

EXPLORATION OF PRESCHOOL TEACHERS' VIEWS TOWARDS VAK'S LEARNING STYLE IN PRE-NUMBER SKILLS

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ABSTRACT

This study explores preschool teachers' perspectives on their knowledge, awareness, and interest in Visual, Auditory, and Kinesthetic (VAK) learning styles within the context of teaching pre-number skills. This study uses a qualitative approach, by involving a total of 6 preschool teachers from Melaka to be interviewed to obtain an in-depth perspective on the understanding and implementation of the VAK learning style in teaching pre-number skills. Regarding knowledge, the findings indicate that three teachers are knowledgeable about VAK learning styles, two teachers understood and recognized the importance of VAK only after the researcher's explanation, and one teacher had merely heard of VAK without implementing it in teaching. In terms of awareness, all teachers acknowledged the importance of the VAK approach after receiving an explanation and expressed that this approach could help students better understand pre-number skills. Concerning interest, all teachers indicated that the VAK approach could engage students and assist teachers in achieving their teaching objectives. This study's primary contribution is discovering that explanations and guidance on VAK learning styles can enhance teachers' awareness and understanding and their interest in applying it in teaching pre-number skills. The study's implications suggest that continuous training and guidance on VAK learning styles should be provided to preschool teachers to enrich the teaching and learning of pre-number skills. Future research is recommended to investigate the long-term effects of using VAK learning styles on the cognitive development of preschool students. With increased knowledge and awareness, it is hoped that preschool teachers can leverage VAK learning styles to enrich children's learning experiences and pre-number skills.

Keywords: *knowledge, awareness, interest, VAK learning styles, pre-number skills*

INTRODUCTION

In the era of modern education, various approaches and strategies have been explored to enhance the effectiveness of the teaching and learning process in preschools. Children experience many sensory experiences in the first eight years of their lives, which is referred to as early childhood (Bartan & Alisinanoğlu, 2024). Multisensory approach is a learning process that utilises visual, auditory, kinesthetics and tactile sensory to enhance memory and ease the process of learning (Rostan et al., 2020). One approach gaining increasing attention is using Visual, Auditory, and Kinesthetic (VAK) learning styles. By using concrete and visual materials, children find it easier to understand mathematical concepts (Sia & Bakar, 2022). This learning style recognizes the diversity in how children acquire and process information and has been applied across various subjects (Bezo & Hala, 2021). In addition, as

Osman et al. (2024), educators must carefully consider pedagogical approaches that meet the needs of children with visual, auditory, and kinesthetic learning preferences. The VAK learning style approach represents an active and enjoyable learning process for preschool children in early mathematics instruction (Seman et al., 2023). However, applying the VAK learning style in teaching pre-number skills remains underexplored and under-practiced.

The Pre-Number Concepts in Preschool Education

Pre-number skills refer to the early ability of children to understand basic mathematical concepts before they formally learn numbers. The pre-number concepts in preschool education, as outlined in the KSPK 2017 revision, include matching objects, comparing quantities of objects, seriation, recognizing and creating patterns, and understanding consistency. *Early childhood education* is a critical period during which the foundation of these pre-number skills is formed. According to Jamil et al. (2022), the ability to estimate numbers is considered an early number skill, and it is deemed necessary during the phase when children master mathematical skills. Children's pre-number skills develop before they enroll in school (Litkowski et al., 2020; MacDonald & Murphy, 2021). Understanding pre-number is a crucial concept in early childhood mathematics education because these skills form the basis for success in more complex mathematical concepts in the future (Tobia et al., 2021; Hannula-Sormunen et al., 2015). A strong understanding of pre-number skills provides an essential foundation for the early development of children's mathematics (Idris & Jamil, 2024).

Preschool teachers play a vital role in early childhood development. However, there is still a lack of knowledge and awareness among teachers regarding the importance and application of the VAK learning style, particularly in the context of teaching pre-number skills (Kumah et al., 2022). This leads to challenges in ensuring that every child fully benefits from an approach tailored to their learning style (Siraj et al., 2023).

Nevertheless, various challenges exist in teaching pre-number skills to preschool children due to differences in individual learning styles (Clements & Sarama, 2020). For instance, some children may be more inclined towards visual learning, while others may benefit more from auditory or kinesthetic methods. A lack of diverse and effective approaches to teaching pre-number skills can lead to significant learning gaps and deep understanding among children (Chavira & Olais, 2023).

Although the VAK learning style has been recognized as an effective approach, its implementation in preschool classrooms remains limited (Kannan et al., 2021). The lack of effective application of the VAK learning style can result in less effective teaching and limited learning for preschool children (Kumah et al., 2022). Therefore, this study aims to understand better teachers' perspectives on the VAK learning style in teaching pre-number skills.

