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Development of a Pre-Number Skill Teaching Activity Model Based on VAK Learning Style in Preschool: A Needs Analysis

Pembangunan Model Aktiviti Pengajaran Kemahiran Pranombor berasaskan Gaya Pembelajaran VAK di Prasekolah: Satu Analisis Keperluan

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ABSTRACT

This study is a needs analysis study in the first phase of the design and development approach (DDR) founded by Richey and Klein (2007). The purpose of this needs analysis study is to identify the need for the development of a model for teaching pre-number skills based on the VAK learning style in preschools. The study was conducted qualitatively using the interview method. A total of six respondents who are experienced preschool teachers were interviewed. All these preschool teachers have been selected by purposive sampling and meet the set criteria. Interview data were analyzed using thematic analysis. The findings of this study show that there is a need for researchers to develop a model of pre-number skills teaching activities based on the VAK learning style in preschools, which can help teachers diversify teaching methods to students, raise awareness of the importance of pre-number skills and provide references and guidance for preschool teachers in applying the VAK learning style approach make learning more easily mastered by students, teaching and learning objectives are easily achieved. Emphasis on the development of pre-number skills teaching activity models based on the VAK learning style in preschools is seen as very relevant so that the quality of teaching and learning can be improved to prepare students who have a strong and excellent early mathematics foundation and then have a positive impact on teachers and students and can be competitive in the local and global arena.

Keywords: pre-number skills, VAK learning style, needs analysis, early mathematics, preschool.

ABSTRAK

Kajian ini merupakan kajian analisis keperluan dalam fasa pertama pendekatan reka bentuk dan pembangunan (PRP) yang diasaskan oleh Richey dan Klein (2007). Tujuan kajian analisis keperluan ini dilaksanakan adalah bagi mengenal pasti keperluan pembangunan model aktiviti pengajaran kemahiran pranombor berasaskan gaya pembelajaran VAK di Prasekolah. Kajian dilakukan secara kualitatif menggunakan kaedah temu bual. Seramai enam orang responden iaitu guru prasekolah yang berpengalaman telah ditemu bual. Semua guru prasekolah ini telah dipilih secara pensampelan bertujuan dan memenuhi kriteria yang ditetapkan. Data temu bual dianalisis menggunakan analisis tematik. Dapatan kajian ini menunjukkan terdapat keperluan bagi penyelidik membangunkan model aktiviti pengajaran kemahiran pranombor berasaskan gaya pembelajaran VAK di prasekolah dapat membantu guru mempelbagaikan kaedah pengajaran kepada murid, menimbulkan kesedaran akan kepentingan kemahiran pranombor serta memberi rujukan dan panduan guru-guru prasekolah dalam

menerapkan pendekatan gaya pembelajaran VAK menjadikan pembelajaran lebih mudah dikuasai oleh murid-murid, objektif pengajaran dan pembelajaran mudah tercapai. Penekanan terhadap pembangunan model aktiviti pengajaran kemahiran pranombor berasaskan gaya pembelajaran VAK di prasekolah ini dilihat sangat relevan supaya kualiti pengajaran dan pembelajaran dapat ditingkatkan bagi menyediakan murid yang mempunyai asas matematik awal yang kukuh cemerlang seterusnya memberi impak yang positif kepada guru dan murid serta mampu berdaya saing di arena tempatan dan global.

***Kata kunci**: kemahiran pranombor, gaya pembelajaran VAK, analisis keperluan, matematik awal, prasekolah.*

INTRODUCTION

The concept of pre-numbers in preschool education, as outlined in the revised KSPK 2017, is divided into several parts: matching objects, comparing the number of objects, serializing, recognizing and building patterns, and understanding the concept of consistency. Understanding pre-numbers is crucial in early childhood mathematics education because pre-number skills lay the foundation for success in more complex mathematical concepts in the future (Tobia et al., 2021; Hannula-Sormunen et al., 2015). Children who develop solid pre-number skills tend to excel in mathematics throughout their education (Clements & Sarama, 2009). The development of children's pre-numerical skills begins before they enroll in school (Litkowski et al., 2020; MacDonald & Murphy, 2021). These skills are vital as they predict children's achievement in mathematics during primary and secondary school (Nguyen et al., 2016). Therefore, to effectively assess and teach, it is essential to understand how pre-number skills develop (Litkowski et al., 2020). This understanding is crucial as mastery of pre-number skills plays a significant role in children's early mathematical development (Nogues & Dorneles, 2021).

