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### TEACHING THINKING SKILLS THROUGH VISIBLE THINKING ROUTINES (VTRS): SHAPING DISPOSITIONS OF PRE-SERVICE ESL TEACHERS

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#### ABSTRACT

**Purpose** - The teaching of thinking skills is not only dependent on pedagogical skills, but also on dispositions. In Malaysia, the teaching of thinking skills is prominent in policy documents, yet weakly embedded in subject teaching. Therefore, the aim of this study was to understand the dispositions of ESL pre-service teachers towards Visible Thinking Routines (VTRs), which are a collection of thinking tools that facilitate different types of thinking. The goal was to identify the salient features of VTRs which shaped the dispositions of ESL pre-service teachers towards teaching thinking.

**Methodology** - Data consisted of 117 written reflective accounts and four focus group discussions involving fifteen pre-service teachers. The participants had experienced VTRs in the following two ways: as learners and as “teachers”.

**Findings** - Participants were largely open and positive towards VTRs. Two main themes reflected this inclination, and they were related to the inherent quality of VTRs which fostered active learning environments, and the systematic framework for teaching thinking skills that VTRs provided. At the same time, there were some less favourable dispositions which were mainly due to finding the “right” routine and implementing VTRs, which resulted in the process being time-consuming.

**Significance** - To shape positive dispositions towards teaching thinking, pre-service teachers should be explicitly taught how to teach thinking and be immersed in a culture of thinking at the teacher education level. This might result in getting pre-service teachers' acceptance and "buy-in" towards research-based thinking tools such as VTRs, which can be used to integrate thinking skills into subject teaching. Openness to use these tools could later result in "dispositions in action" in these pre-service teachers' professional careers in the future.

**Keywords:** Critical thinking, English language education (ELE), English as a second language (ESL), pre-service teachers, thinking skills, visible thinking routines.

## INTRODUCTION

Thinking has been conceptualised as both an ability and a disposition. What this means is that while thinking can be explicitly taught and acquired as a skill, individuals also need to have dispositions to use these skills. Dispositions or habits of mind refer to an enduring characteristic or trait of a person that has developed over time, which later serves to motivate behaviour (Ritchhart, 2015). Tishman et al., (1993) illustrate the difference between ability and disposition through two simple questions: "Can you play the piano?" and "Do you play the piano?". The first question asks about ability; the second moves beyond ability and asks about inclination.

Similarly, when it comes to teaching, it cannot be assumed that teachers who are deep thinkers and who know how to teach will necessarily strive to teach thinking skills. In some contexts, there exist various barriers that impede the teaching of thinking skills, especially higher-order thinking skills (HOTS). These can take the form of an examination culture based on rote-learning and memorisation, limits on freedom of speech and expression, and pedagogical constraints such as insufficient knowledge on how to teach and assess thinking skills (Joseph Jeyaraj & Wald, 2020; Ruslina Othman et al., 2021; Singh et al., 2020). While there are many studies on how thinking skills are nurtured and supported at various levels of education, including within the field of teacher education, studies which look at the dispositions towards the teaching of thinking skills are somewhat limited.

One important cultural force in nurturing dispositions towards thinking is thinking routines. Thinking routines function to direct and guide mental action, which inadvertently scaffolds learning and thinking. They generally consist of a few steps, are easy to teach and learn, are easily supported, and are used repeatedly (Xu, 2024). They have also been noted to be an important lever or force which builds a culture of thinking (Ritchhart, 2015). Thinking routines have often been studied in relation to their practical implementation in the classroom. However, there is also value in understanding whether there are certain features or characteristics which serve in shaping in-service teachers' and future teachers' dispositions towards utilising these routines in the classroom. This knowledge can be helpful to better ascertain the likelihood of thinking routines to be widely used, and also to better improve and refine them. This aspect at present, is an area which has not been widely researched.

With this in mind, the present study was interested in exploring the dispositions or inclinations of English as a Second Language (ESL) pre-service teachers towards using thinking routines. This paper

has focused on a collection of thinking routines called Visible Thinking Routines (VTRs), which are a research-based, systematic framework developed by Project Zero, a research group at the Harvard Graduate School of Education (Harvard Graduate School of Education, 2016). Tishman and Palmer (2005) has defined VTRs as “any kind of observable representation that documents and supports the development of an individual’s or group’s ongoing thoughts, questions, reasons, and reflections” (p.1). The present study has sought to gain insights into VTRs within the context of teachers teaching ESL in Malaysia because of the strong emphasis on thinking at the policy and curricular level, which is evident through the Malaysian Education Blueprint 2015-2025 (Ministry of Education Malaysia, 2013) and the Standards-Based English Language Curriculum (SBELC). Yet at the same time, studies have shown that teachers feel ill-equipped and unprepared to teach thinking skills, especially HOTS, in their English language lessons (Abdul Aziz @Ahmad et al., 2017; Dwee et al., 2016; Li, 2023). This problem is not just unique to the Malaysian context, but can be found in other parts of the world as well. In response to this widespread problem Song et. al. (2025) emphasizes the need for clearer frameworks and pedagogical strategies which can effectively incorporate thinking skills into English language instruction.

