The Exploratory Factor Analysis of Lifelong Learning in Disruptive Education for Teachers under the Secondary Educational Service Area Office, Southern Thailand

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Abstract

The objective of this research paper was to analyze the exploratory factors of lifelong learning in disruptive education for teachers under the SESAO. The method used in this research was the quantitative research method. The research methodology was to study the exploratory factor analysis of lifelong learning. Data collection was by the survey questionnaire. Participants were the teachers who are working under SESAO. The research instrument used to analyze 1,140 survey questionnaires was the factor analysis, with the rationale of 1:20. The research instrument included the 5-rating scale questionnaire (Likert scale) with a reliability coefficient of .963. The collected data were analyzed by the Exploratory Factor Analysis (EFA) measurement model. Research results found that five factors of lifelong learning in disrupted education for teachers under the SESAO, including self-development for change, persistence amid change, growth mindset, using technology for beneficial professional development, and digital disrupted literacy.

Keywords: *Factors, Lifelong Learning, Disruptive, Teachers*

1. Introduction

While the world situation is changing rapidly, the Thai educational system must be gradually adapted to follow the changing world. Advanced technology nowadays replaces manual workers, but an unexpected situation like the COVID-19 has suddenly happened, which affected teaching. In schools, teachers mostly used the online lecture-based model during this crisis. Technology played a role in the new normal of teaching and learning. It showed the gap between education institutions and learners. Learners can study via online resources. They can even crosscheck the topic of the lecture before joining an online class. Due to the opening of a new vision of education, human beings are used to support the most effective technology and reduce the use of the labor force. It means that technology will replace the labor force. In addition, people must improve their practical and empirical skills to be ready for changes. They also must develop their expert skills along with their cooperation skills. (Opasanon, 2020)

All educators must learn how to use and benefit from technology and its impact on education management. There are many new technologies such as mobile learning and On-demand learning, MOOC, artificial intelligence (AI) and Deep Learning, Internet of Things (IoT). Cloud technology, Mixed Reality, Big Data, 3D printing, and Maker Movement. In particular, teachers have to know how to improve themselves in this changing world. Those who keep using the traditional teaching method might have an opportunity to be disrupted. Teachers who lack creative and innovative skills deny learning new things; they dare not change the way they teach. Especially, those who lack the cooperation skills, lack the emphasized content along with lack the lecture-based approach might be disrupted as well. (Theerathien, 2020). While the National Education Plan focuses on building digital literacy skills for teachers, they also promote creating and promoting digital literacy for teachers to be aware of the changes in the world in which the surrounding context that affects learning behavior and the way of life resulting from the advancement of digital technology preparing for change and enhancing digital literacy skills including creating and producing learning materials. Knowing the dangers that come with digital media technology, they learn to be citizens in the digital world and security. For adjusting the process and being a proposal for further changes, be able to learn through digital media according to the digital conception, i.e. learning anywhere, anytime (Ubiquitous). However, the concept of self-directed learning, self-awareness, and self-awareness. Education management attaches great importance to the role of teachers. Teachers must

understand the digital world. In addition, the support of digital media and digital technology can be regarded as a good example of effective teaching and teaching management (Office of the Education Commission, 2019).

Among the currents of change and development of education under the educational strategy of reform in the 21st century, education and social development of the changes occurring in various dimensions affect the reform of teachers in the new era. The education system needs to be developed in response to the changes. Teachers encourage the development of the full potential by using technology as a motivation, recruiting new teaching techniques by the necessity of living in modern society. (Suttaworathamakit and Sutheiro, 2020). Be open, accept and value information, knowledge, and diverse information. Education and learning management are inconsistent processes, but the skills to promote lifelong learning for people (Sodprasert, 2019).

