

Development and Quality Examination of the Training Model for Enabling Registered Nurses to Use Yoga in Developing Children with Neurodevelopmental Disorders

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Abstract

The purpose of this research study was to develop and examine the propriety of the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders. The samples were 186 registered nurses specializing in child and adolescent psychiatry affiliated to the Ministry of Public Health. The specification of sampling groups was a Confidence Level of 95% in accordance with the table created by Darwin Hendel. Stratified Random Sampling and proportional calculation were then employed to classify hospital type. Research instruments were 1) training needs questionnaires for the registered nurses training program which uses yoga in developing children with neurodevelopmental disorders and 2) quality evaluation forms for the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders. The results revealed that the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders was comprised of 1) Principles and Concepts 2) Objectives 3) Definitions 4) Learning Plans 5) Developmental Process 6) Qualifications and Roles of Participants and 7) Knowledge and Skill Assessment. In terms of the research application, according to the consideration of experts and participants, the application qualifies in the aspects of Utility, Feasibility, Propriety and Accuracy to a high level.

Keywords: Training Model, Yoga, Registered Nurse, Children with Neurodevelopmental Disorders

Introductions

Global prevalence estimates of autism spectrum disorders (ASD), attention deficit hyperactivity disorder (ADHD), and intellectual developmental disorder (ID) were 0.62 % (Elsabbagh et al., 2012), 5.29% (Polanczyk, De Lima, Horta, Biederman, & Rohde, 2007), and 0.05 - 1.55 (McKenzie, Milton, Smith, & Ouellette-Kuntz, 2016), respectively. From 2011-2013, majority of children who had been treated in hospitals under the authority of the Department of Mental Health, Ministry of Public Health, Thailand were children with neurodevelopmental disorders (NDD) including ASD, ID, and ADHD, respectively (Department of Mental Health, Ministry of Public Health, n.d.). Provision of services for children with NDD often requires the expertise of professionals from several disciplines, for highly effective therapy. (Lofthouse, Hendren, Hurt, Arnold, & Butter, 2012) Also, if alternative medicine was used to treat these children appropriately in the early stages, it enhanced their ability to develop to their maximum potential, which would in turn, support their learning development. This would help to reduce crime, delinquency and antisocial behavior problems in school and in later ages (Saminsky, 2010). However, if these children do not receive proper treatment, they may cause

more severe problems.

Yoga therapy is one of the effective alternatives used in children's clinics. (Kaley, Peterson, & Peterson, 2010). By combining the concept of traditional yoga, psychology and western medicine, it is an application for the treatment of children with NDD that contains the practice of yoga postures (asana), breathing exercises (pranayama), withdrawal of the senses (pratyahara), concentration on a single thing (dharana) and meditation (dhyana). Various international research studies have found that yoga can help children with ASD to get in touch with their bodies, improve children's imitation skills and change the style of play patterns. (Radhakrishna, 2010). It can also increase attention in children with ADHD (Petsche, 2016; Chou & Huang, 2017). Yoga can also improve IQ, social adaptation, and fine motor coordination ability in children with ID (Singh & Singh, 2014).

It can be seen that practicing yoga can reduce the symptoms of NDD, such as ASD, ADHD and ID. However, yoga therapists should study or receive yoga training according to the standards of the Yoga Alliance (2016) and the International Association of Yoga Therapists (2013). The use of traditional yoga, yoga for children, and yoga therapy must be done by someone trained and experienced in teaching, as it takes a standard training time of at least 4 years after completing a bachelor's degree. Training is often associated with business and training fees (Seitz, 2010), at a high cost. Although there are yoga therapy courses for the bachelor's degree, diploma and master's degree, this course is specialized in foreign countries for long-term use. This causes the development of specialty beyond the demand of service by recipients. A review of service activities of Ministry of Health hospitals found that there are no services, experts or courses in yoga training for children with NDD. 186 participants using the training needs questionnaire regarding training for enabling registered nurses to use yoga in

developing children with neurodevelopmental disorders from the Department of Mental Health, the Ministry of Public Health, showed that the knowledge and skills of yoga to develop children with NDD had a lower average score in every aspect. It also found that registered nurses most required knowledge of basic yoga and its application in developing children with NDD (Langgapin, Samuttai, Srisuk, & Vittayakorn, 2017). Thus, the training model for enabling registered nurses to use yoga in developing children with NDD will reduce cost and time, as well as meeting the needs of clients. As a result, the researchers were interested in studying the training model for registered nurses to use yoga by themselves in developing children with NDD.