Hence, the aim of this study was to better understand the experiences of ESL pre-service teachers who had received significant exposure and opportunities to engage with VTRs, both as learners and “teachers” through teaching simulations. It is important to identify the salient attributes of VTRs that play a role in shaping pre-service teachers’ dispositions towards using them to teach thinking skills because VTRs have been found to be an effective tool in nurturing thinking.

The research was guided by the following question:

*What are the salient features of VTRs which have shaped pre-service teachers’ dispositions towards the teaching of thinking skills in the ESL context?*

The study is aimed at understanding the features of VTRs which shaped pre-service teachers’ dispositions towards using them. This is because these VTR routines act as a major enculturating force which communicates the value of emphasising thinking in the classroom. The dispositions of future teachers also provide an indication of how thinking will be taught in schools. If there are aspirations at both the national and global levels for thinking skills to be embedded more meaningfully in schools, then the experiences of prospective English language teachers are worth exploring in greater depth.

## **REVIEW OF LITERATURE**

### **Thinking Skills in English Language Teacher Education**

Numerous mainstream approaches, such as problem-based learning, inquiry-based learning, task-based language teaching and project-based learning, have been used from the primary level up to the tertiary level to develop critical thinking, creative thinking, problem-solving, computational thinking, and ethical reasoning within English language education (ELE) (Aditomo et al., 2013; Chen, 2021; Fard & Vakili, 2018). However, there do not seem to be many studies which can shed light on how pre-service

teachers engage with such approaches for the purpose of learning how to teach or how engagement with these approaches has played a role in shaping pre-service teachers' dispositions towards the teaching of thinking skills.

While research into dispositions towards the teaching of thinking skills appears rather scant, there are a considerable number of studies which focus on how thinking skills have been embedded in English language teacher education courses. A possible reason for this might be the view that pre-service teachers need to first have higher-order thinking abilities before they are inclined to teach thinking skills in ELE. Yuan et al. (2021) explains that qualified teachers who are equipped with both critical thinking abilities and critical-oriented pedagogies are essential, and they recommend its integration into teacher education so that future teachers will be better prepared to teach critical thinking. Some interesting examples of how thinking has developed through teacher education programmes include overseas field school experience (Yuan et al., 2021); reader-response theory in literature (Garzon & Castaneda-Pena, 2015); critical reading activities and thinking routines (Petek & Bedir, 2018; Phonekeo & Macalister, 2021); didactic discussions (Carabelli, 2021); digital storytelling (Park, 2019); vlogs (Ong et al., 2020); video recordings of teaching (Susoy, 2015); and journal writing (Kim, 2018). These pedagogical strategies reveal why there has been constant attention given to thinking within English language teacher education programmes worldwide.

In addition to striving to build pre-service teachers' thinking abilities, numerous teacher education programmes have sought to introduce pre-service teachers to critical pedagogical approaches which have a strong orientation towards critical thinking and social justice. Critical teacher education enables pre-service teachers to gain a more complex conceptual understanding of the multiple contexts in which education takes place and the plethora of forces shaping the process. This can be done when pre-service teachers are exposed to theoretical and pedagogical concepts such as situated learning, dialogism, and post-structural and post-modern approaches to ELT (Sung & Pederson, 2012). Critical teacher education is important for promoting social justice, building cultural sensitivity, and appreciating diversity, and in fostering empowering spaces within the classroom.

Although thinking skills in teacher education have received significant attention around the globe, the development of pre-service teachers' attitudes and dispositions towards teaching thinking skills remains unclear. It cannot be assumed that pre-service teachers who have pedagogical content knowledge and have developed higher-order thinking skills (HOTS) will later embed the teaching of thinking skills in ELE. While HOTS can be expressly taught, dispositions need to be modelled and nurtured so that students increasingly adopt an identity as thinkers and later act to teach thinking skills. Yet, at times, various barriers stand in the way of enabling the teaching of thinking skills to be meaningfully embedded into classroom practice.

In some countries, various socio-cultural barriers impede thinking skill development, particularly when it comes to engagement with HOTS, both at the teacher education level and within ELE. The first barrier is related to the connotation that "critical" thinking might suggest. In seeking to introduce a critical pedagogical curriculum in a Master of Arts in Teaching English as a Second Language (MA TESL) course at a Hong Kong university, Lin (2004) was confronted with the realisation that the term "critical" carried a negative connotation when she was told that students might not want to enrol in such a course.

Here, “critical” was often taken to mean disturbing harmony by creating dissent and hence, was regarded as a culturally “dirty” word. In some situations, pre-service teachers may be open to engaging critically more “neutral” subject matter but are reluctant to critically interrogate content, which may cause discomfort or unsettle their present beliefs. Evan-Winters (2009) reported how many pre-service teachers enrolled in her course perceived that teaching was apolitical and culturally neutral. Hence, they were wary of critical engagement on social justice topics, such as racism, sexism, and funding inequality. Furthermore, in some contexts where freedom of expression is limited, certain risks are present when sharing critical or dissenting views. In Malaysia, university students have noted that teachers deal with “difficult” or controversial topics in a rather superficial manner (Joseph Jeyaraj, 2020). Perhaps university teachers exercised a form of self-censorship because they were aware of the unfavourable consequences that might arise when discussing such topics in the classroom. Another example of such vigilance was observed in Singapore, where teachers tried to avoid cultural issues in the classroom, resulting in heavy self-censorship because the open debate of intercultural tensions was discouraged (Kiss & Mizusawa, 2018). Additionally, in contexts, such as Malaysia (and elsewhere), where an examination culture dominates, a transmission model of education prevails, with rote-learning and memorisation taking center stage (Song et al., 2025; Puteh-Behak et al., 2015). Therefore, dispositions to teach HOTS and to engage deeply with criticality might be weak because all these barriers make this endeavour cumbersome and fraught with challenges.

