

# Embarking on an Action Plan: Proposing Vark Test as the Need Analysis for Classroom Teaching and Learning

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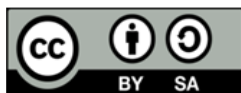
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## ABSTRAK

Gaya belajar mewakili berbagai cara di mana individu lebih memilih untuk belajar dan terlibat dengan konten pendidikan. Gaya belajar didasarkan pada gagasan bahwa orang memiliki kekuatan dan preferensi kognitif unik yang dapat memengaruhi pengalaman dan hasil belajar mereka. Dengan memahami gaya belajar mereka, pendidik dapat menyesuaikan pengajaran mereka untuk memenuhi kebutuhan individu siswa. Pendekatan yang dipersonalisasi ini membantu melibatkan siswa secara lebih efektif dan meningkatkan pengalaman belajar mereka. Siswa akan lebih terlibat dan termotivasi ketika diajar dengan cara yang selaras dengan gaya belajar pilihan mereka. Hal ini mengarah pada peningkatan partisipasi, keterlibatan aktif dalam proses pembelajaran, dan peningkatan retensi informasi. Tujuan dari penelitian ini adalah untuk mengajukan kuesioner VARK sebagai dasar analisis kebutuhan dalam merencanakan rencana tindakan dalam penelitian tindakan. Penelitian ini menggunakan desain penelitian tindakan dengan menggunakan model Kemmis dan Taggart, yang merupakan kerangka kerja yang dikenal luas dalam melakukan penelitian tindakan. Responden yang dipilih dalam penelitian ini adalah mahasiswa Diploma Survei Kuantitas Politeknik Sultan Azlan Shah yang berjumlah 30 orang. Respondennya terdiri dari 15 siswa perempuan dan 15 siswa laki-laki. ditemukan bahwa responden mempunyai gaya belajar yang berbeda-beda sesuai dengan kesukaannya yang dikategorikan menurut gaya belajar VARK.

## ABSTRACT

Learning styles represent the different ways in which individuals prefer to learn and engage with educational content. Learning styles are based on the idea that people have unique cognitive strengths and preferences that can influence their learning experiences and outcomes. By understanding their learning styles, educators can tailor their instruction to meet students' individual needs. This personalized approach helps engage students more effectively and enhances their learning experience. Students are more likely to be engaged and motivated when taught in a manner that aligns with their preferred learning styles. This leads to increased participation, active involvement in the learning process, and improved retention of information. The objective of this research is to propose a VARK questionnaire as the basis for the need analysis in planning the action plan in the action research. This research employed the action research design using the Kemmis and Taggart model, is a widely recognized framework for conducting action research. The respondents selected for this research were 30 students of the Diploma in Quantity Survey of Politeknik Sultan Azlan Shah. The respondents consist of 15 female students and 15 male students. it was found that respondents have different learning styles according to their preferences which are categorized according to VARK learning styles.

## 1. INTRODUCTION

Learning styles refer to people's individual preferences and approaches when it comes to acquiring and processing information. They represent the different ways in which individuals prefer to learn and engage with educational content. Learning styles are based on the idea that people have unique cognitive strengths and preferences that can influence their learning experiences and outcomes (Moussa, 2014; Nurlaela et al., 2018; Wong & Nunan, 2011). Understanding students' learning styles is important

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for several reasons. Every student is unique and has different preferences when it comes to learning. By understanding their learning styles, educators can tailor their instruction to meet the individual needs of students (Fen & Poh, 2015; Putra et al., 2021; Varenina et al., 2021). This personalized approach helps engage students more effectively and enhances their learning experience. When students are taught in a manner that aligns with their preferred learning styles, they are more likely to be engaged and motivated. This leads to increased participation, active involvement in the learning process, and improved retention of information (Emami et al., 2020; Sheromova et al., 2020).

Educators create a more inclusive and supportive learning environment by catering to different learning styles. Students who may have previously struggled with certain teaching methods or materials can benefit from alternative approaches that match their preferred learning styles (Santosa, 2017; Sheromova et al., 2020). Tailoring instruction to students' learning styles enhances their understanding and retention of information. This can result in improved learning outcomes, including higher academic achievement, increased knowledge retention, and better critical thinking skills. Students may have different strengths and abilities based on their learning styles (Karimullah & Mukminatien, 2022; Mason, 2007; Rogowsky et al., 2015). Understanding these strengths allows educators to provide opportunities for students to excel in areas that align with their natural abilities, fostering their confidence and self-esteem. By recognizing students' learning styles, educators can allocate resources more efficiently. They can focus on instructional strategies, materials, and activities that are most effective for each learning style, optimizing the use of time, effort, and educational resources. When students feel that their learning styles are acknowledged and accommodated, they are more likely to have a positive attitude toward learning. This can contribute to their overall enjoyment of the educational experience and promote lifelong learning (Azu, 2009; Hartman et al., 2019; Marchetti & Cullen, 2015).

