

Factors and Indicators for Teachers' Roles that Promote Lifelong Learning Skills of Students at the Basic Education Level

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The objectives of this research were to analyze factors and indicators for teachers' roles to promote lifelong learning skills of students at the basic education level in Thailand, to analyze the relational model of factors and indicators, and to validate the consistency of model with empirical data. This study used Two-Stage Sampling for selecting teachers who got Teacher Awards 2011. The first group was 550 sample teachers for Exploratory Factor Analysis. The second group was 550 sample teachers for testing the relational model analysis and the validity of model consistency through LISREL. The research instruments included the questionnaire about factors and indicators for teachers' roles to promote lifelong learning skills. The findings of this study showed that there were five factors and 40 indicators: instruction consisted of 11 indicators; support & reinforcement for active learning had 11 indicators, teacher attributes had 9 indicators; monitoring, inspection and assessment had 5 indicators; and classroom management consisted of 4 indicators. All factors could explain 58.38% of the variance in observed variables. The relational model was consistent with empirical data. Instruction was factors directly influencing lifelong learning skills. Support & reinforcement for active learning, teacher attributes, monitoring, inspection and assessment and class management were factors indirectly influencing lifelong learning skills.

Keywords: factors and indicators of teacher's roles, promote lifelong learning skills, basic education level in Thailand

Lifelong learning is a major concept for the world and is based on the "Education for Sustainable Development" philosophy. The concept of lifelong learning describes learning that is pursued throughout life; learning throughout life that is motivated by self-development (Medel-Anonuevo, Ohsako & Mauch, 2001). Moreover, lifelong learning is like a key to collaborative learning society in the 21st century. As shown in the article "Learning: The Treasure Within" presented by the International Commission on Education for the Twenty-first Century to the United Nations Educational, Scientific and Cultural Organization (UNESCO), lifelong learning primarily consists of 4 main components, including learning to know, learning to do, learning to be, and learning to live together (Office of the National Education Commission, 2000).

Education system in Thailand has encountered the problem of exam-oriented education and ignored the process of promoting lifelong learning. So, Thai students have poor learning habits and less knowledge seeking, leading to low academic achievement, weak society, slow development, difficulty to adjust themselves to the rapidly changing world and to live together in the 21st Century (Ministry of Education, 2010). To solve these problems,

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lifelong learning should be promoted. The process of promoting students to achieve lifelong learning skills begins in the primary education level, (Medel-Anonuevo, Ohsako, & Mauch, 2001). Teachers play an important role to promote students' lifelong learning skills.

Therefore teachers are required to develop their roles in encouraging students to achieve lifelong learning skills constantly. Teachers' roles are important and emphasized by educational institutions. For instance, the Teachers Council of Thailand has determined the standard roles for teachers. The teachers' roles also are determined according to the National Education Act (Ministry of Education, 1999), and the Basic Education Core Curriculum (Ministry of Education, 2008). Besides, the teachers' roles in learning management in 21st century are evidence.

Consequently, with this research, the development of educational factors and indicators will be one of mechanisms for developing solutions. Indicators are observed value, which reflect abstract things and provide benefits for follow up the operation in order to gain useful information (Johnstone, 1981). In addition, the factor analysis of the data to determine the number of factors and to explain covariance between variables would be conducted. The model analysis to consider the relationship between observed or measured variables leads to the classification of numerous variables into some certain group of factors. In each factor, variables have relationship each other. Additionally, such study provides knowledge of indicators, and relational model for teachers' roles to promote lifelong learning skills of students. This information would be used as guidelines for related agencies or stakeholders to develop teachers' roles to promote lifelong learning skills of students in more efficient manner.

Research Objectives

There are two research objectives-

1. To analyze factors and indicators for teachers' roles to promote lifelong learning skills of students at the basic education level.
2. To analyze the relational model of factors and indicators and validate the consistency of model with empirical data.

Methodology

Two-step procedure was conducted.

Step 1

This included the analysis of factors and indicators for teachers' roles to promote lifelong learning skills of students at the basic education level.

Development of Indicators.

First indicators were developed for teachers' roles to promote lifelong learning skills among students by studying and exploring information from literature, research and the concept of developing indicators of Johnstone (1981). Empirical definitions were studied and selected related variables from analyzing and synthesizing teachers' roles to promote lifelong learning skills of students. Then empirical data was used to test with variables. After studying related research, literature and articles, there were 40 indicators on teachers' roles to promote students' lifelong learning skills and 13 indicators on lifelong learning skills which included