At present, a considerable number of studies have pointed to the success of VTRs in developing thinking skills and nurturing dispositions towards thinking among learners. However, future teachers’ acceptance of VTRs as a tool for teaching thinking skills within the Malaysian context is not fully understood. More importantly, there is limited insight into the salient features of VTRs that make them a desirable tool or otherwise, which can in turn, influence the inclination to teach thinking skills. This knowledge is important because it provides a snapshot of prospective teachers’ “buy-in” and what may or may not cause their inclination to use VTRs in the future.

### **Making Thinking Visible through Visible Thinking Routines (VTRs)**

VTRs have been used in diverse educational settings in different countries, such as in Australia, China, the United States, Thailand, Laos, and Palestine. In Malaysia, however, research on VTRs is rather limited. While there are a small number of studies on how VTRs are utilised in ESL undergraduate teaching (Dass et al., 2017, 2021), there appears to be a lack of research in the ESL teacher education context, especially in relation to how these routines are used to learn how to teach English.

At its core, VTRs aim to develop students as thinkers through the use of thinking routines, which enable the documentation of thinking processes. VTRs are built on the premise that teachers must first embrace the goal of making thinking visible as a significant aim of teaching (Ritchhart & Church, 2020). Only then will they strive to find ways to document and make thinking, which is an invisible process, visible. In other words, teachers must have dispositions to teach thinking and make the thinking process visible. To do this, teachers can utilise routines or mini-strategies that are short and easy-to-learn (Salmon, 2008). These routines or thinking moves represent a sequence of actions which are aimed at efficiently achieving a specific outcome, and at the same time, they break down learning into self-awareness process steps (Yeh et. al., 2024). They were designed with a set of questions and a brief sequence of

steps to support student thinking when seeking to explore ideas. When learning is made visible in such a way, learning becomes not only a process of memorisation, but also a process of exploration. The strength of VTRs is that they can be integrated into the teaching of any subject area. When they are used, students are provided with space to mentally engage with content learned by offering ideas, explanations, justifications, interpretations, reasons, evidence, perspectives, alternatives, and questions (Ritchhart et al., 2011). Some examples of VTRs include Compass Points, What Makes You Say That? and Peel the Fruit. More information can be found in the following URL: <https://pz.harvard.edu/thinking-routines>

A survey of the literature revealed that VTRs have been used across disciplines such as Business Studies (Sepulveda Larraguibel & Venegas-Muggli, 2019); Mathematics (Ritchhart, 2015), Geography; Physical Education; (Ritchhart & Church, 2020) and even as part of a museum's education programme (Wolberg & Goff, 2012). VTRs have also been utilised in English language education, specifically when teaching critical reading (Phonekeo, 2020; Phonekeo & Macalister, 2021) and academic writing (Hooper, 2015). Within the ESL/ EFL context, VTRs have been used among both secondary and tertiary level students and even among young learners at the kindergarten level. In China, VTRs were often incorporated into lead-in activities by EFL teachers and were also used as a tool for text-based discussions (Lei & Joseph Jeyaraj, 2023). Xu (2024) has reported how VTRs were integrated with a pedagogical strategy called dialogic reading, a method which utilised self-made picture books with the aim of developing students' emotional intelligence. Additionally, in a study by Dajani (2016), the challenges experienced by secondary level ESL teachers in Palestine were explored. Even though VTRs led to enriching learning experiences among students, at the initial stage of implementation, teachers felt that extra effort was needed to embed VTRs into classroom teaching. Additionally, some teachers found it difficult to decide on the choice of routine for their lessons. In another study among tertiary level ESL students, Dass et al., (2021) found that VTRs had positive implications for students' learning, which included providing students with the opportunity to construct new knowledge and giving them the confidence to ask questions and exchange ideas.

While studies on VTRs in ELE are available, this area is still underdeveloped. Furthermore, its use among ESL pre-service teachers as a pedagogical thinking tool is somewhat unknown. These routines are flexible (Ritchhart & Church, 2020) and easy to learn and teach (Salmon, 2008), yet empirical studies which shed light on the inherent qualities of VTRs that might shape pre-service teachers' dispositions towards teaching thinking skills have not been fully understood. In this study, the essence of VTRs were explored in order to understand why future teachers might or might not be drawn to use them in ELE.

## **METHODOLOGY**

This study was carried out among a group of ESL pre-service teachers at a public university in Malaysia. As part of their Bachelor of Education in Teaching of English as a Second Language (TESL) programme, these pre-service teachers had to take numerous courses which focused on the pedagogical and methodological aspects of teaching. Purposeful sampling was employed, and only those who were familiar with VTRs and had used them at least once in teaching simulations were identified and invited

to participate. Upon obtaining approval from the institution's human ethics committee, a call for participation was sent to approximately 100-110 pre-service teachers. Sixty-eight participated voluntarily, and they were informed that they could withdraw from the study at any time.

