

DEVELOPMENT OF THE REFLECTIVE LEARNING QUESTIONNAIRE

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Abstract

The capacity to reflect is recognized as one of the main generic competences and is of high importance in the context of pre-service teacher education. In Myanmar, there is a limit of readily usable questionnaire to explore whether student teachers engage in reflective learning. The purpose of this study was to develop the Reflective Learning Questionnaire of student teachers in Myanmar. A total of 500 student teachers participated in this study. To investigate the number of constructs and structure of reflective learning, exploratory factor analysis with Varimax Rotation was conducted. The exploratory factor analysis results revealed that reflective learning was influenced by the three factors: self-reflection on learning, connecting experience with knowledge, and critical reflection. The three-factored construct consisting of 26 items and explaining 50.394 % of total variance is obtained. Moreover, the internal consistency of the Reflective Learning Questionnaire was satisfying. Therefore, the Reflective Learning Questionnaire can use to measure reflective learning of student teachers.

Keywords: Reflective Learning, Reflective Learning Questionnaire, Student Teachers

Introduction

Education as a whole is expected to prepare younger generation to adapt better in the dynamic society. So, the development and existence of the world solely depends on the educated citizens. To nurture the educated person, the importance of quality education and qualified teachers should be considered. Nurturing qualified teachers and upgrading the quality of basic education teachers are two main tasks of the education promotion program in Myanmar. Pre-services Teacher Education Programs in Myanmar aim to prepare graduates to become qualified teachers equipped with pedagogical practices that will serve to meet the increasing the demands associated with the teaching profession. In the twenty-first century, the role of the teacher moves from one who is all-knowing and unquestionable to one who is continually learning, reflective and confident. Student teachers should equip with thoughtful reflection, critical thinking and increased self-awareness and responsibility to become effective professionals.

The capacity to reflect encompasses the need for student teachers not only to be able to reflect on their learning process while acquiring their professional knowledge, but is also directly related to their future careers and their academic competency. Being one of the most popular theories of professional knowledge in the last 30 years, reflective practice has been widely adopted not only by practicing teachers in their working environment, but in pre-service teacher education as well (Eraut, 1994). Critical reflection will help student teachers change their attitude, behavior and skills so to develop professional attitudes and values. Therefore, the first important factor for student teacher is that student teachers must be reflective learners and being reflective learners will support to become reflective teachers.

In Myanmar, the Reflective Learning Questionnaire is needed to measure student teachers' reflective learning. Indeed, none of the previous studies have focused on the development of Reflective Learning Questionnaire for student teachers in Myanmar. Therefore, this study aimed at developing Reflective Learning Questionnaire of student teachers.

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Purpose of the Study

The main purpose of the study was to develop Reflective Learning Questionnaire of student teachers in Myanmar.

Definitions of Key Terms

Reflective learning. It is the process of critically investigating the issue of concern, activated by experience, that produces the meaning in mind and a relatively change of conceptual perspective (Boyd & Fales, 1983).

Student teacher. A student who is learning how to teach and practicing teaching (Merriam-Webster, 1999).

Critical reflection. It is an awareness of the situation, evaluating the situation and making changes to action if necessary (Mezirow, 1998).

Review of Related Literature

Reflective Learning

John Dewey is one of the originators of the concepts of reflection and he believed that reflection is dynamic and conscientious thought of belief or supposed form of knowledge in basis and the further conclusions to which it and it needs communication to formulate experience. He suggested that reflection for learning should include recalling the event and then posing questions to explore why things turned out the way they did and what possible actions could have given a different outcome (Kalk et al., 2014).

Reflection is an activity that involves revisiting experiences with a view to gaining further knowledge. The reflector questions their knowledge relating to the experience and underlying assumptions. Reflection is not restricted to cognitive activity but also involves emotions and affect. Reflection is an important tool in the connection of theory and practice, which is of particular importance in the education of professionals. Learners can achieve better management of their learning by using reflection (Harmmond & Collins, 1991).

