REFLECTIVE LEARNING, COGNITIVE STYLES AND ACADEMIC BEHAVIORAL CONFIDENCE OF STUDENT TEACHERS*

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Abstract

This study aimed to investigate reflective learning, cognitive styles and academic behavioral confidence of student teachers in Myanmar. The explanatory sequential design was used in this study. A total of 846 student teachers from Education Degree Colleges participated in the quantitative study. The results of one-way MANOVA indicated that there were significantly differences of reflective learning and academic behavioral confidence by cognitive styles. Moreover, the finding of this study revealed that student teachers with integrated style and systematic style were higher in reflective learning and academic behavioral confidence than those with split style, undifferentiated style and intuitive style. The correlation results indicated that reflective learning and academic behavioral confidence were significantly positive inter-correlated in split style, undifferentiated style and integrated style. A qualitative follow-up study was conducted by semi-structured interview with 20 selected student teachers based on the results of quantitative study. The interview results supported prominently the findings of quantitative study and indicated that there was relationship between reflective learning and academic behavioral confidence in each cognitive style.

Keywords: Reflective Learning, Cognitive Styles, Academic Behavioral Confidence, Student Teachers

Introduction

Reflective learning provides a framework that helps make sense of experience, which enables people to learn from experience. In the way of preparation to be a professional teacher, great value is placed on the practicing of being a reflective learner. As a result of being reflective learners, student teachers are able to assess critically their own learning, distinguish areas in which they still need to improve their learning and make themselves more self-regulated learners.

Cognitive styles defined as the way people perceive stimuli and how they use this information to guide their behavior i.e., thinking, feeling, actions (Hayes & Allinson, 1998). There are different cognitive styles for each person. Every student teacher has his own style of learning and thinking. The relation between cognitive styles and reflective learning should be considered and these two variables should be interested in while conducting educational research.

Moreover, noticing a person's own cognitive style can reflect which style shows the good level of confidence in learning. For this reason, another variable, academic behavioral confidence can be continually studied with a consideration of the relation in cognitive style. There is a growing interest about the variation in confidence which the student teachers' possess in their academics because their confidence level can prove how much they perceive their theoretical learning and practicing for their profession.

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Accordingly, reflective learning, cognitive styles and academic behavioral confidence are important variables for student teachers. Doing reflection on learning, knowing their own cognitive styles and their confidence levels will be helpful in their present times and also in their professional life span. In Myanmar education context, there is no study to probe that which cognitive styles provide in reflective learning and show how much feel confident in academic. Therefore, this study was an attempt to explore the relationship of student teachers' reflective learning and academic behavioral confidence by cognitive styles.

Purpose of the Study

The main purpose of the study is to investigate reflective learning, cognitive styles and academic behavioral confidence of student teachers.

The specific objectives are as follows:

- To find out reflective learning and academic behavioral confidence by cognitive styles
- To explore the relationship of reflective learning and academic behavioral confidence by cognitive styles.

Definitions of Key Terms

Reflective learning. Reflective learning (RL) is the process of internally examining and exploring an issue of concern, triggered by experience, which creates and clarifies meaning in term of self and which results in a change of conceptual perspective (Boyd & Fales, 1983)**.**

Cognitive style. Cognitive Style is the preferred way, which an individual processes information (Martin, 1982).

Academic behavioral confidence. Academic behavioral confidence (ABC) refers to the beliefs of student teachers that they can execute competently in a particular learning circumstance. It is conceptualized as being how students behave in the extent to which they have a strong belief, firm trust, or sure expectation in their ability to respond to the demands of studying at school (Sander & Sanders, 2003).

Student teacher. Student teacher is defined as a student who is studying pre-service training in teaching (Ngidi & Sibaya, 2003).

Review of Related Literature

Jarvis (1991) provided a practical and intricate model of reflective learning. In his research model, reflective learning might be described as action learning. According to his model of reflective learning, three of which as reflective learning and he established nine potential pathways. The first one referred to as contemplation. Reflective skills learning was described as the second form of reflective learning. It was concerned with the learning of practical, possibly vocational skills. Reflective skills learning involves the study of grounded knowledge that strengthens practice, it thereby associates with problem solving. The third form of reflective learning is experimental learning (as cited in Grant, 2005).

