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Developing Students' Self-Leadership and Students' Creativity in Zhanjiang, China

Le Kang*

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Abstract

Purpose: The study investigates the influence of five independent variables (Behavior Focused, Natural Reward, Constructive Thought, Self-Punishment, and Self-Talk) on two dependent variables (Self-Leadership and Creativity). Additionally, it aims to identify significant difference between variables. **Research design, data, and methodology:** The research employed the Index of Item-Objective Congruence (IOC) for validity and a Cronbach's Alpha in a pilot test (n=50) for reliability. 259 valid responses from students at Zhanjiang University of Science and Technology were analyzed by the multiple linear regression to verify the significant relationship between variables. Following this, a group of 30 students underwent a 14-week Intervention Design Implementation (IDI). Afterwards, the quantitative results from post-IDI and pre-IDI were analyzed in the paired-sample t-test for comparison. **Results:** In multiple linear regression, the study revealed that behavior focused, natural reward, constructive thought, and self-talk significantly impacted students' creativity, while self-punishment had no significant impact on creativity. Additionally, constructive thought and self-talk significantly impacted students' self-leadership, whereas behavior focused, natural reward, and self-punishment did not significantly impact self-leadership. Finally, the results from the paired-sample t-test for comparison demonstrated significant difference in both self-leadership and creativity between the post-IDI and pre-IDI stages. **Conclusions:** This research endeavors to foster students' creativity by cultivating their self-leadership skills in the context of Zhanjiang, China.

Keywords : Behavior Focused, Natural Reward, Self-leadership, Creativity, Intervention Design Implementation

JEL Classification Code: D9, I23, L2

1. Introduction

Zhanjiang University of Science and Technology (ZUST) students face four significant challenges that necessitate immediate and substantial improvements in their creativity. First, the unprecedented number of college graduates has intensified competition, demanding heightened creativity from graduates. Second, the Chinese government is actively promoting and supporting college students' creativity through national policies. Third, the global economic downturn resulting from the three-year COVID-19 pandemic has created a scarcity of job opportunities, making entrepreneurship a vital career path for college graduates. Finally, ZUST has introduced new policies aimed at fostering and stimulating students' creative endeavors.

ZUST already offers creativity and innovation courses such as "Introduction to Critical and Creative Thinking" and "Creative Thinking Training," which have been consistently taught since 2014. In order to assess the current state of creativity education, the researcher and two independent observers conducted classroom observations and randomly selected 15 students for interviews. This assessment revealed two key issues in the existing creativity education at ZUST: problems related to the quality of instruction in theoretical classes and issues concerning the practical aspects of these courses.

1*Le Kang, Ph.D. Candidate in Educational Administration and Leadership, Graduate School of Human Sciences, Assumption University, Thailand. Email: 1863771@qq.com

The need for action in this research can be considered from three key perspectives. Firstly, creativity has become an essential and urgent skill for contemporary university students. Secondly, ZUST's creativity and innovation courses suffer from several issues, both in theory and practice. Lastly, these courses not only fail to effectively enhance students' creativity but also give them a false sense of improvement, creating an illusion that their creative capabilities are developing as long as they follow the prescribed processes. Consequently, finding practical methods to enhance ZUST students' creativity promptly and effectively has become a pressing concern, one that necessitates careful consideration from both the ZUST management team and educators.

2. Literature Review

2.1 Self-leadership (SL)

The concept of self-leadership was originally introduced by Manz in 1986, defining it as a self-directed process through which individuals guide themselves to accomplish essential tasks, even when they may be unwilling to do so. This process is underpinned by three critical factors: willingly accepting a broader range of self-imposed demands, embracing heightened expectations for self-driven career pursuits, and assuming greater responsibilities for self-management. In the context of this research, self-leadership comprises five integral components: behavior focus, natural reward, constructive thought, self-punishment, and self-talk.

2.2 Creativity (C)

The concept of creativity was initially defined by Cropley in 1966, and it has since garnered extensive attention and scholarly contributions from numerous experts over the past several decades. In academic discourse, it is widely acknowledged that the generation of novel ideas and innovative behaviors is a symbiotic outcome of domain-specific skills and creativity-related capabilities, as articulated by Amabile in 1996. In the context of this research, this definition of creativity is adopted.