Reflective learning is an important type of learning both in formal and informal situation in school, higher education, at workplace, and in everyday life. Research studies pointed out that reflective ability is a learning strategy and means to promote learning benefits. This ability can be used to evaluate learning accomplishment experiences and elevate the promotion of learning motivation. Reflection is positive for learning and encouraging learners to undertake reflective learning (Hwang et al., 2018).

Reflective learning includes conscious thinking and critical analysis about what they have learned in the previous activity. Detailed metacognitive activities support and activate reflective learning to become more engaged in their own learning. Students are able to enhance awareness about the best practices they followed in order to learn more effectively and essential skills such as critical and creative thinking, adaptability and personal responsibility. Reflective learning as an efficient and competent manner should be provided in many ways to learners (Daradoumis & Arguedas, 2020).

According to David Boud, the concept of reflective leaning is entwined with learning from experience. Reflective learning can dominant in professional training and is regarded as an element of the status attributed to good education. He argued that reflective learning concerns the provision of a framework that helps make sense of experience, which enables people to learn from experience. He defined reflection as a processes in which learners engage to recapture, notice and re-evaluate their, to work with their experience to turn it into learning. Boud points out

that experience is necessary for learning, but in itself does not automatically lead to learning. If learner engages with and transform experience, learning can occur. It is important that reflective learning needs be open and concerned with weakness as well as strengths. Boud also acknowledged that there is possible connection between the social science and the concept of reflective learning (as cited in Grant, 2005).

Colomer, Pallisera, Fullana, Burriel and Fernández (2013) conducted a comparative analysis on reflective learning in higher education. Their study provided data to suggest that reflective learning methodology helps students become more aware of the learning process; it encourages critical thinking and analysis of their own capabilities, proposing both strategies for improvement and new strategies for addressing challenges arising during the learning process. Gelfuso (2013) found that an important method to encourage and enhance reflective learning and the development of reflective skills is participation in small groups.

Methodology

Participants of the Study

A total of 500 student teachers (*Mage* = 19.3 years old) from Hpa-An Education Degree College participated in this study. Among the respondents, 185 were male (37%) and 315

were female (63%). All participants were recruited from Hpa-An Education Degree College by the researcher, given a thorough explanation about the study, and asked if they wished to participate in the questionnaire response voluntarily with informed consent.

Procedures

This study will conduct the three stages of the development and psychometric properties of the questionnaire: (1) item generation, (2) item reduction, and (3) assessment of basic psychometrical properties (reliability, factor structure).

The items of Reflective Learning Questionnaire have been generated by the researchers and experts in educational psychology based on the Reflection in Learning Scale (Sobral, 2001), Self-reporting Reflective Learning Appraisal Questionnaire (Colomer, Serra, Cañabate, & Serra, 2013), and Reflective Thinking Questionnaire (Kember et al., 2000). The Reflection in Learning Scale (Sobral, 2001) was developed with regard to multiple sources of information as reported before and cognitive regulation strategy. The scale includes 14 items with a 5-point Likert scale (1= never, 2= rarely, 3= undecided, 4= often, 5= always). The scale consists of four subscales - planning, monitoring, reflection and self-testing. Self-reporting Reflective Learning Appraisal Questionnaire was designed by Colomer, Serra, Cañabate and Serra in 2013 using four blocks of information. First block is self-knowledge to the daily situation. The second block is students' perceptions of connecting experiences with prior knowledge. The third means self-reflection on the learning process and the fourth is self-regulation of learning. It consists of 18 items. A five-point Likert scale was used (from 1 = strongly disagree through to 5 = strongly agree) to measure the concepts of each areas. The Reflective thinking Questionnaire was developed by Kember et al. in 2000. It contains 16 items and is based on Mezirow framework. It includes four subscales and these are: habitual action, understanding, reflection and critical reflection. Each subscale is composed of four items and a 5-point response scale (from 1 = definitely disagree through 5 = definitely agree) was applied. In total, a pool of 48 items was generated by the researchers and experts in educational psychology based on the three questionnaires.

