4th International Research Conference on Humanities,
Social Sciences and Technology 2021
(4th IRCHST 2021)
Kuala Lumpur, Malaysia
eISBN xxx-xxx-xx
21-22 August 2021

ANALYSING THE STYLES OF THINKING AMONG PRIMARY SCHOOL TEACHERS

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***Abstract**: One of the focuses of Malaysian National Philosophy is the holistic development of individuals, which includes the ability to think in higher order. Teachers are the most important agents in the teaching process, so it's critical to pay attention to their capacity to teach students the skills. As a result, the purpose of this research is to examine teachers' thinking abilities and determine if there are any differences between genders. The Teaching Skills Inventory was completed by 266 primary school teachers in the Selangor area, and the results revealed that teachers use executive thinking skills. Despite the fact that both genders preferred executive thinking skills, a t-test indicates that male teachers scored significantly higher in all of Sternberg's suggested thinking styles. At the conclusion of the study, some recommendations for future research were included.*

***Keywords:** Thinking styles, executive style, primary school teachers, mental self-government, quantitative method*

Introduction

Teaching and learning is a dynamic process that necessitates constant adaptation to changing circumstances. Individuals and society are facing new and demanding issues as the economy becomes more globalised, populations become more diverse and interconnected, and technological progress accelerates. Technology forces change, which is unsettling since it forces individuals out of their comfort zones. McCain and Jukes, (2001) argued that future success is determined by the mindset of those who use technology rather than by the technology itself. As a result of these factors, school systems must adjust to such shifts in mindset. McCain and Jukes (2001) went on to say that teachers should teach students higher-order thinking abilities, such as analysis, synthesis, and assessment, which are critical for effective problem-solving. As a result, to adapt to the requirement to modify teachers' mindsets and duties, school systems must improve their curriculum policies in order to teach kids new abilities for future survival.

In Malaysia, the transition from the New Primary School Curriculum (Kurikulum Baru Sekolah Rendah) or KBSR to the new Primary School Standard Curriculum (Kurikulum Standard

Sekolah Rendah) or KSSR, which began with Year One students in 2011, placed a greater emphasis on developing higher-order thinking skills as well as knowledge (Malaysia Education Blueprint 2013-2025 p.E-4). This appears to be a step in the right direction in terms of higher-order instruction. KSSR was created in an effort to reform and improve the existing curriculum in order to ensure that students are equipped with the information, skills, and values necessary to address the requirements and challenges of the twenty-first century (KPM, 2012). The old primary school curriculum, KBSR, focused on three skills: reading, writing, and arithmetic; however, the current curriculum, KSSR, includes a fourth skill: reasoning (*menaakul*). Thinking, specifically higher-order thinking, is a form of reasoning.

Furthermore, the KSSR is designed to produce a balanced and holistic student capable of thinking creatively, critically, and innovatively through six strands: I communication, ii) science and technology, iii) physical and aesthetic development, iv) self-exposure, v) humanity, and vi) spirituality, attitudes, and values (*Malaysia Education Blueprint 2013 - 2025*, 2013). Thinking skills is one of the ambitions included in the KSSR, which emphasises that every student would be instilled with a desire for inquiry and lifelong learning, as well as the ability to integrate disparate parts of knowledge (p.E-4). Critical thinking, reasoning, creativity, and innovation are just a few of the cognitive abilities that every student will need to acquire. As a result, this curriculum is expected to encourage students to think in higher order.

As the primary agent in the teaching process, teachers play a critical role. The previous study has found that teachers' intellectual styles, as well as their relationship to students' intellectual styles, influence classroom teaching and learning (Zhang, 2008). There is also a link between specific teachers' thinking styles and student creativity, according to research (Dikici, 2014; Boroujerdi & Hasani, 2014; Betoret, 2007). Having said that, a study conducted by Chua (2011) discovered that Malaysian teachers are left-brainers, which means that they are lack creative skills, which makes it difficult for them to teach creativity to students. Similarly, Kamarulzaman (2017) discovered that teachers do not comprehend critical thinking, making it difficult for them to teach the skills to students. The problem we discovered in prior studies is that there is a scarcity of research on teachers' thinking styles, particularly in primary schools, which is thought to have an impact on student learning. As a result, the current research attempts to examine the thinking processes of primary school teachers and determine if there are any differences between genders.

Literature Review

Thinking Styles

A way of thinking is referred to as a *style* (Sternberg, 1997). A style of thinking, according to Sternberg, is not a skill but rather a preferred way of putting one's abilities or skills to use. The distinction between the two is obvious: ability refers to how well someone can do something, whereas style refers to how someone prefers to perform something.

