Macrothink Institute™

Journal of Educational Issues
ISSN 2377-2263
2022, Vol. 8, No. 2

A Study and Compare the Futuristic Thinking of Grade 9 Students in Schools of Different Sizes

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Received: June 30, 2022 Accepted: August 17, 2022 Published: August 25, 2022

doi:10.5296/jei.v8i2.20129 URL: https://doi.org/10.5296/jei.v8i2.20129

Abstract

The research aimed at studying and comparing the futuristic thinking of Grade 9 students studying in schools of different sizes. The samples of the research were Grade 9 students of semester 2 in academic year 2020 in Sisaket Province, Thailand. The multi-stage random sampling technique was employed for the selection of 860 students from 12 schools: 216 students were from extra-large-sized, 160 from large-sized, 302 from medium-sized, and 182 from small-sized schools. The instrument used in the research was a 15 item-5-point Likert scale futuristic test. The validity (IOC) ranged from 0.32 to 0.75, Item Total Correlation from 0.57 to 0.75, and reliability value was 0.94. The data was analyzed using Mean, Standard Deviation (S.D.), One way ANOVA, and Scheffe' method. The results showed that 1) Grade 9 students' futuristic thinking was at high level in both overall and individual aspect; 2) Grade 9 students studying in schools of different sizes had different levels of futuristic thinking at the .05 level of statistical significance. Students from extra-large-sized schools had higher level of futuristic thinking than those from medium-sized ones. For those students who were in large schools had higher futuristic thinking levels than the ones in medium and small-sized schools, with a statistical significance of .05 level. The other pairs were not different.

Keywords: Futuristic thinking, School size, Grade 9 students

1. Introduction

1.1 Introduce the Problem

Futuristic thinking means anticipation of what the future might hold. It also refers to foreseeing the good and bad that will happen and take what has been forecasted into use. In an educational context, futuristic thinking is essential because it encourages students to look into the future, practice their problem-solving capabilities, promote the abilities in writing, the use of language in communication, the knowledge of creative thinking, the ability to work in groups, and critical thinking. In addition, futuristic thinking helps students prepare themselves for adaptation, make decisions for a better future, and increase awareness of how to adjust and have vision; they can connect themselves with a rapidly changing world. It is crucial especially to children, as stated by Caza, O'Brien, Cassidy, Ziani-Bey, and Atance (2021), "Future-oriented thought is ubiquitous in humans but challenging to study in children". Having more or less futuristic thinking depends on both internal and external factors, especially the environment and context of the schools, e.g., the availability of resources, the number of teachers, teaching efficiency, and the budget for projects to support students in various fields. In the context of Thailand, sizes of schools are taken into consideration because the budget from the government is allocated accordingly to the number of students in the schools. Therefore, schools with a large number of students get more budgets and sufficient resources. On the other hand, the budget allocated for schools with a small number of students is quite limited. Obviously, the lack of resources affects the quality of students as found in the study of Lucy Prior, Harvey Goldstein & George Leckie (2021) that it is very different academic outcomes, in terms of the size of school effects. Such problem may also lead to dropping out rates. According to Ambrose, Amy R., George W. Moore, John R. Slate, Cynthia Martinez-Garcia (2017), lower academic achievement can lead to high number of dropouts, especially for students in poverty. Consequently, the researcher was interested in studying futuristic thinking of grade 9 students and comparing whether students studying in schools of different sizes have different futuristic thinking levels. It is essential to provide policy recommendations at different levels in order to plan, develop, and modify strategies to promote students' development equally.

1.2 Research Objectives

The research objectives were to study Grade 9 students' futuristic thinking and compare the futuristic thinking levels of those students studying in schools of different sizes.

1.3 Research Hypothesis

Grade 9 students studying in schools of different sizes have different levels of futuristic thinking.