Objectives

The objectives of this research study were to develop and examine the quality of the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders.

Methods

Research Design

In this study, research ethics were considered by the Faculty of Education, Chiang Mai University and divided into two phases as follows:

Phase 1 Analysis of training needs, for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders (NDD), was comprised of the following process:

1. Study and analysis of documents and previous research studies relating to the study of training needs for enabling registered nurses to use yoga in developing children with NDD.

2. Application of results from stage 1. to develop training needs questionnaires for the registered nurses training program using yoga in developing children with NDD. The questionnaires consisted of three parts: general information, data

related to the training needs of the organization, and the training needs of the individuals. A three-rating scale was employed as multiple choice in both the actual level of job performance and the expected level of job performance.

3. Presentation of the draft questionnaire to five experts to verify content validity by considering the value of Index of item Objective Congruence (IOC) and selecting questions with an IOC of 0.60 or higher. Adjustment of the questionnaire was needed in accordance with the experts' suggestions. When the IOC value links with the question and objective was between 0.80 - 1.00, it meant that the IOC value was at a high level.

4. Trialing the draft questionnaire with 30 registered nurses who were not in the sample group. Reliability was then analyzed by using Cronbach's alpha coefficient. Interpretation of the reliability of knowledge and skill at 0.98 meant the validity of the questionnaire was at a high level.

5. Creation of the completed questionnaire for data collection from the sample group.

6. Delivery of 280 questionnaires to the sample group by post (the proportion was 186 copies, but 94 copies (50%) were added in case of no returns) directly to the receivers' addresses, including addressed and stamped envelopes for return of the questionnaires.

7. Collection of 198 questionnaires after their return, checking their data, and selecting 186 perfectly completed ones.

8. Analysis and summarizing of questionnaires in respect of training needs. In this stage, general information and data relating to the training needs of the organization were analyzed by using frequency distribution and percentage. The training needs of individuals were analyzed by using the Modified priority needs index: PNIModified. Then it was compared to the difference of the average point of the level of the actual level of job performance and the expected level of job performance by using the mean, standard deviation and t-test score.

Phase 2 Development and examination of the quality of the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders consisted of the following two parts.

Model development

1. Application of the results of the training needs analysis from phase 1, including synthesis of the concepts, theories and other research studies relating to the development model frame including 1) Theory of Transformative Learning by Mezirow (1990), 2) Process of Training for Performance System Model (TPS) by Swanson (2001), 3) Curriculum structure standards for the nursing training program (Thai Nursing Council, 2009), 4) Curriculum structure standards for yoga teacher training by the Yoga Alliance (2016), 5) Curriculum structure standards for children's yoga teacher training by the Yoga Alliance (2016), 6) Curriculum structure standards for yoga therapy by The International Association of Yoga Therapists (2013), 7) symptoms of children with neurodevelopmental disorders following diagnostic criteria of The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of the American Psychiatric Association (2013), 8) Raja Yoga, and 9) Chakra.

2. Drafting a training model for registered nurses to enable them to use yoga in developing children with neurodevelopmental disorders, consisting of:

- Principles and Concepts derived from the results of the training needs analysis in phase 1, including synthesis of the concepts, theories and other research studies related to the development model frame.

- Objectives derived from the results of the training needs analysis in phase 1.

- Definitions derived from the results of the training needs analysis in phase 1.