2.3 Behavior Focused (BF)

The concept of behavior focus, as initially defined by Manz in 2015, is characterized as a valuable tool for enhancing employees' self-awareness and effectively managing demanding yet less enjoyable tasks. Furthermore, Anderson and Prussia (1997) were the first to identify behavior focus as a central component of self-leadership, a widely accepted notion in academic circles for the past three decades. In the context of this research, behavior focus is integral and constitutes a key element of self-leadership.

Several empirical studies have supported the idea that behavior-focused strategies, as affirmed by Ghosh (2015) in alignment with Carmeli et al.'s (2006) findings, can serve as motivators for subordinates to become more creative and willingly embrace greater challenges. Additionally, Lin (2017) has underscored the role of behavior focus in fostering innovation by encouraging employee participation in innovative processes and emphasizing superiors' deliberate actions to promote desired behaviors while discouraging undesirable ones. This, in turn, cultivates creative thinking and performance among subordinates. Multiple researchers have consistently emphasized that the behavior focus dimension is a fundamental component of self-leadership, as observed in the works of Anderson and Prussia (1997), Houghton et al. (2004), and Manz and Neck (1995). Consequently, the following hypothesis is formulated:

H1: Behavior focused has a significant impact on students' creativity.

H6: Behavior focused has a significant impact on students' self-leadership.

2.4 Natural Reward (NR)

The concept of natural reward, originally delineated by Manz in 1986, revolves around strategies that shift individuals' focus toward enhancing their personal capabilities, self-management, and the attainment of goals. Furthermore, Anderson and Prussia (1997) were the first to identify natural reward as a fundamental component of self-leadership, a concept that has enjoyed widespread acceptance within academic circles for the past three decades. In the context of this research, natural reward is a pivotal element and represents a key factor within the self-leadership framework.

Researchers have asserted that the natural reward component of self-leadership exerts influence over the creative thoughts and actions of both superiors and subordinates. This assertion was substantiated through empirical studies involving 250 leaders and followers from six Israeli companies and institutions, as demonstrated by Carmeli et al. (2006). Moreover, Lin (2017) proposed that behavior focus and personal creative thoughts and actions can mutually influence one another, with natural reward serving as a moderating factor.

Multiple researchers have consistently emphasized the significance of natural reward as a key element and employed it as a variable in their empirical studies, as evidenced by the works of Lin (2017) and Marques-

Quinteiro et al. (2012). Consequently, the following hypothesis is presented:

H2: Natural reward has a significant impact on students' creativity.

H7: Natural reward has a significant impact on students' self-leadership.

2.5 Constructive Thought (CT)

Neck and Houghton (2006) have defined constructive thought as a sequence of psychological processes aimed at constructing effective and productive mental frameworks. This is achieved through engaging in constructive self-dialogue, envisioning potential accomplishments, and critically evaluating personal and social-related thoughts and assumptions. Furthermore, Anderson and Prussia (1997) were the first to include constructive thought as a fundamental element of self-leadership, a concept that has garnered widespread acceptance within academic circles over the past three decades.

Lin (2017) posited that individuals can enhance their capacity to creatively navigate challenging situations, as observed by Marques-Quinteiro et al. (2012), by actively monitoring their thoughts and assumptions. Other researchers, such as Neck and Houghton (2006), shared the viewpoint that constructive thought can facilitate the establishment of self-set goals and lead to improved innovative work outcomes. Additionally, researchers have emphasized that constructive thought can alter individuals' attitudes towards their thoughts and actions, fostering greater engagement in creative tasks and assignments by suppressing ineffective thoughts or ideas, as documented by Marques-Quinteiro et al. (2012).

Several researchers, including Carmeli et al. (2006), Ghosh (2015), Houghton and Neck (2002), and Lin (2017), have provided evidence that constructive thought, when combined with the other two independent variables, namely behavior focus and natural reward, comprises the dependent variable of self-leadership. This assertion has been substantiated through empirical studies. As a result, the following hypothesis is posited:

H3: Constructive thought has a significant impact on students' creativity.

H8: Constructive thought has a significant impact on students' self-leadership.