The next step was to refine the collected items by asking twelve experts who have special knowledge and close relationship in the field of educational psychology. Next, revisions in item length, the wording of items, and content were made. Then, the wording and phrases of

some items were modified since they were inappropriate with student teachers. Finally, the final questionnaire consisted of 48 items in order to examine reflective learning of student teachers. The Reflective Learning Questionnaire was designed with five-point Likert scale (from 1 = Strongly Disagree to 5 = Strongly Agree). Finally, exploratory factor analysis of the Reflective Learning Questionnaire was conducted.

Results

Exploratory Factor Analysis of Reflective Learning Questionnaire

In this study, exploratory factor analysis was conducted to find the number of factors influencing a set of measures and the strength of the relationship between each factor and each observed measure. To investigate the number of constructs and structure of reflective learning using three questionnaires included 48 items, an exploratory factor analysis with varimax rotation was conducted.

Before the exploratory factor analysis, KMO and Bartlett's Test is assessed to check the appropriate of subscales for factor analysis (see Table 1).

Table 1 KMO and Bartlett's Test Result of Reflective Learning Questionnaire

Kasier-Meyer-Olkin Measure of Sampling Adequacy		.89 (>0.5)
Bartlett's Test of Sphericity	Approx. Chi-Square	0.000 ($p < 0.001$)

The Table 1 gives information about two assumptions of factor analysis. To determine whether the subscales were suitable for factor analysis, the Bartlett Test of Sphericity and KMO (Kasier-Meyer-Olkin Measure of Sampling Adequacy) tests were used. The first test examined if the subscales of the scale are inter-independent, and the latter examined sample sufficiency. As shown in Table 1, $KMO = 0.889 > 0.50$ indicated that the sample data are suitable for factor analysis (Hair et al., 2011). The Bartlett's Test ($p < 0.001$) showed that the correlations coefficients are not all zero. As a result, both assumptions required for factor analysis are satisfied.

Table 2 Communalities of Items

Items	Initial	Extraction
I reviewed subjects that previously studied during each course. (item 1)	1.000	.121
I found the relations between topics to structure more comprehensive notions about some theme. (item 3)	1.000	.595
I reflected about how studying and learning in various contexts and situations systematically. (item 7)	1.000	.961
I ask some questions to others the ways to do something and think about a better way for me. (item 14)	1.000	.751
I found my mistakes in what I had previously thought that was true during this course. (item 15)	1.000	.250
I need to understand facts and concepts that the teacher taught during this semester. (item 22)	1.000	.821
I continue to think about the material being taught during this course. (item 26)	1.000	.603

Items	Initial	Extraction
I try to reflect from the positive aspects of my knowledge and skills. (item 30)	1.000	.823
I often try to reflect from the negative views of my attitudes. (item 39)	1.000	.855
I prepared my learning activities and tasks in the courses carefully. (item 42)	1.000	.935
I discuss with my friends about learning and ways of studying. (item 2)	1.000	.182
I organized all topics in a course with each other and with those of other courses in training. (item 4)	1.000	.106
I tried to be aware of that I was studying and for what purposes. (item 6)	1.000	.915
I thought over the meaning of the content I was studying in relation to my personal experience. (item 8)	1.000	.424
I usually reflect on my behaviors to notice whether I could have improved in my works. (item 17)	1.000	.537
To do practical tasks, I have to understand the content taught in class first.(item 25)	1.000	.536
The feelings and emotions are analyzed when facing professional and daily circumstances. (item 29)	1.000	.596
I try to reflect from the negative views of my knowledge and skills. (item 37)	1.000	.669
I carefully notice the connection of what I learn and how I learn it. (item 40)	1.000	.586
I decide who or what I need to suggest and discuss. (item 43)	1.000	.842
I concluded the things that were learning every day in my studies. (item 10)	1.000	.176
I applied my ability to reflect during a learning situation. (item 11)	1.000	.205
I often reflect my experience and learn from it so I believe next performance will improve. (item 18)	1.000	.659
After this course, I have changed my usual method of doing things. (item 21)	1.000	.256
I try to reflect the material that I studied and the way to learn meaningfully. (item 44)	1.000	.654
I evaluate methods of solving problems and monitor my studying and analyzing the difficulties. (item 47)	1.000	.346