1) self-directed learning, 2) peer-directed learning, 3) integrated content and skills instruction, 4) research-based instruction, 5) accordance of content and activities with individual interest and differences, 6) thinking skills-oriented activities, 7) practice-oriented activities, 8) activities for learning from multiple sources, 9) learning through reflection, 10), up-to-date instructional materials, 11) knowledge seeking and reading activities, 12) perception on knowledge seeking methods, 13) stimulating participative learning through activities and situation simulation, 14) in-class and outdoor learning resources recommendation, 15) suggestions for knowledge seeking practices through various sources, 16) activities and situation simulation for thinking, doing, and self-revision, 17) learning promoted media, 18) facilitating learning based on learners' potential, interest and demand through classroom environment, 19) participatory learning and collective experience sharing among learners, 20) providing learners opportunity to describe and present their work in front of the class, 21) giving learners opportunity to ask and express their opinions, 22) caring for learners intimately and thoroughly, 23) flexible classroom that is appropriate for learners and activities, 24) emphasizing on individual differences and limitations, 25) rules and regulations in classroom collectively set by teachers and learners, 26) punishing violated students based on agreed rules and regulation, 27) evaluation straightforwardly, 28) various evaluative methods i.e. self-evaluation, teacher-evaluation, and peer-evaluation, etc., 29) notifying learners evaluative result for self-improvement, 30) determining evaluation as part of learner's learning, 31) formative evaluation for learner's development and post evaluations for measuring academic result, 32) competency to prepare environment promoting learning, 33) teaching competencies to promote self-learning, 34) emphasizing on continuous learning, 35) having good intention and appreciation of learning, 36) applying technology for self- and learner-development, 37) realizing and advising learning sources for learners, 38) being a model for learning and knowledge seeking, 39) being a facilitator regulating learning for students, and 40) usually searching for additional resources for teaching.

There are 13 Indicators on lifelong learning skills included 1) knowledge seeking, 2) love reading, writing and listening, and questioning reasonably, 3) self-learning competency, 4) continuous learning competency, 5) communication and language literacy, knowledge, understanding, feeling and attitude transfer through speaking and writing, 6) analytic thinking, 7) synthesis thinking, 8) creative thinking, 9) critical thinking, 10) predictability, 11) setting target and guidelines for decision making, 12) teamwork competency, and 13) technology literacy for learning and presentation.

The validity of factors and indicators.

Content Validity was conducted as by synthesis indicators which considered by 7 experts two persons are research experts on education measurement and evaluation and lifelong learning; three persons are experts on education management; two persons are experts on lifelong learning. The results were evaluated by all experts found that index of consistency (IOC) was 0.86 -1.00, meaning that all indicators were consistent with factors. The average of indicators was 4.29-5.00, showing that indicators met appropriate and feasibility criteria to be developed. Nine indicators were recommended for language revision. Overall, there are 40 indicators on teachers' roles to promote students' lifelong learning skills, and 13 indicators on students' lifelong learning skills.

Exploratory Factor Analysis (EFA) was conducted to analyze factors and indicators on teachers' roles to promote students' lifelong learning skills at basic education level. EFA was used to classify factors, indicators, and explain the covariance between indicators. The reason using EFA was that indicators lack sufficient evidence for using as hypothesis

framework about factor classification through Principal Component Analysis (PC) and Orthogonal Rotation with Varimax Rotation.

Step 2

The analysis of relational model of factors and indicators and the consistency of model with empirical data was conducted. After conducting Exploratory Factor Analysis (EFA), each group of factors was analyzed for evaluating indicators. The validation of relational model of factors and indicators for teachers' roles to promote students' lifelong learning skills at basic education level was tested with empirical data through LISREL 8.72.

Population and Sample

The population was a list of 9,004 teachers who received Teachers Award 2011, Quality Learning Foundation (QLF) in Thailand. Since there are huge amounts of teachers nationwide, this study determined the narrow scope of population of teachers who received Teachers Award. The criteria to receive Teacher Awards partly meet some attributes of teachers who provide instruction by promoting students' lifelong learning skills. For example, teachers are able to provide effective learning process, develop continuous learning process, provide instruction focusing on skills that are appropriate to learners, build good intention on learning, motivate learners to seek for additional knowledge, make continuously self-development, to being a model for self-development and knowledge seeking (Quality Learning Foundation, 2011).

There were two sample groups. The first group was 550 sample teachers, teachers for Exploratory Factor Analysis. The second group was 550 sample teachers for relational model analysis and the validity of model consistency. This study used Two - Stage Sampling. The first stage conducted by stratified random sampling. Six regions were determined as stratifies. Sample size was calculated using the Taro Yamane formula (Yamane, 1960) at a confidence level of 95%, an error level of 5%. To sample different provinces of each region in Thailand, the authors got 34 sample provinces for analyzing factors and indicators while 34 sample provinces for monitoring the relation model and the validity of model consistency. The second stage, sample random sampling was used to sample teachers in these provinces, according to the proportion of teacher population in 34 provinces. The sample size was determined by the concept of several scholars as follows. Wiratchai (1999) suggested that the sample size should be the larger of 10-20 times the number of variables. Comery and Lee (1992) viewed the sample size of 500 as excellent. Therefore, the authors determined the sample size should be the larger of 10 times the number of variables. The suitable sample size was 550 sample teachers. More than 550 questionnaires thus were distributed to participants in order to get high response rate.