Student teachers were selected as participants from amongst the TESL cohort who had experienced VTRs in two ways: as learners and as "teachers". Familiarity with VTR as learners occurred when VTRs were included as a topic that was covered in the syllabus, and students were explicitly taught about the uses, importance, and relevance of VTRs in classroom practice in one of their methodology courses. Additionally, as learners, these students were also given multiple classroom tasks where VTRs were used as a tool to engage with different learning content and types of thinking and to develop dispositions toward thinking. The following VTRs were used with students:

*I used to think...Now I think; See, Think, Wonder; Compass Points; Think, Pair, Share; 4Cs; 3 Whys; and Feelings and Options.*

Secondly, students also engaged with VTRs as "teachers" when they conducted teaching simulations. Here, students were required to replicate an ESL-related lesson for practice teaching. Most importantly, they were required to embed VTRs in these teaching simulation tasks. The rationale in helping students engage with VTRs both as learners and as teachers was that dispositions toward teaching thinking skills could be nurtured through a process of immersion and enculturation, and from there, one could identify what aspects of VTRs shaped these prospective teachers' dispositions. Explicit instruction within a supportive cultural context and opportunities for meaningful practice and reinforcement play a part in developing dispositions (Ritchhart, 2002), which is why these students were clearly taught how to use VTRs, and at the same time provided with opportunities to engage with VTRs in different ways.

Participants were then invited to respond in the form of written reflective accounts (WRAs) at various points of their learning journey with VTRs. They were given questions and prompts relating to their initial perceptions of VTRs as a tool to nurture thinking in ESL, what they liked about VTRs, what they found challenging, and their openness to using these routines when they become future teachers. Participants were also specifically tasked to write a group WRA of their experience using VTRs in teaching simulations. A total of 117 WRAs, which consisted of both individual and group reflections were obtained. In addition to the WRAs, the same group of students was also invited to participate in focus group discussions (FGDs), which probed further into important insights which had emerged from the WRAs. A total of four FGDs involving fifteen students were conducted. These sessions lasted between 45-60 minutes and were carried out after the students had completed their teaching simulations.

Data from FGDs were recorded and transcribed and were later read together and combined with data from the WRAs. The data were analysed inductively, and this involved patterns, themes, and categories of analysis that emerged from the data rather than being imposed (Patton, 2002). The technique employed was content and thematic analysis. Through content analysis, the data from the WRAs were summarised and grouped into different categories. Then, through thematic analysis, themes to reframe, reinterpret, and/or connect elements of the data were identified. Thematic analysis, as described by Braun and Clarke (2006), is a flexible and systematic method for identifying, analysing, and reporting patterns (themes) within qualitative data. For the purpose of this study, six recursive phases were

adopted and they included the following: familiarization with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing the report. Thematic analysis was used to capture recurring ideas and insights that emerged from the data, ensuring that the themes were both data-driven and aligned with the broader aim of the research.

The data analysis process began with the WRAs and transcripts being read multiple times so that greater understanding and familiarity could be gained. Once a general understanding was obtained, the coding process followed, and this was based on the research question that guided this study. In this stage, the data were divided into smaller parts, or meaning units, which were then represented as codes. These codes were grouped into categories which were later interpreted into a number of preliminary themes. At times, segments of text were coded into multiple categories; there were also times where some text remained uncoded if they did not relate to the study objective. At this stage, there was a constant revision and refinement of categories to ensure that they accurately represented the data. Once preliminary themes were created, sub-themes were identified and merged if they were similar. This involved merging, splitting, or discarding themes based on their relevance and coherence to the broader aim of the study.

Additionally, the data from the WRAs and FGDs were triangulated. This involved comparing and contrasting themes that appeared in both sources. The responses from the WRAs were used to support or qualify significant themes from the FGDs (and vice versa); in other words, one data source was used to validate the other. The reporting of emergent themes included clear naming and definition of each theme, followed by a concise description of its representation and relationship to the research question in this study. The following section presents the three main themes that had emerged from the analysis.

## **RESULTS AND DISCUSSION**

Overall, participants were largely open and positive towards the use of VTRs to teach thinking skills. All participants said that they would be inclined to utilise them in their ESL lessons when they become teachers in the future. Two themes exemplified the inherent quality of VTRs, which shaped positive dispositions towards their use. The first salient feature was the potential of VTRs to facilitate active learning environments, while the second feature was the systematic framework for teaching thinking skills provided by VTRs. The third theme reflects yet another salient feature of VTRs, which is their wide selection of routines. This feature, however, was seen to shape participants' dispositions in a less favourable manner because finding the "right" routine became a time-consuming process. However, as a whole, VTRs were still seen as a valuable resource in the classroom, and the process of engaging with VTRs provided opportunities for thinking *about* and thinking *through* VTRs.