PROBLEM STATEMENT

The issue of student achievement in mathematics frequently garners attention, with reports indicating that approximately 20 percent of students exhibit low calculation skills and rely on classification methods, while an additional 4 percent to 14 percent have been identified as experiencing learning difficulties in mathematics (Butterworth, 2010; Shalev et al., 2005). The inability to master literacy and numerical skills at this early stage indicates challenges in students' mathematics learning (Luyee et al., 2015).

This highlights that the mathematics proficiency of students in Malaysia still requires improvement on a global scale. Meanwhile, TIMSS performance statistics also indicate declining achievement levels (Connie Shin & Juppri, 2019; Lu Chung Chin & Effandi Zakaria, 2015). Early Mathematics Education forms the most critical foundation for acquiring mathematical knowledge to navigate a more challenging life. Early mathematics constitutes a fundamental skill that necessitates development from preschool age, as it lays the groundwork for future academic performance. Consequently, children equipped with these skills will be better prepared to comprehend more advanced mathematical concepts in the future (Lee, 2017; Nguyen et al., 2016; Zang, 2015).

Rachmawati et al., (2021) and Geary et al., (2012) asserted that students with low achievement in mathematics struggle due to difficulties in mastering prenumber knowledge, counting skills, and basic mathematical facts. Previous studies have highlighted that students' academic performance suffers due to their inadequate mastery of pre-number skills (Castro Cañizares et al., 2021; Sowder, 2007). The issue pertains to students' lack of proficiency in pre-number skills, which significantly impacts their mathematical mastery. Many students encounter challenges in fundamental arithmetic, algebra, and other math-related subjects because they haven't mastered pre-number skills (Malone et al., 2020; Lyons et al., 2014). Consequently, these struggling students risk falling behind in primary school mathematics. Insufficient comprehension of pre-number skills can result in difficulties in basic arithmetic operations such as addition, subtraction, multiplication, and division (Szkudlarek et al., 2022; Malone et al., 2020). Moreover, a deficiency in pre-number skills can pose challenges in more advanced mathematical topics, including algebra, geometry, and statistics (National Research Council, 2001). Students grappling with pre-number skills find it challenging to perform mental calculations, estimate quantities accurately, or

discern unreasonable answers (NRC, 2001).

Furthermore, some preschool teachers require assistance determining appropriate methods, strategies, and implementations for early mathematics instruction (Li, 2021; Costa et al., 2021; Kam et al., 2018). It has been observed that teachers encounter challenges in developing children's mathematical knowledge and concepts (Sia & Kamariah, 2022), consistent with the findings of Nachiappan et al.'s (2018) study, which revealed that preschool teachers possess limited experience and expertise in selecting teaching aids, with less emphasis on creative and innovative teaching approaches in the classroom. Subsequently, preschool teachers often feel less comfortable, confident, and more hesitant when teaching mathematics due to their limited mathematical content knowledge (Jenßen et al., 2020; Moss et al., 2016), ultimately impeding their involvement in pedagogical practices and teaching and learning strategies in the classroom. This lack of confidence can also impact students' perceptions of mathematics as challenging, reducing their interest and engagement in learning.

Quality teachers can make learning more interesting and are able to plan teaching and facilitation creatively and innovatively (Yasin et al., 2021). Therefore, the teaching and learning strategy of preschool teachers in Early Mathematics, especially in pre-number skills, needs to be prioritized as an effort to strengthen further the knowledge and skills of preschool children regarding pre-number skills, thereby indirectly making it easier for students to master the more challenging Early Mathematics skills.