- Learning Plans derived from the results of the training needs analysis in phase 1, including synthesis of the concepts, theories and other research studies related to the development model frame,

consisted of knowledge and skill aspects.

Knowledge

- Draft Learning Plans comprised of (1) course (2) objectives (3) course description (4) lesson plans which included 4.1) learning objectives 4.2) core concept 4.3) learning process 4.4) time period 4.5) resources and materials and (5) guided reading materials

- Presentation of the draft to six experts to check content validity by considering the value of Index of item Objective Congruence (IOC) and selection of subjects with an IOC value above 0.60. If the result of the consideration of the consistency of IOC between the subject and objective was between 0.67 - 0.83, it meant the consistency of IOC between the subject and objective was at a high level. Then the program was adjusted and improved in accordance with the experts' suggestions.

Skills

- Synthesis of the concepts, theories and other research studies related to the development training program frame including 1) symptoms of the children with NDD following diagnostic criteria of The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of the American Psychiatric Association (2013), 2) Raja Yoga, and 3) Chakra.

- Drafting a Yoga program for children with NDD, as part of the model in collecting data relating to developing children with NDD, containing yoga postures (asana), breathing exercises (pranayama), with drawal of the senses (pratyahara), concentration on a single thing (dharana), and meditation (dhyana).

- Presentation of the draft to five experts to check content validity by considering the value of Index of item Objective Congruence (IOC) and selection of subjects with an IOC value of 0.60 or higher. If the result of the consideration of the consistency of IOC between the subject and objective was between 0.60 - 0.80, it meant the consistency of IOC between the subject and objective was at a high level.

Then the program was adjusted and improved

in accordance with the experts' suggestions.

- Developmental Process derived from the results of the training needs analysis in phase 1, including synthesis of the concepts, theories and other research studies related to the development model frame, and containing Critical Reflection and Discourse in accordance with the theory of Transformative Learning by Mezirow (1990).

- Qualifications and Roles of participants derived from synthesis of other research studies related to the development model frame.

- Knowledge and Skill Assessment.

- Application of the results of the training needs analysis from phase 1, including synthesis of the concepts, related to the development model frame including 1) Curriculum structure standards for the nursing training program (Thai Nursing Council, 2009), 2) Curriculum structure standards for yoga teacher training by the Yoga Alliance (2016), 3) Curriculum structure standards for children's yoga teacher training by the Yoga Alliance (2016), and 4) Curriculum structure standards for yoga therapy by The International Association of Yoga Therapists (2013).

- Creation of an evaluation form for checking the knowledge and skills of the participants.

- Presentation of the evaluation form to five experts for checking content validity by considering the value of Index of item Objective Congruence (IOC) and selecting content with an IOC value of 0.60 or above. If the result of the consideration of the consistency of IOC between the content and objective was between 0.60 - 0.80, it meant the consistency of IOC between the content and objective was at a high level. The program was then adjusted and improved in accordance with the experts' suggestions.

3. Drafting of a model manual and the content used in the model to facilitate utility, and then its presentation to three experts to check propriety of language. Then the manual was adjusted and improved in accordance with the experts' suggestions.

Checking the quality of the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders was processed as follows:

1. Creation of an evaluation form for quality examination of the model for enabling registered nurses to use yoga in developing children with NDD, by applying concepts of the Joint Committee on Standards for Educational Evaluations (1994), and distinguished by the following quality aspects

- 1) Utility means the ability of registered nurses to develop, in terms of knowledge and skills, in the use of yoga for developing children with NDD,
- 2) Feasibility means hospitals that have a practical way of developing mental health and child and adolescent psychiatry, according to the Department of Mental Health, Ministry of Public Health. Feasibility steps are practical, easy to follow, and worthy of duration and human resource allocation,
- 3) Propriety means the ability of propriety of the hospital context, especially for mental health and child and adolescent psychiatry, of the Department of Mental Health, Ministry of Public Health, and propriety of the model process, procedure, duration, and assessment and
- 4) Accuracy means the clarity of principles, objectives, contents, procedure, and stages of the development and reasonable assessment.