Sternberg (1997) provides the idea of mental self-government, in which he argues that the world's forms of administration are not spontaneous but rather an external mirror of what individuals think. As a result, the various kinds of government are thought to be reflections of people's minds.

Government has three functions: executive, legislative, and judicial. To connect the world's governments, he says that the legislative branch enacts laws, the executive branch implements the initiative, policies, and laws, and the judicial branch assesses if the laws are being followed correctly or if any violations have been enforced.

This theory proposes that persons who want to do things their own way are more likely to be legislative people. These individuals make their own decisions about what and how they will do their jobs. They love challenges that are not pre-structured or manufactured, and they prefer to make their own rules. Legislative people are typically creative because they not only have the ability to generate new ideas but also the drive to do so. Scientist, cover artist, policy banker, and architect are some of the jobs that legislative people prefer.

The legislative mindset differs from the executive mindset. Executives favour challenges that are pre-structured or premade because they like to follow the rules. They tend to fill in the gaps with an existing framework rather than create their own structures or norms. Executives prefer activities such as solving mathematical issues, applying rules to difficulties, and enforcing regulations. Furthermore, executive people are appreciated in both school and work since they willingly execute what they are instructed. They prefer to follow instructions and orders, and when it comes to judging themselves, they will judge themselves based on how effectively they follow instructions, which is similar to how the system will rate them. As a result, a bright child who thinks in an executive style is more likely to succeed in school, whereas a gifted youngster who thinks in a legislative style is more likely to be seen as non-conforming and even rebellious.

Furthermore, unlike executive officials who prefer to follow instructions and regulations, judicial officials prefer to assess those instructions, rules, and processes. Furthermore, judicial individuals tend to analyse and evaluate existing problems and ideas, as opposed to legislative people who want to construct or produce their own policies and solve pre-structured difficulties. Judges, consultants, system analysts, and admission officials are some of the jobs that judicial people favour.

Zhang (2003) looked into Sternberg's (1997) concept of mental self-government and discovered that persons who think in a judicial style are continually reviewing and prioritising items in order to make appropriate decisions. They are also more likely to perform evaluative and analytical tasks (Zhang, 2003). Zhang (2004) conducted another mental-government study a year later and discovered that analytical ability and judicial style are related; the capacity to analyse will require judicial thinking and vice versa. This is supported by Abdi's (2012) research, which claims that there is a link between Sternberg's (1997) thinking styles and critical thinking skills and that the judicial style of thinking engages evaluative and analytical tasks.

Teachers' Thinking Styles

According to Zhang (2002), analytical thinking style has a significant relationship with executive thinking style, which is supported by Dikici (2014), who claims that people with executive thinking styles are left-brainers who are specialised in processing information in a piecemeal, analytical, and sequential manner. A study of mathematics teachers discovered that their thinking styles were not dissimilar (Deringol, 2019). Deringol (2019) contrasted the

analytic and holistic thinking styles and discovered that teachers solve mathematical problems in similar ways. However, Canbolat et al. (2016) discovered that, when compared to judicial and legislative thinking types, mathematics teachers favoured the executive thinking style, which likes to deal with procedures and has a greater level of topic understanding. Teachers favoured executive thinking style, according to Sarıçoban and Kırmızı (2020), and it is an ultimate predictor of both knowledge and cognitive regulation. They adhere to the rules and regulations of the debate and, for the most part, use the most acceptable problem-solving approaches.

A lot of research was also conducted to investigate the relationship between teachers' thinking styles and other characteristics. One of them investigated the relationship between thinking styles and attitude and discovered that, while the majority of the participants preferred legislative thinking styles, executive thinking styles have a significant relationship with values, love, and teaching attention (Uygun & Kunt, 2014). This research supports Şen (2018), who claims that teachers with executive thinking styles are more confident in their communication skills and provide plausible explanations when making decisions. According to Chang (2013), executive thinking style is associated with helpful, understanding, and freedom traits, which allow students to study more freely. These teachers, on the other hand, favoured leadership and rigid interpersonal behaviour. Furthermore, executive teachers participate in activities such as lecturing about facts and requiring students to produce what they have learned in detail, whereas legislative and judicial thinking styles teachers provide students autonomy and opportunities to make their own decisions (Zhang, 2001). Studies also suggested that teachers who teach different student grades have different preferences in thinking styles; those who teach in upper grades may adopt executive thinking style (Sternberg & Grigorenko, 1995) and may also adopt legislative and judicial thinking styles as they are more experienced teachers (Dikici, 2014). As can be shown, thinking styles influence a variety of features and variables.