The issue of preschool teachers' teaching strategies in Early Mathematics, particularly pre-number skills (Rono et al., 2020; Cueli et al., 2020), can be addressed by incorporating elements of the VAK learning style into their teaching approaches. Papadatou-Pastou et al., (2021) discovered that educators frequently utilize the VAK Model to identify and accommodate students' diverse learning styles in their instructional practices. This underscores the VAK Model's dual function as both a teaching strategy and an assessment tool for understanding students' learning preferences. Moreover, according to Osman et al., (2024) teachers need to pay full attention to teaching strategies that target students with visual, auditory and kinesthetic learning styles. According to Samara Willis (2017), the VAK Model is a widely adopted instructional technique that is an effective intervention for student learning. These findings collectively demonstrate the widespread trust educators place in the VAK Model, which can be applied to cater to individual students' learning styles.

Therefore, developing a pre-number skills teaching activity model based on the VAK learning style in preschool is highly significant. It represents a crucial step toward enhancing Early Mathematics instruction, particularly in pre-number skills, for preschool teachers. Implementing teaching and learning methods in Early Mathematics, especially pre-number skills, based on the VAK approach, can indirectly engage and stimulate the interest of preschool students in learning Early Mathematics.

NEEDS ANALYSIS

Before constructing a model, conducting a needs analysis is a crucial preliminary stage to identify fundamental research questions (Siraj et al., 2013; Mohd Jamil, 2016; Beram et al., 2020). Additionally, needs analysis aims to scrutinize current issues and determine if there is a necessity for model development (Azli, 2018; Mohd Jamil & Mat Noh, 2020). This study used McKillip's needs analysis model (1987), which centers on evaluating decisions to address problems within a target group. McKillip's Discrepancy Model (1987) is the foundation for analyzing the disparity between the present situation and the desired outcome. According to McKillip (1987), the needs analysis phase entails identifying and evaluating the needs of the topic, which will influence the desired outcomes. The identification phase involves defining issues and proposing corresponding solutions. Needs analysis is frequently executed through three methods: face-to-face interviews, telephone interviews, and questionnaires (McKillip, 1987).

METHODOLOGY

Design and Development Research (DDR) was employed in this study. The design and development approach is defined as systematic research to conduct the design, development, and evaluation process

to establish an empirical basis for creating and producing products and equipment. This study aims to develop a pre-number skill activity model based on the VAK learning style in preschool. Richey and Klein (2007) elucidated that a study utilizing the DDR method follows an orderly and systematic process, comprising the needs analysis phase, the design and development phase, and the evaluation phase, which includes testing the usability of the model. The Design and Development Research approach (DDR) denotes a systematic research process encompassing the development of education-related products, models, or modules. The strength inherent in this DDR-based research approach is its systematic nature, which can guide researchers in developing their studies, provided that each method used adheres to the prescribed procedures (Mohd Jamil & Mat Noh, 2020).

In this study, needs analysis is the first phase in DDR. The researcher uses a qualitative approach using a semi-structured interview protocol with six experienced preschool teachers. A needs analysis was made to get a direct expert view on developing a pre-number skills activity model based on the VAK learning style in preschool. An interview protocol was developed based on the themes identified through the literature review. Before the interview was conducted, the validity of the language, content, and methodology experts was checked against the interview protocol. Open interviews allow the researcher to gather more detailed information about the respondents' perspectives and the study and help manage the conversation (Cresswell & Creswell, 2018; Cohen et al., 2018). Education specialists are those with more than five years of expertise in their current profession. (Palmer et al., 2005; Akbari & Yazdanmehr, 2014). Sampling is used to select respondents using purposive sampling to meet certain criteria collected from various districts and schools. Interviews were recorded with the consent of the respondents and transcribed verbatim. Before doing the analysis, classification, and coding, all respondents need to confirm the transcription (Cohen et al., 2018).