2. Presentation of the evaluation form to five experts for checking content validity by considering the IOC value (Index of item Objective Congruence) and selecting items with an IOC value of 0.60 or above. If the result of the consideration of IOC consistency between the content and objective was between 0.60 – 0.80, it meant the IOC consistency between the content and objective was at a high level. It was then adjusted and improved in accordance with the experts' suggestions.

3. Presentation of the model to nine experts and the participants, to examine the quality of the model

4. Analysis of the model quality data by using these criteria: an average of between 4.51– 5.00

meant the opinions were at the highest level, an average of between 3.51– 4.50 meant the opinions were at a high level, an average of between 2.51– 3.50 meant the opinions were at a moderate level, an average of between 1.51-2.50 meant the opinions were at a low level, and an average of between 1.00 – 1.50 meant the opinions were at the lowest level (Srisatidnarakul, 2012).

Results

The result was presented as follows.

1. To develop the training model for enabling the registered nurses to use yoga in developing children with neurodevelopmental disorders (NDD) which derived from the results of the training needs analysis in phase 1, including synthesize the concepts, theories and other research studies related to be as the development model frame, that consist of including

- 1) Theory of Transformative learning by Mezirow (1990),
- 2) steps for Training for Performance System Model (TPS) by Swanson (2001),
- 3) Structure of curriculum for the standard of the nursing training program (Thai Nursing Council, 2009),
- 4) Structure of curriculum for the standard of yoga teacher by Yoga Alliance (2016),
- 5) Structure of curriculum for the standard of kids yoga teacher by Yoga Alliance (2016),
- 6) Structure of curriculum for the standard of yoga therapy by The International Association of Yoga Therapist (2013),
- 7) symptoms of the children with neurodevelopmental disorders followed in diagnostic criteria by The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of American Psychiatric Association (2013),
- 8) Raja Yoga and
- 9) Chakra. These helps the training model for enabling the registered nurses to use yoga in developing children with neurodevelopmental disorders which contain these components:

1) Principles and concepts are the explanation of principles and concepts to make the origin of the training model development for enabling the registered nurses to use yoga in developing children with NDD.

2) Objectives includes the explanation of the objectives for gaining knowledge and skills for enabling the registered nurses to use yoga in developing children with NDD.

3) Definitions relates to the term definitions used in this training model.

4) Learning plans comprise (1) course (2) objectives (3) course description (4) lesson plans which include 4.1) learning objectives 4.2) core concept 4.3) learning process 4.4) period of time 4.5) resource and materials and (5) guided reading materials

5) Processes of development contain Critical Reflection and Discourse in accordant with the theory of Transformative Learning by Mezirow (1990).

6) Qualifications and roles of the participants are trainees, speakers and training organizers.

7) Assessment of knowledge and skills of the trainees in terms of theory and practical component.

Results of the quality examination of the training model for enabling registered nurses to use yoga in developing children with NDD are shown in Table 1.

Table 1: Mean and Standard Deviation of The Level of The Experts’ Opinions toward Utility, Feasibility, Propriety and Accuracy of the Training Model for Enabling Registered Nurses to use yoga in Developing

Aspect of Utility	Mean	SD
1. The model is beneficial for improving knowledge and skills and enabling registered nurses.	4.12	0.99
2. The model is beneficial for developing children with NDD.	4.62	0.52
3. The model responds to the requirement of the training model and is beneficial for registered nurses	4.37	1.06
4. The model can be applied to the development of registered nurses	4.37	0.74
Total	4.37	0.25
Aspect of Feasibility	Mean	SD
1. The model can be practiced in child and adolescent psychiatric hospitals.	4.12	0.83
2. Stage 1: The preparation stage for pre-training is practical for child and adolescent psychiatric hospitals.	4.62	0.74
3. Stage 2: The operation stage is practical for child and adolescent psychiatric hospitals.	4.25	0.71
4. Stage 3: The evaluation stage is practical for child and adolescent psychiatric hospitals.	4.37	0.74
5. The model is easy to understand, simple, and not too complicated to use.	4.75	0.70
6. Use of the model helps registered nurses to gain knowledge and skills, and is applied effectively to child development.	4.12	0.83
7. It is feasible for participants to cooperate in the model operation.	4.12	0.99
8. Model use results are worthwhile when compared to the duration of the operation.	4.12	0.99
9. The model is feasible in additional resource allocation	4.12	0.99
Total	4.29	0.12