This study aims to understand the level of teachers' knowledge regarding the VAK learning style in the context of teaching pre-number skills. Secondly, it assesses teachers' awareness of using the VAK learning style to enhance children's understanding and engagement in learning pre-number skills. Thirdly, the study examines teachers' interest in using the VAK learning style.

This study is expected to contribute to the field of preschool education by providing valuable information to policymakers and educators regarding the level of teachers' knowledge, awareness, and interest in the VAK learning style. It can offer practical guidance to preschool teachers on how to apply the VAK learning style in teaching pre-number skills and help develop training and practical guidance for preschool teachers to enhance the use of the VAK learning style in teaching pre-number skills.

Implementation VAK Learning Styles in Pre-Number Skills

Research on VAK learning styles has shown that this strategy can enhance students' understanding and academic achievement by providing various approaches aligned with their needs (Kolb, 2015). A study by Dunn and Dunn (2017) found that students who were taught according to their learning styles tended to be more engaged and motivated. Although there is substantial evidence supporting the effectiveness of VAK learning styles, research on its implementation in teaching pre-number skills at the preschool level remains limited.

The VAK learning styles involve diverse approaches tailored to how individuals receive and process information. VAK learning styles (visual, auditory, kinesthetic) are among the learning styles where students use three sensory perceptions to receive information. Teachers can apply all three learning styles to maximize the achievement of students participating in the program (Rayanto et al., 2022). The Visual learning style involves using images, graphics, and visual representations to aid student comprehension. The Auditory style uses sounds, rhythms, and music as learning tools, while the Kinesthetic style involves physical activities and movements to help students understand concepts better. Research indicates that using diverse VAK learning styles can enhance children's understanding and engagement in learning. Papadatou-Pastou et al., (2021) found that educators often use the VAK Model to explore and apply students' learning styles in teaching and learning. Willis (2017) also found that the VAK learning styles model is a frequently used learning strategy in classrooms and serves as a learning intervention for pupils.

METHODOLOGY

This study employed a qualitative approach using semi-structured interview protocols with six experienced preschool teachers from Melaka. These interviews served as a crucial component of data collection. They aimed to provide insights into preschool teachers' knowledge, awareness, and interest in Visual, Auditory, and Kinesthetic (VAK) learning styles in the context of teaching pre-number skills. The open nature of these interviews encouraged preschool teachers to express their thoughts, views, and suggestions freely (Shen et al., 2022). Open interviews enabled the researcher to gather detailed information about respondents' perspectives and manage the conversation (Cresswell & Creswell, 2018; Cohen et al., 2018).

Purposive sampling was used to select respondents using the maximum variation sampling technique. This sampling technique is used to meet specific criteria collected from various districts and schools (Nyimbili & Nyimbili, 2024). The study respondents exhibit diverse variations in terms of gender differences, teaching regions, and educational experience. This diversity ensured a comprehensive range of perspectives and experiences. The qualitative data collection and analysis process was referred to and followed according to Creswell's (2009) and also Miles and Huberman (1994) views. Interviews were recorded before the audio was transcribed for thematic analysis. Thematic analysis was used to identify recurring themes, patterns, and views, providing an understanding of preschool teachers' knowledge, awareness,

and interest in VAK learning styles in teaching pre-number skills. All respondents were required to verify the transcriptions before conducting analysis, classification, and coding (Cohen et al., 2018).

FINDINGS AND DISCUSSIONS

Interviews were conducted with six preschool teachers to gather their views on their knowledge, awareness, and interest in Visual, Auditory, and Kinesthetic (VAK) learning styles in the context of teaching pre-number skills.

Teachers' Knowledge of VAK Learning Styles

The interview results to ascertain the teachers' knowledge of VAK learning styles revealed two themes:

Theme 1: Knowledge of VAK Learning Styles

Three preschool teachers were found to know VAK learning styles. They could identify the characteristics of visual learners, auditory learners, and kinesthetic learners. This is illustrated by the interview excerpts from respondents 1 and 2:

"...Okay VAK tu saya biasa dengar. Visual Auditori dan Kinestetik. VAK ni lebih kepada budak. Jenis budak. Budak yang jenis visual, budak yang jenis auditori dengan kinestetik. budak ni ada pelbagai jenis. Satu budak dia belajar dengan cara melihat. Melihat tu dia boleh faham. Visual kan? Dia melihat tu dia boleh faham. Kedua budak yang jenis mendengar. Yang dia lagi cepat dapat, mendengar. Dia dengar je dia cepat dapat. Dan ketiga cara kinestetik lah, pergerakan. Mungkin dia cara menyanyi, cara beraktiviti. Dia nak buat, dia nak pegang barang, dia nak buat benda tu. Pemahaman saya lah macam tu." (R1-Pengetahuan VAK- T1)