RESULTS AND DISCUSSION

Based on the verbatim transcription analysis conducted, the respondents have agreed that there is a need to develop a model of pre-number skills activities based on the VAK learning style in preschool.

Demographics of Study Respondents

A total of six respondents have over 9 years of experience in the field of preschool education. This study employs purposive sampling, as highlighted by Creswell (2008), who notes that a key distinction between quantitative and qualitative research lies in the purposive selection of samples for qualitative research. Considering the study's context, the researcher opted for purposive sampling by selecting six participants from Melaka state, constituting a heterogeneous group based on the following criteria:

1 Gender differences
2 Variances in teaching settings
3 Disparities in teaching experience

The demographics of the respondents are shown in Table 1.

Table 1: Demographics of the Respondents

Aspects	Categories	No.
Gender	Men	2
	Female	4
Teaching place	Alor Gajah District	2
	Central Malacca District	2
	Jasin District	2
Experience in Education	5 to 10 years	1
	11 years and above	5

Based on Table 1, it was found that six respondents involved in this research interview were preschool teachers with experience in preschool education for more than 9 years. All respondents in this interview are from different districts, namely Alor Gajah, Melaka Tengah, and Jasin. All the respondents who have been interviewed have expertise in the field of preschool, making them the primary trainers in the state of Melaka.

After analyzing the interviews, it was determined that the respondents agreed on the necessity of developing a model for teaching pre-number skills activities tailored to the VAK learning style in preschool. Respondents also elaborated on the importance of developing such a teaching activity model for pre-number skills based on the VAK learning style in this preschool setting.

The Need for Developing a Pre-Number Skills Teaching Activity Model Based on the VAK Learning Style in Preschool

The needs analysis phase study findings indicate a necessity for developing a model of pre-number skills teaching activities grounded in the VAK learning style for preschools. This perspective was validated by respondent 1, drawing from the rationale of their preschool teaching experience. Similarly, respondent 2 corroborated this notion, drawing on their 15 years of experience in preschool teaching.

> *"Saya rasa amat perlu sebab kalau kita ada satu model, cikgu-cikgu akan ikut model itu. Jadi pengajaran akan lagi tersusun dan akan lebih berkesan. Jadi memang amat perlu. Ada panduan supaya kita sebagai cikgu kadang-kadang mengajar ikut cara kita. Asalkan budak faham. Tapi bila ada model aktiviti pengajaran ini, guru akan ikut cara model ini. Kerangka model itu. Jadi bila kita ikut, pengajaran itu akan jadi tersusun mengikut langkah demi langkah".* (R1-PNM-AK)
>
> **Translation:** I think it is necessary because if we have a model, the teachers will follow it. So, teaching will be more organized and will be more effective. So it is very necessary. There is a guide so that we as teachers sometimes teach in our way. As long as the boy understands. But when there is a model of this teaching activity, the teacher will follow the way of this model. The framework of the model. So, if we follow, the lesson will be organized step by step. (R1-PNM-AK)
>
> *"Bagi saya, perlulah dibangunkan model aktiviti pengajaran ini supaya kita ada guideline. Dan memudahkanlah kita sebagai guru nak mengajar. Contoh macam tadi kan ada topik-topik yang susah nak diajar. Jadi bila ada model aktiviti pengajaran ini cikgu lebih nampak. Kita ada panduan yang boleh di ikut. Pada saya sangat sesuai dan amat memerlukan".* (R2-PNM-AK)

> **Translation:** For me, it is necessary to develop a model for this teaching activity to provide guidance and facilitate the teaching process for us as educators. Certain topics can be particularly challenging to teach, and having a model for this teaching activity makes the teacher's role more conspicuous. With a structured model, we have a clear guide to follow. In my opinion, this is highly suitable and essential. (R2-PNM-AK)