When comparing teachers' thinking styles by gender, there were some discrepancies. Male teachers scored higher on executive thinking style, according to Zhang and Sternberg (2002), and they were also judged to have greater leeway in determining their teaching content. However, a more recent study by Betoret (2007) indicated that there is no significant difference in thinking styles preference between genders, despite the fact that female teachers scored higher in executive thinking style. Similarly, Qummer and Zamir (2020) discovered that while both genders' thinking styles were similar, female teachers scored higher in executive style. However, Ozan (2019) discovered that female teachers favoured executive thinking style significantly as compared to male teachers, which is consistent with Çenberci and Yavuz (2018). It can be concluded that most studies that we reviewed suggested that female teachers prefer executive thinking style more than male teachers.

Based on the literature, we found that there is a lack in research on the thinking styles among primary school teachers in Malaysia. Thus, in the current study we hypothesised that teachers preferred executive thinking style, and there is a significant difference in teachers' thinking styles between genders.

Method

Sample

A total of 266 participants were purposefully selected to answer the questionnaire. They were primary school teachers from around five schools in Selangor area.

Measure

A revised version of Mental Self-Government (MSG) Thinking Styles Inventory (TSI) (Sternberg & Wagner, 1991) questionnaires where only the functions of mental self-government were used from the questionnaire. The questionnaire is designed to determine the types of thinking that teachers adopt. There are three types of thinking measured by the revised questionnaire: legislative, executive, and judicial. Each construct has 0.78 0.95, and 0.83 reliability scores respectively and 0.90 when they are computed together (Gelen et al., 2016). Sample items of the questionnaire are shown in Table 1 below:

Table 1: MSG TSI sample items

Styles	Items
Legislative	1. When making decisions, I tend to rely on my ideas and ways of doing things 2. When faced with a problem, I use my own ideas and strategies to solve it
Executive	1. When discussing or writing down ideas, I will follow formal rules or presentation 2. I like to figure out how to solve a problem following certain rules
Judicial	1. When discussing or writing down ideas, I like criticising others' way of doing things 2. When making a decision, I like to compare the opposing points of view

Data collection and analysis technique

Permissions from the Ministry of Education, State Education Department and District Education Office were obtained since the research employed teachers from five public schools. We went to each school and sought the permission from the school's principal to conduct our survey. Once the permission was obtained, we left the hard copy of the questionnaire at the schools for the teachers to respond. After a month, we went back to the schools to collect our questionnaire.

The quantitative data collected was measured based on the items in the questionnaire. Sternberg MSG Interpretation table (1998) is used to analyse the data collected from the questionnaire. The questionnaire used 1-7 Likert scale. There are 8 assessment statements for each thinking style, and they are interpreted separately and differently. Descriptive analysis, as well as t-tests, were used to analyse the data.

Ethical Consideration

Ethical consideration is an important part of the research process and should be adhered to with the highest standards in regard to the work completed. Ethics need to be considered in all aspects of the research project to maintain rigour, prevent bias, and alleviate all conflicts of

interest. It may not be possible to completely avoid all such cases, but every effort was made regarding this study to achieve the most ethical manner possible.

Informed Consent

The study's outline was explained to all participants, and their participation was entirely optional.

Harm and Risk

The risks connected with this study are extremely low, and there is a very slim chance that any of the participants will be harmed as a result of their involvement. Because participation is fully voluntary, participants were given the option to decline or withdraw at any time.

Privacy, Confidentiality, and Anonymity

Gender, marital status, age, and teaching experience were all used to determine the participants' identities. The genuine names, on the other hand, are kept hidden. Others will be unable to access the participants as a result of this.

Results

Demographic information

Table 2: Demographic Information

		Frequency (N=266)	Percent
Gender	Male	60	22.6
	Female	206	77.4
Race	Malay	235	88.3
	Chinese	5	1.9
	Indian	24	9.0
	Others	2	.8
Age Range	Less than 35 years old	72	27.1
	35-44 years old	138	51.9
	More than 45 years old	55	20.7
	NA	1	.4
Teaching Experience	Less than 5 years	32	12.0
	Between 5-10 years	85	32.0
	Between 11-15 years	77	28.9
	More than 15 years	72	27.1
Level of Education	Diploma	22	9.0
	Bachelor's degree	224	84.2
	Master's degree	18	6.8

Table 2 summarises the demographic information where female participants are more than male participants at 77.4% and 22.6%, respectively. 88.3% were Malay participants, 5% Chinese, 24% Indians, and 2% comes from other races. 52% of the participants are between

35-44 years old. Most of the participants have 5-10 years of experience in teaching (32%) and have a bachelor's degree (84%).

Teachers' Thinking Styles

Table 3 below shows the comparisons between the three styles of thinking and the differences among male and female teachers. The comparison is made by looking at the high and low columns for both genders. When comparing between the styles, it is found that most male teachers are high in executive style (53%) and 33% of them have low preference in legislative thinking style. Similar results show in female teachers where 38% of them prefer executive style, and 37% of them preferred legislative style the least.