2.6 Self-Punishment (SP)

According to Politis (2006), self-punishment refers to the process of individuals modifying their own behaviors by harnessing feelings of regret when confronted with unexpected or unsuccessful situations.

Ko and Butler (2007) put forth the argument that entrepreneurs, often closely associated with creativity and innovation, may grapple with issues related to authority stemming from childhood trauma. They suggested that self-punishment could be linked to negative experiences with parents who were perceived as neglectful or punitive.

Neubert and Wu (2006) contended that self-punishment directly influenced self-leadership, which constitutes a fundamental component of self-leadership. These assertions were corroborated by Chung et al. (2011), who conducted empirical research in 20 different companies and institutions to validate these theories.

Furthermore, Ho and Nesbit (2009) shared similar viewpoints and conducted an empirical study involving hundreds of Hong Kong community college students. As a result, the following hypothesis is proposed:

H4: Self-punishment has a significant impact on students' creativity.

H9: Self-punishment has a significant impact on students' self-leadership.

2.7 Self-talk (ST)

The concept of self-talk, as originally defined by Ellis in 1962, pertains to the personal and private inner dialogues that individuals hold exclusively with themselves. Rogelberg et al. (2013) conducted a series of empirical studies, revealing significant variations in the utilization of self-talk among managers. Subsequently, they demonstrated that positive self-talk had a pronounced impact on leadership and creativity for both leaders and their followers, with reciprocal effects noted. In a similar vein, Lin (2017) cited that self-talk has the potential to enhance an individual's awareness of ambitious and challenging tasks, including innovative assignments, consequently directing their focus toward creative thinking and motivating forces, as corroborated by Marques-Quinteiro et al. (2012).

Neck (1996) proposed that, in conjunction with three other independent variables, self-talk serves as a cornerstone of self-leadership. To support this notion, the researcher conducted empirical studies involving 48 workers in the aviation industry. An increasing number of researchers, including Alnakhli et al. (2020) and Neubert and Wu (2006), have underscored that self-talk exerts a direct influence on self-leadership and is a pivotal component of the self-

leadership framework. Consequently, the following hypothesis is presented:
H5: Self-talk has a significant impact on students' creativity.
H10: Self-talk has a significant impact on students' self-leadership.

3. Research Methods and Materials

3.1 Research Framework

Researcher applied three model theories from Houghton and Neck (2002), Neubert and Wu (2006), and a linking model connecting empowering leadership, creativity and self-leadership (Amundsen & Martinsen, 2015). All three theoretical frameworks mentioned above supported and developed conceptual framework in Figure 1.

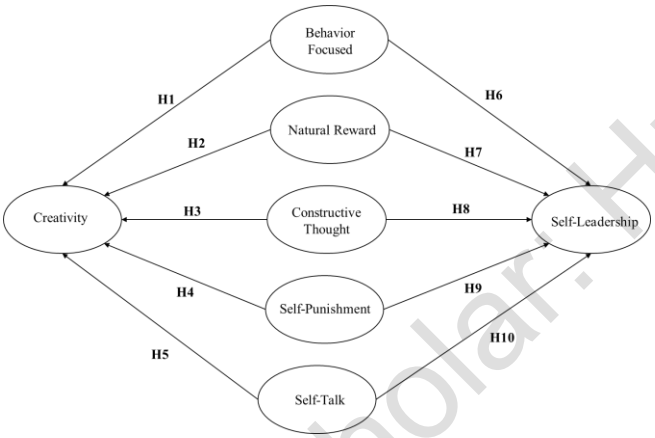

Figure 1: Conceptual Framework

H1: Behavior focused has a significant impact on students' creativity.
H2: Natural reward has a significant impact on students' creativity.
H3: Constructive thought has a significant impact on students' creativity.
H4: Self-Punishment has a significant impact on students' creativity.
H5: Self-talk has a significant impact on students' creativity.
H6: Behavior focused has a significant impact on students' self-leadership.
H7: Natural reward has a significant impact on students' self-leadership.
H8: Constructive thought has a significant impact on students' self-leadership.
H9: Self-punishment has a significant impact on students' self-leadership.
H10: Self-talk has a significant impact on students' self-leadership.

