CRITICAL THINKING DISPOSITION AND SELF-DIRECTED LEARNING READINESS OF UNIVERSITY STUDENTS

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Abstract

A total of 925 third year and fourth year students from universities in Sagaing District were randomly selected in this study. Descriptive research design and survey method were used. California Critical Thinking Disposition Inventory (CCTDI) adapted by Kokdemir (2003) and Self-directed Learning Readiness Scale (SDLRS) developed by Dr. Lucy M. Guglielmino (1977) were used. It was found that there was no significant difference in total critical thinking disposition by gender, grade and university. But for subscales, male students were better in systematicity and self-confidence than female ones. In analyticity and truth-seeking, female students were better than male students. Fourth year students were found to be better in systematicity than third year students. It was also found that students in University 1 and University 5 were more open-minded and then students in University 1 were also better in analyticity than the other universities. In comparing self-directed learning readiness by gender, grade and university, significant difference was not found. The result of correlation matrix indicated that critical thinking disposition and self-directed learning readiness was significantly correlated in positive direction (r=.671, p<.01). So, critical thinking disposition is one of the important factors to improve the students' level of self-directed learning readiness.

Keywords: critical thinking, critical thinking disposition, self-directed learning

Introduction

Higher education is a fundamental to a country's societal and economic development. It is responsible for nurturing skilled human capital needed in government, business and industry. Institute of International Education (2013) presented that there is a need in higher education system of Myanmar that can produce students who possess the skill of critical thinking and innovation (as cited in Po Po Thaung Win, 2015).

Critical thinking is one of the aspects of thinking, which is accepted as a way of overcoming problems and eases the way of reaching the information in our lives (Hudgins & Edelman, 1988). According to Reynolds (2011), critical thinking is an important element of all professional fields and academic disciplines. Critical thinking helps individuals to think and analyze critically about their own learning, and to strive and develop expertise in their areas of professionalism (Phan, 2010). That is why, it is considered as one of the important skills required for human (Mimbs, 2005; Halvorsen, 2005).

Critical thinking disposition is the desire and motivation of the individual to think critically (Zhang, 2003). A student's disposition to think critically is a necessary precondition for critical thinking, and it greatly affects critical thinking capability (cited in Demirhan & Koklukaya, 2013).

Self-directed learning (SDL) is "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes"(Knowles, 1975).

Self-directed learning is the key to personal and academic success (cited in Zemke, 1982). Thus, higher educators increasingly see the advocacy of self-directed learning as an important

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goal for higher education (Kreber, 1998). Since university students were very important human resources for developing countries, especially in Myanmar, it was need to consider the role of their learning to be self-directed. Besides, in order to facilitate students' self-directed learning, it is critical to assess students' readiness (Klunklin, Viseskul, Sripusanapan, & Turale, 2010). Osman (2015) found that self-directed learning is a skill which can be improved through learning activities catered to increase the readiness level of self-directed learning.

Moreover, the study of Abd-Elmoghith, El-Aziz and Rashawn (2018) also indicated that the self-directed learning readiness increased when critical thinking skills found. So, it is necessary to increase critical thinking disposition to increase self-directed learning readiness. That is why; the present study chose critical thinking disposition as an important factor for improving critical thinking and studying self-directed learning readiness of the university students.

Objectives of the Study

This main aim of this study was to examine critical thinking disposition and self-directed learning readiness of university students. The specific objectives were;

1. To identify the levels of critical thinking disposition and self-directed learning readiness of university students.
2. To examine critical thinking disposition and self-directed learning readiness of university students by gender, grade and university.
3. To find out the relationship between critical thinking disposition and self-directed learning readiness of university students.

Definitions of Key Terms

Critical Thinking Disposition: Critical thinking disposition is the desire and motivation of the individual to think critically (Zhang, 2003).

Self-directed Learning: Self-directed learning (SDL) is "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (Knowles, 1975).

Materials and Method

In this study, quantitative approach and descriptive survey design was used.

Participants

By using simple random sampling technique, 925 students (426 males and 499 females) in (2018-2019) academic year were chosen as participants of the present study.