Translation: "...Okay, I'm familiar with VAK. Visual, Auditory, and Kinesthetic. VAK relates to the types of children. There are visual learners, auditory learners, and kinesthetic learners. These children learn in numerous ways. One child learns by seeing. Seeing helps them understand. That is visual, right? They understand by seeing. The second type of child learns by listening. They grasp things quickly by hearing. And the third is kinesthetic, involving movement through singing or activities. They want to do, touch things, and make things. That's my understanding." (R1-Knowledge VAK-T1)

"...Untuk yang gaya pembelajaran VAK tu, saya pernah dengar lah. VAK ni adalah gaya pembelajaran murid. Murid yang mempunyai pelbagai gaya pembelajaran tersendiri ada visual, ada auditori dan kinestetik. Itu dah yang saya faham." (R2-Pengetahuan VAK -T1)

Translation: "...As for the VAK learning style, I've heard of it. VAK is the learning style of students. Students have their various learning styles—visual, auditory, and kinesthetic. That's what I understand." (R2-Knowledge VAK-T1)

Respondent 4 stated that combining visual, auditory, and kinesthetic activities benefits all students with different learning styles. Respondent 4's opinion is as follows:

*"...Kemahiran murid ini ada pelbagai. Murid-murid mempunyai kecerdasan pelbagai. Jadi, bila kita masukkan semua sekali, **gaya pembelajaran visual, auditori dan kinestetik digabungkan dengan tiga-tiga gaya pembelajaran ini, memang orang kata tak ada murid yang akan tertinggal. Ini kerana ada murid dia lebih kepada kinestetik. Visual dengan auditori dia tak dengar. Dia tak nak dengar kita cakap. Tapi bila kita ada aktiviti yang mempunyai aktiviti pergerakan ini, dia nak turut serta. Dia nak melibatkan diri. Jadi, bila ada ketiga-tiga ini gaya pembelajaran visual, audio dan kinestetik. Saya berpendapat insyaAllah semua tahap murid mereka dapat apa yang diajar oleh guru.**" (R4-Pengetahuan-T1)*

Translation: "...Students' skills vary. They have multiple intelligences. No student will be left behind when we incorporate all three learning styles—visual, auditory, and kinesthetic. Some students are more kinesthetic. They will not listen or want to hear us talk. But when we have activities involving movement, they want to participate. So, when we have all three learning styles—visual, auditory, and kinesthetic—I believe all students can grasp what is being taught." (R4-Knowledge-T1)

Although teachers know VAK, some do not implement it in teaching pre-number skills but rather in other subjects. This is stated by respondent 4:

*"...**Gaya pembelajaran VAK ni saya ada laksanakan tapi ini bukan dalam pengajaran dan pembelajaran kemahiran pranombor. Tapi ini saya ajar untuk subjek lain. Pengalaman saja untuk gaya pembelajaran visual, auditori, kinestetik ini saya mengajar kepada subjek Sains. Contohnya tema haiwan iaitu burung. Bagi visual saya bawakan haiwan sebenar burung dan tunjukkan gambar burung. Kemudian untuk aktiviti auditori, saya akan tanya murid. "Ini bunyi apa atau bagaimana bunyi burung?"**. Murid akan meneka. Bagi aktiviti kinestetik murid akan buat pergerakan burung akan tapi kalau untuk kemahiran pranombor ini belum lagi nak gunakan. Saya rasa tak pernah guna pun. Akan tetapi setelah sesi perbincangan ini saya lebih jelas konsep dalam visual, auditori dan kinestetik itu di dalam pranombor." (R4-Pengetahuan -T1)*

Translation: "...I do implement VAK learning styles, but not in teaching pre-number skills. I use it in other subjects. For example, in teaching Science about birds, I bring an actual bird and show pictures for visual learning. For auditory activities, I ask students what sound it makes. For kinesthetic activities, students mimic bird movements. However, I have not used pre-number skills yet. But after this discussion, I have a clearer concept of visual, auditory, and kinesthetic pre-number skills." (R4-Knowledge-T1)

However, respondents 6 and 3 initially did not understand the VAK learning style. However, after the researcher explained, they acknowledged that they had implemented VAK learning styles in teaching but not all three styles simultaneously. Respondent 6 stated:

*"...**Bila sebut gaya pembelajaran VAK tu macam blur sikit lah tapi bila cikgu Ju dah terangkan gaya pembelajaran VAK tu, macam dapat lah bayangan sebenarnya itu antara yang kita sedia maklum juga, cuma istilah tu mungkin istilah jenama semula ke. Biasanya gunakan satu juga. Satu kaedah dan dalam satu masa. Ataupun kadang – kadang kalau rajin dalam dua pendekatan je lah. Buat secara kumpulan. Satu sini dia***

buat contoh main Lego. Satu meja, satu tempat main lego bagi kumpulan satu dan kumpulan dua pula, mereka orang buat aktiviti lain pula. Jadi mereka akan tukar-tukar aktiviti macam tu je.” (R6-Pengetahuan-T1)