There are many assumptions or conceptions to define about cognitive styles. Messick (1969) defined cognitive styles as information processing habits which represent the learner's

typical nodes of perceiving, thinking, remembering and problem solving. Goldstein and Blackman (1978) defined cognitive style as an individual's characteristic approach to processing information. Martin (1982) developed a multidimensional model intended to reflect the entire spectrum. This model included two continua: (1) high systematic to low systematic and (2) high intuitive to low intuitive.

Academic behavioral confidence is related to the conviction and confidence of student teachers to handle the challenges in colleges and to their expectations. Academic Behavioral Confidence is conceptualized as a student's belief that they are able to do proficient performance in certain learning situations. It is a concept that how a student behave with strong and firm beliefs, or certain expectations in their abilities that are determined by academic self-efficacy (Sander & Sanders, 2009).

Method

Participants of the Study

Participants were selected by using stratified random sampling technique for quantitative study. A total of 846 student teachers (M_{age} = 19 years old, SD_{age} = 1.58) from Education Degree Colleges participated in this study. Among the respondents, 380 were males (45%) and 466 were females (55%). For the qualitative study, four student teachers were selected from each cognitive style by using purposive sampling as participants. Thus, semi-structured interview was conducted with a total of 20 student teachers.

Instrumentation

Reflective Learning. The Reflective Learning Questionnaire was developed by the researcher and it was designed with 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) consisting of 26 items. Reflective Learning Questionnaire consists of three factors such as self-reflection on learning, connecting experience with knowledge and critical reflection in order to examine reflective learning of student teachers. The Cronbach's alpha of Reflective Learning Questionnaire was .89.

Cognitive Style. The Cognitive Style Inventory (CSI) was developed by Martin (1982) and standardized by Jha (2001). It is a 5-point Likert format and consists of 40 items which measure systematic style and intuitive style consisting of 20 items each. Five responses categorized as from 1 = strongly disagree to 5 = strongly agree. The minimum and maximum score on both dimensions ranges between 20 and 100. The range of the scores for each scale is defined as high is greater than 81, medium high is 71-80, medium low is 61-70 and low is less than 60. The internal consistency of the Cognitive Style Inventory was .82.

Academic Behavioral Confidence. The Academic Behavioral Confidence (ABC) scale (Sander & Sanders, 2003) consists of four subscales: grades, studying, attendance and verbalizing and 17 items. The scale is a 5-point scale (from 1 = not at all confident to 5 = very confident). The reliability coefficient of the ABC was .82.

Results of Quantitative Study

Comparison of Reflective Learning and Academic Behavioral Confidence by Cognitive Styles

To find out reflective learning and academic behavioral confidence by cognitive styles, multivariate analysis of variance was undertaken. The results of MANOVA showed that there was statistically significant difference in reflective learning and academic behavioral confidence in accordance with cognitive styles, Wilks' Lambda = 0.865, F (4, 841) = 15.852, $p < .001$, Partial Eta Squared = .07. It means that cognitive styles have significant effect on reflective learning and academic behavioral confidence. Multivariate test eta-squared was above .04 and therefore medium effect size was found. In one-way MANOVA result, the mean score of student teachers with integrated style was the highest in reflective learning and the mean score of student teachers with systematic style was the highest in academic behavioral confidence (see Table 1). Therefore, it can be assumed that student teachers with integrated style were more reflective persons than those with other cognitive styles and student teachers with systematic style had higher range of academic behavioral confidence than those with other cognitive styles.

Again, notably, post-hoc comparisons using Tukey HSD tests indicated that student teachers with integrated style and systematic style were higher in reflective learning and academic behavioral confidence than student teachers with split style, undifferentiated style and intuitive style. It may be due to the fact that the characteristics of cognitive styles such as integrated style person possesses dual cognitive specialties and systematic style person spend a great time on detail and well-defined method. Tukey HSD test also revealed that student teachers with split style were higher in academic behavioral confidence than student teachers with undifferentiated style and intuitive style. The result was related to the fact that a person with split style has approximately equal degrees of systematic and intuitive (Martin, 1982). Therefore, it can be assumed that student teachers with split style could manage behaviors well using these two styles alternatively and so they were higher in confident than other styles.