Instrumentation

The first instrument was the California Critical Thinking Disposition Inventory (CCTDI) adapted by Kokdemir (2003). It measures the critical thinking disposition by six scales: Open-mindedness, Inquisitiveness, Systematicity, Truth-seeking, Analyticity and Self-confidence. The total items used in the present study were 51 items examined by six-point Likert type (1= Strongly disagree, 2= Disagree, 3= Partly disagree, 4= Partly agree, 5= Agree, and 6= Strongly agree).

The second instrument, Self-directed Learning Scale (SDLRS) developed by Dr. Lucy. M. Guglielmino (1977) was used to measure self-directed learning readiness of university students. The total number of items used in this study were 58 items and all are five-point Likert type (1=Almost never true of me, 2=Not often true of me, 3=Sometimes true of me, 4= Usually true of me and 5=Almost always true of me).

Firstly, the instruments used in this study were translated into Myanmar version. To study whether the instruments were reliable, pilot testing was done. The internal consistencies were (.732) for California Critical Thinking Disposition Inventory (CCTDI) and (.905) for Self-directed Learning Readiness Scale (SDLRS).

Findings

Table 1 Descriptive Statistics for Critical Thinking Disposition of University Students

Variable	No. of Students	Minimum	Maximum	Mean	*SD*
Critical Thinking Disposition	925	157	263	204.66	17.025

According to Table 1, it was found that mean score for critical thinking disposition of university students was 204.66 and standard deviation was 17.025. The mean score (204.66) for critical thinking disposition of university students was less than 240 scores defined by Kokdemir (2003). So, it can be concluded that critical thinking disposition of university students were low.

Table 2 The Results of Independent Sample *t* test for Critical Thinking Disposition of University Students by Gender

Variables	Gender	*N*	Mean	*SD*	*t*	*df*	*p*
Systematicity	Male	426	22.03	3.681	2.798**	923	.005
	Female	499	21.37	3.457			
Truth-seeking	Male	426	25.38	6.007	-5.520***	769.029	.000
	Female	499	27.28	4.424			
Analyticity	Male	426	50.13	7.696	-2.789**	795.492	.005
	Female	499	51.39	5.978			
Self-confidence	Male	426	27.77	6.022	2.017*	923	.044
	Female	499	27.01	5.499			
Critical Thinking Disposition (Total)	Male	426	203.95	18.368	-1.157	923	.242
	Female	499	205.26	15.782			

Note ***Significance at 0.001 level **Significance at 0.01 level *Significance at 0.05 level

According to Table 2, among six subscales, it was found significant differences only in systematicity (t=2.798, p=.005), truth-seeking (t=-5.520, p=.000), analyticity (t=-2.789, p=.005) and self-confidence (t=2.017, p=.044) by gender. So, it can be concluded that male students had better systematicity and self-confidence than female students. And, female students were better in truth-seeking and analyticity than the males. In comparing total critical thinking disposition by gender, significant difference was not found.

Table 3 The Results of Independent Sample *t* test for Critical Thinking Disposition of University Students by Grade

Variables	Grade	*N*	Mean	*SD*	*t*	*df*	*p*
Systematicity	3 rd Year	466	21.44	3.297	-2.022*	923	.043
	4th Year	459	21.91	3.825			
Critical Thinking Disposition (Total)	3 rd Year	466	203.72	16.330	-1.691	923	.091
	4th Year	459	205.61	17.669			

Note:*****Significance at 0.05 level

In Table 3, among six subscales, it was found that fourth year students had better systematicity than third year one (*t*=-2.022, *p*=.043). But, in comparing total critical thinking disposition by grade, significant difference was not found.