Table 1: Mean and Standard Deviation of The Level of The Experts' Opinions toward Utility, Feasibility, Propriety and Accuracy of the Training Model for Enabling Registered Nurses to use yoga in Developing Children with NDD (Cont.)

Aspect of Propriety	Mean	SD
1. The model is proper for the context of child and adolescent psychiatric hospitals.	4.25	0.71
2. Stage 1: The preparation stage has propriety for development.	4.50	0.75
3. Stage 2: The operation stage has propriety for development.	4.25	0.71
4. Stage 3: The evaluation stage has propriety for development.	4.12	0.83
5. The model has propriety in developing children with NDD.	4.37	0.52
6. The model has propriety for development of registered nurses.	4.12	0.99
7. Duration of the model operation has propriety.	3.87	0.83
8. An evaluation of the model development has propriety.	4.00	0.75
Total	4.19	0.13
Aspect of Accuracy	Mean	SD
1. Concepts and principles in each stage are clear and accurate.	4.12	0.99
2. Specifications of the development objectives are clear and accurate.	4.50	0.92
3. Specifications of the development content are accurate for developing knowledge and skills of registered nurses.	4.50	0.75
4. Methods of the development operation are systematic and accurate.	4.50	0.75
Aspect of Accuracy	Mean	SD
5. Stage 1: The preparation stage is systematic and accurate.	4.25	0.70
6. Stage 2: The operation stage is systematic and accurate.	4.25	0.70
7. Stage 3: The evaluation stage is systematic and accurate.	4.12	0.83
8. The evaluation of the model is accurate, systematic and reliable.	4.12	0.83
9. The content of improving knowledge and skills of registered nurses is accurate.	4.25	1.03
10. Stages of the operation can improve knowledge and skills of registered nurses.	4.25	1.03
11. Evaluation of the development shows that nurses gain knowledge and skills in using yoga for developing children with NDD.	4.00	1.07
Total	4.26	0.14

Table 1 reveals that the quality of the training model for enabling registered nurses to use yoga in developing children with neurodevelopmental disorders (NDD) has an aspect of utility of a high level (Mean = 4.37 Standard Deviation = 0.25). With regards to utility, the experts agreed that the model is most beneficial for developing children with NDD.

Besides that, the aspect of feasibility is at a high level (Mean = 4.29 Standard Deviation = 0.12) and the experts agreed that the model is very easy to understand, simple, and not too complicated to use. With regards to the propriety being at a high level (Mean = 4.19 Standard Deviation = 0.13), the experts concluded that the preparation stage has most propriety for development. Lastly, in the aspect of accuracy at a high level (Mean = 4.26 Standard Deviation = 0.14), the experts agreed that specifications of the objectives of the development are clear and accurate; specifications of the content of the development are accurate for developing knowledge and skills for registered nurses, and methods of the developing operation are most systematic and accurate.

Discussion

The training model in this study includes the following components: 1) Principles and Concepts 2) Objectives 3) Definitions 4) Learning Plans 5) Developmental Process 6) Qualifications and Roles of participants and 7) Knowledge and Skill Assessment for the trainees. Other training models also gave priority to the principles and concepts; for example, the explanation of the history of training in the study of the development of a training model for the program of nursing specialty as a nurse practitioner (Primary Health Care) by (Pischat, Kitkhuandee, Manomai, & Odklun, 2010). In this part, users understand the history of model development. The objectives of model use are specified in much research, such as the studies of Pongpattarrine (2012), Tantaranunont (2013), Mansukpol (2014), and Reunmuey (2015). In their research, users realized what aspect of development that the model was used for. Although various previous research did not contain specific definitions, this research study did for fear of misunderstandings, such as the term “Yoga”, which some studies, for example by Pongpattarrine (2012), had already defined.