Communalities range from 0 to 1 where 0 means that the factors don't explain any of the variance and 1 means that all of the variance is explained by the factors. Variables with small extraction communalities cannot be predicted by the factors and it should be considered eliminating them if too small. In the present result, the communalities of all variables are acceptable and satisfied (see Table 2).

Table 3 Factor Loadings of Each Item in the Reflective Learning Questionnaire

Items	Factor Loadings		
	1	2	3
I reviewed subjects that previously studied during each course. (item 1)	.338		
I found the relations between topics to structure more comprehensive notions about some theme. (item 3)	.757		
I reflected about how studying and learning in various contexts and situations systematically. (item 7)	.967		
I ask some questions to others the ways to do something and think about a better way for me. (item 14)	.851		
I found my mistakes in what I had previously thought that was true during this course. (item 15)	.429		
I need to understand facts and concepts that the teacher taught during this semester. (item 22)	.894		
I continue to think about the material being taught during this course. (item 26).	.767		
I try to reflect from the positive aspects of my knowledge and skills. (item 30)	.897		
I try to reflect from the negative views of my attitudes. (item 39)	.961		
I planned my learning activities and tasks in the courses carefully. (item 42)	.953		
I discuss with my friends about learning and ways of studying. (item 2)		.417	
I organized all topics in a course with each other and with those of other courses in training. (item 4)		.302	
I tried to be aware of that I was learning and for what purposes. (item 6)		.938	
I thought over the meaning of the content I was studying in relation to my personal experience. (item 8)		.646	
I usually reflect on my behaviors to notice whether I could have improved in my works. (item 17)		.726	
To do practical tasks, I have to understand the content taught in class first.(item 25)		.725	
The feelings and emotions are analyzed when facing professional and daily circumstances. (item 29)		.766	
I try to reflect from the negative views of my knowledge and skills. (item 37)		.815	

Items	Factor Loadings		
	1	2	3
I carefully notice the connection of what I learn and how I learn it. (item 40)		.754	
I decide who or what I need to suggest and discuss. (item 43)		.906	
I concluded the things that were learning every day in my studies. (item 10)			.360
I applied my ability to reflect during a learning situation. (item 11)			.424
I often reflect my experience and learn from it so I believe next performance will improve. (item 18)			.801
After this course, I have changed my usual method of doing things. (item 21)			.471
I try to reflect the material that I studied and the way to learn meaningfully. (item 44)			.807
I evaluate methods of solving problems and monitor my studying and analyzing the difficulties. (item 47)			.534

A principal axis factoring was run with Varimax Rotation to check the scale construct validity. This rotation provided three factors with acceptable loadings. The items under first factor consisted of 10 items with loadings between .338 - .897. The items under second factor consisted of 10 items with loadings between .302 - .938 and third factor has factor loadings ranging from .360 - .807 (see Table 3).

According to Table 4, three factors explaining 50.394% of total variance were obtained. The first factor is explained by 27.898% of total variance. Second factor is explained by 15.691% of total variance and third factor is explained by 6.804% of total variance. By this way, a three-factored construct consisting of 26 items explaining 50.394% of total variance is obtained.

Table 4 Exploratory Factor Analysis Result of Reflective Learning Questionnaire

	Eigenvalues	% of Variance	No. of Items
1 st factor	8.090	27.898	10
2 nd factor	4.551	15.691	10
3 rd factor	1.973	6.804	6
Total		50.394 %	26

Naming the Factors

Each factor was named in accordance with the construct explained by the items as shown in Figure 1. The first factor could be named as self-reflection on learning. The second factor could be named as connecting experience with knowledge. The third factor could be named as critical reflection.