Research instrument

Research instruments included an opinion questionnaire measuring the indicators for teachers' roles to promote students' lifelong learning skills at basic education level. The study of concepts, theories and related literature on the development of indicators for teachers' roles to promote students' lifelong learning skills were used as guidelines to develop the instrument. There were five factors- instruction, support & reinforcement for active learning, teacher attributes, monitoring inspection and assessment, and classroom management. The questionnaire was rated on a 5 point Likert scale.

Data analysis

Computer program was used for Exploratory Factor Analysis (EFA). The criteria to consider acceptable factor is that Eigenvalue of factor will be 1.00 or above and factor loading of indicator will be 0.30 or above (Wanichbancha, 2008). The analysis of the relational model of factors and indicators and the consistency of model with empirical data was conducted through LISREL 8.72. Chi-square test showed the relational model was consistent with empirical data if chi-square value is low or close to zero.

Results

Results were divided into two parts.

Part 1: Results of analysis of factors and indicators for teachers' roles to promote students' lifelong learning skills at basic education level.

It was found five factors and 40 indicators for teachers' roles to promote students' lifelong learning skills at basic education level. The sum of factor loading was ranked from highest to lowest value and these were- 11 indicators of instruction (Instru); 11 indicators of support & reinforcement for active learning; 9 indicators of teacher attributes; 5 indicators of monitoring, inspection and assessment; and 4 indicators of classroom management. All factors could explain 58.38% of variance in variable, teachers' roles to promote students' lifelong learning skills at basic education level as follows.

First factor: instruction

Eigenvalue of Instruction was 6.52. Instruction was consisted of 11 indicators, with factor loading from 0.48 to 0.74. Its indicators included 1) self-directed learning, 2) peer-directed learning, 3) integrated content and skills instruction, 4) thinking skills-oriented activities, 5) learning through reflection, 6) activities for learning from multiple sources, 7) research-based instruction, 8) accordance of content and activities with individual interest and differences, 9) knowledge seeking and reading activities, 10) practice-oriented activities, and 11) up-to-date instructional materials.

Second factor: support & reinforcement for active learning

Eigenvalue of support & reinforcement for active learning was 5.52, which could explain 13.80% of variance in observed variable. Support & reinforcement for active learning consisted of 11 indicators, with factor loading from 0.37 to 0.63. Its indicators included 1) suggestions for knowledge seeking practices through various sources, 2) facilitating learning based on learners' potential, interest and demand through classroom environment, 3) providing learners opportunity to describe and present their work in front of the class, 4) in-class and outdoor learning resources recommendation, 5) learning promoted media, 6) participatory learning and collective experience sharing among learners, 7) giving learners opportunity to ask and express their opinions, 8) stimulating participative learning through activities and situation simulation, 9) perception on knowledge seeking methods, 10) activities and situation simulation for thinking, doing, and self-revision and 11) caring for learners intimately and thoroughly.

Third factor: teacher attributes

Eigenvalue of teacher attributes was 2.856, which could explain 7.12% of variance in observed variable. Teacher attributes factor consisted of 9 indicators, with factor loading from 0.40 to 0.75. Its indicators included 1) being a model for learning and knowledge

seeking, 2) having good intention and appreciation of learning, 3) emphasizing on continuous learning, 4) realizing and advising learning sources for learners, 5) usually searching for additional resources for teaching, 6) being a facilitator regulating learning for students, 7) applying technology for self- and learner-development, 8) teaching competencies to promote self-learning, and 9) competency to prepare environment promoting learning.

Fourth factor: monitoring, inspection and assessment

Eigenvalue of monitoring, inspection and assessment was 3.45, which could explain 8.63% of variance in observed variable. Monitoring, inspection and assessment factor consisted of 5 indicators, with factor loading from 0.52 to 0.70. Its indicators included 1) determining evaluation as part of learner's learning, 2) notifying learners evaluative result for self-improvement, 3) formative evaluation for learner's development and post evaluations for measuring academic result, 4) evaluation straightforwardly and 5) various evaluative methods i.e. self-evaluation, teacher-evaluation, and peer-evaluation, etc.

Fifth factor: class management

Eigenvalue of class management was 5.01, which could explain 12.529% of variance in observed variable. Class management factor consisted of 4 indicators, with factor loading from 0.50 to 0.73. Its indicators included 1) rules and regulations in classroom collectively set by teachers and learners, 2) punishing violated students based on agreed rules and regulation, 3) flexible classroom that is appropriate for learners and activities, 4) emphasizing on individual differences and limitations.

The analytical result of factors and indicators for students' lifelong learning skills at basic education level showed the eigenvalue was 9.35, which could explain 71.919% of variance in observed variable. Lifelong learning skills consisted of 13 indicators, with factor loading from 0.70 to 0.93. Its indicators included 1) critical thinking, 2) synthesis thinking, 3) analytic thinking, 4) setting target and guidelines for decision making, 5) creative thinking, 6) communication and language literacy, knowledge, understanding, feeling and attitude transfer through speaking and writing, 7) love reading, writing and listening, and questioning reasonably, 8) predictability, 9) knowledge seeking, 10) continuous learning competency, 11) self-learning competency, 12) teamwork competency, 13) technology literacy for learning and presentation.