Lifelong learning is a supplement to the human way of life. It is something that is born together with social changes. Organizing learning activities that promote lifelong learning by emphasizing encouraging individuals to learn and develop according to their potential to have characteristics and ability to work in response to the needs and adaptation of individuals to be aware of changes, and the development of a lifelong educational global social context. Changes in the global economic and social context due to the digital revolution (Digital Revolution), the change of industry 4.0 (The Fourth Industrial Revolution), or even other context changes in the global society (Chonpracha, 2019). Also, to study the analysis and synthesis of philosophies, concepts, and principles of lifelong education to become a learning community (Rattanaubon, 2019) to study teaching education is lifelong learning that reflects professional development (Crandall, 1981). To educate contemporary teachers and core competencies for lifelong learning (Mitkovska & Hristovska, 2005). To study the conditions for lifelong learning of future teachers (Ignatyeva, et al, 2020). To study the relationship between teacher attitudes and lifelong learning abilities (Tenekeci & Uzunboylu, 2020), and to study the enhancement of the organization of lifelong learning (Sanhakot, 2021).

From the mentioned problems, the researcher is now interested in studying the analysis of lifelong learning factors in disruptive education for teachers under the SESAO. The results of this study can be used to promote the development of lifelong learning in the disruptive teacher for improving the quality of teachers in in-schools and countries.

2. Objective

To analyze the exploratory factors of lifelong learning in disruptive education for teachers under the SESAO.

3. Materials and Methods

This research was the quantitative research for exploratory analysis of lifelong learning factors in disruptive education for teachers under the SESAO. The research methods are as follows.

The sample size of this research uses the concept of Hair, et al. (2010) to define a 1:20 ratio. In this study, 57 variables were identified as 1 to 20 samples. So, the sample size was 1,140 people. This study adopts the method of stratified random sampling, that is, and then the purposive sampling method was used.

The research instrument for this study, the researcher studied the concepts and theories and related documents, and analyzed to extract the 57 variables that were factors in the analysis of lifelong learning factors in disruptive education for teachers. Then, it was used to create data tools which is the 5-rating scale questionnaire on the lifelong learning factors in disruptive education for teachers the research instrument is the questionnaire which is the 57-Likert scale on the lifelong learning factors in disruptive education for teachers. The content validity of the questionnaire was checked by 7 experts with Ph.D. educational qualifications. All work in the field of education. Consistency and content validity were used. The questionnaires were selected between 0.67 to 1.00, and it was tried out with the 30 non-sample teachers under the SESAO to find the reliability of the questionnaire, and the reliability coefficient was 0.963.

The researcher collected data from teachers under the SESAO who are in the sample group to cooperate by answering the questionnaire. A questionnaire form was handed into samplers by researchers

individually with an understandable explanation of the details of doing the questionnaire and received 1,140 questionnaires which was a proportion of 1:20, or 100.00 percent from all questionnaire that was sent out.

Data analysis from of lifelong learning factors in disruptive education for teachers the SESAO. By checking the correlation coefficient between variables using Kaiser – Meyer - Olkin (KMO) statistics, the value was .974, which is greater than .50. Phase 1, The data used in this study are appropriate factor analysis techniques and a significant Bartlett's test of sphericity of .05 indicates that the obtained data which is appropriate to use factor analysis from the hypothesis testing Bartlett's test of sphericity, it was found that each variable was related. Therefore, factor analysis techniques can be used. Then, the composition, eigenvalue, and percentage of variance were analyzed. Percentage of cumulative variance analyzed from the correlation matrix. After that, factor extraction was extracted by using principal factor analysis by selecting the element with an Eigenvalue greater than or equal to 1 and rotating the element (Factor Rotation) using Orthogonal Rotation to help determine. The correlation between variables being more common as one factor was more clearly defined by the Varimax method (Wanichbuncha, 2008); (Kaiyawan, 2013) for finding the factors of lifelong learning factors in disruptive education for teachers under the SESAO. By using the selection criteria for question items (variables) with an element weight (Factor Loading) of .60 or more and the number of variables in each element must be at least 3 variables or more, so it is considered 1 element, and then name the element by considering all the variables in the factor and then set a name to cover all variables in the element. By taking into account the element weight (Factor Loading) of the variable that has the largest value first, followed by the lower value, respectively.