3.2 Research Methodology

The research process comprises four distinct stages. Initially, the entire research population (n=271) was surveyed to collect data for the proposed conceptual framework. Subsequently, all hypotheses underwent rigorous testing using multiple linear regression to determine their significance at a p-value threshold of < 0.05. As a result, hypotheses that received support were retained, while those that did not meet the criteria were eliminated.

The second stage involved conducting pre-IDI surveys on the remaining population of 271 students within the supported hypotheses. Following this, the third stage introduced the Intervention Design Implementation (IDI), which was specifically implemented with 30 participants.

In the final stage, 30 IDI participants completed a survey, generating the necessary data for conducting a paired-sample t-test analysis to compare the pre-IDI and post-IDI results. This comprehensive process allowed for a thorough examination of the research's objectives and hypotheses.

Top of Form

3.3 Research Population, Sample Size, and Sampling Procedures

3.3.1 Research Population

Researcher selected 271 ZUST students as research population to implement pre-survey. According to ZUST (2022), there were around 21,000 students and this research proportion accounted for 1.29% of the total student population. Students from different year, which were class 1 and class 2 students from Year 2, class 3, class 4 and class 5 students from Year 3, and class 6 and class 7 students from Year 4. Totally, there were 271 ZUST students received questionnaire on printed paper. Afterward, researcher checked all responses and confirmed that 259 responses were valid.

3.3.2 Sample size

Researcher implemented pilot survey to 50 students randomly and verified reliability by pilot test. Afterward, researcher identified 271 ZUST students as research population and gained 259 valid responses, and then researcher investigated through multiple linear regression, identifying relationship between independent variables and dependent variables. Finally, researcher selected 30 voluntary students who were involved in IDI intervention stage.

3.3.3 Sampling Procedures

Researcher conducted several sampling and relating sampling procedures were as follow:

Sampling 1: Sampling for pilot survey and pilot test

Researcher sampled 50 students randomly by asking students to fill the survey questionnaire and to give feedback for pilot survey and pilot test.

Sampling 2: Sampling for Pre-survey

Researcher sampled 271 ZUST students from different student year for pre-survey by distributing survey questionnaire on printed paper. Afterward, researcher checked all responses and confirmed that 259 responses were valid.

Sampling 3: Sampling for IDI

Researcher randomly selected and sampled 30 voluntary students to implement IDI.

3.4. Research Instruments

3.4.1 Design of Questionnaire

Researcher designed survey questionnaire by following three steps.

Step1: Identifying questionnaire sources from three openly published articles (Amundsen & Martinsen, 2015; Houghton & Neck, 2002; Neubert & Wu, 2006)

Step2: Adjusting and Presenting survey questionnaires on Chinese university students Context.

Step3: Implementing IOC.

3.4.2 Components of Questionnaire

Survey questionnaire items were composed by following three parts:

Part 1: Screening Questions. There were screening questions to filter out non-research population.

Part 2: Basic info Questions. There were questions to gain basic info of research population including gender, age, birthplace and so on.

Part 3: Pre-survey Questions. There were questions for pre-survey to find out current level of IV and DV to total 271 ZUST students.

3.4.3 IOC Results

Researcher invited five independent experts or scholars or doctors to implement IOC (Index of item-objective congruence) , and one of them was Thai professor and the other four were Chinese professors. In this IOC process, independent experts or scholars or doctors marked +1 for Congruent, 0 for Questionable, and -1 for Incongruent. In this research, all questionnaire items were greater than 0.67, so researcher retained all questionnaire items.

3.4.4 Pilot survey and Pilot test results

Researcher implemented pilot survey to 50 students randomly by asking them to fill the survey questionnaire, and to give feedback. Afterward, researcher implemented Cronbach's Alpha's internal consistency reliability test, which values should be equal to or greater than 0.7 (Nunnally & Bernstein, 1994). Therefore, below table demonstrated the approved results for high reliability of each construct.