There are various models and frameworks that attempt to categorize learning styles. One of the widely recognized models is the VARK model (Emami et al., 2020; Leasa et al., 2020), which classifies learning preferences into four main styles: Visual learners: Visual learners prefer to process information through visual aids such as diagrams, charts, graphs, and images (Kolesnikov et al., 2019; Noroozi et al., 2019). They benefit from seeing information presented in a visual format. Auditory learners: Auditory learners prefer to learn through listening and verbal communication (Firat & Laramee, 2018; Hwang et al., 2022). They often benefit from lectures, discussions, podcasts, and other auditory resources. Reading/Writing learners: Reading/writing learners prefer to learn through written text (Klimova, 2012; Yulianti et al., 2019). They excel in reading materials, taking notes, and engaging in written exercises or assignments. Kinesthetic learners: Kinesthetic learners prefer hands-on experiences and physical activities to engage with learning (Jamulia, 2018; Oktari et al., 2019). They learn best through practical tasks, demonstrations, experiments, and other interactive experiences. However, it is important to note that learning styles are not mutually exclusive, and individuals can have preferences across multiple styles (Bernard et al., 2017; Lee & Wu, 2022). Some individuals may exhibit a dominant learning style, while others may have a combination of preferences. A seminal paper by previous study introduces the VARK model and discusses its practical applications in understanding learning preferences and adapting teaching methods (Fleming & Mills, 1992).

The model is proven to be a catalyst to give empowerment to students to reflect on their own sensory preferences and modify their study methods accordingly. Another study offers a comprehensive review that examines various learning style models, including VARK and explores their implications for pedagogy and classroom practices which concluded that it matters fundamentally which model is selected (Coffield et al., 2004). Other study investigates the factor structure of the VARK inventory, providing insights into the validity and reliability of the instrument. Many articles have discussed the benefits of the VARK model (Paivio & Harshman, 1983). An article by other study explores the use of the VARK model in medical education, discussing how understanding students' learning preferences can inform instructional strategies and enhance learning outcomes (Prithishkumar & Michael, 2013). There is also study that investigate the impact of self-explanation and VARK modal preferences on learning performance, providing empirical evidence for the effectiveness of aligning instruction with learners' preferences (Ainsworth & Loizou, 2003). This study focuses on the method of creating an inventory based on the Learning Styles Test conducted on participants. This inventory is seen as a necessity because by obtaining learning style data, educators are able to identify teaching strategies that suit students. Identifying learning styles will help students to determine the most effective learning method in mastering a subject. The objective of this research is to propose a VARK questionnaire as the basis for the need analysis in planning the action plan in the action research.

## 2. METHOD

This research employed the action research design using (Taggart & Kemmis, 1998). The Kemmis and Taggart model is a widely recognized framework for conducting action research. It provides a systematic approach to guide researchers through the different stages of the action research process. The model consists of four main stages, namely planning, acting, observing, and reflecting, which are cyclical and iterative in nature. For this study, the focus is given on the initial stage of the action research which is the planning stage by using the VARK questionnaire as the need analysis. The finding will later be used as the source for the action plan. The action research model is show in Figure 1.

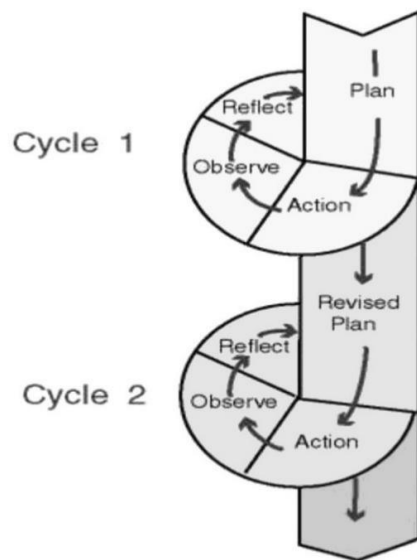


Figure 1: The Action Research Model

The respondents selected for this research were 30 students of the Diploma in Quantity Survey of Politeknik Sultan Azlan Shah. The respondents consist of 15 female students and 15 male students. The method of sampling was purposive sampling. Each respondent was given a set of VARK questionnaires, and the data was then analysed descriptively via the IBM SPSS version 25 using frequency, percentage, and cross-tab analysis.