Training models generally contain a

curriculum, training plan, content for training, and worksheets, such as the studies by Chandavimol (2013), Mansukpol (2014) and Reunmuey (2015). These are often the result of study relating to training needs and the synthesis of previous studies in which this study of the learning plan consists of the main subjects, objectives, a course description, additional subjects, with learning objectives for each subject, and the core concept (information or activity worksheets, methods, periods in hours, materials and guided reading resources). In addition, the learning plans are for developing a yoga program for children with NDD, so that registered nurses can practice on ASD, ADHD, and ID children. The training consists of a basic program for children to enable them to pay more attention and to have more concentration. Specific programs to help reduce symptoms have eight practice sessions of 45 minutes duration each. Treatment of individuals was more effective than the treatment done in groups, since the children needed to be calm and attentive. Some children had to bring other interested children to join in the training programs. Some children did not like the breathing exercises. However, some specific programs can be done in groups and behavioral modification needs to be incorporated in some cases for those who lose their self-control. This program can be practiced by parents at home with their children. Moreover, this program can also be used with autistic children who have no communication problems. Children with ADHD who are on medication, can also join the program. Children with ID should be impaired at a mild level. The development process used in the model includes the Critical Reflection and Discourse according to the Theory of Transformative Learning by Mezirow (1990). The questions for the trainees, both before and after each subject lesson, are critical reflections to assess the beliefs, feelings and values of individuals (Phillipi, 2010). These are associated with criticism of original beliefs, and

have a discourse which assesses the beliefs, feelings and values, unofficially, with no threat (Phillipi, 2010). This results in respect for others by listening, being open-minded about new ideas and the sharing of individuals' ideas (Guthrie, 2011).

As the use of yoga for treatment of children with NDD is still not widespread nor acceptable in Thailand; thoughts, views, and judgments of value need to be reconsidered, so that participants can use yoga to treat children by themselves. The qualifications and roles of participants involves trainees, speakers and training organizers; this was discussed in many research studies such as those of Chandavimol (2013), Mansukpol (2014) and Reunmuey (2015). Evaluation of knowledge and skills of the theoretical and practical components, is generally assessed before the training, such as in the study of Reunmuey (2015). During training, praise and rewards are employed, such as the study of Chandavimol (2013) and evaluation after training was stated in the study of Reunmuey (2015), by doing an evaluation of satisfaction, a post-test, and supervision.

Quality assessment of the training model, for registered nurses to use yoga in developing children with NDD, found quality in all aspects of utility, feasibility, propriety and accuracy. Firstly, in the aspect of utility, the training model can develop registered nurses in knowledge and skills for using yoga in developing children with NDD, at a high level. Expert opinions showed that the model is most beneficial for developing children with NDD.

As a result of studying requirements in the first period, model development was employed with the quality of utility according to the Joint Committee on Standards for Educational Evaluations (1994), which supports users' requirements. There is also a link between yoga and the application in developing children with NDD in the form of a yoga program. People who attended the program can be trained to practice on their own.

Secondly, in the aspect of feasibility, the model can be used in child and adolescent psychiatric hospitals under the Department of Mental Health, the Ministry of Public Health. The model is easy to understand, simple, and not too complicated to use. Model use of time is worth while when compared to the duration of the operation, and additional resource allocation was at a high level. The experts agreed that this training model is easy to understand, simple, and not too complicated to use. This may be due to this type of practice, with inquiries from participants during application, while the yoga program was trialed before actual application. There is also a model manual which has proven that the language and the quality of the feasibility are practical and deliberate, according to the guidelines of the Joint Committee on Standards for Educational Evaluations (1994). With regards to propriety, the model is proper for the context of child and adolescent psychiatric hospitals under the Department of Mental Health, the Ministry of Public Health. During the operation process, evaluation was at a high level. The experts expressed their opinions that the preparation stage has propriety for development, most of all. This might be due to the preparation before training being most important in the training plan. The model focuses on the operation of Raja Yoga, of which Yama, without violence, is honest and considerate in accordance with the propriety under the guidelines of the Joint Committee on Standards for Educational Evaluations (1994), in consideration with ethics and humanity.