Part 2: The analytical results of the relational model of factors and indicators for students' lifelong learning skills at basic education level

The results of validity testing of six models of factors and indicators for teachers' roles to promote students' lifelong learning skills at basic education level revealed that all models were consistent with empirical data as follows.

i. Instruction model.

The results of construct validity of Instruction model revealed that chi-square = 40.74 , $df = 29$, $p = 0.07$, $GFI = 0.99$, $AGFI = 0.97$, $RMSEA = 0.03$. This means that Instruction Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.34-0.58. It was measured by the following indicators: activities for learning from multiple sources (Instru8), thinking skills-oriented activities (Instru6), practice-oriented activities (Instru7), accordance of content and activities with individual interest and differences (Instru5), learning through reflection (Instru9), research-based instruction (Instru4), integrated content and skills instruction (Instru3), self-directed learning (Instru1), peer-directed learning (Instru2), up-to-date instructional materials (Instru10) and knowledge seeking and reading activities (Instru11). The instruction model equation was shown below and shown in the figure 1.

$$\text{Instru} = 0.05(\text{Instru1}) + 0.16(\text{Instru2}) + 0.16(\text{Instru3}) + 0.32(\text{Instru4}) + 0.29(\text{Instru5}) + 0.22(\text{Instru6}) + 0.19(\text{Instru7}) + 0.26(\text{Instru8}) + 0.22(\text{Instru9}) - 0.17(\text{Instru10}) + 0.33(\text{Instru11})$$

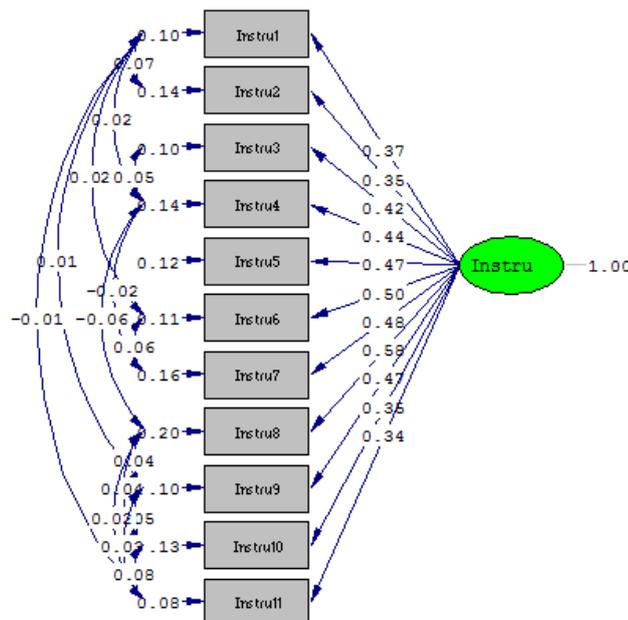


Figure 1. Instruction model

ii. Support & reinforcement for active learning model.

The results of construct validity of this model revealed that Chi-square=46.62, $df=23$, $p=0.003$, $GFI=0.98$, $AGFI=0.96$, $RMSEA = 0.04$. This means that this Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.34-0.62. It was measured by the following indicators: perception on knowledge seeking methods (Support1), caring for learners intimately and thoroughly (Atmos5), providing learners

opportunity to describe and present their work in front of the class (Atmos3), giving learners opportunity to ask and express their opinions (Atmos4), participatory learning and collective experience sharing among learners (Atmos2), facilitating learning based on learners' potential, interest and demand through classroom environment (Atmos1), stimulating participative learning through activities and situation simulation (Support2), learning promoted media (Support6), activities and situation simulation for thinking, doing, and self-revision (Support5), in-class and outdoor learning resources recommendation (Support3) and suggestions for knowledge seeking practices through various sources (Support4). The model equation was shown below and shown in the figure 2.

$$\text{SupportA} = 0.01(\text{Support1}) - 0.08 (\text{Support2}) - 0.02(\text{Support3}) + 0.22(\text{Support4}) + 0.27(\text{Support5}) + 0.36(\text{Support6}) - 0.06(\text{Atmos1}) + 0.56(\text{Atmos2}) - 0.22(\text{Atmos3}) + 0.73(\text{Atmos4}) + 0.28(\text{Atmos5})$$