Translation: "...When you mentioned the VAK learning style, I was a bit confused, but after the explanation, I got a clearer picture. We are familiar with it, but it may just be a rebranding of terms. Usually, we use one method at a time or two if we are diligent in group activities. One group might play with Lego while another does something else, and then they switch activities." (R6-Knowledge-T1)

“...Berdasarkan penjelasan tadi, kita nampaklah pendekatan itu memang biasa kita buat. Cuma nama itu yang agak-agak baru sikitlah. Mungkin kalau macam itu, gaya pengajaran VAK itu memang kita ada buat tetapi tidak lah secara serentak pendekatan VAK dilakukan dalam satu masa. Okay berdasarkan gaya pembelajaran VAK ini, bila saya lihat pendekatan ini tak asing dengan kita. Maksudnya, kita ada laksanakan. Bukan tak ada. Cuma kurang penekanannya dalam pengajaran dan pembelajaran, tidak dijalankan secara serentak gaya pembelajaran ini. Jadi, saya rasa pendekatan ini perlu diberi penekanan semula lah, perlu ada satu guideline yang membantu guru-guru. Terutamanya kan, guru yang dah berkhidmat lama ini. Kadang-kadang ilmu-ilmu pendidikan itu banyak yang kita dah lupa. Dah tak ingat. Kadang-kadang kena diberikan latihan dan orang kata apa seiring dengan keadaan semasa supaya cikgu ini mudah untuk nak sampaikan ilmu kepada murid. Sesuai dengan keadaan semasa.’ (R3-Pengetahuan VAK-T1)

Translation: "...From the explanation, we usually do it. It is just that the term is new. We do apply the VAK learning style, but not simultaneously. We might need to emphasize it more in our teaching practices and perhaps have guidelines to help teachers, especially those who have been teaching for a long time and might need a refresher." (R3-Knowledge VAK-T1)

In summary, three preschool teachers knew about the VAK learning style, and two initially did not fully understand it. However, after explanation, they acknowledged they had implemented it in teaching but not all three styles simultaneously.

Theme 2: Knowledge of VAK Learning Styles but Did Not Implement

One preschool teacher said they had heard of VAK learning styles but did not implement them in class. This was stated by respondent 5:

“...Gaya pembelajaran VAK ini ada yang pernah dengar akan tetapi memang tak buat lah mengikut gaya pembelajaran yang berbeza ni, maksudnya di dalam kelas murid-murid semua hanya menggunakan kaedah sama contoh macam permainan main manipulatif, lego, bongkah dan lain-lain. Kita tak ikut gaya pembelajaran VAK ni.” (R5-Pengetahuan-T2)

Translation: "...I've heard of the VAK learning style, but we don't follow it in class. All students use the same methods, like playing with manipulatives, Lego, blocks, etc. We don't follow the VAK learning styles." (R5-Knowledge-T2)

In conclusion, one preschool teacher had heard of VAK learning styles but did not implement them in class. Therefore, integrating VAK learning styles in teaching prenumber skills is necessary since some preschool teachers lack knowledge about VAK learning styles and agree on its benefits if applied to prenumber skills, improving their pedagogical knowledge.

Preschool teachers' knowledge of VAK learning styles shows variation in understanding and implementation. Three teachers had a deep understanding and could identify student needs based on learning styles. This is consistent with Isra and Mufid (2022), who stated that teachers who understand various learning styles can better tailor their teaching to meet individual students' needs. However, there is a gap in implementation, particularly in teaching pre-number skills, which are often applied more in other subjects like science. This may stem from a lack of specific training and guidelines, as Yuniarti et al., (2021) suggested, emphasizing the need for continuous training for effective VAK use.

Overall, this study's findings indicate that although preschool teachers are knowledgeable about VAK learning styles, there is a need to enhance training and guidelines for integrating this approach into teaching pre-number skills. With proper support, preschool teachers can fully utilize the VAK learning styles' potential to improve student learning.

Teachers' Awareness of VAK Learning Styles

The study found that all preschool teachers became aware of VAK (Visual, Auditory, Kinesthetic) learning styles after the researcher explained its application in teaching pre-number skills. This is supported by all respondents below:

Theme 1: Awareness of VAK Learning Styles

Six preschool teachers were aware of VAK learning styles in teaching pre-number skills, with this awareness emerging after the researcher's explanation.