## 3. RESULT AND DISCUSSION

### Result

Percentage and Frequency of Unimodal Learning Style Preference is show in Figure 2 and Table 1.

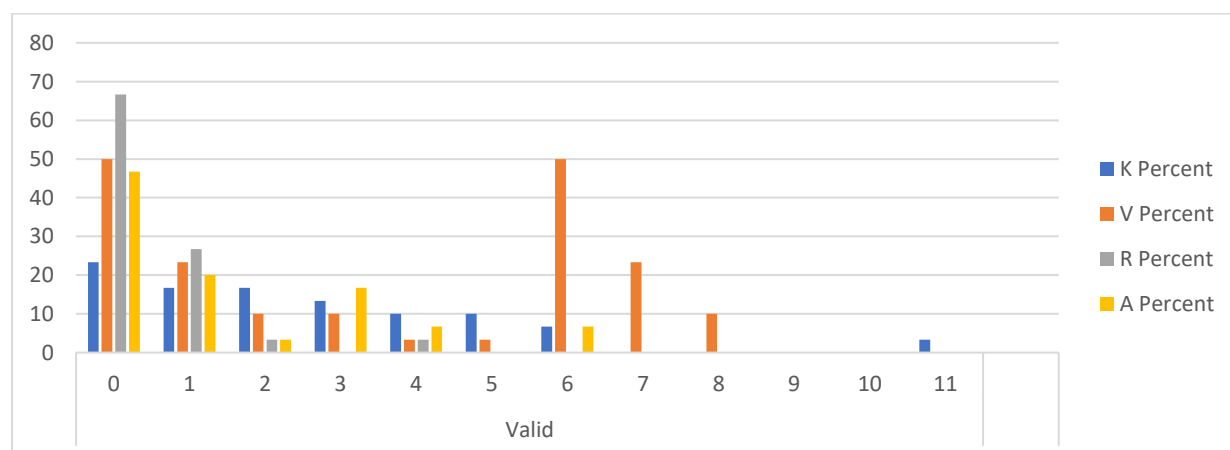
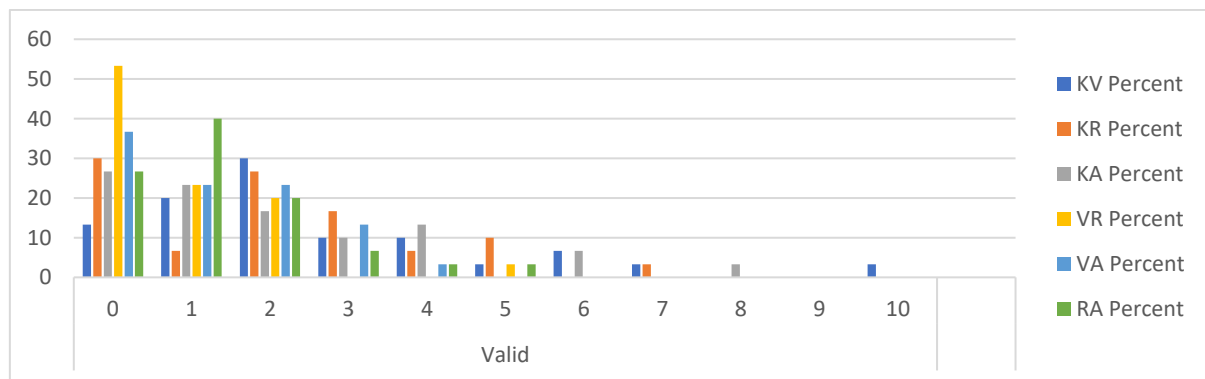


Figure 2. Percentage and Frequency of Unimodal Learning Style Preference

**Table 1.** Percentage and Frequency of Unimodal Learning Style Preference

	K		V		R		A	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
11	1	3.3						
10								
9								
8								
7								
6	2	6.7					2	6.7
5	3	10	1	3.3				
4	3	10	1	3.3	1	3.3	2	6.7
3	4	13.3	3	10			5	16.7
2	5	16.7	3	10	1	3.3	1	3.3
1	5	16.7	7	23.3	8	26.7	6	20
0	7	23.3	15	50	20	66.7	14	46.7
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

Based on the findings in Figure 2 and Table 1 it was found that respondents have different learning styles according to their preferences which are categorized according to VARK learning styles. For the uni-modal learning style, most of the respondents were found to choose the Kinesthetic learning style (K) 76.7% (23 respondents) with the highest score was 11 (3.3%), followed by Auditory learning style (A) by 53.3% (16 respondents) with the highest score was 6 (6.7%). Half of the respondents were found to choose the Visual learning style (V) with the highest score was 5 (3.3%) and most of them (7 respondents) only scored 1 (23.3%). Whereas the least preferred learning style was Reading/Writing (R) with 33.3% (10 respondents) with the highest score was 4 (3.3%). Then percentage and frequency of bimodal learning style preference is show in Figure 3 and Table 2.