Table 4 ANOVA Results for Critical Thinking Disposition of University Students by University

Variables	Region Group	Sum of Squares	*df*	Mean Square	*F*	*p*
Open-mindedness	Between Groups	307.448	4	76.862	4.683	.001**
	Within Groups	15100.156	920	16.413		
	Total	15407.604	924			
Analyticity	Between Groups	557.206	4	139.301	2.996	.018*
	Within Groups	42775.925	920	46.496		
	Total	43333.131	924			
Critical Thinking Disposition	Between Groups	1873.893	4	468.473	1.621	.167
	Within Groups	265943.095	920	289.069		
	Total	267816.988	924			

Note: **Significance at 0.01 level; *Significance at 0.05 level

In comparing subscales of critical thinking disposition by university, a statistically significant differences were found in open-mindedness (*F*=4.683, *p*=.001) and analyticity (*F*=2.996, *p*= .018). But, in comparing total critical thinking disposition by university, significant difference was not found.

Table 5 Results of Games-Howell for Open-mindedness and Analyticity by University

Subscales	University (I)	University (J)	Mean Difference (I-J)	*p*
Open-mindedness	University 1	University 2	1.038	.137
		University 3	.851	.198
		University 4	1.093	.034*
		University 5	-.367	.920
	University 5	University 1	.367	.920
		University 2	1.406	.032*
		University 3	1.218	.045*
		University 4	1.460	.006**
Analyticity	University 1	University 2	1.871	.112
		University 3	.817	.699
		University 4	1.695	.013*
		University 5	2.088	.029*

*Mean difference is significant at 0.05 level **Mean difference is significant at 0.01 level.

It was found that students in university 1 and 5 were more open-minded than the other universities. For analyticity, students in university 1 had higher analyticity than others.

Table 6 Descriptive Statistics for Self-directed Learning Readiness

Variable	N	Minimum	Maximum	Mean	*SD*
Self-directed Learning Readiness	925	141	278	213.86	21.417

According to Table 6, it was found that mean score for self-directed learning readiness of university students was 213.86 and standard deviation was 21.417. The mean score (213.86) for self-directed learning readiness of university students was between the scores 202 and 206 defined by Guglielmino (1977). So, it could be concluded that self-directed learning readiness of university students was average.

Table 7 Independent Sample *t* test for Self-directed Learning Readiness by Gender

Variable	Gender	*N*	Mean	*t*	*df*	*p*	*MD*
Self-directed Learning Readiness	Male	426	214.17	.406	923	.685	.574
	Female	499	213.60				

According to the result of *t* test, it was found that no significant difference in self-directed learning readiness by gender.

Table 8 Independent Sample *t* test for Self-directed Learning Readiness by Grade

Variable	Grade	*N*	Mean	*t*	*df*	*p*	*MD*
Self-directed Learning Readiness	3 rd Year	466	213.57	-.413	923	.680	-.582
	4th Year	459	214.15				

According to the result of *t* test, significant difference in the self-directed learning readiness by grade was not found.

Table 9 ANOVA Results for Self-directed Learning Readiness by University

Variable	Region Group	Sum of Squares	*df*	Mean Square	*F*	*p*
Self-directed Learning Readiness	Between Groups	2757.789	4	689.447	1.506	.198
	Within Groups	421069.941	920	457.685		
	Total	423827.730	924			

According to the ANOVA result, it was revealed that there was no significant difference in self-directed learning readiness in terms of universities.

Table 10 Correlation Matrix between Critical Thinking Disposition and Self- directed Learning Readiness

Variable	Self-directed Learning Readiness
Critical Thinking Disposition	.671**

**Correlation is significant at 0.01 level.

According to the Table 10, statistically significant positive correlation between critical thinking disposition and self-directed learning readiness (r=.671, $p<0.01$) was found. Therefore, it can be concluded that better critical thinking disposition university students possessed, the higher self-directed learning readiness they had.

Discussion and Conclusion

Critical Thinking Disposition of University Students: Based on the criteria developed by Kokdemir (2003), it was found that university students' critical thinking disposition was low level. The present study is agreed with some of these studies that have reported that students generally have low level critical thinking disposition (Genc, 2008; Cetinkaya, 2011; Bakir, 2015)

Based on findings of the present study, some suggestions were discussed for improving learner's level of critical thinking disposition. To develop their critical thinking disposition, learners should-

- Eager to seek the truth and ask questions about what they want to know
- Be tolerant of divergent views and think open-mindedly

To improve learners' critical thinking disposition, educators and administrators should-

- Create time for students to reflect what they have learned
- Accept and ask to anticipate alternative solutions when students solve problems

Critical Thinking Disposition of University Students by Gender: The result revealed that there was no significant difference in critical thinking disposition between male and female students. The overall findings have also confirmed that no significant difference in critical thinking disposition by gender (Laird, 2005, Ben-Chaim et al. 2000; Biber et al. 2013; Kucuk & Uzun, 2013; Bidjerano, 2005; Gurol et al. 2013; Bakir, 2015).