Table 3: Types of teachers thinking styles

	Male (%)			Female (%)		
	Low	Middle	High	Low	Middle	High
Legislative	33	54	13	37	59	3
Executive	0	47	53	2	60	38
Judicial	17	55	28	29	43	28

Our descriptive analysis shows similar results, as shown in Table 4. Executive thinking style scored the highest ($\overline{x}$=41.1, sd=6.97), followed by legislative style, ($\overline{x}$=38.5, sd=6.86), and judicial thinking style ($\overline{x}$=37.6, sd=7.3) which shows that teachers prefer executive thinking style.

Table 4: Descriptive Analysis

	N	Mean	Std. Deviation
Legislative	266	38.4549	6.86142
Executive	266	41.0755	6.97194
Judicial	266	37.5602	7.29889
Valid N (listwise)	266		

Further analysis was done to determine whether there is a significant difference between genders in teachers' thinking styles preference. Table 5 illustrate the results which indicates that there is significant difference in all styles of thinking; legislative (t=3.145, df=264, p=0.02), executive (t=1.979, df=264, p=0.49) and judicial (t=2.359, df=264, p=0.19) were male teachers preferred all types significantly as compared to female teachers. Nonetheless, we failed to reject our null hypothesis since both genders prefer executive thinking style.

Table 5: Gender Difference in Thinking Styles

Style	Male			Female			t	df	p
	n	$\overline{x}$	sd	n	$\overline{x}$	sd			
Legislative	60	40.9	6.93	266	37.8	6.69	3.145	264	0.02
Executive	60	42.6	6.35	266	40.6	7.09	1.979	264	.049
Judicial	60	39.5	6.89	266	37.0	7.33	2.359	264	.019

Discussion

The aim of the study is to investigate the thinking processes of primary school teachers and determine whether there are any differences between male and female teachers. The teachers preferred executive thinking style, according to our findings. Canbolat et al. (2016) found that, when compared to judicial and legislative thinking styles, mathematics teachers preferred executive thinking, which enjoys dealing with procedures and has a higher level of topic mastery. Similar findings were observed by Sarıçoban and Kırmızı (2020), who went on to say that teachers who preferred executive thinking style were ultimate predictors of both knowledge and cognitive control. They follow the debate's rules and regulations and, for the most part, employ the most acceptable problem-solving techniques. Additionally, executive thinking style is linked to analytical mode of thinking, which is specialised for processing information in a piecemeal, analytic, and sequential manner (Zhang, 2002). Other research, on the other hand, has discovered that executive thinking style hinders students' creativity (Chua, 2011). Executive style people like to follow the rules and organisation, according to Sternberg's mental self-government theory. Although it may appear that this does not aid in the development of higher-order thinking skills in students, they are excellent implementers and action takers (Sternberg & Grigorenko, 1995). They are capable of performing the duties of a teacher in a professional way, as needed and directed by the Ministry of Education. Individuals who prefer executive thinking style are most suited for schools and the federal government, according to Sternberg (1997).

Another finding from our study showed that although there is a significant difference in the level of preference between genders in all the thinking styles, both male and female teachers do not differ in their thinking style preference which is the executive style. Simply put that, male teachers showed more characteristics of all the thinking styles, but both genders scored highest in executive style. This is contradictory with a study by Betoret (2007), who indicated that there is no significant difference in thinking styles preference between genders, despite the fact that female teachers scored higher in executive thinking style. Similarly, Qummer and Zamir (2020) discovered that while both genders' thinking styles were similar, female teachers scored higher in executive style. Our study found that there are none of the male participants' scores low in executive characteristics.

Conclusion and Recommendation

The study's goal is to look at the thinking styles of primary school teachers in the Selangor area, as well as the differences in thinking styles between genders. Only the functions domain of the mental self-government theory was examined, and 266 teachers were specifically chosen to respond to the MSG TSI questionnaire, which was amended. Teachers preferred executive thinking style, which is thought to be best suited for teachers and federal government employees, according to our data. We also discovered that teachers have the same preference for thinking styles, even though there is a significant difference in each thinking style, with male teachers scoring better in all styles than female teachers. The executive thinking style is said to be the ideal fit for teachers since they are good implementers and action takers who will follow the Education Ministry's ideas and directions on how to effectively teach students higher-order thinking skills.

Since we have identified teachers' preferred thinking style, future research could focus on the relationship between the style and other factors like teaching style, student academic performance, teachers' attitudes, and work satisfaction.

Acknowledgement
We wish to give great thanks to Open University Malaysia (OUM) for funding this study. Without the fund, we will not bee able to conduct the study.

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