Lastly, in regarding accuracy, the model is accurate and clear in specifying the objectives of the development, the content of the development, and the developing operation, which were all at high levels. The experts agreed that the objectives of the development are clear and accurate; specifying the content of the development is accurate for developing knowledge and skills for registered nurses; and

methods of the developing operation are most systematic and accurate. This is a result of using research methods in a scientific operation that are proven through quality checks, in accordance with the quality of the accuracy, according to the guidelines of the Joint Committee on Standards for Educational Evaluations (1994), which provide methods and techniques.

Suggestions

1. Results from the training model development can be continuously used to develop the training model for trainers who use yoga in developing children with neurodevelopmental disorders.
2. Development of the training model needs more specific studies of additional yoga programs, such as programs for attention development, emotional control, social skills and others.
3. Using the training model would mean more additional studies in terms of creating training motivation, so that the development process cooperates with the training, and makes it more interesting.

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References

- Athill, E. (2010). *Can early intervention reduce crime*. Retrieved May 12, 2014, from <http://www.rslpf.com/articles/Early%20Intervention.pdf>
- Butter, E. (2012). A review of complementary and alternative treatments for autism spectrum disorders. *Autism Research and Treatment*, 2012, 1-21
- Chandavimol, P. (2013). *Development of a blended training model with knowledge management and action learning principles to develop training program design competencies of personnel development staff* (Doctoral dissertation). Bangkok: Chulalongkorn University. (in Thai).
- Chou, C., & Huang, C. (2017). *Effects of an 8-week yoga program on sustained attention and discrimination function in children with attention deficit hyperactivity disorder*. Retrieved May 7, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5237364/>
- Department of Mental Health. (n.d.) *Annual report of department of mental health in B.E. 2556*. Department of Mental Health, Ministry of Public Health. (in Thai).
- Edition, F. (2013). *Diagnostic and statistical manual of mental disorders*. Arlington: American Psychiatric Publishing.
- Elsabbagh, M., Divan, G., Koh, Y., Kim, Y. S., Kauchali, S., Marcín, C., ... Fombonne, E. (2012). Global prevalence of autism and other pervasive developmental disorders. *Autism Research*, 5(3), 160-179.
- Guthrie, B. (2011). *Facilitating a transformative learning environment: A case study of its use in a Graduate-level Psychology course*. Retrieved January 7, 2017, from <https://repository.cityu.edu/bitstream/handle/20.500.11803/527/Chapter26Authentic.pdf?sequence=2&isAllowed=y>
- International Association of Yoga Therapists. (2013). *Current illustrative standards for yoga*