**Figure 3.** Percentage and Frequency of Bimodal Learning Style Preference

**Table 2.** Percentage and Frequency of Bimodal Learning Style Preference

	KV		KR		KA		VR		VA		RA	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
10	1	3.3										
9												
8					1	3.3						
7	1	3.3	1	3.3								
6	2	6.7			2	6.7						
5	1	3.3	3	10			1	3.3			1	3.3
4	3	10	2	6.7	4	13.3			1	3.3	1	3.3
3	3	10	5	16.7	3	10			4	13.3	2	6.7
2	9	30	8	26.7	5	16.7	6	20	7	23.3	6	20
1	6	20	2	6.7	7	23.3	7	23.3	7	23.3	12	40
0	4	13.3	9	30	8	26.7	16	53.3	11	36.7	8	26.7
<b>Total</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>	<b>30</b>	<b>100.0</b>

Based on Figure 3 and Table 2 for Bimodal Learning Style preferences, it was found that most of the respondents chose Kinesthetics Visual Learning Style (KV) by 86.7% (26 respondents) and the highest score was 10 (3.3%). Sharing the same spot as the second highest was Kinesthetics Auditory Learning Style (KA) and Reading Auditory Learning Style (RA) with 73.3% (22 respondents) respectively. However, the highest score for KA was 8 (3.3%) and for RA was 5 (3.3%). The least preferred bimodal learning style was Visual Reading Learning Style (VR) by 46.7% (14 respondents).

As previously discussed, the Kinesthetics learning style (K) was majorly chosen by respondents for unimodal learning style preference, the crosstab analysis result in Table 3 presents findings according to gender.

**Table 3. Crosstab Analysis Result for Unimodal Learning Preference**

Category/Score		0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	Total	
K	Gender Male	3	1	3	4	2	1	0	0	0	0	0	0	1	15
	Female	4	4	2	0	1	2	2	0	0	0	0	0	0	15
	<b>Total</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>30</b>
V	Gender Male	5	6	1	2	1				0					15
	Female	10	1	2	1	0				1					15
	<b>Total</b>	<b>15</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>1</b>				<b>1</b>					<b>30</b>
R	Gender Male	11	4	0		0									15
	Female	9	4	1		1									15
	<b>Total</b>	<b>20</b>	<b>8</b>	<b>1</b>		<b>1</b>									<b>30</b>
A	Gender Male	6	3	1	1	2									15
	Female	8	3	0	4	0									15
	<b>Total</b>	<b>14</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>2</b>									<b>30</b>

Base on Table 3 it was found that the number of male respondents who selected K outnumbered the females by 1 person and the highest score (11) was recorded for male students. The second highest learning style preference, Auditory (A), While the least preferred learning style, reading (R), was majorly disliked by male students, and the number of female students who had selected this style surpassed the male students. In brief, the unimodal learning style was dominated by male students as compared to female students. The result of the crosstab analysis for bimodal learning preference was summarised in Table 4.

**Table 4: Crosstab Analysis Result for Bimodal Learning Preference**

CATEGORY/SCORE		0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	Tota
KV	Gender Male	2	4	5	1	2	0	0	1			0		15
	Female	2	2	4	2	1	1	2	0			1		15
	<b>Total</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>			<b>1</b>		<b>30</b>
KR	Gender Male	6	1	3	3	0	2		0					15
	Female	3	1	5	2	2	1		1					15
	<b>Total</b>	<b>9</b>	<b>2</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>3</b>		<b>1</b>					<b>30</b>
KA	Gender Male	5	4	2	0	2		1		1				15
	Female	3	3	3	3	2		1		0				15
	<b>Total</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>4</b>		<b>2</b>		<b>1</b>				<b>30</b>
VR	Gender Male	8	2	4			1							15
	Female	8	5	2			0							15
	<b>Total</b>	<b>16</b>	<b>7</b>	<b>6</b>			<b>1</b>							<b>30</b>
VA	Gender Male	6	2	5	2	0								15
	Female	5	5	2	2	1								15
	<b>Total</b>	<b>11</b>	<b>7</b>	<b>7</b>	<b>4</b>	<b>1</b>								<b>30</b>