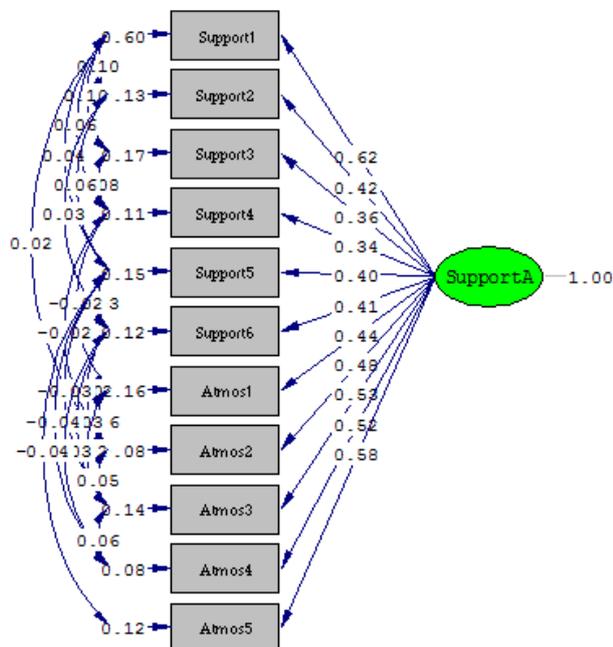


Figure 2. Support & reinforcement for active learning model

iii. Teacher attributes model.

The results of construct validity of this model revealed that Chi-square=17.64 , $df=15$, $p=0.27$, $GFI=0.99$, $AGFI=0.98$, $RMSEA=0.028$. This means that this Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.37-0.82. It was measured by the following indicators: having good intention and appreciation of learning (Teacher4), emphasizing on continuous learning (Teacher3), being a model for learning and knowledge seeking (Teacher7), usually searching for additional resources for teaching (Teacher9), applying technology for self- and learner-development (Teacher5), competency to prepare environment promoting learning (Teacher1), realizing and advising learning sources for learners (Teacher6), being a facilitator regulating learning for students (Teacher8), and teaching competencies to promote self-learning (Teacher2). The model equation was shown below and shown in the figure 3.

$$\text{Teacher} = 0.44(\text{Teacher1}) - 0.29(\text{Teacher2}) + 0.03(\text{Teacher3}) - 0.03(\text{Teacher4}) + 0.65(\text{Teacher5}) + 0.09(\text{Teacher6}) + 0.42(\text{Teacher7}) + 0.49(\text{Teacher8}) + 0.33(\text{Teacher9})$$

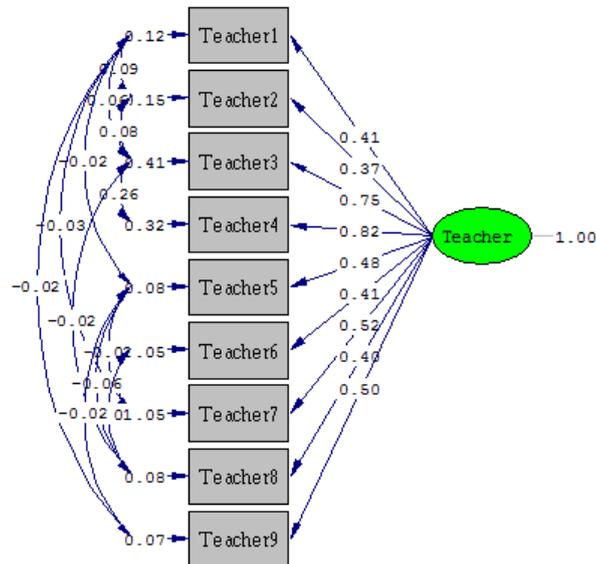


Figure 3. Teacher attributes model

iv. Monitoring, inspection and assessment model.

The results of construct validity of this model revealed that Chi-square=0.70, $df=3$, $p=0.87$, $GFI=1.00$, $AGFI=1.00$, $RMSEA=0.00$. This means that this Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.34 -0.68. It was measured by the following indicators: evaluation straightforwardly (Assess1), formative evaluation for learner's development and post evaluations for measuring academic result (Assess5), notifying learners evaluative result for self-improvement (Assess3), determining evaluation as part of learner's learning (Assess4), and various evaluative methods i.e. self-evaluation, teacher-evaluation, and peer-evaluation, etc. (Assess2). The model equation was shown below and shown in the figure 4.

$$\text{Assess} = 0.01(\text{Assess1}) + 0.01(\text{Assess2}) + 0.92(\text{Assess3}) + 0.01(\text{Assess4}) + 0.71(\text{Assess5})$$

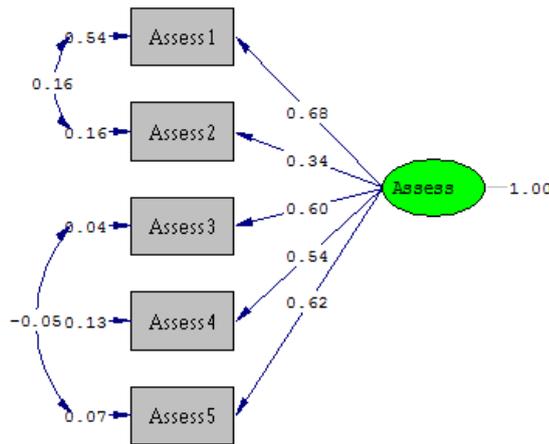


Figure 4. Monitoring, inspection and assessment model

v. Classroom management model.

