublished Master's thesis, Ramkhamhaeng University, Bangkok, Thailand.
- McMullan, M. (2006). Students' perceptions on the use of portfolios in pre-registration nursing education: A questionnaire survey. *International Journal of Nursing Studies*, 43(3), 333–343.
- Moonkum, S. (2000). *Portfolio* (13th ed.). Bangkok, Thailand: Parppim Publishing.
- Morin, A. (1995). *Portfolio: An effective tool used by prospective teachers to encourage self-evaluation and improvement*. Doctoral dissertation, California State University, Los Angeles, CA. (ERIC Document Reproduction Service).
- Mueller, J. (2005). The authentic assessment toolbox enhancing student learning through online faculty development. *Journal of Online Learning and Teaching*, 1(1): 1–7.
- Nicolaidou, I. (2012). Can process portfolios affect students' writing self-efficacy? *Educational Research*, 56, 10–22. <http://dx.doi.org/10.1016/j.ijer.2012.08.002>
- Pasiphol, S; Koraneekij P., & Sotthayakom, P. (2015). Development of electronic portfolio model of reflective feedback through assessment of student learning development under the Office of the Basic Education Commission. *Journal of Research Methodology*, 28(1), 1–26.
- Pearson Education Development Group. (2001). *Portfolio assessment*. Retrieved January, 6, 2005, from <http://www.teachervision.com/lesson-plans/esson-5942.html>
- Poowipadawat, S. (2001). *Child-centered learning and authentic assessment* (2nd ed.). Chiangmai, Thailand: Knowledge Press.
- Prawarnpruek, K. (1997). *Portfolio*. Bangkok, Thailand: Office of Private Education Commission.
- Punngam, A. (2000). *A development of portfolio evaluation process and utilization of portfolio evaluation result: An application of meta-evaluation*. Unpublished Doctoral dissertation, Chulalongkorn University, Bangkok, Thailand.

- Saereerat, C. (1997). *Portfolio assessment*. Bangkok, Thailand: The master group management.
- Saypetch, P. (2003). *A study of conditions and problems of authentic assessment by using portfolio according to the opinions of teachers in primary schools under the Office of Buriram Provincial Primary Education*. Unpublished Master's thesis, Buriram Rajabhat University, Bangkok, Thailand.
- Siladech, C. (1997). *The development of mathayomsuksa 3 English portfolio assessment*. Unpublished Doctoral dissertation, Srinakharinwirot University, Bangkok, Thailand.
- Soothhipong, B. (2000). *Effects of teaching interior architecture by using portfolios on learning achievement of the first-year student at the higher vocational education certificate level, the Division of Interior Architecture, Rajamangala Institute of technology*. Unpublished Master's thesis, Chulalongkorn University, Bangkok, Thailand.
- Sripijitworasakul, A., & Tangdhanakanond, K. (2012). Development of a checklist for elementary school student portfolio assessment for Thai language subject area. *Online Journal of Education*, 7(1), 1681–1692.
- Srirod, W. (2002). *Condition and problems related to using student portfolio assessment under the jurisdiction of the Office of Doi Saket District Primary Education, Chiang Mai Province*. Unpublished Master's thesis, Chiang Mai University, Chiang Mai, Thailand.
- Sujarittanarugse, P. (2005). *A proposed web-based instructional model based on constructivist concept using electronic portfolio for creative thinking development of undergraduate students in social sciences, Chulalongkorn University*. Unpublished Master's thesis, Chulalongkorn University, Bangkok, Thailand.
- Tangdhanakanond, K. (2006). Authentic assessment. *Journal of Educational Studies*, 34(3), 1–13.
- Tangdhanakanond, K., Pitiyanuwat, S., & Archwamety, T. (2005). Constructionism: Student learning and development. *Academic Exchange Quarterly*, 9(3), 259–266.
- Tangdhanakanond, K., Pitiyanuwat, S., & Archwamety, T. (2006a). A development of portfolio for learning assessment of students taught by full – scale constructionism approach at Darunsikkhalai school. *Research in the Schools*, 13(2), 24–36.
- Tangdhanakanond, K., Pitiyanuwat, S., & Archwamety, T. (2006b). Assessment of achievement and personal qualities under constructionist learning environment. *Education*, 126(3), 495–503.
- Tangdhanakanond, K., & Wongwanich, S. (2012). Teacher attitude and needs assessment concerning the use of student portfolio assessment in Thailand's educational reform process. *International Journal of Psychology: A Biopsychosocial Approach*, 10, 71–88.