4. Results and Discussion

4.1 Results

From the data analysis, the results and discussion were as followed

The result of analyzing of lifelong learning factors in disruptive education for teachers under the SESAO, 1,140 questionnaires that were collected from a sample size including 57 variables, the result shown in table 1.

Table 1 The result of data collection by using Exploratory Factor Analysis: EFA

Questionnaire	Numbers of variable	KMO	Bartlett's Test of Sphericity		
			Approx. Chi-square	df	Sig.
Lifelong learning factors in disruptive education for teachers under the SESAO	57	.974	142901.764	1139	0.000

Table 1, found that KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) was significantly .974 at the 0.05 level and Bartlett's Test of Sphericity was 142901.764 indicating that the variables were related. The data is suitable to use the exploratory factor analysis technique to analyze the factor of lifelong learning factors in disruptive education for teachers under the SESAO.

Table 2 Numbers of factor, Eigenvalue, percentage of variance, percentage of the cumulative variance of analyzing lifelong learning factors in disruptive education for teachers under the SESAO.

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	39.804	69.831	69.831	17.462	30.635	30.635
2	3.847	6.749	76.580	12.476	21.888	52.523
3	2.418	4.241	80.822	8.593	15.076	67.600
4	2.310	4.052	84.873	5.973	10.478	78.078
5	1.922	3.371	88.245	5.795	10.167	88.245

From Table 2, researchers extracted factors by analyzing the elements of the Principal Axis Factoring: PAF and rotating the element (Factor Rotation) using Orthogonal Rotation to help determine by the Varimax method and got 5 factors. This shows the suitability statistics of the variables at 88.245 found that only the first 5 factors have eigenvalues greater than 1 and Cumulative %. It expresses the cumulative percentage variance (% of Variance), the cumulative % of the total factor is 88.245. That is factors 1-5 can be used to explain Lifelong learning factors in disruptive education for teachers under the SESAO with the variation of all 57 variables being 88.245.

When considering each factor, it was found that factor 1 had an Eigenvalue of 39.804, a percentage of cumulative variance was 69.831, and a factor weight was between .633 – and .857. It showed that teachers brought the results of the activities to share their learning with the community scholars. It is a priority for lifelong learning in disruptive education for teachers, and teachers who brought knowledge and innovation to disseminate to professional networks through systematic online were the second priority. Teachers develop citizenship that adapts to changing social conditions. Teachers develop strategies, set goals, and knowledge-sharing mechanisms throughout the organization on an ongoing basis. Teachers integrate knowledge into teaching. Teachers develop themselves to increase their working capacity and can apply problem-solving methods in similar situations. Teachers develop curricula to develop learners as entrepreneurs to suit the context of the community. Teachers can live and perform their duties well through crises. The teacher synthesizes the information. and collecting resources to improve online teaching. Teachers have a continuous and efficient process of retrieving information. Teachers always feel that everyone is part of the organization. Teachers take lessons that have been wrong to improve and improve. Teachers have a broad vision, foreseeing new possibilities in the future. Teachers can effectively synthesize information from information technology in various forms. Teachers learn from groups of people or institutions that manage to learn both inside and outside the school. Teachers develop classroom activities designed with new teaching techniques that are consistent with reality in fluctuating situations. Teachers search for knowledge on the Internet to apply knowledge to solve problems at work. Teachers use technology networks to share knowledge in professional development both inside and outside the school. The teachers had a positive attitude towards the organization. community and society nowadays. Teachers continually develop a sequential thinking and performance process. Teachers manage learning integrated both thought processes and practice. Hence, the name of this factor is named “Self-Development for Change”.