### **VTRs Facilitate Active Learning Environments**

The first and most significant theme that emerged reflected a significant feature of VTRs, which was their ability to foster active learning environments. Active learning environments are those that are student-centred and encourage participation, engagement and thinking. Participants used some of these phrases to describe VTRs in their WRAs: "engaged thinking", "stimulating thinking", "active thinking

skills”, “interactive”, “dig deeper”, and “facilitate students' ongoing inquiry”. These descriptions of VTRs reflected participants’ positive dispositions towards the use of VTRs and indicated the likelihood of future use. Participants shared how prompts and questions within these thinking routines enabled active learning environments to be created. This engagement was observed in three main areas, specifically in relation to subject matter, thinking and peers.

Engagement with subject matter, i.e., English, and engagement with thinking were observed when VTRs moved learning beyond the rote-memorisation culture that participants had previously experienced. One participant related their past experience of learning literature in English, highlighting how VTRs facilitated a shift from rote memorisation to a more flexible and reflective approach to learning literature:

... (Previously) we were forced to memorize – memorize incidents and memorize the contents of the literature and other stuff. ... it is not literature anymore if you memorize all those elements because literature is supposed to be flexible. This can be achieved by the use of VTRs in our lesson. Until now, I have a very positive perspective towards the use of VTRs (FGD, Pre-service teacher 3).

This participant’s past experience as a student reflects what Puteh-Behak et al., (2015) term as a “copy-paste” culture which dominate Malaysian classrooms. This prevalent culture is grounded in rote learning and the regurgitation of information, all of which stifle criticality and independent thinking. In contrast, after experiencing the use of VTRs as learners, one participant reflected on why they found value in engaging with VTRs: “...(VTRs) prevents them (learners) from transforming into pre-coded robots without emotions and the ability to think” (Individual WRA 66). Several other participants who used VTRs in teaching simulations observed that when they used VTRs, their teaching moved away from merely facilitating a “copy-paste” culture and instead encouraged “...students to derive the message themselves instead of being spoon-fed” (Individual WRA 1); VTRs “...promoted students to think beyond the textbooks and relate them to real-life dilemmas ...promoted learners to think from different perspectives” (Individual WRA 3); VTRs “...led students to think about relating outside sources with what they're current reading about in class” (FGD, Pre-service teacher 6). These positive views about VTRs suggest that participants recognized the value of fostering a classroom culture that prioritises critical thinking and engagement. Through VTRs, pre-service teachers sought to design lessons that encouraged learners to engage with multiple perspectives while linking textbook content to real-life issues and dilemmas.

A distinctive feature of thinking routines, as documented in the literature, is that they encourage active processing, which means that students need to actively engage with a topic by thinking beyond just facts and instead be involved in a process of “asking questions, taking stock of prior knowledge, probing the certainty of their ideas, and visibly connecting new knowledge to old” (Tishman & Palmer, 2005, p.2). Rich thinking-oriented learning opportunities which require active processing may not always be easily fostered within the English language classroom. Numerous studies have indicated how a transmission model of education dominates, causing a lack of dialogue and active student engagement (Couch, 2017; Phonekeo, 2020). However, through VTRs, participants felt that they had the opportunity to actively

engage with content, whether through learning how to consider multiple perspectives, digging deeper into ideas or even synthesising and structuring ideas.

The WRA below illustrates how VTRs were used to teach an ESL lesson which focused on learning about characterisation in a short story. By utilising *Feelings and Options*, elements of character could be better taught:

The reason why we chose (Feelings and Options) is because it scaffolds the students to consider different perspectives and points of view, allowing them to develop a sense of empathy for others... also enhances the student's creative and cognitive skills by thinking of various ways to solve or handle a problem or dilemma... so we thought that it was a very suitable activity for the students to learn about the characters (in a short story) and their decisions (Group WRA 53).

This excerpt demonstrates how VTRs enabled students in the teaching simulation to engage with multiple viewpoints, fostering both cognitive and emotional engagement with the short story characters. A study among EFL teachers in China revealed that although many believed they taught critical thinking skills, particularly “analysis”, “evaluation” and “drawing conclusions based on evidence”, they felt that they did not teach students to consider issues from multiple perspectives or to be open to new ideas (Li, 2023). It has become clear that VTRs such as *Feelings and Options* foster active processing by enabling teachers to guide their students to look beyond their own perspectives and to consider the viewpoints of others. The process of perspective-taking enables individuals to develop a sense of empathy for others, and this element was observed in a recent study by Xu (2024). The integration of VTRs and dialogic reading facilitated children’s performance in key areas of emotional intelligence, namely empathy, whereby children in this study were seen to display empathy in action. They became more aware of the emotional states of others and were also willing to provide help to those in need.

Additionally, in an active learning environment, learning is regarded as a social endeavour instead of an isolated enterprise. In this sense, interactions with peers and teachers enable learning and meaning making. Participants shared how the interactive nature of VTRs provided opportunities for discussions, sharing different points of view and reaching consensus, as exemplified in the following remarks: “...When we implemented VTRs, we can see different viewpoints among students... they can exchange their thinking (FGD, Pre-service Teacher 7)”; “...they can discuss and share their answers with their friends, and they share it with the teacher. I think it is engaging for the lesson. (FGD, Pre-service Teacher 10). To enable social interaction and the exchange of viewpoints and ideas within group settings, participants utilised various interactive technologies such as Pear Deck, Padlet, and Jamboard. All these tools shared one feature in common - they enabled the documentation of ideas, which made group thinking visible on an online platform.