Table 1 One-way MANOVA Summary Table of Mean Comparison for Reflective Learning and Academic Behavioral Confidence by Cognitive Styles

	Cognitive Styles					*F*	*p*	Partial η^2
	Split Style	Undifferentiated Style	Integrated Style	Intuitive Style	Systematic Style			
	Mean *(SD)*	Mean *(SD)*	Mean *(SD)*	Mean *(SD)*	Mean *(SD)*			
RL	98.71 (7.11)	94.95 (9.89)	101.86 (8.69)	93.00 (8.20)	100.03 (5.53)	25.38***	.000	.108
ABC	66.25 (5.93)	63.05 (8.39)	68.38 (7.09)	59.20 (8.24)	70.51 (7.84)	22.30***	.000	.096

***$p < .001$

Note. RL = Reflective Learning, ABC = Academic Behavioral Confidence

Table 2 Results of Tukey HSD Multiple Comparison for Reflective Learning and Academic Behavioral Confidence by Cognitive Styles

Dependent Variable	Cognitive Style (I)	Cognitive Style (J)	*MD*(I-J)	*p*
Reflective Learning	Integrated Style	Split Style	3.15***	.000
		Undifferentiated Style	6.91***	.000
		Intuitive Style	8.86***	.000
	Systematic Style	Split Style	6.32***	.000
		Undifferentiated Style	10.08***	.000
		Intuitive Style	12.03***	.000
Academic Behavioral Confidence	Split Style	Undifferentiated Style	3.20***	.000
		Intuitive Style	7.05**	.001
	Integrated Style	Split Style	2.13**	.002
		Undifferentiated Style	5.33***	.000
		Intuitive Style	9.18***	.000
	Systematic Style	Split Style	4.26**	.004
		Undifferentiated Style	7.46***	.000
		Intuitive Style	11.31***	.000

** $p < .01$, *** $p < .001$.

Correlation Between Reflective Learning and Academic Behavioral Confidence in Accordance with Cognitive Styles

In order to examine the relationships between the variables, Pearson product moment correlations were calculated and the criterion $p < .05$ was used to determine statistically significant correlations. As expected, self-reflection, connecting experience with knowledge and critical reflection were significantly positive correlated with academic behavioral confidence in split style, undifferentiated style and integrated style. In systematic style, self-reflection and critical reflection were positively correlated with academic behavioral confidence.

Table 3 Correlation Between Reflective Learning and Academic Behavioral Confidence in Accordance with Cognitive Styles

	Academic Behavioral Confidence				
	Split Style	Undifferentiated Style	Integrated Style	Intuitive Style	Systematic Style
Self-reflection	.277**	.536**	.371**	-.266	.342*
Connecting Experience with Knowledge	.296**	.528**	.385**	-.026	-.048
Critical Reflection	.329**	.539**	.500**	-.405	.349*

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

Predictive Power of Reflective Learning on Academic Behavioral Confidence in Accordance with Split Style

The results of multiple regression analysis pointed out that the subscales of reflective learning made a predictive contribution to academic behavioral confidence in accordance with split style, F (3, 364) = 21.636, $p < .001$ and explained for 14.4% (adjusted R^2) of the variance in academic behavioral confidence.