"...Penerangan tadi secara tidak langsung memberi kesedaran kepada saya lah, perlunya guna gaya pembelajaran macam ni untuk murid saya lebih faham dan menarik minat murid kan sebab dia ada gaya-gaya pembelajaran dari segi visual, auditori dan kinestatik." (R2-kesedaran-T1)

Translation: "...The explanation gave me awareness of the need to use such learning styles to help my students understand better and be more engaged since it incorporates visual, auditory, and kinesthetic styles." (R2-Awareness-T1)

"...Sebenarnya, selepas perbincangan, saya rasa macam satu perkara yang sangat bagus dan baru kita macam tersedar yang kita sangat melupakan pranombor tu. Mengabaikan pranombor, Sebab kita rasa itu bukan priority. Sedangkan itu satu benda yang paling asas." (R5-kesedaran-T1)

Translation: "...Actually, after the discussion, I realized we often neglect pre-number skills, thinking they aren't a priority, whereas they are fundamental." (R5-Awareness-T1)

After the researcher's explanation, teachers could express their opinions about awareness of VAK learning styles in pre-number skills. Respondents 1 and 2 said that the VAK approach is suitable for teaching pre-number skills because they believe these skills are foundational and necessary before mastering other skills. Activities involving visual, auditory, and kinesthetic approaches make pre-number learning easier for children with various learning styles.

*"...Sesuai. Sebab macam pengalaman pranombor kan dia awal kan, Satu pengajaran awal ataupun basic untuk kanak-kanak prasekolah. Saya rasa guna **pendekatan gaya pembelajaran VAK ni murid-murid akan dapat lagi jelas. Lagi mudah faham, lagi jelas** sebab mereka bermain dengan **bahan maujud, melihat gambar, mendengar arahan**, saya rasa pendekatan seperti ini akan **mencapai objektif dengan lebih cepat**. Saya berpendapat pendekatan ini **sangat sesuai digunakan dalam PdP kemahiran pranombor di prasekolah.**" (R1-kesedaran-T1)*

Translation: "...Suitable. Pre-number skills are early skills, a basic teaching for preschool children. I think using the VAK approach, students will understand better and more quickly as they engage with concrete materials, see pictures, and follow instructions. This approach can meet the objective faster." (R1-Awareness-T1)

*"...Bagi saya **wajar dan sesuai kemahiran pranombor ini menggunakan pendekatan gaya pembelajaran VAK ini**. Pendekatan seperti ini memang sesuai sangat-sangat. Sebabnya, murid kita ni memang ada pelbagai gaya pembelajaran dia kan, VAK tu kan, ada yang visual, ada yang auditori, ada yang kinestetik. Jadi bila pendekatan gaya pengajaran guru ni mengikut pendekatan VAK, memang dah persesuaian sangat tu kerana murid ada yang dia jenis visual, ada budak yang jenis auditori, ada budak yang jenis kinestetik kan. Jadi sekiranya kita masukkan **gaya pendekatan pengajaran VAK ni, akan membantu setiap gaya pembelajaran murid itu sendiri secara tidak langsung**" (R2-kesedaran-T1)*

Translation: "...I believe using the VAK approach is appropriate for pre-number skills. The approach is highly suitable since our students have different learning styles—visual, auditory, kinesthetic. So, if we incorporate VAK, it will assist each learning style." (R2-Awareness-T1)

Respondents 3 and 5 stated that VAK learning styles meet all students' needs with distinct levels of intelligence and improve teaching methods.

"...Kita dapat mengukur sejauh mana tahap murid dengan kecerdasan murid yang pelbagai ada murid visual, murid auditori, murid kinestetik. Jadi melalui gaya pembelajaran VAK ini kita boleh dapat mencakupi semua murid yang dari pelbagai tahap dan kecerdasan ini. Selain dapat memperbaiki kaedah pengajaran pada masa akan datang." (R3-kesedaran-T1)

Translation: "...We can assess the various levels of students' intelligence—visual, auditory, kinesthetic. Through the VAK learning style, we can address all students' needs with different levels of intelligence and improve teaching methods." (R3-Awareness-T1)

*"...Di sini kita boleh kenal pasti murid mana yang lemah, yang belum ada **pengetahuan asas** lagi sebelum itu kan. Jadi bila kita dah ada pendekatan dengan gaya pembelajaran VAK ini, jadi kita boleh tahu macam mana cara pengajaran yang lebih*

terbaik untuk setiap murid yang kita kategorikan itu. Wajar sangat menggunakan pendekatan gaya pembelajaran VAK dalam PdP kemahiran pranombor.” (R5-kesedaran-T1)

Translation: "...From this, we can identify weak students who lack basic knowledge. With the VAK learning style, we can determine the best teaching method for each categorized student. It's highly appropriate for teaching pre-number skills." (R5-Awareness-T1)

Respondent 4 noted the benefits of VAK learning styles for students and teachers. Students understand pre-number skills better through a comprehensive learning experience, and teachers benefit from guided teaching approaches based on VAK learning styles.