CATEGORY/SCORE		0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	Tota l
<b>Total</b>		<b>11</b>	<b>7</b>	<b>7</b>	<b>4</b>	<b>1</b>								<b>30</b>
RA	Male	5	5	2	1	1	1							15
	Female	3	7	4	1	0	0							15
<b>Total</b>		<b>8</b>	<b>12</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>1</b>							<b>30</b>

Base on [Table 4](#), for the most chosen category, the kinesthetics visual (KV), quite a balanced number was scored between the gender with the highest score of 10 recorded by a female student. The second highest category, KA and RA, these categories were mostly chosen by female students, but the male students obtained higher scores compared to female students. Whereas for the least preferred bimodal learning style, the VR, quite similar responses were gathered by both gender which indicate that both genders were not interested in this category, but male students were found to score higher. Overall, female learners tend to choose bimodal learning preferences compared to male learners who prefer unimodal preferences.

### Discussion

Based on the findings above, it highlights the importance of understanding learning styles. Understanding learning styles helps students to identify the most effective way of learning for them. This involves a deeper understanding of whether a person prefers to learn through visual, auditory, or kinesthetic learning ([Kolb & Kolb, 2005](#); [Tuan, 2011](#)). Learning styles may also include a preference for independent or collaborative learning. By understanding their learning styles, students can optimize their learning experience, making it more efficient and effective. By knowing their learning style, students can adjust their learning techniques according to their needs. For example, students who prefer to learn visually can utilize diagrams, graphs, or concept maps in their learning process ([Margunayasa et al., 2019](#); [Oktari et al., 2019](#)). These adjustments help avoid learning burnout and improve information retention. By designing appropriate learning methods, students can achieve better results in their academic performance. Educators have an important role in supporting students' understanding of learning styles. By knowing the variety of learning styles in the classroom, teachers can design diverse and inclusive teaching methods ([Durga et al., 2018](#); [Winarno et al., 2022](#)). This understanding also allows teachers to provide more effective feedback to students and design assessments that include multiple forms so that each student has the opportunity to demonstrate their understanding. Moreover it can developing lifelong skills, the concept of learning styles is not only relevant in the context of formal education, but can also be a powerful tool for the development of lifelong skills ([Azu, 2009](#); [Nasamu, 2021](#)). Understanding the best ways to learn helps individuals continue to learn and develop in an ever-changing world. The ability to adapt to a variety of learning methods allows one to remain relevant and competent in the work environment and everyday life. The concept of learning styles highlights the importance of an inclusive educational approach. By recognizing and respecting differences in learning styles, education can be more equitable and accommodate the needs of diverse students ([García et al., 2020](#); [McGunagle & Zizka, 2020](#)). Inclusive education creates an environment that supports diversity, promotes active participation, and improves learning outcomes for all students, regardless of their learning style. By combining a deep understanding of learning styles, students and educators can create a learning environment that is motivating, supportive, and effective, contributing to academic and personal success.

This research has positive implications for the effectiveness of classroom teaching by identifying student learning styles using the VARK Test. Teachers can adapt their teaching methods according to students' learning preferences, increasing information retention and participation in learning. The results of the VARK Test can be used as a guide for developing learning materials that are more diverse and appropriate to students' dominant learning styles. This can create a more inclusive and responsive learning experience. By knowing each student's learning style, teachers can design learning activities that encourage collaboration between students with different learning styles. This can increase cooperation and understanding between students. The implications of this research include optimizing the use of learning resources, including technology, textbooks and other teaching materials that suit students' learning style preferences. Students can identify their dominant learning style and develop appropriate learning strategies. This can increase students' self-confidence and learning motivation. However, this research also has limitations, the research results may not be directly generalizable to the entire student population or learning context. Variability in learning style preferences may make it difficult to apply the findings of this study generally. The VARK Test itself has limitations as a tool for measuring learning styles, and not all aspects of learning preferences can be measured accurately. Therefore, the results need



to be interpreted with caution. This research may not consider all external factors that can influence the learning process, such as social factors, the environment, and previous experiences. Changing teaching methods based on learning styles may require adjustments in time and resources. This can pose practical challenges in busy learning environments. If data is obtained through self-reporting, there is a risk of discrepancies between actual preferences and those reported by students, resulting in bias in the research results.

#### 4. CONCLUSION

In conclusion, understanding learning styles is an effective tool that empowers learners to identify and optimize their learning as well as to achieve greater academic and personal success. Learners can tailor their study techniques and learning environment to suit their needs. Educators can also benefit from the information; hence, they can plan or create their teaching materials and settings to suit the learners' diverse styles. Embracing the concept of learning styles can enrich educational experiences as well as enable both parties to become lifelong learners, adapting and thriving in an ever-changing world.

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