Using VTRs for group tasks which require interaction and collaboration, has been found to be valuable, and evidence of this can be seen through a number of studies. For instance, Dass et al., (2021) found that the interactions fostered by VTRs were valued and were beneficial for task accomplishment, the creation of new knowledge, and the voicing of thinking. Additionally, Sepulveda Larraguibel and Venegas-Muggli (2019) found that university students who were taught using VTRs achieved better

academic results compared to those who were taught through a teacher-centred, lecture style approach. The researchers hypothesised that students' higher achievement was attributed to the development of thinking dispositions that VTRs fostered, which "became automated and used to approach class content and exams even when routines were not used" (p. 414). Ramos-Vallecillo et al., (2024) found that the active learning opportunities offered by VTRs promoted the construction of meaningful learning and collaboration among university students. The examples provided here indicate that the student-centred nature of VTRs create opportunities for learning to be a social and interactional endeavour, which consequently leads to the creation of active learning environments.

Based on this theme that VTRs can facilitate active learning environments, participants appeared to be overwhelmingly receptive towards their use offered by the VTRs. Through their teaching simulations and their past experiences as students, participants learned about the importance of such environments in facilitating and nurturing thinking-oriented lessons.

### **VTRs are a Systematic Framework for Structuring Thinking Lessons**

This theme relates to the design of VTRs, which was found to be, for the most part, something that could be easily followed. Pre-service teachers who were still learning about how to structure lessons and create ESL activities felt that VTRs provided them with a systematic framework to fall back on. This framework was described by participants using words and phrases such as "guide", "manual", "steps", "strong base" and "bank of activities and ideas". This was a key feature valued by pre-service teachers who appreciated having a structured approach to lesson planning and ESL activity design, and could consequently increase the likelihood of VTRs being used in the future. Ritchhart (2002) explains that complicated routines or cumbersome processes are not of much use and tend not to get used. This point can also be extended to the kinds of routines that novice teachers choose to use with their students. If routines are too difficult to be embedded, or too confusing, new teachers might not be inclined to use them.

Even for experienced teachers, the teaching of thinking skills has been identified as a challenging task. There have been instances when experienced, trained teachers reported a lack of knowledge and exposure to teach thinking skills (Abdul Aziz @Ahmad et al., 2017; Ruslina Othman et al., 2021). This points to the need to build skills and confidence at the teacher education level. Given the significance of thinking within ELE, it is essential for teacher education programmes to integrate higher order thinking into the curriculum so that teachers receive systematic training on content and pedagogical knowledge about how to integrate thinking into English language subject teaching. Joseph Jeyaraj et al. (2025) identify two important forces that influence the pedagogical strategies that teachers draw upon and this includes socialisation into the profession at the teacher education level, and teacher confidence to engage with the methods, tools and pedagogical principals they have been exposed to. Therefore, if the teaching of thinking skills is not strategically embedded and intentionally taught at the teacher education level, it is unlikely that pre-service teachers will prioritize this in their future teaching practice.

Participants provided various examples of how VTR's systematic framework helped in lesson planning. Many perceived these routines as new and interesting, therefore, important to be incorporated into lessons:

“... VTRs creates or generates ideas for me to create activities that is not usually being used in class ... It somehow really opens my mind a little bit about so many things that we can actually do in a lesson” (FGD, Pre-service teacher 6); “I think it is very useful to be implemented in a lesson because it adds variety to a lesson because if there is no VTR, it might be quite dull” (FGD, Pre-service teacher 10).

Additionally, the participants also found that the varied routines enabled them to be able to meet the aims sought for in a lesson rather easily:

“...we felt that the VTR we chose really guided students in extracting information and really guided them into getting what we wanted our students to learn” (FGD, Pre-service teacher 13); “VTRs have so many categories. The teacher can choose any of them to use in the class that they think is suitable and appropriate according to the student's needs” (Individual WRA 8).

While a systematic framework to guide the teaching of thinking skills was generally appreciated, one participant was cautious not to blindly accept VTRs:

While I understand the utility and ingenuity of the various VTRs, I tend to default to the thought that VTRs may be a glorified template of sorts. ...by the end of my learning experience (as a secondary school student) there were many strategies employed by educators in an attempt to reach the government's and ministry of education's goals of modernising the education system. Many flashy terms, assessment methods and learning styles were introduced, to not much difference in student performance, at least in my view. I think VTRs are a good tool to be used in classroom instruction but will only be as good as the one utilizing them (Individual WRA 7).

This response underscores the importance of teacher agency and professional judgement in the use of VTRs. Similar to what was highlighted in the Individual WRA 7, Ritchhart et al., (2011) stress that VTRs are just tools, and like any tool, they must be “applied in the right context and in skilled hands to see their full potential” (p. 259). Therefore, although VTRs are a framework for thinking, they should not be viewed merely as a “template” to be blindly followed. A teacher’s professional knowledge, skills and judgement are still needed in order to appropriate VTRs to suit the individual classroom context. In fact, Ritchhart and Church (2020) found that teachers constantly adapt them to better engage students in learning and thinking. Therefore, pre-service teachers should be encouraged to carefully consider how and when to use a particular VTR, and whether it aligns with their lesson aims and objectives.