This point is further supported by respondent 4, who emphasized the vital necessity of relying on the VAK learning style to facilitate this teaching activity model, stating as follows:

> *"Pada pandangan saya perlu untuk kita bangunkan model aktiviti pengajaran untuk kemahiran pranombor berasaskan gaya pembelajaran VAK ni di prasekolah. Sebab apa? Kita boleh mempelbagaikan lagi gaya pengajaran kita di dalam kelas. Dengan adanya model aktiviti pengajaran mengikut gaya pembelajaran VAK ni setelah diterangkan dan kefahaman yang telah saya dapat saya rasa benda ni sangat bagus dan memang boleh digunakan untuk semua subjek. Jadi memang saya rasa amat perlu untuk kita bangunkan untuk membantu guru-guru prasekolah terutamanya di kawasan-kawasan kampung, pedalaman yang kekurangan akses ataupun guideline. Jadi dengan panduan seperti ini, membantu guru-guru kita daripada semua tahap. Tak kisah dari sekolah kampung pun boleh guna, sekolah bandar, sekolah elit. Maknanya untuk memudahkan guru dan juga murid-murid serta memberi manfaat kepada semua".* (R4-PNM-AK)
>
> **Translation:** In my view, we must develop a teaching activity model for pre-number skills based on the VAK learning style in preschool. Why? We can diversify our teaching style in the classroom. With the teaching activity model according to the VAK learning style after it has been explained and the understanding I have gained, I think this is very good and can be used for all subjects. So, I think we must develop programs to help preschool teachers, especially in rural areas lacking access or guidelines. So with a guide like this, we help our teachers from all levels. It doesn't matter if you are from a village, city, or elite school. The meaning is to make it easier for teachers and students as well as to benefit everyone (R4-PNM-AK)

Respondent 3 also supports the need for the development of this teaching activity model:

> *"Gaya pembelajaran VAK ini pernah dengar. Setahu saya, belum ada model aktiviti pengajan seperti ini lagi untuk kemahiran pranombor. Jadi bila ada model aktiviti pengajaran seperti ini saya rasa bagus dan perlu dibangunkan. Jadi keperluan untuk nak adakan tu memang sangat wajar pada waktu ketika ini. Sebab pertama ianya memudahkan dan membantu. Yang kedua kadang kita dapat ikut susunan flow pengajaran kita. Bermula dengan konkrit. Maksudnya kita ikut flow tu. Rangka pengajaran tu berdasarkan gaya pembelajaran VAK. Jadi saya rasa ianya wajar. Sangat-sangat wajar perlu untuk adakan pembangunan model aktiviti pengajaran seperti ini".* (R3-PNM-AK)
>
> **Translation:** I have heard of this VAK learning style. As far as I know, there is no learning activity model like this yet for pre-number skills. So, when there is a teaching activity model like this, I think it is good and needs to be developed. So, the need to hold that is very reasonable at this time. The first reason is that it is easy and helpful. The second is that sometimes, we can follow the flow of our teaching. Start with concrete. It means we go with the flow. The teaching framework is based on the VAK learning style. So, I think it is reasonable. It is very necessary to develop a teaching activity model like this. (R3-PNM-AK)

Furthermore, the views of Respondent 5 and Respondent 6 are also supported by emphasizing the importance of pre-number skills. This topic is often neglected and considered quiet, as it contributes significantly to the understanding and manipulation of numbers, as follows:

> *"Sangat-sangat perlu. Jadi ada kepentingan dan sangat berkeperluan kerana pendidikan awal ni yang pertama adalah yang asas murid perlu kuasai. Kita perlu sebar luaskan untuk semua prasekolah. 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. Jadi saya berpandangan model aktiviti pengajaran untu kemhiran pranombor berasaskan gaya pembelajaran VAK ini sangat perlu dan perlu dijalankan di prasekolah serta diperkenalkan. Cikgu kena buat untuk kami, memang perlu ada panduan serta tatacara bagaimana melaksanakannya supaya cikgu lebih mengambil berat tentang kemahiran pranombor ini".* (R5-PNM-AK)
>
> **Translation:** Very necessary. So it is important and necessary because this early education is the first thing students need to master. We need to spread it to all preschools. Actually, after the discussion, I feel it's a very good thing, and we just realized that we forgot the prefix. Ignore the prefix because we don't think it's a priority. At the same time, that is one of the most basic things. So, I believe this teaching activity model for pre-number skills based on the VAK learning style is necessary and should be carried out in preschools and introduced. The teacher has to do it for us, and there needs to be a guide and procedure to implement it so that the teacher is more concerned about this pre-number skill. (R5-PNM-AK)
>
> *"Pendapat saya memang kita perlulah satu model aktiviti pengajaran yang berasaskan gaya pembelajaran VAK ini, supaya bila kita ada satu panduan, kita lagi senang nak sampaikan ke kawan-kawan, nak sebar luaskan dekat rakan-rakan guru prasekolah khususnya. Dan ni pun rasa untuk cikgu aliran perdana pun perlu. Pendekatan gaya pembelajaran VAK ni satu benda yang sangat memberangsangkan kalau kita gunakan sepenuhnya. Bila kita bincang-bincang ni pun, sambil kita buat ni, kita ingat balik tadi mengajar pun macam terlompat juga skip-skip juga sebenarnya. Kita mengandaikan mesti murid-murid dah tahu ni, takkanlah tak tahu. Akan tetapi apabila kita terus masuk abstrak, dia macam termangu-mangu. Oh ok, murid ini tidak faham. Jadi guru perlu ulang dari langkah yang awal agar murid mudah faham".* (R6-PNM-AK)
>
> **Translation:** My opinion is that we need a teaching activity model based on this VAK learning style so that when we have a guide, we are happy to pass it on to our friends and spread it to our preschool teacher friends in particular. And I think this is also necessary for mainstream teachers. The VAK learning style approach is very encouraging if we use it fully. When we talk about this, while we are doing this, we remember that teaching was like skipping. We assume the students must already know this; they will not know. However, he seems to be in doubt when we continue to get into the abstract. Oh, ok, this student doesn't understand. So the teacher needs to repeat the first step so that the students understand easily. (R6-PNM-AK)

Based on the verbatim interview analysis, all respondents agreed that researchers need to develop an activity model for pre-number skills based on the VAK learning style in preschool as a guide and reference for preschool teachers in applying the VAK learning style in pre-number skills.

The Importance of Developing a Teaching Activity Model for Pre-Number Skills based on the VAK Learning Style in Preschool

Based on transcription analysis, it also shows that developing an activity model for pre-number skills based on the VAK learning style in this preschool will be able to assist teachers in their teaching and learning processes by implementing the VAK learning style approach.

The respondent affirmed that the teaching activity model for pre-number skills based on the VAK learning style in preschools that was developed could be used as a reference and guide for preschool teachers in applying the VAK learning style approach to make learning more easily mastered by students, teaching and learning objectives easily achieved. Teachers will emphasize the topic of pre-number skills that have been overlooked in the past. This statement is based on the views of Respondent 1 and Respondent 2 as follows:

> *"Mestilah ada kepentinganya. Pertama, supaya objektif kita tercapai dengan baik lah. Kalau boleh tu dan harapan semua murid dapat mencapai objektif. Kedua, murid akan lebih faham dan saya rasa dia akan menjadi lebih faham dan seronok dengan adanya aktiviti berdasarkan gaya pembelaran VAK tu. Sebab mereka seronok menggunakan bahan, gambar dan aktiviti hands-on. Jadi mereka tak bosan. Jadi pada saya untuk kemahiran pranombor ni kita nak fahamkan murid terlebih dahulu sebelum menguasai konsep nombor, perlu fahamkan murid kemahiran asas ni dulu iaitu kemahiran pranombor. Jadi aktiviti pengajaran yang bersandarkan gaya pembelajaran VAK ni memang amat bersesuaian untuk kemahiran pranombor".* (R1-KPTG-VAK)
>
> **Translation:** There must be an interest first to achieve our objectives well. If possible, I hope all students can achieve the objective. Second, the student will understand better, and I think he will understand better and have fun with the activities based on the VAK presentation style because they enjoy using materials, pictures, and hands-on activities. So they are not bored. So, in my opinion, for this pre-number skill, we want to understand the students first before mastering the number concept; it is necessary to understand the basic skill of the students first, which is the pre-number skill. So, teaching activities based on the VAK learning style are indeed very suitable for pre-number skills. (R1-KPTG-VAK)
>
> *"Bagi saya memang ada kepentingannya sebabnya, macam saya cakap tadi, sebelum murid nak kenal asas nombor, dia kena ada kemahiran asas. Kemahiran asas tu bila dah gunakan dengan pendekatan gaya pembelajaran VAK akan lebih menyeronokkan dan lebih jelas pengisian dia tu. Objektif kita akan lebih tercapai. Murid akan lebih seronok. Guru pun akan lebih pelbagaikan kaedah pengajaran. Jadi bila ada gaya pembelajaran VAK seperti ini dengan diberikan panduan secara jelas, dapat membantu guru guru prasekolah sebenarnya yang selama ni kita macam terlepas pandang dengan kemahiran pranombor".* (R1-KPTG-VAK)
>
> **Translation:** For me, it is important because, as I said earlier, he has to have basic skills before a student wants to know the basics of numbers. When used with the VAK learning style approach, those basic skills will be more fun and clearer. Our objectives will be achieved. Students will have more fun. Teachers will also diversify teaching methods. So, if there is a VAK learning style like this with clear guidance, it can help preschool teachers who seem to overlook pre-number skills. (R1-KPTG-VAK)

This viewpoint is further supported by respondents 4 and 3, who emphasized the importance of having a teaching activity model for pre-number skills as a guide for preschool teachers. Teachers will feel less

pressured to teach, which is crucial for students' comprehension before progressing to more challenging topics such as number concepts and operations, as stated below:

> *"Pandangan saya pendekatan gaya pembelajaran VAK dalam pranombor ni amat penting. Apabila adanya pendekatan gaya pembelajaran VAK ini, akan menjadi satu panduan kepada guru baru ataupun guru lama untuk menggunakan pendekatan gaya pembelajaran VAK ni dan juga memberi manfaat kepada murid prasekolah. Pandangan, saya ianya sangat penting kerana apabila guru-guru kurang stres sesi pengajaran dan pembelajaran menjadi lebih lancar, kerana guru telah disediakan panduan aktiviti pengajaran yang sesuai untuk kemahiran pranombor dan memenuhi keperluan murid-murid yang disertakan aktiviti mengikut gaya pembelajaran murid visual, audio, kinestetik. Jadi, saya berpendapat model aktiviti pengajaran ini sangat penting untuk kesejahteraan guru dan juga murid-murid"*. (R4-KPTG-VAK)
>
> **Translation:** In my opinion, VAK's learning style approach in pre-numbers is very important. If there is this VAK learning style approach, it will guide new teachers or old teachers to use this VAK learning style approach and benefit preschool students. My point of view is that it is very important because when teachers are less stressed, teaching and learning sessions become smoother because teachers have been provided with teaching activity guides that are suitable for pre-number skills and meet the needs of the students that include activities according to the student's learning style, visual, audio, kinesthetic. So, I think this teaching activity model is very important for the well-being of teachers and students. (R4-KPTG-VAK)
>
> *"Bagi saya sangat penting kerana kita mahukan murid-murid ini kefahaman yang maksimum sebelum nak masuk ke operasi nombor ataupun konsep nombor. Jadi, apabila murid-murid kuat di bahagian asasnya dan guru juga dibimbing, ada guideline, ada panduan untuk mengajar murid kemahiran pranombor ini, jadi memang sangat baguslah untuk kedua-dua pihak di pihak guru dan juga pihak murid. Jadi, bagi saya, wajarlah model aktiviti pengajaran untuk kemahiran pranombor ini dibangunkan di prasekolah"*. (R3-KPTG-VAK)
>
> **Translation:** For me, it is very important because we want these students to have the maximum understanding before going into number operations or number concepts. So, when the students are strong in the basics, and the teacher is also guided, there are guidelines to teach the students these pre-number skills, which is very good for both the teacher and the student. So, for me, it is appropriate that the teaching activity model for these pre-number skills is developed in preschool. (R3-KPTG-VAK)