- therapists. Retrieved from <http://www.iayt.org/?page=CurrentIllustrativeS>
- Joint Committee on Standards for Educational Evaluations. (1994). *The program evaluation standards: How to assess evaluations of educational programs*. California: Sage.
- Kaley-Isley, L., Peterson, John, Fischer, Colleen, Peterson, & Emily. (2010). *Yoga as a complementary therapy for children and adolescents: a guide for clinicians*, 7(8), 20.
- Karami, K., Harmooshi, N. N., & Sharifi, M. (2016). Epidemiological study on tuberculosis patients in Ahvaz East Center during 2009-2013. *International Journal of Bioassays*, 5(2), 4782-4785.
- Kepner, J. (2011). Current illustrative standards for yoga therapists. *International Journal of Yoga Therapists*, 31, 6.
- Langgapin, S., Samuttai, R., Srisuk, K., & Soisuda Vittayakorn (2017). Training needs assessment of registered nurses for developing children with neurodevelopmental disorders using yoga. *Journal of Yala Rajabhat University*. 12(2), 77-91. (in Thai).
- Lofthouse, N. L., Hendren, R., Hurt, E., Arnold, L. E., & Butter, E. (2012). A Review of Complementary and Alternative Treatments for Autism Spectrum Disorders. *Autism Research and Treatment*, 2012, 1-21.
- Mansukpol, W. (2014). *The development of e-training model using collaborative learning to enhance E-learning instructional design competency for instructors of higher education* (Doctoral dissertation). Bangkok: Silpakorn University. (in Thai).
- McKenzie, K., Milton, M., Smith, G., & Ouellette-Kuntz, H. (2016). Systematic Review of the Prevalence and Incidence of Intellectual Disabilities: *Current Trends and Issues*. *Current Developmental Disorders Reports*, 3(2), 104-115.
- Mezirow, J. (1990). *Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning*. San Francisco: Jossey-Bass Publishers.
- Petsche, A. (2016). *The Effect of Yoga on Attention in Students Diagnosed with ADHD*. Retrieved from <https://opencommons.uconn.edu/dissertations/1141/>
- Phillipi, J. (2010). Transformative learning in healthcare. *PAACE Journal of Lifelong Learning*, 19, 39-54.
- Pischat, N.; Kitkhuandee, B.; Manomai, N., & Odklun, P. (2010). *A development of training model for program of nursing specialty in nurse practitioner (Primary Health Care)*. Boromarajoni College of Nursing. UdonThani. (in Thai).
- Polanczyk, G., De Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The Worldwide Prevalence of ADHD: A Systematic Review and Meta-regression Analysis. *American Journal of Psychiatry*, 164(6), 942-948.
- Pongpattarrine, C. (2012). *The development of a training model based on action learning concept to enhance performance for international education consultants* (Doctoral dissertation). Bangkok: Chulalongkorn University. (in Thai).
- Radhakrishna, S. (2010). Application of integrated yoga therapy to increase imitation skills in children with autism spectrum disorder. *International Journal of Yoga*, 3(1), 26.
- Reunmuey, R. (2015). *Development distance training model to enhance teachers' instructional competence in remote area of western Thailand* (Doctoral dissertation). Pitsanulok: Naresuan University. (in Thai).
- Saminsky, A. (2010). *Preventing juvenile delinquency: early intervention and comprehensiveness as critical factors*. Retrieved January 7, 2018, from <http://www.inquiriesjournal.com/articles/165/preventing-juvenile-delinquency-early-intervention-and-comprehensiveness-as-critical-factors>

- Seitz, D. (2010). An Overview of regulatory issues for yoga, yoga therapy, and Ayurveda. *International Journal of Yoga Therapy*, 20(1), 34-40.
- Singh, S., & Singh, J. P. (2014). Impact of Pranayama on Fine Motor Coordination Ability of Children with Intellectual Impairment. *Creative Education*, 05(04), 273-278.
- Srisatidnarakul, B. (2012). *Development and validation of research instruments*. Bangkok: Chulalongkorn University Press. (in Thai).
- Swanson, R. A., & Holton, E. F. (2001). *Foundations of human resource development*. Berrett-Koehler Publishers.
- Tantianunanont, V. (2013). *Development of a training model to enhance information literacy for manufacturing industry workforce based on collaborative learning concept and information and communication technology literacy* (Doctoral dissertation). Bangkok: Chulalongkorn University. (in Thai).
- Thai Nursing Council (2009). *Standard criteria of training program in palliative nursing/ Thai subspecialty board of curriculum administration trans*. Retrieved May 7, 2014, from http://www.tnc.or.th:81/files/2010/03/page-144/_87104.pdf. (in Thai).
- Yoga Alliance. (2016). Spirit of the Standards. Retrieved March 16, 2017, from <https://www.yogaalliance.org/Credentialing/Standards/ChildrensStandards>