On the whole, the responses from the participants reflected how the salient feature of the VTRs as having a systematic framework positively shaped dispositions towards its use. However, VTRs should not simply be presented as a set of simple “rules” or “recipes” to be followed because this runs the risk of reifying the rules and limiting thinking rather than enabling it. While it is unknown whether these participants will eventually use VTRs when they become ESL teachers, their positive perceptions towards the usefulness of these routines hold promise.

## **VTRs Consist of a Wide Selection of Routines**

This theme reflects a strong feature of VTRs, which at the same time poses a challenge for some pre-service teachers. Many acknowledged that VTRs were a suitable thinking tool to be incorporated into ESL teaching. However, a few struggled to find the “right” routine for their lessons because of the sheer number of routines available. This made the process of choosing the right routine confusing, which was an unfavourable feature for a small number of participants. They shared the following: “... hard to pinpoint the VTR that was suitable. This is due to the fact that there are too many VTRs that can be used in the lesson...” (Individual WRA 54); “...there are quite a lot of it (VTRs) that sometimes I don't know which one could be more suitable...” (Individual WRA 16); “...it was quite confusing because when you go to the website, there's a lot of options...” (FGD, Pre-service teacher 13); ...there are a lot of them (VTRs) with various of aims and objectives...can get confusing at times (Individual WRA 4).

The search for a suitable routine was often described as “challenging”, “hard”, “confusing”, “too many”, “intimidating” or “difficult”. These sentiments were particularly evident in group WRAs and FGDs, where feelings of being overwhelmed were expressed. The negative sentiments reaffirmed one of the challenges faced by Palestinian ESL teachers, who at times found it difficult to decide which thinking routine was appropriate for the activities they wanted to implement (Dajani, 2016). This feature of VTRs, which offer a wide range of choices to teachers, may also cause negative dispositions, which can be a debilitating or inhibiting force when it comes to teaching thinking skills.

Due to the wide selection of routines to choose from, a small number of pre-service teachers stated that it was time consuming to choose the right routine and to implement them in their teaching simulations. This observation aligns with the idea that initial engagement with VTRs requires significant effort and planning, as reflected in the following comments: ...we have to go through a lot of options (VTRs) in order to search for a suitable one. So, the searching aspect is basically time consuming (FGD, Pre-service teacher 13). While spending time on preparation is to be expected at the initial stages of being acquainted with a new tool like VTRs, Phonekeo and Macalister (2021) explain that once a set format has been established, the workload issue is addressed and identifying suitable routines becomes easier.

The element of time surfaced as a significant challenge not only during the preparation stage, but also during the lesson implementation stage. Participants noted that a significant amount of time needed to be allocated to complete some routines in the classroom, they found that: “Some routines are time-consuming as students have to take many perspectives and come up with many points” (Individual WRA 11); “...need to be mindful of the allocated time to deliver the lesson, as some students might need time to think and answer the questions presented” (Individual WRA 6). These findings resonate with a study among EFL university instructors who were open towards creating a culture of thinking, but found that time was a significant barrier (Abdelhalim & Aldaghri). For this reason, they reported avoiding group discussions and high-order thinking questions. However, Ritchart (2011) stresses that good thinking requires time because without time given for thinking, it is unlikely that insights, connections, and understandings will develop. Therefore, although VTRs on the whole only consist of a few questions or prompts, the depth of thinking that results from these short thinking stimuli can involve a considerable amount of classroom time.

In light of this, a question that arises is whether there is sufficient time for thinking within the current school setting. Some barriers to engaging with higher-order thinking skills in Malaysia include time constraints, heavy syllabus content, and students' abilities (Chun & Abdullah, 2019). Hence, how will these prospective teachers act when confronted with these classroom realities? Might these future teachers who find engaging with VTRs time consuming resort to spoon-feeding or teaching through rote-learning and memorisation because it may place a lighter demand on time? The present study believes that only if these pre-service teachers are convinced of the importance and effectiveness of VTRs as a tool to guide and direct thinking, and if they themselves have had positive experiences engaging with VTRs, will they strive to embed these thinking routines in their future classroom practice.

Even though the wide-ranging selection of VTRs was somewhat undesirable for a handful of participants, there was some indication that positive dispositions towards using VTRs may have developed in the process. Upon closer observation, the "struggle" participants experienced finding the right routine prompted thinking among some of them. For these participants, the process of selecting suitable VTRs was initially challenging; however, favourable dispositions towards VTRs were later developed once participants gained knowledge and familiarity with these routines. To do this, participants went through a process of discovering VTRs both independently and collaboratively, as exemplified in their reflections below:

When doing the lesson plan, me and [my] partner were quite confused which VTR we should use. ... but we actually asked some of our friends for their opinions and compared them with our opinions... (FGD, Pre-service teacher 6)

In the beginning, when we heard about VTRs, it was quite confusing because when you go to the website, there's a lot of options; so, you get confused about what you're supposed to search for and what are you supposed to choose. But after going through the website a few times, playing around and discovering what it is, you realise it's actually quite easy (FGD, Pre-service teacher 13)

...it will be a challenge for us to really find the most suitable VTR to match with our lesson because of course it has to be an effective lesson. If the routine is not related to the lesson, that would be confusing to the students and that will be a problem. (FGD, Pre-service teacher 10)