Factor 2 had an eigenvalue of 3.847, a percentage of cumulative variance was 76.580, and a factor weight was between .603 - .857. This showed that teachers cooperate with others in designing imaginative learning methods, which changes in today's world. Teachers allow others to voluntarily criticize their work and develop reflections. Teachers have reintroduced what they have done to develop innovations that benefit the profession. Teachers allocate time to plan for self-improvement appropriately. Analytical teachers choose different forms of technology by their aptitudes. Teachers have access to information in all aspects that is accurate, up-to-date, and convenient for use in their work. Teachers learn the system of effective network connection for ease of searching. Teachers develop themselves to be able to use technology to increase their full potential. Teachers adjust their positive attitude towards changing events in changing current conditions. Teachers behave as role models to build trust among professional peers. Teachers choose a form of community learning activities that are consistent with the community context. Teachers have learned that this is out of the original conceptual framework. It has a wide field of view and is well adapted to the situation, and Teachers are aware of learning together with network partners. Thus, the name of this factor is named “Persistence amid Change”.

Factor 3 had an eigenvalue of 2.418, a percentage of cumulative variance was 80.822, and a factor weight was between .609 - .730. This showed that teachers unintentionally learn from the by-products of a particular event. Teachers encourage the intentions and determination of their professional partners to complete their work. Teachers are friendly, considerate, and accept the work of colleagues. Teachers create learning networks through online systems. The teacher used the information obtained from the synthesis of knowledge. Professional skills are distributed through online media. Teachers study learning, always

seeking new opportunities and challenges to keep pace with the shift from participating in professional learning to community activities. Teachers develop measurement and assessment designs by learners' potential. Hence the name of this factor is named "Growth Mindset".

Factor 4 had an eigenvalue of 2.310, a percentage of cumulative variance was 84.873, and a factor weight was between .602 – and .777. This showed that teachers learn computer programs to apply in practice. Teachers consider modern technology media and are consistent with the content for teaching and learning management. Teachers use the group learning process to find ways to perform tasks or solve problems and apply knowledge to work. Teachers can choose information materials that are beneficial to their profession. Hence the name of this factor is named "Using Technology for Beneficial Professional Development".

Factor 5 had an eigenvalue of 1.922, a percentage of cumulative variance was 88.245, and a factor weight was between .629 – and .720. This showed that teachers have the discretion to discern facts from information on online networks. Teachers provide a working atmosphere that is conducive to the use of technology. Teachers bring knowledge from information technology as a basis for professional development. Hence, this factor is named "Digital Disruptive Literacy".

In summary, the factor of lifelong learning factors in disruptive education for teachers SESAO. factor 1 had the self-development for change which has the lowest weight value at the highest value (weighted = .633). Followed by factor 5 Digital Disruptive Literacy (Weighted = .629). Factor 3 had the Growth Mindset (weighted = .609). Factor 2 Persistence amid Change (Weighted = .603), and factor 4 Using Technology for Beneficial Professional Development (Weighted = .602).

4.2 Discussion

From the analysis of the factor of lifelong learning factors in disruptive education for teachers under the SESAO. Discussion can be drawn as followed.