In comparing gender difference in subscales of critical thinking disposition, the result showed that male university students were better in systematicity and self-confidence than female university students. The result of the present study is congruent with the finding of Demirhan and Koklukaya (2013). It was also found that critical thinking disposition scores in subscales of truth-seeking and analyticity were in favor of female university students. The result is consistent with Cetinkaya (2011).

Therefore, to adapt sex difference in critical thinking disposition subscales of systematicity, truth-seeking, analyticity and self-confidence of students, educators and administrators should-

- Choose the teaching-learning activities that make their female students to use facts and logic in solving complex problems
- Encourage their male students to focus questions carefully before answering it

Critical Thinking Disposition of University Students by Grade: The result showed that there was no significant difference between third year and fourth year students in terms of grade. Similar result was found on the previous studies conducted by Profetto-McGrath (2003), Laird (2005) and Ozyurt (2015) that CTDs levels of students did not vary statistically significant by grade.

In comparing its subscales by grade, the subscale of systematicity is in favor of fourth year students when compared with third year students. This result is agreed with Coskun (2001)'s result (cited in Gulec, 2010).

Therefore, to adapt grade difference in critical thinking disposition subscale of systematicity, educators and administrators should-

- Take care of grade difference in their learning environment
- Provide different teaching-learning strategies that can develop reasoning and reflective capacity for students from all grade levels.

Critical Thinking Disposition of University Students by University: The result from the ANOVA showed that there was no significant difference in critical thinking disposition by university. But in the subscales of open-mindedness and analyticity, by Games-Howell method, students in university 1 and 5 had more open-mindedness than those in other universities. And, students in university 1 were found to be more analytical than the other universities.

Therefore, to adapt university differences in subscales of open-mindedness and analyticity, educators and administrators should-

- Take care of university difference in critical thinking disposition
- Provide their instructional strategies that can improve their students' thinking

Self-directed Learning Readiness of University Students: It was found that university students' readiness for self-directed learning was average level. The result supports the finding of Alfaifi (2006) that undergraduate students at Saudi Electronic University on Riyadh campus have an average level of self-directed learning readiness.

Therefore, some suggestions were discussed for learners, educators and administrators for improving the level of self-directed learning readiness. Learners should-

- Love to learn
- Be responsible for their learning

Educators and administrators should-

- Help students aware their roles in learning
- Allow individual learners to approach a task in different ways using different strategies
- Plan instructional strategies that could facilitate learners' own learning

Self-directed Learning Readiness of University Students by Gender: The result revealed that there was no significant difference in self-directed learning readiness by gender. Most of the studies have confirmed no significant difference in self-directed learning by gender (Roberts, 1986; Cox 2002; Carson, 2012; Alfaifi, 2016).

Self-directed Learning Readiness of University Students by Grade: The result indicated that there was no significant difference in self-directed learning readiness by grade. The present study is agreed with Kan'an and Osman (2015). Therefore, educators should provide different teaching-learning strategies that can develop all grade levels of students.

Self-directed Learning Readiness of University Students by University: The result indicated that there was no significant different in self-directed learning readiness by university.

Critical Thinking Disposition and Self-directed Learning Readiness: It was found statistically significant positive correlation between critical thinking disposition and self-directed learning readiness. This finding was consistent with the findings of studies conducted by Haksoon Cho (2007), Karatas & Basbay (2014) and Abd-Elmoghith, El-Aziz and Rashawn (2018).

In summary, it is hoped that the current study will support to the university learning environment by providing the basic information of critical thinking disposition and self-directed learning readiness.

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