Table 4 Multiple Regression Analysis for Reflective Learning and Academic Behavioral Confidence in Accordance with Split Style

Predictor	*B*	Std. Error	β	*t*	*R*	R^2	Adjusted R^2	*F*
Constant	35.139	3.996			.389	.151	.144	21.63***
Self-reflection (SR)	.206	.096	.120	2.142*				
Connecting Experience with Knowledge (CE)	.288	.102	.156	2.806**				
Critical Reflection (CR)	.545	.137	.218	3.978***				

*$p < .05$, **$p < .01$, ***$p < .001$, $R^2 = 0.151$; F (3, 364) = 21.636, $p < .001$

The resultant model can therefore be defined as in the following equation:

ABC = 35.139+ 0.206 SR+0.288CE + 0.545 CR

Predictive Power of Reflective Learning on Academic Behavioral Confidence in Accordance with Undifferentiated Style

The results of the predictive contribution of the subscales of reflective learning to academic behavioral confidence showed that the subscales of reflective learning were significantly predictive to academic behavioral confidence F (3, 169) = 39.892, $p < .001$, and explained for 40.4% (adjusted R^2) of the variance in academic behavioral confidence.

Table 5 Multiple Regression Analysis for Reflective Learning and Academic Behavioral Confidence in Accordance with Undifferentiated Style

Predictor	*B*	Std. Error	β	*t*	*R*	R^2	Adjusted R^2	*F*
Constant	11.296	4.783			.644	.415	.404	39.892*
Self-reflection (SR)	.409	.143	.224	2.864**				
Connecting Experience with Knowledge (CE)	.515	.142	.266	3.624***				
Critical Reflection (CR)	.827	.213	.286	3.892***				

*$p < .05$, **$p < .01$, ***$p < .001$, $R^2 = 0.415$; F (3, 169) = 39.892, $p < .001$

By applying multiple regression analysis presented above, the relationships of the subscales of reflective learning with academic behavioral confidence (ABC) were investigated and the following model was as in the equation.

ABC = 11.296 + 0.409 SR + 0.515 CE + 0.827 CR

Predictive Power of Reflective Learning on Academic Behavioral Confidence in Accordance with Integrated Style

The results of the predictive contribution of the subscales of reflective learning to academic behavioral confidence showed that the subscales of reflective learning were significantly predictive to academic behavioral confidence F (3, 249) = 31.143, $p < .001$ and explained for 26.4% (adjusted R^2) of the variance in academic behavioral confidence.

Table 6 Multiple Regression Analysis for Reflective Learning and Academic Behavioral Confidence in Accordance with Integrated Style

Predictor	*B*	Std. Error	β	*t*	*R*	R^2	Adjusted R^2	*F*
Constant	28.257	4.532			.522	.273	.264	31.143***
Self-reflection (SR)	.173	.123	.099	1.404				
Connecting Experience with Knowledge (CE)	.223	.139	.115	1.606				
Critical Reflection (CR)	1.049	.186	.384	5.646***				

Note. ***$p < .001$, $R^2 = 0.273$; F (3, 249) = 31.143, $p < .001$

Therefore, the resultant model can be defined as in the following equation:

ABC = 28.257 + 1.049 CR

Qualitative Study

Participants of the Qualitative Study

Based on the results of quantitative data analysis, high reflective learning (RL) and high academic behavioral confidence (ABC) group, low reflective learning (RL) and low academic behavioral confidence (ABC) group, high reflective learning (RL) and low academic behavioral confidence (ABC) group, low reflective learning (RL) and high academic behavioral confidence (ABC) group and average reflective learning (RL) and average academic behavioral confidence (ABC) group from each cognitive style were categorized and four participants in each style were selected for follow-up qualitative study via semi-structured interview method was conducted. Therefore, a total of 20 student teachers participated in the qualitative study. Semi-structured

interview was administered to attain a complete picture of reflective learning and academic behavioral confidence of student teachers in each cognitive style.

Interview Guide

The instrument for semi-structured interview contained an interview guide of 21 core questions.

Results of Qualitative Study

According to the interview results, it was found that student teachers with split style who had high RL and high ABC, average RL and average ABC and low RL and high ABC expressed that they consciously responded to learning situation and academic area by step by step approach. They had awareness of reflection in their lessons that made them feel confident in academic performance. Student teachers with split style who had low RL and low ABC did not notice how they approach in reflection and learning and could not show what extent to the confident in academic performance.

The interview results indicated that student teachers with undifferentiated style who had high RL and high ABC, average RL and average and high RL and low ABC expressed that they reflected daily experiences and often wrote reflection paper, it made them more confident in academic learning and doing activities. Sometimes they needed the help of elders in their studying. Student teachers with undifferentiated style who had low RL and low ABC sometimes reflected their experiences with peers and it could not make improvement in academic subjects.