2. Method

2.1 Population and Sample

The population was 6,798 Grade 9 students from 56 schools studying in the 2nd semester of the academic year 2020 in Sisaket and Yasothon Provinces, Thailand. The sizes of schools

were extra-large, large, medium, and small. The sample of this research included 860 Grade 9 students of semester 2 in the academic year 2020 studying in Sisaket and Yasothon. The multi-stage random sampling technique randomly was used to select students from 12 schools. Those 216 students were from extra-large-sized schools, 160 large-sized, 302 from medium-sized, and 182 from small-sized schools.

2.2 Research Instruments

The instrument used in the research was a 15 item-5-point Likert scale questionnaire on futuristic thinking. It was divided into five areas: relationship, continuity, reasonableness, balance, and imagination. The scoring criteria were: 5—meaning that the given statement corresponded to the students' agreement at the highest level; 4—at high level; 3—at moderate level, 2—at low level; and 1—at the lowest level. The interpretation of the means of the scores was set as the followings. 4.51-5.00: the students had the highest level of futuristic thinking; 3.51-4.50: high level of futuristic thinking; 2.51-3.50: a moderate level of futuristic thinking; 1.51-2.50: a low level of futuristic thinking; and 1.00-1.50: the lowest level of futuristic thinking. The procedures of creating and verifying the quality of the research instrument were: (1) The purpose of creating the questionnaire was determined; (2) Concepts, theories, and related research to define an operational definition were studied; (3) A 5-point Likert scale questionnaire on futuristic thinking was constructed; (4) 5 experts verified the content validity of the questionnaire items which based on the index of consistency (IOC). (5) According to the experts, the IOC values ranged from 0.32 to 0.75 and the items with the IOC that equaled or higher than .50 were selected and improved before trying out; (6) The revised questionnaire was tried out with 30 Grade 9 students in the same population but not the sample group; (7) The analysis of discrimination between item total correlation was carried out by selecting the items that had a positive correlation to the total score at the .05 level of statistical significance. The values ranged from .57 to .75 and all of the items were statistically significant; (8) Cronbach's Alpha Coefficient method was employed for reliability analysis. The value found was .94; and (9) The questionnaire was printed and distributed.

2.3 Data Collection

(1) Letters of request for data collection were sent from the Faculty of Education, Mahasarakham University to the school directors, giving the guidelines for collecting data with the sample group. (2) The heads of the schools' academic department were contacted to set up the date and time to collect the data. (3) Sufficient number of questionnaires were prepared to be used. (4) Data were collected on the appointed date and time. (5) The received questionnaires were checked and coded in order to obtain data for analysis.

2.3 Data Analysis

The collected data were analyzed using Mean, Standard Deviation (S.D.), One-way ANOVA, and Scheffe' method.

3. Results

3.1 Part 1: The Results of the Study of the Level of Futuristic Thinking of Grade 9 Students as in Table 1

Table 1. Mean and standard deviation of futuristic thinking among Grade 9 students

Futuristic thinking (FTT)	Mean	S.D.	Level of Future Thinking
1. Relationship (FTT1)	4.27	.67	High
2. Continuity (FTT2)	4.10	.64	High
3. Reasonableness (FTT3)	4.15	.62	High
4. Balance (FTT4)	4.22	.66	High
5. Imagination (FTT5)	4.25	.65	High
Total	4.20	.54	High

From Table 1, futuristic thinking of Grade 9 students was at high level in both overall and individual aspect.

3.2 Part 2: Comparative Results of Futuristic Thinking of Grade 9 Students Studying in Schools of Different Sizes as Shown in Tables 2-4

Table 2. Mean and Standard Deviation of futuristic thinking classified by school size