The results of construct validity of this model revealed that Chi-square=1.73, $df=1$, $p=0.19$, $GFI=1.00$, $AGFI=0.98$, $RMSEA=0.04$. This means that this Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.04-0.53. It was measured by the following indicators: emphasizing on individual differences and limitations (Manage2), rules and regulations in classroom collectively set by teachers and learners (Manage3), punishing violated students based on agreed rules and regulation (Manage4), and flexible classroom that is appropriate for learners and activities (Manage1). The model equation was shown below and shown in the figure 5.

$$\text{Manage} = 0.54(\text{Manage1}) + 0.97(\text{Manage2}) + 0.31(\text{Manage3}) + 0.00(\text{Manage4})$$

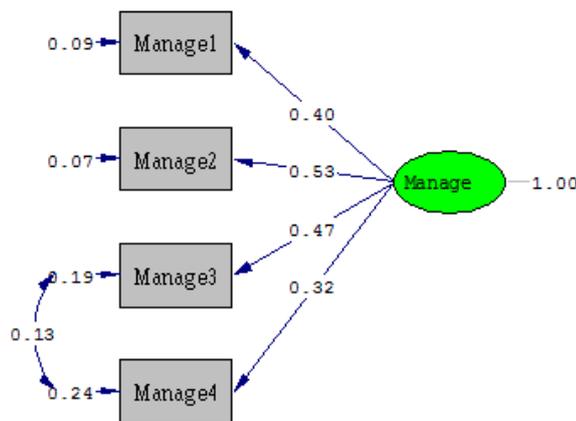


Figure 5. Classroom management model

vi. Students' lifelong learning skills model

The results of construct validity of this Model revealed that chi-square=46.50, $df=21$, $p=0.00$, $GFI=0.99$, $AGFI=0.94$, $RMSEA=0.05$. This means that this Model was consistent with empirical data at high level. Given that all values of factor loading were statistically significant different from zero at .01 level, it was found positive factor loading of 0.41 – 0.80. It was measured by the following indicators: critical thinking (Life9), love reading, writing and listening, and questioning reasonably (Life 2), synthesis thinking (Life7), analytic thinking (Life6), creative thinking (Life8), communication and language literacy, knowledge, understanding, feeling and attitude transfer through speaking and writing (Life5), setting target and guidelines for decision making (Life11), knowledge seeking (Life1), self-learning competency (Life3), predictability (Life10), continuous learning competency (Life4), teamwork competency (Life12), and technology literacy for learning and presentation. The model equation was shown below and shown in the figure 6.

$$\text{Life} = 0.89(\text{Life1}) - 0.20(\text{Life2}) + 0.25(\text{Life3}) - 0.75(\text{Life4}) + 0.46(\text{Life5}) - 0.58(\text{Life6}) - 0.60(\text{Life7}) + 0.66(\text{Life8}) + 1.63(\text{Life9}) - 0.61(\text{Life10}) + 0.56(\text{Life11}) - 0.53(\text{Life12}) - 0.13(\text{Life13})$$

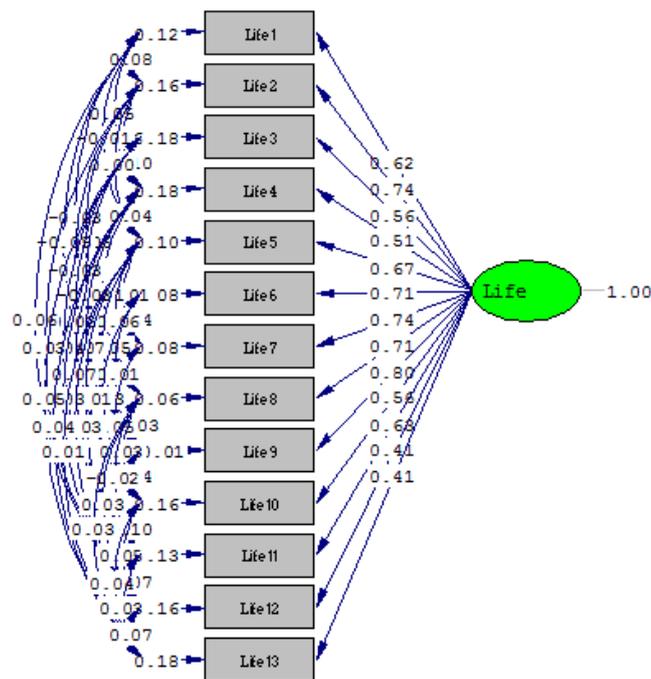


Figure 6. Students' lifelong learning skills model.

The analytical results of the relational model of teachers' roles to promote students' lifelong learning skills at basic education level represented that the relational model was consistent with empirical data (chi-square=954.93, $df=1,306$, $p=1.00$, $GFI=1.00$, $AGFI=0.93$, $RMSEA=0.00$). Instruction had direct influence on students' lifelong learning skills. On the other hand, support & reinforcement for active learning, classroom management, monitoring inspection and assessment and teacher attributes had indirect influence on students' lifelong

learning skills. The influence of factors on students' lifelong learning skills is described below.