“...Jadi, bagi saya sangat wajar kerana kita mahukan murid-murid ini kefahaman yang maksimum sebelum kita nak masuk ke operasi nombor ataupun pengenalan nombor. Jadi, bila murid-murid kuat di bahagian asasnya dan guru juga dibimbing, ada guideline, ada panduan untuk mengajar murid dalam kemahiran pranombor ini, jadi memang sangat baguslah untuk kedua-dua pihak guru dan juga murid. Jadi, bagi saya, wajarlah kita gunakan pendekatan gaya pembelajaran VAK dalam kemahiran pranombor bagi pembangunan model ini di dalam kelas prasekolah.” (R4-kesedaran-T1)

Translation: "...So, I believe it's very appropriate as we want students to have a solid foundation before advancing to number operations or introductions. It benefits both parties when students have a strong foundation and teachers are guided with a clear teaching approach. Therefore, using the VAK learning approach in pre-number skills is very beneficial." (R4-Awareness-T1)

Respondent 6 also stated that the VAK learning style approach in prenumber skills will positively impact children in learning these skills. This was explained by Respondent 6 as follows:

“...Wajar pengajaran dengan gaya pembelajaran VAK untuk kanak-kanak prasekolah. Daripada sudut cikgu sendiri, kita sebagai guru boleh kenal pasti kanak-kanak prasekolah yang agak lemah. Kita perlu beri lebih perhatian lebih. Bagi murid yang okey, dia dah boleh nampaklah murid ini dah ada pengetahuan sedia ada. Dia dah agak kukuh, mantap. Satu lagi, Kebiasaanya apabila murid telah faham sesuatu dia boleh mencambahkan minat dan keseronokkan murid. Murid akan berkata, oh, best ni, senang ni. Tak delah, susah sangat.” (R6-kesedaran-T1)

Translation: "...Using the VAK approach in preschool is very appropriate. From a teacher's perspective, we can identify weaker students needing more attention. Students who are already strong have a solid pre-existing knowledge base. When students understand something, it fosters interest and enjoyment." (R6-Awareness-T1)

Theme 2: Awareness of the Importance of VAK Learning Styles in Pre-Number Skills Teaching

The study found that preschool teachers became aware of the importance of VAK learning styles in teaching pre-number skills. Respondents 1 and 2 said the VAK approach makes it easier for teachers to achieve teaching objectives and makes learning more engaging and

enjoyable for students.

*“...Terdapat kepentingan gaya pembelajaran VAK ini, pertama, supaya objektif kita mudah tercapai dengan baik lah. Dengan harapan semua murid dapat mencapai objektif. Kedua, **murid akan lebih faham dan saya rasa dia akan menjadi lebih seronok dengan pendekatan VAK tu. Sebab mereka seronok menggunakan bahan permainan manipulatif, jadi mereka tak bosan.**” (R1-kesedaran-T2)*

Translation: “...There are several important aspects of the VAK learning style. Firstly, it helps us achieve our objectives more effectively. We hope all students can meet these objectives. Secondly, students will better understand and enjoy the VAK approach because they find using manipulative play materials fun and engaging, reducing boredom.” (R1-awareness-T2)

*“...Bagi saya memang ada kepentingannya lah sebabnya, macam saya cakap tadi, sebelum murid nak kenal asas nombor, dia kena ada kemahiran asas kan? **Kemahiran asas tu bila dah gunakan pendekatan gaya pembelajaran VAK yang lebih menyeronokkan dan lebih jelas pengisian dia tu. Murid akan lebih seronok dan objektif pdp mudah tercapai.**” (R2-kesedaran-T2)*

Translation: “...In my opinion, the VAK learning style is important because, as I mentioned earlier, before students can grasp the basics of numbers, they need to have fundamental skills. These foundational skills become more enjoyable and clearer when using the VAK approach. Students will find the learning process more enjoyable, and the teaching objectives will be easier to achieve.” (R2-awareness-T2)

Respondent 4 stated that the importance of the VAK learning style lies in reducing the stress on teachers by providing a guide for teaching prenumber skills based on the VAK approach. Teaching and learning become smoother because having a comprehensive guide helps teachers with ideas for activities that cater to the visual, auditory, and kinesthetic learning styles, thus aiding the diverse understanding of students.

*“...Jadi, bila adanya **pendekatan mengikut gaya pembelajaran VAK ni, dia menjadi satu guideline**, tak kisah guru baru ataupun guru lama, menggunakan pendekatan ni dan juga dapat manfaatnya kepada murid prasekolah. **Kebaikan kepada guru-guru prasekolah antaranya guru-guru akan kurang tekanan stress, jadi pengajaran tu dia jadi lebih smooth**, maknanya guru dah tak payah nak fikir macam mana cara nak mengajar kemahiran pranombor kerana ada guideline yang disediakan untuk di ikut sahaja dan murid-murid pun dah cukup disediakan pendekatan yang mempunyai gaya pembelajaran VAK iaitu ada visual, ada audio, ada kinestetik, maknanya dah melengkapinya untuk murid. Jadi, saya rasa **pendekatan seperti ini sangat pentinglah untuk kesejahteraan guru dan juga murid-murid.**” (R4-kesedaran-T2)*