Size		FTT1	FTT2	FTT3	FTT4	FTT5	FTT
1	Mean	4.36	4.17	4.15	4.27	4.27	4.25
	n	216	216	216	216	216	216
	Std. Deviation	.62	.59	.54	.62	.55	.49
2	Mean	4.44	4.26	4.34	4.39	4.38	4.36
	n	160	160	160	160	160	160
	Std. Deviation	.54	.57	.51	.58	.54	.43
3	Mean	4.17	3.99	4.06	4.12	4.17	4.11
	n	302	302	302	302	302	302
	Std. Deviation	.73	.69	.69	.71	.73	.59
4	Mean	4.16	4.02	4.11	4.18	4.23	4.14
	n	182	182	182	182	182	182
	Std. Deviation	.68	.65	.64	.67	.67	.58
Total	Mean	4.27	4.09	4.15	4.22	4.25	4.20
	n	860	860	860	860	860	860
	Std. Deviation	.66	.64	.62	.67	.65	.54

Note. 1 for extra-large-sized, 2 for large-sized, 3 for medium-sized, and 4 for small-sized schools.

Table 3. Comparative results of futuristic thinking among Grade 9 students who studied in schools of different sizes

Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.833	3	2.611	9.082	< .05
Within Groups	246.087	856	.287		
Total	253.920	859			

Table 3 shows that Grade 9 students studying in schools of different sizes have different levels of futuristic thinking at .05 level of statistical significance. The results of multiple comparisons are shown in Table 4.

Table 4. Multiple comparison result

(I) Size	(J) Size	Mean Difference (I-J)	Std. Error	Sig.
1	2	-.11987	.05593	.205
	3	.13654*	.04778	.043
	4	.09833	.05395	.345
2	1	.11987	.05593	.205
	3	.25641*	.05243	< .001
	4	.21820*	.05811	.003
3	1	-.13654*	.04778	.043
	2	-.25641*	.05243	< .001
	4	-.03821	.05031	.902
4	1	-.09833	.05395	.345
	2	-.21820*	.05811	.003
	3	.03821	.05031	.902

Table 4 demonstrates that students studying in extra-large-sized schools had higher futuristic thinking levels than those in medium-sized ones. Also, students studying in large-sized schools had higher futuristic thinking levels than those in medium-sized and small-sized ones with statistically significant at the .05 level, while the other pairs were not different.

4. Discussion

(1) From the research finding, it indicates that the Grade 9 students have futuristic thinking at a high level in both overall and individual aspect. When the average of each aspect is considered, it shows that the 'relationship' aspect has the highest mean, whereas the 'continuity' aspect has the lowest mean. This is because 'relationship' is the ability to view the interrelationships of factors that affect the future of a matter from all sides. It also refers to the ability to realize that everything in the world is interdependent and has rational relationships to each other. The population of the research includes Grade 9 high school students who are about to graduate from a compulsory school education and are becoming late adolescents. They have had quite a lot of experiences to be able to connect things well. The lowest mean of futuristic thinking fell on the 'continuity' aspect, which refers to the ability to predict a sequence of events or situations in order to be able to fix problems. It can be said that students in Grade 9, even they are in their last year of the basic education, but they may not face enough problems to solve. It is so because, at this age, they tend to receive care and problems are solved by their parents. However, futuristic thinking should be developed in all aspects but may have different focuses in different contexts. Teachers need to adjust their learning management and give more practices to reflect future issues. It is in line with the study of Laherto and Rasa (2022) stating that future-oriented science learning activities involving systems thinking, scenario development, and back casting can let students broaden their futures perceptions, imagine alternatives and navigate uncertainty. The study by Taylor and Jones (2020) has also found that the value of future-oriented dioramas is for developing climate-change understanding and future thinking. In addition, the study by Rasa, Palmgren, and Laherto (2020) also indicates that students perceive the future and technological development are not only more positive but are also more unpredictable. They see their possibilities for agency as clearer and more promising and feel a deeper connection to the otherwise vague idea of futures.