The result of analyzing the factor of lifelong learning factors in disruptive education for teachers SESAO from the analysis using the Factor Analysis technique found that there were 5 factors including Self-Development for Change, Persistence amid Change, Growth Mindset, Using Technology for Beneficial Professional Development, and Digital Disruptive Literacy. Due to the result of the leaping change in technology, it is a catalyst that causes reversals in all sectors. Not except in education where teachers are the main factor in driving youth to meet the goals of educational management. That is, teachers must be aware of their development of scientific knowledge in their areas of responsibility. Learning modern technology as a tool for learners. Learn and manage online teaching, and the information communicated through the Internet by Sakcharoen (2015) said that the important elements to promote lifelong learning in the form of learning activities are practical work or on-the-job training, adult education, and informal education. Learning activities help to promote students' continuous learning. By constantly learning, learners become lifelong learners, and the fact that society has a large number of people. Being a lifelong learner will make that society become a learning society at all levels. from family, community, and organization to urban society. Moreover, Deci and Ryan (2000) said that lifelong learners should have the ability to think critically. Research creativity, communication, and problem-solving using information technology. Initiative and entrepreneurship efficient use of resources ability to cooperate and work as a team taking into account differences and self-management skills. It complies with Fischer (2000) that lifelong learning is an educational activity and continuous work to create knowledge which is learning that happens by chance through experience or working situation. It is a participation in the operation for ease of work. There is a pattern or structure in learning. Working in groups creates learning from each other, and it is an activity that arises from work.

Otherwise, Uzunboylu and Hürsen (2011) studied the lifelong learning competency scale (LLLCS): The study of validity and reliability they found lifelong learning competency scales such as; "self-management competencies", "digital competencies" and "decision-talking competencies" with implied the result of this research.

The factor of using technology for beneficial professional development had the lower lifelong learning in disruptive education for teachers compared to other factors. This is because of problems in the use of information technology mainly the use of material tools or equipment and techniques. Teachers need to be proficient in the skills but teachers still lack the readiness to use media. Create innovative media and information technology. As Stella (2012) said, rapid technological change creates new problems and challenges for education. Technology training is therefore necessary. in lifelong learning to facilitate the development of work Lifelong learning should be managed. to cover all education, both formal and non-formal education Each person is responsible for self-learning. There are agencies to support the cost of self-study. To improve work and life skills foster creativity and promote effective educational opportunities in all environments. Consistent with Brigden and Grieveson (2003), lifelong learning should have options and flexibility about what is learned. The workplace is an environment where everyone can learn together well. Practice is a key factor in future change and development for both individuals and organizations, and Selvi (2011) said that school as an organization is essential for a response to, the contemporary needs of society. Teachers must also have the ability as lifelong learners to adapt quickly to social changes and to operate effectively. Teachers with lifelong learning abilities will learn on their own to increase productivity and develop students' lifelong learning abilities.

5. Conclusion and Recommendation

5.1 Conclusion

Lifelong learning is the goal of learning. To enable teachers to have the ability in theory and practice. Yet the development of teachers to have analytical thinking skills, synthetic thinking, and criticism increases the skill to have a permanent knowledge in the teacher. To be able to learn on their own without someone to guide them. It is continuous self-improvement throughout life. For professional stability and being a morally-ethical person. For this reason, educational organizations in Thailand must prepare the next generation of teachers with the knowledge, skills, attributes, and ability to adapt to lifelong learning to keep up with the changing world and various current situations.

5.2 Recommendation

From the result of this research, the researchers would like to suggest and give guidelines for developing the lifelong learning factors in disruptive education for teachers from all 5 factors. Suggestions are as followed

1) Self-development for change should encourage teachers to attend training Seminars in various formats

2) Persistence in the mindset of change, teachers should be encouraged to use technology in teaching and learning management and disseminating results in a technological network.

3) Growth Mindset should encourage teachers to create innovations in teaching and learning

4) Using Technology for Beneficial Professional Development, teachers should be encouraged to use technology to participate in teaching and learning activities both on-site and online.

5) Digital Disruptive Literacy should encourage teachers to train in Practice using technology and networking. In line with the National Education Plan 2017-2036 Strategy 3, the potential development of people of all ages with the goal of a system to produce teachers to meet international standards. Teachers have developed competency standards. Strategy 4: Creating Opportunity, Equality, and Equality in Education The goal is to increase educational opportunities through technology for education for all. (Education Council Secretariat, 2017) and further study on the practice of lifelong learning in turn for teachers is to create and promote the practice to occur, both the opportunity of access and the quality of learning throughout. life for the next teachers.

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