It was also found in the interview results that student teachers with integrated style who had low RL sometimes involved in learning process by reflecting on experience. They could not review critically. Student teachers with integrated style who had high RL made a strongly connection a lesson with other or real life to form a concept. They regulated their learning and analyzed the difficulties well. Student teachers with integrated style who had low ABC had average level in confidence to discuss their own point of view in front of class. They knew workable approach for their learning. Student teachers who had high ABC had full of confidence to get good grade and to engage in independent study by revising subjects thoroughly and daily. They were selected as a group leader or presenter in classes.

The interview results indicated that student teachers with intuitive style who had low RL and low ABC sometimes reflected experiences or lesson. By doing it, they noticed that their decisions were more precise. Student teachers who had average RL and ABC reflected lessons, actions or daily experiences most of the time. They sometimes wrote reflection paper for special activities.

It was also found in the interview results that student teachers with systematic style who had high RL and high ABC always reflected their daily lessons and experiences so they could be aware of their strengths and weaknesses in their learning. Student teachers with systematic style who had average RL and ABC sometimes reviewed their actions and lessons. It helped to improve in presentations, making friends and examinations.

Discussion

In the comparison of reflective learning and academic behavioral confidence by each cognitive style, Tukey HSD tests indicated that student teachers with integrated style and systematic style were higher in reflective learning and academic behavioral confidence than student teachers with split style, undifferentiated style and intuitive style. In qualitative results, it was confirmed that student teachers with integrated style who had high/low RL knew their own strengths, act knowledgeable manner and regulated their actions. They always tried to look for opportunities to solve problems and thinking ways to be better. Student teachers with systematic style who had high/low RL reviewed their daily lesson, often reflected with friends, identified their own good points and bad points, critically planned, spent time on details and organized materials well. Therefore, it was proved that student teachers with integrated style and systematic style were more reflective persons than those with other cognitive styles.

Student teachers with integrated style who had high/low ABC were active, alert, and high in participation and involvement in discussions and activities. They had strong attitude for their actions. Student teachers with systematic style who had high/low ABC used well- defined method or overall plan for studying, concrete facts or figures, created lists what should do and were logical and rational. Therefore, it was proved that student teachers with integrated style and systematic style had a greater extent of academic behavioral confidence than other cognitive styles.

The result of this study indicated that student teachers with split style were higher in academic behavioral confidence than student teachers with undifferentiated style and intuitive style. According to Martin (1982), a person with split style had approximately equal degrees of systematic and intuitive and he consciously responded to learning situation by selecting appropriate style. A person with intuitive style is associated with a spontaneous, holistic and visual approach and generally viewed as “bad” when a value is assigned. According to Khin Zaw (1993), mental processes of intuitions tended to be common wherever there were situations too complex for ready logical analysis. A person who had intuitive thinking thought a solution with little awareness of the process to get it which was right or wrong. A person with undifferentiated style relied heavily on rules, suggestions or guidelines and had difficulty in making decisions. Therefore, this finding was possible and reasonable in that the extent of confidence level in academic behavior of student teachers with split style were higher than student teachers with undifferentiated style and intuitive style.

The results of this study indicated that reflective learning and academic behavioral confidence were significantly positive inter-correlated in split style, undifferentiated style and integrated style. It can be due to the fact that these three cognitive styles were characterized with the combination or alternating of the systematic and intuitive styles. A person with split style applied only one style at a time based on the nature of the task. A person with undifferentiated style is a receptive, reflective person and depends on specific directions for actions. A person with integrated style is proactive, creative and innovative and exhibit high degrees of internal

locus of control. Therefore, student teachers with these cognitive styles might be highly successful in reflection and also more confident in academic behavior than others. Hence, a follow up program of semi-structured interview allowed for investigating consistencies in exploring the relationship of reflective learning and academic behavioral confidence in accordance with each cognitive style.