These reflections suggest that pre-service teachers were not passive recipients of knowledge, but were instead actively engaged in evaluating and selecting routines that aligned with their lesson aims. The thought and consideration participants had to invest into selecting a suitable VTR led to opportunities *for* thinking. The quotes above illustrate that there was engagement and discussion with peers to better understand the broad range of VTRs that were offered, and that a considerable amount of time had to be spent to become better acquainted with the features of these routines. Because of the wide selection of VTRs, pre-service teachers had to carefully evaluate them to ensure that the VTRs suited their ESL lessons, all these evaluations facilitated opportunities for thinking *about* and thinking *through* VTRs. Participants had to think *about* VTRs by first understanding the purpose of each routine and how it was to be used. Then, they had to think *through* these routines in order to decide if it would be appropriate

for their respective lessons. Ritchhart et al., (2011) however, cautioned that: “Teachers who wish to create a culture of thinking in their classrooms not only need to make intentional choices about what thinking routines to use with students but also with what content to use the thinking routines” (p. 256).

These accounts reveal that although the wide selection of available VTRs initially caused some unfavourable feelings during the selection process, this same salient feature ultimately created valuable opportunities for thinking among participants. Dispositions to teach thinking skills were evident because despite these challenges, participants were willing to engage with and persist in this complex task. To mitigate these difficulties, pre-service teachers can be taught how to judiciously evaluate the range of theories, pedagogies and tools they are introduced to throughout their teacher education programmes, so that they can make informed decisions when they step into classrooms in the future.

### **CONCLUSION**

This paper has identified three main salient features of VTRs derived from ESL pre-service teachers' experiences. It has also shown how these features have helped to shape their dispositions towards teaching thinking skills. First, VTRs were favourably regarded as a thinking tool because of their prominent role in fostering active ESL learning environments. Second, positive dispositions were shaped because VTRs provided an inherently clear and systematic research-based framework. This framework was especially helpful for pre-service teachers who were currently learning how to develop thinking-oriented ESL lessons. Although many benefits were felt, a small group of participants reported experiencing difficulties when it came to choosing an appropriate routine. This could be attributed to another feature of VTRs which comprised a broad selection of routines. As a result, participants were unsure of how and when to use each VTR. Another constraint was allocating sufficient time for thinking when seeking to embed VTRs in classroom practice through teaching simulations. While this was the case, the process of discovering and thinking through these routines prompted pre-service teachers to think and gave them an avenue to exercise professional knowledge, skills, and judgement.

Based on the findings from this study and the broader literature in the area, the researchers have offered some concluding thoughts and pointed out some implications for future research and practice. First, teaching thinking skills, even with a systematic framework in place, can be challenging. Future teachers need to have knowledge about thinking skills and know how to teach them. Therefore, the process of acquiring this knowledge and competencies should begin at the teacher education level (Akinoğlu & Karsantik, 2016; Li, 2023). Teaching pre-service teachers how to teach thinking skills can include teaching simulations, where they are given opportunities to experiment with various tools and approaches. Teaching simulations help build connections between theory and practice and enable pre-service teachers to improve their teaching skills with regard to planning, implementation and evaluation. The findings of this study have shown that participants had positive dispositions towards VTRs because they were able to experience first-hand the inherent features of VTRs and could see for themselves what might or might not work in the classroom.

Second, since there are aspirations in Malaysia and in other countries in the Asia-Pacific region to nurture 21<sup>st</sup> century skills and higher order competencies, in particular, communication, collaboration,

problem-solving, and critical thinking, VTRs can be considered one of the many ways in which these skills are more systematically embedded into ELE. The findings of this study also showed that pre-service teachers perceived certain features of VTRs to be beneficial in the teaching of thinking. Therefore, if there are aims for VTRs to be used more widely, then gaining pre-service teachers' acceptance and "buy-in" at the initial teacher education stage is essential. Hu (2002) observes:

“...a methodology is only effective to the extent that teachers and students are willing to accept and implement it with good faith, and whether it is accepted or not is largely determined by the set of values and beliefs that these teachers and students have been socialised into” (p. 102).

Furthermore, pre-service teachers' "buy-in" of VTRs can only truly be uncovered through longitudinal studies which shed light on whether positive dispositions towards VTRs eventually lead to what Thornton (2006) had referred to as "dispositions in action". Future studies can move beyond reflection, self-assessment and perceptions to explore how dispositions are manifested within the classroom and how they impact pedagogy and ultimately the learning process.

Finally, deeper exploration of VTRs and introspections into the experiences of teachers engaging with these routines are encouraged, especially in the field of ESL and in the Asia-Pacific region. At present, research in these contexts remains underdeveloped so it might be worthwhile to uncover how VTRs can be utilised to develop thinking amidst the numerous barriers that currently exist. Besides that, determining the impact VTRs have on student learning is also essential, and one way to do this is for teachers to research their own practice. In the spirit of making thinking visible, teachers are encouraged to make the findings of their research visible, shareable and amplified.

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#### **ETHICS APPROVAL**

All procedures performed in this study were in accordance with the ethical standards of the institutional review board at the authors' respective institution. This project received approval from The Ethics Committee for Research involving Human Subjects of Universiti Putra Malaysia (JKEUPM). REFERENCE NO: JKEUPM-2022-190.

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