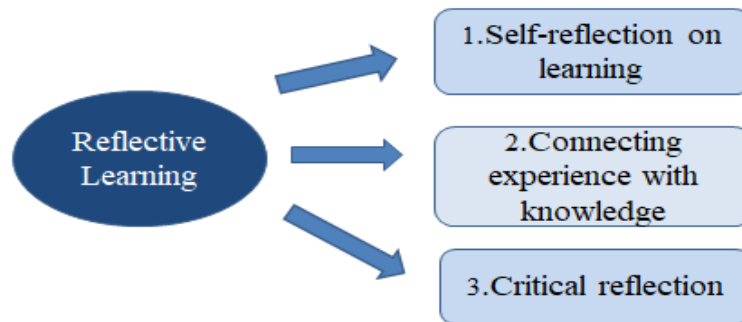


Figure 1. Factors of Reflective Learning

Reliability of Reflective Learning Questionnaire

The reliability of three factors and the whole questionnaire was determined by computing Cronbach's alpha values (see Table 5). The results revealed that all values are in satisfied levels and therefore the questionnaire is reliable.

Table 5 Reliability Coefficient of Reflective Learning Questionnaire

Factors	Cronbach's Alpha
Self-reflection on learning	0.950
Connecting experience with knowledge	0.893
Critical reflection	0.658
Reflective Learning Questionnaire	0.895.

Discussion

Reflection is claimed to help the professional trainee connect theory with practice adopt a deeper approach to learning (Entwistle, 1997). High value in teacher education and graduate employment is placed on the skill of being a reflective learner. This means that student teachers should critically evaluate their learning, identify areas of their learning that require further development and make themselves more independent learners. Therefore, developing a reliable Reflective Learning Questionnaire can be useful in exploring the quantitative data in professional preparation courses and especially in assessing the range of reflection in student teachers. But there may be more benefits in conducting a longitudinal study using both qualitative and quantitative research methods.

In this study, the Reflective Learning Questionnaire includes three factors: self-reflection on learning, connecting experience with knowledge and critical reflection. It was observed that there are three factors that can adequately explain reflective learning and the reliability of each factor was satisfactory. This questionnaire can be used as a diagnostic tool in classes that aims to promote reflective learning. It may be useful for to examine the inter-relationship between constructs related to learning activity.

Conclusion

According to Moon (1999), reflection makes continuity of learning and ensures the progress of individual and society. Reflective learning includes the knowledge of self, connecting the experience with knowledge and critically reflection what have learned. Therefore, the main point for education and professional trainees is reflection and the way to reflect in learning can improve their future profession. This study will help student teachers to investigate reflective learning in the context of teacher training using a quantitative approach.

Limitation and Future Research

This study recruited only student teachers from Hpa-An Education Degree College. Since only 500 student teachers participated in this study, the result may not represent all the student teachers in Myanmar. Future research should investigate student teachers' reflective learning to represent student teachers from all Education Degree Colleges in Myanmar.

Acknowledgements

We would like to offer respectful gratitude to Dr. Kay Thwe Hlaing (Rector, Yangon University of Education), Dr. Pyone Pyone Aung (Pro-Rector, Yangon University of Education), Dr. May Myat Thu (Pro-rector, Yangon University of Education), Dr. Khin Khin Oo (Pro-rector, Yangon University of Education) and Dr. Nyo Nyo Lwin (Pro-rector, Yangon University of Education) for their official permission to do this research. Especially, we are grateful to Dr. Khin Hnin Nwe (Professor and Head of Department of Educational Psychology, Yangon University of Education) for her encouragement and valuable comments. Moreover, we wish to express our deep gratitude to all principals and participants of this study.

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