According to the findings of interview, student teachers with split style who had high RL and high ABC reflected daily lessons in class and everyday events. It helped to evaluate methods of solving problems and analyze the difficulties and so it made them confident in activities, presentations and assignments. Student teachers with undifferentiated style who had high RL and high ABC always reflected daily experiences and often wrote reflection paper for some subjects. It made them more confident in academic learning and doing activities. Student teachers with integrated style who had high RL and high ABC could reflect well their lessons and it made them flexible and adaptable to class activities, presentations and assignments.

The results of this study revealed that self-reflection and critical reflection were positively correlated with academic behavioral confidence whereas there was no correlation in connecting experience with knowledge with academic behavioral confidence in systematic style. According to the interview results, student teachers with systematic style who had average RL and ABC sometimes reviewed their actions and lessons. By reviewing facts and information only, it helped them to improve in presentations, making friends and taking examinations. Therefore, student teachers with systematic styles could be weak in connecting experiences for their work and their actions although they were confident in doing activities. Martin (1982) pointed out that people with systematic style were very conscious of approaches in reflection and focused on product.

Multidisciplinary applications of cognitive styles helped researchers to explain individual differences in reflection, receiving information, performance, responding to situation and development of different attitudes (Riding, 1997). Students who lacked awareness of their cognitive style were the least successful than those who were aware, individuals who engage in a learning environment compatible with their cognitive style do better (Baliya, 2016). Therefore, people who made career decisions that aligned with their cognitive styles would have a higher chance of success and vocational satisfaction in comparison to those having diverse cognitive styles with different professional options.

Therefore, educators need to be able to identify the cognitive styles of their students, recommend prescriptions for developmental strategies that students can use to strengthen their own cognitive styles and to improve in styles that they do not generally utilize. They need to be able to recommend personalized educational approaches that is consistent with each cognitive style. Teacher educators from education institutions need to help their student teachers to identify their own cognitive styles and to understand the benefits as well as the drawbacks of all cognitive styles. They also need to be able to notice how to create conducive learning environment, which teaching learning strategies should be used and learning activities that are appropriate for each cognitive style to be high in reflective learning and academic behavioral confidence.

Previous studies pointed out that the result of extreme cognitive specialization in one dimension can drastically impact overall effectiveness in personal professional situations (Wonder & Donovan, 1981). Therefore, split style, undifferentiated style and integrated style were good in functions and effectiveness by combining or alternating each of bipolar elements of the systematic and intuitive styles. Therefore, student teachers with these styles need to learn the benefits and liabilities of their styles particularly as how to communicate, learn or solve problems. By raising their awareness of the significance of cognitive styles in general and of their own in particular, they can improve in reflection and can develop in academic behavioral confidence in professional training.

Extreme specialization might limit an individual's or a group's ability to think, learn, solve problems and interact with others (Martin, 1982). Buzan (1983) said that a synergistic effect took place in all cognitive performance when a person developed one cognitive extreme (either the systematic or the intuitive) that was previously considered to be weak. Therefore, student teachers with systematic style and intuitive style are needed to assist in the development of the abilities, dispositions and behaviors associated with styles. It can be assumed that by doing group works activities in class and assigning them properly in group, student teachers will promote their strengths and confidence in academic performance. And also, it will develop their ability in reflective learning and be more convenient in interaction with others.

Conclusion

To conclude, this study made a contribution to the importance of student teachers' reflective learning, cognitive styles and academic behavioral confidence in their learning and profession. Furthermore, this study recommended that educational personnel such as administrators, teacher educators, teachers and curriculum developers should consider the development of teaching learning strategies and conducive learning environment that were appropriate for student teachers' cognitive styles to promote their reflective learning and academic behavioral confidence.

Limitation and Future Research

This study was a cross-sectional study which showed the relationships among reflective learning, cognitive styles and academic behavioral confidence. The results should be interpreted carefully and longitudinal studies should be carried out to understand the improvement of reflective learning and academic behavioral confidence of student teachers. Based on the findings of this study and literature reviews, some recommendations for future research were made. Future research should address the limitation of this study and replicate the procedure with a large and more diverse sample.

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