Table 1: Pilot Test Result

Variables	No. of Items	Sources	Cronbach's Alpha	Strength of Association
Behavior Focused (BF)	5	Houghton and Neck (2002)	0.743	Good
Natural Reward (NR)	5	Houghton and Neck (2002)	0.832	Very Good
Constructive Thought (CT)	5	Houghton and Neck (2002)	0.770	Good
Self-Punishment (SP)	4	Neubert and Wu (2006)	0.749	Good
Self-Talk (ST)	3	Neubert and Wu (2006)	0.871	Very Good
Self-Leadership (SL)	5	Amundsen and Martinsen (2015)	0.904	Excellent
Creativity (C)	5	Amundsen and Martinsen (2015)	0.738	Good

4. Results and Discussion

4.1 Results

4.1.1 Demographic Profile

Researcher demonstrated demographic profile of entire research population (n=259), followed by selected students' group (n=30), who participated IDI as shown in Table 2.

Table 2: Demographic Profile

Entire Research Population (n=259)		Frequency	Percent
Gender	Male	123	47.49%
	Female	136	52.51%
Year	First Year	0	0.00%
	Second Year	72	27.80%
	Third Year	109	42.08%

Entire Research Population (n=259)		Frequency	Percent
	Fourth Year	78	30.12%
Age	17	4	1.54%
	18	20	7.72%
	19	66	25.48%
	20	69	26.64%
	21	61	23.55%
	22	18	6.95%
	23	14	5.41%
	24	5	1.93%
	25	2	0.77%
Birthplace	GD	124	47.88%
	HI	32	12.36%
	GX	34	13.13%
	HN	21	8.11%
	HB	23	8.88%
	XJ	1	0.39%
	YN	6	2.32%
	JX	7	2.70%
	SC	5	1.93%
	FJ	4	1.54%
	GZ	2	0.77%
Total		**259**	**100%**
IDI Participants (n=30)		**Frequency**	**Percent**
Gender	Male	12	40.00%
	Female	18	60.00%
Year	First Year	0	0
	Second Year	30	100.00%
	Third Year	0	0
	Fourth Year	0	0
Age	19	9	30.00%
	20	14	46.67%
	21	7	23.33%
Birthplace	GD	17	56.67%
	GX	5	16.67%
	HN	4	13.33%
	HB	1	3.33%
	SC	1	3.33%
	FJ	1	3.33%
	GZ	1	3.33%
Total		**30**	**100%**

4.1.2 Results of multiple linear regression

Researcher conducted Multiple Linear Regression (MLR) to total 259 survey questionnaire results and found out whether each hypothesis was supported. Totally, there were ten research hypotheses, among which the first five hypotheses were related to Dependent Variable Creativity (C), and the last five hypotheses were related to Dependent Variable Self-leadership (SL). Based on the variance inflation factor (VIF) analysis, it can be concluded that multicollinearity is not a concern since the VIF value is below 5 (Hair et al., 1995). The R-squared (R^2) in a multiple linear regression model with five independent variables can account for 48.6% of the variability in creativity. Additionally, in the context of a multiple linear regression model with the same set of five independent variables, the R-squared value is 21.8%, indicating its ability to explain the variance in self-leadership.

Table 3: The multiple linear regression of five independent variables on creativity

Variables	Standardized Coefficients Beta value	t-value	p-value	VIF	R^2
Behavior Focused (BF)	0.1094	2	0.047*	1.48	0.486
Natural Reward (NR)	0.1013	2.1	0.037*	1.15	
Constructive Thought (CT)	0.2466	4.34	< 0.001 *	1.59	
Self-Punishment (SP)	0.0892	1.56	0.119	1.60	
Self-Talk (ST)	0.3625	6.15	< 0.001 *	1.71	

Note: p-value <0.05*

Table 4: The multiple linear results of five independent variables on self-leadership

Variables	Standardized Coefficients Beta value	t-value	p-value	VIF	R^2
Behavior Focused (BF)	-0.0544	-0.805	0.422	1.48	0.218
Natural Reward (NR)	0.0586	0.983	0.327	1.15	
Constructive Thought (CT)	0.2248	3.209	0.002*	1.59	
Self-Punishment (SP)	0.1101	1.564	0.119	1.60	
Self-Talk (ST)	0.2347	3.226	0.001*	1.71	

Note: p-value <0.05*

In sum, for the first five hypotheses, H1, H2, H3 and H5 were supported, while H4 was not supported. Meanwhile, for the last five hypotheses, H8 and H10 were supported, while H6, H7 and H9 were not supported. Among all those hypotheses were not supported, Self-Punishment (SP) had no significant impact both on Students' Creativity (C) and on

Students' Self-leadership (SL), which meant Self-Punishment (SP) as an independent variable had no significant impact on both dependent variables. In these circumstances, researcher removed independent variable Self-Punishment (SP) and made relating adjustments. Therefore, the hypotheses were developed in stage based on multiple linear regression analysis's results. Afterwards, IDI was conducted to follow below hypotheses:

H11: There is a significant mean difference in behavior focused between pre-IDI and post-IDI.