- Tangdhanakanond, K., & Wongwanich, S. (2015). State, problems and guidelines for solving problems in implementing student portfolio assessment in elementary school in Thailand. *Procedia-Social and Behavioral Sciences*, 171, 1381–1387. <http://dx.doi.org/10.1016/j.sbspro.2015.01.257>
- Tangdhanakanond, K. (2016). *Performance Assessment (2nd ed.)*. Bangkok: Chulalongkorn University Press.
- Tomkins, M., & Quette-Frenette, D. (2010). Learning portfolio models in health regulatory Colleges of Ontario, Canada. *Journal of Continuing Education in the Health Professions*, 30(1), 57–64.
- Tyler, D., & Dibble E. (2019). Toward Authentic Assessment: Using ePortfolio at Salt Lake Community College. *New Directions for Community Colleges*, 186, 37–42. <http://dx.doi.org/10.1002/cc.20353>
- Waedramae, M. (2004). *Analysis of misconceptions and practices in educational quality assessment*. Unpublished Doctoral dissertation, Chulalongkorn University, Bangkok, Thailand.

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MOKINIŲ ĮVERTINIMAS PORTFOLIO BŪDU PRADINĖSE MOKYKLOSE TAILANDE: KLAIDINGI MOKYTOJŲ ĮSITIKINIMAI IR TAIKYMO PATIRTIS

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Santrauka. Priėmus nacionalinį švietimo aktą B.E. 2542, Tailande mokytojams siūloma taikyti įvairius mokinių vertinimo metodus, taip pat ir portfolio. Mokinių portfolio metodas – sisteminis įrodymų, kaip jiems sekasi mokytis ir ko yra pasiekę įvairiose srityse, rinkinys. Šio tyrimo tikslai – įvertinti klaidingus mokytojų įsitikinimus, susijusius su mokinių vertinimu portfolio metodu, taip pat palyginti mokytojų, kurie lankė portfolio metodo įgyvendinimo mokymus ir kurie juose nedalyvavo, portfolio metodo taikymo patirtį. 454 pradinė mokyklų mokytojai buvo atsitiktinai atrinkti dalyvauti šiame tyrime. Klausimynai buvo naudojami siekiant surinkti informaciją apie mokytojų klaidingus įsitikinimus taikant portfolio principus mokiniams vertinti. Taip pat klausimynu

buvo vertinama, kiek mokytojai naudoja keturis portfolio metodo žingsnius: a) portfolio vertinimo planavimas, b) atliktų užduočių rinkimas, c) užduočių parinkimas ir refleksija jų atžvilgiu, d) užduočių peržiūra ir įvertinimas. Tyrimo rezultatai atskleidė, kad mokytojai turi klaidingų įsitikinimų devyniose srityse. Šešios iš jų susijusios su portfolio vertinimo principais ir trys – su vertinimo rezultatų panaudojimu. Mokytojai, kurie buvo mokomi naudoti portfolio vertinimo metodą, geriau taikė keturis šio vertinimo žingsnius, palyginti su nedalyvavusiais mokymuose. Tyrimo rezultatai leidžia suinteresuotiems visuomenės atstovams, personalui ir mokytojų ugdyme dalyvaujantiems universitetams efektyviau pakeisti klaidingus mokytojų įsitikinimus dėl portfolio metodo.

Reikšminiai žodžiai: pradinė mokykla, klaidingi įsitikinimai, portfolio, Tailandas.

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