1) Instruction had direct influence on students' lifelong learning skills. The magnitude of influence was statistically significant different from zero at .01 level. Instruction had positive direct effect on students' lifelong learning skills, with coefficient of determination (R^2) of 0.64.

2) Support & reinforcement for active learning had positive indirect influence on Life through mediating variable of instruction, with coefficient of determination (R^2) of 0.87. The magnitude of influence was statistically significant different from zero at .01 level.

3) Classroom management consisted and monitoring, inspection, assessment had positive indirect influence on students' lifelong learning skills through mediating variable of Support & reinforcement for active learning and instruction, with coefficients of determination (R^2) of 0.48 and 0.30, respectively. The magnitude of influence was statistically significant different from zero at .01 level.

4) Teacher attributes had positive indirect influence on students' lifelong learning skills through mediating variable of support & reinforcement for active learning and instruction, with equal coefficients of determination (R^2) of 0.20. The magnitude of influence was statistically significant different from zero at .05 level.

Coefficient of determination (R^2) of students' lifelong learning skills was 0.40, meaning that five factors including instruction, support & reinforcement for active learning, classroom management, monitoring, inspection and assessment, teacher attributes could together explain 40% of variance in students' lifelong learning skills as shown in the figure 7.

Discussion

The results of this study were discussed in two parts.

Part I: five factors affecting teachers' roles to promote lifelong learning skills of students at basic education level were found. Five factors included instruction, support & reinforcement for active learning, teacher attributes, monitoring, inspection and assessment, and classroom management. The direct effect of instruction on students' lifelong learning skills would be due to instruction, which is an important factor to develop learners' lifelong learning skills. This is consistent with the concept of Medel-Anonuevo, Ohsako, and Mauch (2001), which suggested numerous factors affecting lifelong learning skills including internal and external factors. Instruction is one of external factors that plays important role to lifelong learning skills. Support & reinforcement for active learning had positive indirect influence on students' lifelong learning skills through mediating variable of instruction u. This could be explained that support and reinforcement for active learning is contribute to instruction. Good support and reinforcement can lead to effective instruction enhancing lifelong learning skills.