This view is also supported by Respondent 5 and Respondent 6, who states that the importance of teaching activity models for pre-number skills so that students can easily understand the concept of numbers is stated as follows:

> *"Pentingnya untuk pengetahuan yang asas sebelum murid melangkah kepada topik konsep nombor. Maksudnya kemahiran pranombor tu, kena menguasai betul-betul. Baru murid boleh kepada konsep nombor. Sebab kalau kita tengok balik, kenapa budak kita operasi nombor macam tambah dan tolak tu dia tak dapat kerana murid belum menguasai kemahiran pranombor seperti mana banyak dan mana sikit. Maksudnya, jika murid tidak kuasai mana banyak dan sedikit , masih belum fahami konsep tersebut , akan berlaku kesukaran murid untuk memahami konsep tolak itu sendiri"*. (R5-KPTG-VAK)

> **Translation:** Basic knowledge is important before students move on to the topic of number concepts. It means that you have to master pre-number skills. New students can understand the concept of numbers. If we look back, why can't our boy do number operations like addition and subtraction because the students have not mastered pre-number skills such as how much and how little? That is, if the student does not master the many and the few and still does not understand the concept, there will be difficulties for the student to understand the concept of subtraction itself. (R5-KPTG-VAK)

> *"Memang penting gaya pengajaran VAK ni untuk dua-dua pihak, untuk cikgu dan juga murid, jika daripada awal kemahiran pranombor ni murid masih tak dapat kuasai, tak faham, banyak atau sikit , sama banyak ataupun lebih kurang ni, jadi murid akan keliru dan susah nak fahamkan, seterusnya untuk menguasai kuasai topik yang lebih mencabar. Jadi pasti ada kesan sekiranya murid tidak kuasai kemahiran pranombor, murid akan sukar untuk belajar topik-topik yang lebih dalam matematik awal".* (R6-KPTG-VAK)

> **Translation:** The VAK teaching style must cater to both sides, benefiting the teacher and the students. If, from the beginning, students fail to grasp pre-number skills—whether to a significant or minimal extent, in equal measure or otherwise—they will experience confusion and find it challenging to understand, hindering their ability to master more complex topics. Therefore, the inability to master pre-number skills will significantly impact it, making it difficult for students to comprehend subsequent topics in early mathematics. (R6-KPTG-VAK)

Based on the findings of this interview, it can be concluded that the respondents unanimously agree on the necessity of developing a teaching activity model for pre-number skills based on the VAK learning style in this preschool. Such a model is deemed essential both for their use and as a guide for teachers in facilitating the teaching and learning of pre-number skills. Their statements are informed by their experiences as preschool educators. Siraj et al., (2020) elucidated that the needs analysis phase aimed to identify the necessity for constructing the proposed innovation in the study.

CONCLUSION

Based on the conducted research, it can be concluded that the requirements analysis phase needs to be implemented as the initial step in the Design and Development Study (DDR). Through the needs analysis, respondents concurred on developing a teaching activity model for pre-number skills based on the VAK learning style in preschool. This model is a reference and guide for preschool teachers in teaching and learning pre-number skills.

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