H12: There is a significant mean difference in natural reward between pre-IDI and post-IDI.

H13: There is a significant mean difference in constructive thought between pre-IDI and post-IDI.

H14: There is a significant mean difference in self-talk between pre-IDI and post-IDI.

H15: There is a significant mean difference in creativity between pre-IDI and post-IDI.

H16: There is a significant mean difference in students' self-leadership between pre-IDI and post-IDI.

4.2 IDI Intervention Stage

The IDI Intervention plan lasted for 14 weeks and based on quantitative and qualitative data collected at pre-IDI stage to achieve the purpose of this research, which was developing students' self-leadership to enhance students' creativity. Researcher illustrated IDI intervention in chronological order, as illustrated in Figure 2.

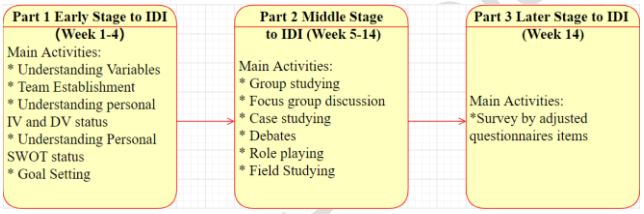

Figure 2: IDI Activities

4.3 Results Comparison between Pre-IDI and Post-IDI

Researcher implemented paired-sample t-test analysis on all six variables to identified whether there were any differences between Students' Self-leadership and Students' Creativity between the pre-IDI and post-IDI phases. Totally, the below tables to illustrate paired-sample t-test analysis on six variables as follow:

Table 5: Paired-Sample T-Test Results

Variables	Mean	SD	SE	p-value
Behavior Focused				
Pre-IDI	4.07	0.4498	0.0821	p<0.001
Post-IDI	4.97	0.0800	0.0138	
Nature Reward				
Pre-IDI	3.78	0.5738	0.1048	p<0.001
Post-IDI	4.96	0.0814	0.0149	
Constructive Thought				
Pre-IDI	4.05	0.4840	0.0884	p<0.001
Post-IDI	4.97	0.0758	0.0138	
Self-Talk				
Pre-IDI	4.38	0.5722	0.1045	p<0.001
Post-IDI	4.97	0.1017	0.0186	
Creativity				
Pre-IDI	3.75	0.4023	0.0735	p<0.001
Post-IDI	4.98	0.0610	0.0111	
Self-Leadership				
Pre-IDI	3.63	0.3754	0.0685	p<0.001
Post-IDI	4.97	0.0758	0.0138	

Table 5 illustrated the results of paired-sample t-test analysis of pre-IDI and post-IDI comparison per follows:

There was a significant increase in Behavior Focused between post-IDI (M=4.97, SD=0.08, SE=0.0138) stage and pre-IDI stage (M=4.07, SD=0.4498, SE=0.0821) , while P<0.001 and mean value difference between post-IDI stage and Pre-IDI stage was 0.9. Therefore, H11 was supported that there is a significant mean difference in behavior focused between pre-IDI and post-IDI.

There was a significant increase in Nature Reward between post-IDI (M=4.96, SD=0.0814, SE=0.0149) stage and pre-IDI stage (M=3.78, SD=0.5738, SE=0.1048) , while P<0.001 and mean value difference between post-IDI stage and pre-IDI stage was 1.18. Therefore, H12 was supported that there is a significant mean difference in nature reward between pre-IDI and post-IDI.

There was a significant increase in Constructive Thought between post-IDI (M=4.97, SD=0.0758, SE=0.0138) stage and pre-IDI stage (M=4.05, SD=0.4840, SE=0.0884), while P<0.001 and mean value difference between post-IDI stage and pre-IDI stage was 0.92. Therefore, H13 was supported

that there is a significant mean difference in constructive thought between pre-IDI and post-IDI.