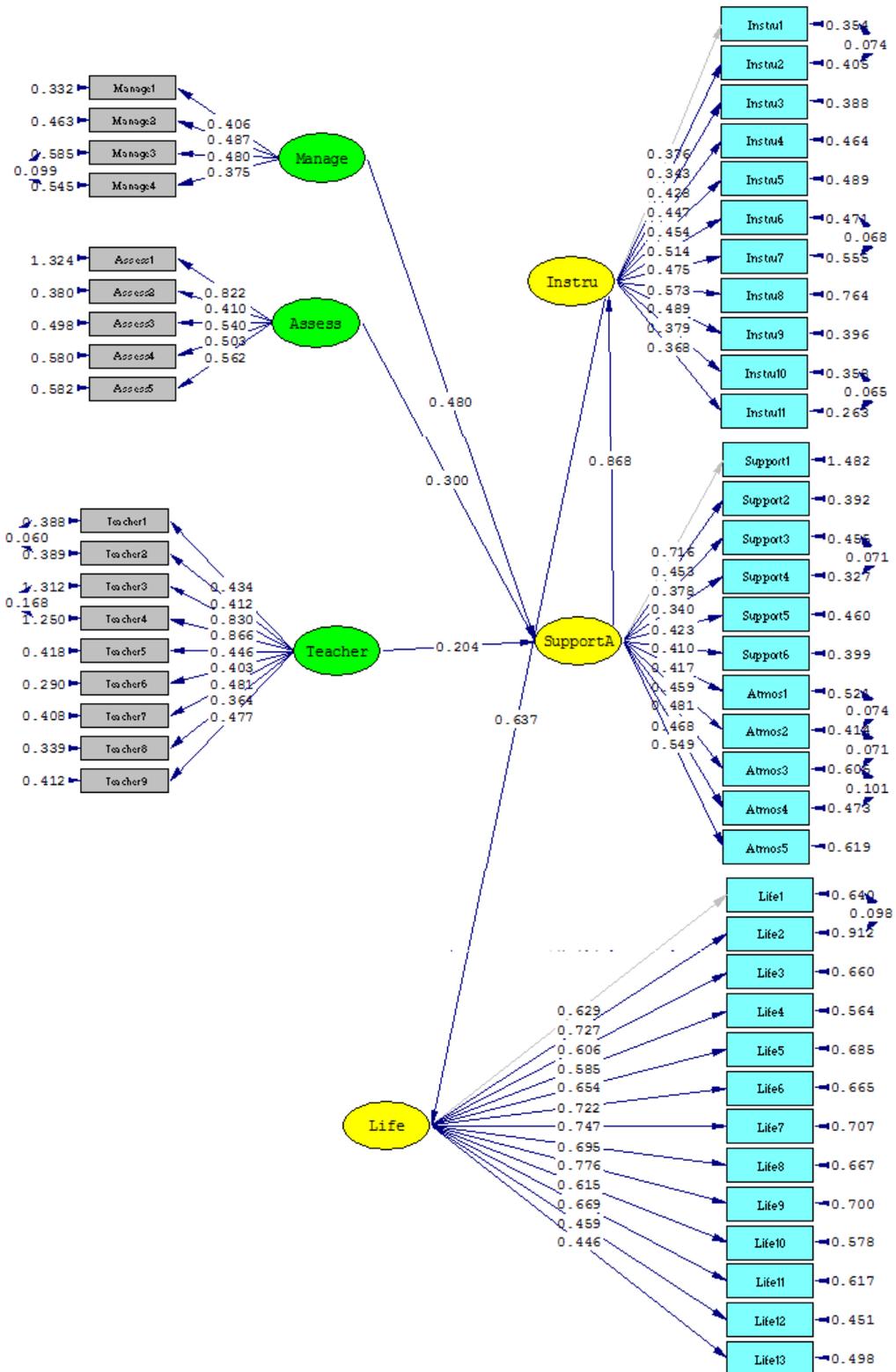


Figure 7. Model of teachers' roles to promote students' lifelong learning skills at basic education level

Classroom management and monitoring, inspection, assessment had positive indirect influence on students' lifelong learning skills through mediating variable of support & reinforcement for active learning and instruction. This could be explained that classroom management for learning as well as monitoring, inspection and assessment result to self-development. This is consistent with the suggestion of Knowles (1975) about instructional process for self-learning. Knowles suggested that classroom management should provide to facilitate and support learning and, classroom should be regulated in the form of free, trustful, respectful atmosphere, and assessment of learning activities should be conducted by the cooperation of teacher and learners. These will support instruction and lead to lifelong learning skills.

Teacher had positive indirect influence on Life through mediating variable of Support A and instruction. This could be explained that some certain attributes of teachers can affect lifelong learning skills; Usually searching for additional resources for teaching, Applying technology for self- and learner-development, Realizing and advising learning sources for learners, Emphasizing on Continuous Learning, Being a Model for Learning and Knowledge Seeking, and Creating learning motivation for learners. These attributes of teachers can facilitate learning and affect instruction, leading to the promotion of lifelong learning skills. This is consistent with the concept of Knapper, Christopher, and Cropley (2000). They viewed that lifelong learning behaviors can be cultivated through learners' attention and motivation to learn and their love to learn all the time. These learning behaviors become learners' habit and finally lead to lifelong learning behavior.

Part II: the results of the relational model of factors and indicators for teachers' roles to promote students' lifelong learning skills at basic education level showed that follows. All models were consistent with empirical data. This implies that five factors of teachers' roles are important to promote students' lifelong learning skills because this study used empirical definition. Empirical definition was based on baseline research and literature to determine sub-variable of each indicator as well as to integrate sub-variables to indicator and calculate factor loading (Buason, 2007). It also depended on empirical data and experts' opinion. As these results, all models were consistent with empirical data. Moreover, the quality of indicator was tested under the theoretical framework. If indicators were developed from poor theory, good statistical techniques could not provide good findings.

Recommendations

The analytic results of relational model of teachers' roles to promote students' lifelong learning skills at basic education level showed as follows. In terms of teacher factor, attributes of teachers affecting lifelong learning skills included having good intention and appreciation of learning, emphasizing on continuous learning and being a model for learning and knowledge seeking. In terms of instruction factor, teachers should provide the following instruction characteristics: activities for learning from multiple sources, thinking skills-oriented activities, and practice-oriented activities. In terms of monitoring, inspection and assessment, teachers should have the following assessment: evaluation straightforwardly, formative evaluation for learner's development and post evaluations for measuring academic result, and notifying learner's evaluative result for self-improvement. In terms of support & reinforcement for active learning, teacher should provide support and learning atmosphere as follows: perception on knowledge seeking methods, caring for learners intimately and thoroughly, giving learners an opportunity to ask and express their opinions, participatory learning and collective experience sharing among learners, facilitating learning based on

learners' potential, interest and demand through classroom environment. In terms of class management, teachers should emphasize on individual difference and limitations. Therefore, related organizations and all related parties should participate to build measures and mechanisms to enhance lifelong learning skills. The findings of this study would be beneficial information to related organizations and parties' consideration, decision making, planning, and policy determination on the development of teachers' roles to promote students' lifelong learning skills. Furthermore, training, seminar, observe study in the field of promoting lifelong learning skills should be provided.

Suggestions for future research

Future research should test Criterion-Related Validity and Concurrent Validity in order to validate the quality of measured indicators and the real circumstance. Developed indicators should be used to establish the assessment model, together with manual and assessment criterion.

Future research should extend the scope of this study to investigate teachers' roles to promote students' lifelong learning skills at higher education levels such as college, vocational education, and non-formal education.

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