Translation: “...When we use the VAK learning style approach, it becomes a guideline that benefits both new and experienced teachers. It provides advantages for preschool teachers, such as reduced stress and smoother teaching. Teachers no longer need to worry about how to teach prenumber skills because there are guidelines to follow, and students are provided with a VAK learning approach that includes visual, auditory, and kinesthetic elements that meet their learning needs. I believe this approach is essential for the well-being of both teachers and students.” (R4-awareness-T2)

The study findings indicate that preschool teachers' awareness of the VAK learning style increased after the researcher's explanation, with teachers acknowledging that this approach helps students understand and engage in pre-number skills. Teachers noted that the VAK approach, combining visual, auditory, and kinesthetic elements, is suitable for meeting various learning styles and improving teaching methods. This approach also helps teachers achieve teaching objectives and reduces stress by providing clear guidelines. These findings align with previous studies by Huang and Zheng (2022), Atma et al., (2021), and Mastrokoukou et al., (2022), which showed that diverse learning styles enhance understanding, motivation, and teaching effectiveness. The awareness and importance of the VAK approach in teaching prenumber skills are recognized as crucial for ensuring effective and enjoyable learning for students and teachers.

Interest in the VAK Learning Style

Interviews with six respondents provided insights into the interest in the VAK learning style for teaching prenumber skills in preschool, summarized in the following theme:

Theme 1: Interest of VAK Learning Style

The study found that the VAK learning style approach in teaching prenumber skills is suitable and preferred by preschool teachers because it helps them easily achieve teaching objectives, aids student understanding, and makes learning more enjoyable through manipulative materials. This was articulated by respondents 1 and 2 as follows:

"...Ya, memang saya rasa gaya pembelajaran VAK ni memang menjadi pilihan saya lah untuk semasa pengajaran. Membantu murid lebih faham, membantu kita mencapai objektif dan pembelajaran itu menjadi lebih menyeronokkan. Sebab ada bahan manipulatif konkrit tu tadi." (R1-minat-T1)

Translation: "...Yes, I feel that the VAK learning style is indeed my choice for teaching. It helps students understand better, helps us achieve our objectives, and makes learning more enjoyable due to the use of concrete manipulative materials." (R1-interest-T1)

"...Sebab bila saya menggunakan pendekatan gaya pembelajaran VAK, satu memang membantu saya lah untuk lebih memahamkan murid tentang tajuk ataupun topik pembelajaran yang saya nak ajar tu." (R2-minat-T1)

Translation: "...Using the VAK learning style approach helps me better convey the subject or topic I want to teach." (R2-interest-T1)

Respondent 3 expressed interest in the VAK learning style for teaching prenumber skills by stating that this approach makes lesson planning more organized and helps teachers deliver instruction according to students' needs.

"...Guru dapatlah satu guideline yang cantik lah jika ada perancangan yang lebih teratur, bila dia ada satu sistem mudah cara kita nak sampaikan pengajaran ikut keperluan tu." (R3-minat-T1)

Translation: "...Teachers can benefit from well-structured guideline, making it easier to plan and deliver instruction according to students' needs." (R3-interest-T1)

Respondent 4 also expressed interest in the VAK learning style for teaching prenumber skills, saying that this approach is suitable and preferred due to using tangible materials that align with young children's nature.

*"...Ya, tentu sekali. Sebab saya rasa **pendekatan gaya pembelajaran VAK ni sangat bijak.** Kita dah didedahkan di maktab, cuma kita tak ada guideline, cara macam mana kita nak mengendalikan pdp tu menggunakan gaya pembelajaran VAK dan juga untuk murid-murid. Jadi, saya rasa sangat sesuai dan menjadi pilihan saya lah sebab macam saya cakap sebelum ni, pengalaman saya, saya lebih suka **bahan-bahan maujud yang rapat dengan murid-murid prasekolah.** Jadi, dalam ni kita tengok ada visual, auditori dan kinestetik lagi. Jadi, saya rasa memang saya akan gunakan lah kalau dia berikan pendekatan gaya pembelajaran VAK kepada saya, saya akan gunakan lah di kelas saya."* (R4-minat-T1)

Translation: "...Absolutely. I think the VAK learning style approach is very smart. We were introduced to it in college but did not have a guideline on conducting lessons using the VAK learning style. So, I find it very suitable and my preferred choice because, as I mentioned before, I prefer using tangible materials that resonate with preschool children. This approach includes visual, auditory, and kinesthetic elements, which I will use in class. (R4-interest-T1)

Respondent 5 expressed interest in the VAK learning style for teaching prenumber skills, stating that this approach is suitable and preferred because it helps students better understand foundational skills and prepares them for more complex skills.