There was a significant increase in Self-Talk between post-IDI (M=4.97, SD=0.1017, SE=0.0186) stage and pre-IDI stage (M=4.38, SD=0.5722, SE=0.1045), while P<0.001 and mean value difference between post-IDI stage and pre-IDI stage was 0.59. Therefore, H14 was supported that there is a significant mean difference in self-talk between pre-IDI and post-IDI.

There was a significant increase in Creativity between post-IDI (M=4.98, SD=0.0610, SE=0.0111) stage and pre-IDI stage (M=3.75, SD=0.4023, SE=0.0735), while P<0.001 and mean value difference between post-IDI stage and pre-IDI stage was 1.23. Therefore, H15 was supported that there is a significant mean difference in creativity between pre-IDI and post-IDI.

There was a significant increase in Self-Leadership between post-IDI (M=4.97, SD=0.0758, SE=0.0138) stage and pre-IDI stage (M=3.63, SD=0.3754, SE=0.0685), while P<0.001 and mean value difference between post-IDI stage and pre-IDI stage was 1.34. Therefore, H16 was supported that there is a significant mean difference in self-leadership between pre-IDI and post-IDI.

According to paired-sample t-test results demonstrated above; researcher came up with following conclusions. First, all six variables had significant mean difference between post-IDI stage and pre-IDI stage. Second, researcher found out that there was significant increase on Students' Self-leadership and Students' Creativity between the pre-IDI and post-IDI phases.

5. Conclusions, Recommendations and Limitations

5.1 Conclusions & Discussions

The study investigated the influence of five independent variables, namely behavior focused, natural reward, constructive thought, self-punishment, and self-talk, on two dependent variables, self-leadership and creativity. The research employed a comprehensive research design, data collection, and methodology to draw meaningful conclusions.

The research design incorporated the use of the Index of Item-Objective Congruence (IOC) for validity and Cronbach's Alpha in a pilot test to ensure the reliability of the measurement instruments. This rigorous approach to measurement strengthened the credibility of the research. Data were collected from 259 valid responses from students at Zhanjiang University of Science and Technology and were subjected to multiple linear regression analysis to verify the significant relationships between the independent and dependent variables. Moreover, a 14-week Intervention Design Implementation (IDI) was carried out with 30 selected students' group. Post-ID data were collected and compared with pre-ID data using paired-sample t-test.

The results of the study demonstrated that certain factors significantly impacted students' self-leadership and creativity. specifically, behavior focused, natural reward, constructive thought, and self-talk were found to significantly influence students' creativity. On the other hand, self-punishment did not have a significant impact on creativity. this suggests that focusing on positive behaviors, intrinsic rewards, constructive thinking, and effective self-talk can enhance creativity among students.

In terms of self-leadership, the study revealed that Constructive Thought and Self-Talk had a significant impact, indicating that these variables play a crucial role in shaping students' self-leadership skills. However, behavior focused, natural reward, and self-punishment did not significantly affect self-leadership. This suggests that fostering self-leadership may require a focus on nurturing constructive thinking and self-encouragement.

The findings from the paired-sample t-test for comparison showed a significant difference in both self-leadership and creativity between the post-ID and pre-ID stages. This suggests that the 14-week Intervention Design Implementation had a positive and statistically significant impact on students' self-leadership skills and creativity.

These findings suggest that educational strategies at ZUST should focus on promoting intrinsic motivation and providing opportunities for autonomous learning and exploration. By emphasizing the intrinsic value of tasks and encouraging students to engage in self-directed learning, instructors can enhance students' creativity.

The results highlight the importance of integrating cognitive-behavioral techniques into creativity education at ZUST. By teaching students' strategies for managing their thoughts and self-talk, instructors can empower them to overcome obstacles and enhance their creative abilities. Additionally, incorporating self-leadership training into the curriculum can help students develop the skills needed to effectively manage themselves and others in creative endeavors.

These findings challenge the traditional approach to discipline and motivation in education. Instead of focusing on punishment and extrinsic rewards, instructors at ZUST should emphasize positive reinforcement and autonomy support to foster creativity and self-leadership. By creating a supportive and empowering learning environment, educators can facilitate students' intrinsic motivation and creativity.