(2) It is found that Grade 9 students studying in schools of different sizes have different levels of futuristic thinking with statistical significance at the .05 level. It shows that students studying in extra-large-sized schools have higher futuristic thinking levels than those studying in medium-sized ones. Also, students studying in large-sized schools had higher futuristic levels than those who are in the medium-sized and small-sized schools with statistical significance at the .05 level. The other pairs are not different. It can be stated that school sizes affect students' levels of futuristic thinking. This is also supported by the research of Busby and John (2020), which has found that the students of large-sized schools had higher reading and mathematics progress rates than those of small-sized schools. This is because in the context of small and medium-sized schools, there are quite several constraints on resources such as human resources, materials, equipment, and budget, which affect the management of the quality of education including thinking skills. The lack of teachers or the heavy teaching loads of teachers in small and medium-sized schools hinder the design of extra-curricular activities to develop students' thinking skills. The fact that the medium-sized and small-sized schools encountering a shortage of teachers results from the criteria used to determine the ratio of teachers to the number of students. In the case of budgets, small-sized

and medium-sized schools get less budgets than the large and extra-large-sized schools. The government provides budgets accordingly to the number of students. Therefore, small and medium-sized schools often face problems with insufficient funds and being unable to organize projects to promote students' skills. Moreover, small and medium-sized schools are often located in the communities that have less participation with the schools and in mobilizing resources. However, small-sized schools with such restrictions have their strengths; for example, smaller schools with parent volunteers have a positive effect on school safety (Daniel & Angran, 2021) because they can take care of their students thoroughly. Edward, Nathalie, and Victor (2019) also mention that small-sized schools can have a positive impact on school culture, which is consistent with the study of Ekanem (2013), which indicates that a small-sized class is an important factor for parents to send their children to that school. Although the present research has shown that larger schools encourage students to have higher futuristic thinking level than smaller schools, large-sized schools also need to be vigilant in other matters, such as learners' behaviors. The study of Chen and Vazsonyi (2013) confirm that adolescents from large-sized schools are reported to have higher levels of problem behaviors than the same age students from small-sized schools.

5. Recommendation

5.1 Research Implications

As found in the research that Grade 9 students studying in small-sized and medium-sized schools had lower levels of futuristic thinking than those in large-sized and extra-large-sized schools, it is necessary that involved people must focus on and find ways to promote, in particular, providing sufficient resources and organizing various and continuous activities that promote futuristic thinking. Importantly, development methods must be diversified within a given context without using the same policies or strategies. This is in line with Christian, Daniel, and Christopher (2022) who have suggested that 'one size fits all school policies might not be the best course of action, and individual support might be a more fruitful avenue. Schools that lack resources may need to adapt their approaches to learning to be diversified and appropriate to the context. Rahim (2019) proposes that school-based management programs will lead to outcomes under resource scarcity in developing countries or may adopt a learning management method that focuses on students to study on their own, such as 5E, for example. However, it is important for the teachers to adjust themselves as well. This is consistent with a study by Francesc, Cristina, Núria, and Héctor (2021) which states that these results provide strong evidence regarding the long-term sustainability of interventions aiming to change teachers' practices in favor of active learning methods such as the 5E model and their positive effects on students' conceptual learning. It is also consistent with the study of Yalçınkaya and Karaca (2021) showing that improving map skills in the teaching process increase students' success, and a study by Batlolona, Diantoro, Wartono, and Latifah (2019) indicating that The PBL has been recommended to develop or enhance students' creative thinking. It shows that although there is a great shortage of teachers and resources in schools, if teachers who are key managers adapt and try to find a variety of appropriate methods, it will benefit students. Finally, the study of Levrini et al. (2021) asserts that the learning module on climate change, consisting of activities inspired by the field of future studies.

5.2 Recommendations for Future Research

(1) The causal factors affecting the futuristic thinking of students studying in medium-sized and small-sized schools should be studied as necessary information in developing development plans.

(2) A school management/classroom activity model should be developed to encourage students' futuristic thinking.

Acknowledgements

I would like to thank the Faculty of Education, Mahasarakham University to encourage and support this research. Thank you so much for the research samples and the experts who checked the quality of the tools. I would like to thank the students who helped in collecting the data. Finally, I would like to thank Asst. Prof. Tang-On Srirak, my colleagues for recommending the journal and manuscript preparation.

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