*"...Kalau kita faham betul-betul pendekatan gaya pengajaran VAK ni, sebenarnya dia boleh banyak **membantu murid tu untuk memahami kemahiran pranombor yang lebih baik lagi.** Maksudnya, dari awal murid dah boleh memahami kemahiran asas dengan lebih baik. **Dengan persediaan ni murid lebih bersedia untuk belajar kemahiran yang lebih sukar lagi.**"* (R5-minat-T1)

Translation: "...If we really understand VAK teaching style approach, can actually help the student a lot to understand the pre-number skills even better. This means, from the beginning students can understand the basic skills better. With this preparation, students are better prepared to learn more difficult skills." (R5-interest-T1)

This was supported by Respondent 6, who said that the VAK learning style promotes differentiated learning, making students more active and engaged in enjoyable activities.

"...Pendapat saya, ya. akan membantu lah. Anak-anak pun akan lebih seronok sebab bila time VAK ni, ada pembelajaran terbeza, ada lebih banyak aktiviti, anak-anak lebih aktif lah. Lebih seronok dan minat." (R6-minat-T1)

Translation: "...In my opinion, yes, it will help. Children will enjoy it more because, during the VAK activities, there is differentiated learning, more activities, and the children become more active and interested." (R6-interest-T1)

The study findings show that the VAK learning style approach for teaching prenumber skills in preschool is highly suitable and preferred for teachers. It helps achieve teaching objectives, enhances student understanding, and makes learning more enjoyable with

manipulative materials. These findings are consistent with Abarquez (2020), who found that using manipulative materials in teaching can enhance students' understanding and interest in learning. Teachers find this approach makes lesson planning easier and aligns with the nature of children, who prefer hands-on learning experiences. Lakshmi and Maraichelvi (2023) found that learning involving several styles, such as visual, auditory, and kinesthetic, can increase engagement and effectiveness among children.

Additionally, the VAK learning style helps students better understand basic skills and prepares them for more complex skills while promoting active and enjoyable learning. This is supported by Salleh and Er (2022), who found that learning approaches involving assorted styles can improve foundational understanding and motivate students to continue learning. Therefore, the VAK learning style approach should be widely integrated into teaching prenumber skills in preschool to achieve optimal learning outcomes.

CONCLUSION AND IMPLICATIONS OF THE STUDY

This study found that preschool teachers' knowledge, awareness, and interest in Visual, Auditory, and Kinesthetic (VAK) learning styles play a crucial role in teaching pre-number skills. Most teachers know about VAK learning styles and recognize their importance after receiving explanations from the researcher. They stated that the VAK approach can help achieve teaching objectives, enhance students' understanding, and make learning more engaging and enjoyable. However, some teachers still lack understanding or have not implemented the VAK approach in teaching prenumber skills.

Teachers aware of VAK learning styles noted that this approach could meet the needs of students with various levels of intelligence and learning styles. They also recognized the importance of using manipulative materials and activities that align with visual, auditory, and kinesthetic characteristics to help students better understand prenumber skills. Teachers also believe that the VAK approach can help them plan their lessons more systematically and reduce the stress associated with teaching.

This study contributes clear and structured teaching guidelines for teachers implementing the VAK (Visual, Auditory, Kinesthetic) approach for teaching pre-number skills. The interviews revealed that teachers need specific guidelines for effective teaching, especially those containing VAK elements. Although teachers already have the National Preschool Curriculum Standard (KSPK), they require additional guidelines to plan and execute their lessons more effectively. These guidelines are expected to enhance students' understanding and achievement in prenumber skills, thereby supporting more holistic educational development.

Following this, preschool teachers need more in-depth training and guidance on using VAK (Visual, Auditory, Kinesthetic) learning styles in teaching pre-number skills. This includes providing training materials, modules, and workshops to strengthen teachers' skills in planning and delivering effective lessons. With more in-depth training and guidelines, it is hoped that teachers can better adapt the VAK approach, ensuring that each student receives learning that is suited to their learning style, thereby improving their understanding and achievement in prenumber skills.

Finally, this study suggests formally integrating the VAK (Visual, Auditory, Kinesthetic) approach into the preschool curriculum. This ensures that all teachers consistently and systematically use this approach in teaching prenumber skills. Such integration is expected to create a more comprehensive and effective teaching standard, enhancing early childhood education quality by considering different learning styles. Future research could examine the effectiveness of this integration, including its impact on student achievement, implementation challenges, and the support teachers need to adapt this approach effectively. Additionally, long-term studies on the effects of the VAK learning style approach on preschool children's cognitive development could provide a deeper and more comprehensive assessment of this integration's effectiveness.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this study.

AUTHOR CONTRIBUTIONS

The author was responsible for the conception and design of the study, data collection, data analysis, interpretation of the findings, and preparation of the manuscript.

DECLARATION OF GENERATIVE AI USE

No generative artificial intelligence (AI) tools were used in the design, data collection, analysis, interpretation of the findings, or writing of this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the author upon reasonable request.

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