In conclusion, this research has made a valuable contribution by demonstrating the potential to foster students' creativity by cultivating their self-leadership skills in the context of Zhanjiang, China. The study's robust methodology, comprehensive analysis, and practical

implications offer insights into the factors that can enhance creativity and self-leadership among students. These findings can be used to inform educational strategies and interventions aimed at developing these vital skills in students, ultimately preparing them for success in an increasingly competitive and innovative world.

5.2 Recommendations

The quest for nurturing creativity and self-leadership skills among students has never been more pertinent. In light of a recent study that investigated the influence of several key variables on students' self-leadership and creativity, there is a growing body of knowledge to inform educational institutions on how to better prepare their students for success in a competitive and innovative world. In this essay, we will explore a set of recommendations derived from the study's findings, aiming to foster students' creativity and self-leadership.

One of the primary recommendations that emerge from the study is the incorporation of self-leadership training as part of the curriculum. Educational institutions, including Zhanjiang University of Science and Technology, can introduce courses or workshops designed to develop constructive thought patterns and effective self-talk among students. By integrating self-leadership principles into the curriculum, students will be equipped with the skills to take charge of their own learning and personal development.

Behavior-focused approaches can significantly impact students' self-leadership and creativity. It is crucial for educational institutions to encourage students to adopt proactive behaviors that lead to positive outcomes. Workshops, seminars, or courses can be organized to help students set and achieve personal and academic goals through proactive behavior. This empowers them to take control of their actions and decisions.

The study underscores the importance of intrinsic rewards. Educators should emphasize the satisfaction and sense of accomplishment that come from mastering new skills and knowledge. By encouraging students to focus on intrinsic motivation, rather than relying solely on external rewards, institutions can foster a more enduring passion for learning and creative thinking.

Constructive thought and self-talk play a vital role in students' mental health and well-being. Institutions should recognize this and offer counseling services or mental health programs to help students develop a more positive and constructive internal dialogue. A supportive and healthy mindset is a foundation for self-leadership and creative thinking.

Regular assessments and monitoring of students' self-leadership and creativity are essential. By implementing ongoing evaluations, institutions can identify areas where students may be struggling and provide targeted interventions. This approach ensures that the development of these skills remains a priority.

Educators and faculty members play a pivotal role in shaping students' self-leadership and creativity. Therefore, it is essential to provide training for faculty in techniques and strategies that promote these skills. Workshops can focus on fostering a growth mindset, creating a positive learning environment, and delivering constructive feedback to students.

Peer mentoring and support programs can be established within the educational environment. Experienced students can serve as mentors, guiding their peers in developing self-leadership skills and enhancing creativity. Learning from peers who have successfully navigated similar challenges can be highly beneficial.

In conclusion, the findings of the study provide valuable insights for educational institutions seeking to cultivate creativity and self-leadership among their students. By implementing these recommendations, institutions can create a holistic and supportive learning environment that empowers students to take charge of their own development and enhances their creative thinking. The proactive integration of self-leadership training, the promotion of positive behaviors, and the emphasis on intrinsic rewards can collectively prepare students to thrive in a competitive and innovative world. It is incumbent upon educational institutions to embrace these recommendations and equip their students with the skills necessary for success and personal growth.

5.3 Limitations for Future Research

While the study on the influence of independent variables on students' self-leadership and creativity offers valuable insights, it's essential to acknowledge its limitations to guide future research in this area. These limitations suggest potential avenues for further investigation and research refinement:

Sample Size and Demographics: The study focused on a specific group of students from Zhanjiang University of Science and Technology. Future research should aim to diversify the sample by including students from various educational backgrounds, age groups, and cultural contexts to assess the generalizability of the findings.

Variables and Relationships: The study focused on five specific independent variables and two dependent variables. Future research could explore additional independent variables and their potential interactions, offering a more

holistic view of the factors influencing self-leadership and creativity.

Intervention Design: The study implemented a specific intervention program. Future research should explore alternative intervention designs, allowing for a comparison of the effectiveness of different strategies in enhancing self-leadership and creativity.

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