DIGITAL
ANDRAGOGY
BLUEPRINT

A collaboration between Singapore University of Social Sciences, Institute for Adult Learning and Microsoft Singapore.

Digital Andragogy Blueprint

Abstract:
The Digital Andragogy Blueprint, developed in collaboration with Microsoft Singapore, is designed to offer educators a starting point to explore the possibilities of enhancing adult instruction through digital tools. This blueprint provides recommendations and strategies for leveraging digital tools aligned with specific learning objectives, ease of use, and cost-effectiveness. It is intended to simplify the process of selecting appropriate tools for instructional goals. The blueprint places an emphasis on equipping educators with knowledge and skills to address any concerns they might have about adopting and using digital tools. It serves as a guide to navigate the digital landscape of adult education. It also includes real-world case studies that showcase the implementation of the digital andragogy approach and evidence of potential effectiveness of digital andragogy in augmenting the learning experiences of diverse learner profiles within organisational settings. It is, however, also important to recognise that this blueprint is the beginning of a journey towards effective integration of digital tools into instructional practices. There is certainly more to come.

ACKNOWLEDGEMENT

I would like to express my sincerest gratitude to all those who gave me the opportunity to work on the blueprint. A big shoutout to my team members for their tremendous support and assistance in the completion of the blueprint. Thank you for cheering me on.

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EXECUTIVE SUMMARY

The purpose of this report is to present a digital andragogy blueprint that provides educators with recommendations on how they can effectively incorporate digital tools to facilitate adult instruction and learning. Its debut is certainly timely and necessary. While there is a deluge of digital tools that adult educators can avail themselves to, it is understandable that some may be overwhelmed by the alternatives they are presented with. The blueprint serves to solve their conundrum by curating the appropriate digital tools they can engage to augment their teaching and learning practices. More importantly, the curation of digital tools is tethered to Bloom's revised taxonomy of learning objectives, ease of use of digital tools for teaching and learning and their cost-effectiveness.

The primary objective of the blueprint is to make it easier for adult educators to identify the digital tools they can leverage to achieve the intended learning objectives. It also addresses the concerns of educators who may feel apprehensive about using digital tools by providing recommendations tailored to specific learning objectives. Additionally, the report includes case studies showcasing the successful implementation of digital andragogy in diverse organisational settings for various learner profiles. In essence, it aims to enhance digital literacy, a key obstacle to digital adoption, by empowering educators with the necessary knowledge, skills, and confidence to utilise technology effectively.

Furthermore, it is essential to acknowledge that employing a digital andragogy approach does **not** necessitate the integration of digital tools throughout the entire lesson. Instead, it advocates for selective use, strategically incorporating digital tools when they can effectively support learning objectives and enhance the overall learning experience. Educators must consider learners' profiles, including their existing knowledge, learning needs, and the context in which they will apply their knowledge, to select the most appropriate tools (Palis & Quiros, 2014). It is important to note that digital tools do not always have to be the most advanced and complex. When selecting digital tools for adult instruction and learning, it is crucial to prioritise purpose and effectiveness.

As the field of adult education continues to evolve, it is imperative for educators to constantly challenge themselves to try new strategies that create meaningful and impactful learning experiences for adult learners. It is only when educators continuously learn that they inspire learners to learn more, do more and become more.

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INTRO DUC TION

UNLIKE CHILDREN,

adults have many responsibilities, and unless they see the need to learn or know of the opportunities to learn, they are unlikely to engage in learning. Malcolm Knowles, a pioneering scholar in adult learning, described adults as goal and relevancy-oriented; they like to know how learning helps them reach their goals. They must also see that they can apply what they are learning to their work or everyday tasks that they value. Adults are also intrinsically different from children; they do not learn the same way as children, they learn by collaborating and interacting with peers and educators; they learn by relating what they have learned to their existing knowledge and experience; they learn by initiating and sustaining conversations on what they have learned in a collegial environment; they learn by taking an active role in the learning process; and they learn by contextualising what they have been told and making connections to real-world contexts.

In designing adult learning, thought should be given to piquing learners' interest in what they are learning, acknowledging their prior background experiences, using real-life examples to help them construct knowledge, creating opportunities for interaction and collaboration with peers and educators and providing them with constructive feedback. The emergence of digital technologies, real-time chat and video-conferencing has provided educators with an assembly of tools to enrich learners' experiences and engage them in authentic learning. The digitalisation of learning, described as the "process by which education and training, and generally, skills acquisition, development, and recognition, are being transformed by the use of digital technologies" (Beblavy et al., 2019, p.7) such as mobile learning and virtual reality, empowers learners to decide what, how and when they want to learn.

Digitalisation of learning is not the same as *digitisation of learning*, which involves the conversion of content to digital form and the adoption of any learning system that bridges in-person training and online learning. Digitalisation of learning involves the integration of digital technologies into the teaching and learning spaces, putting emphasis on educators' dexterity to engage digital tools to enhance instructional practice and learners' proficiency with digital tools to maximise their learning. During the Covid-19 pandemic outbreak, many educational institutions and universities moved their courses online within a short time frame (Ali, 2020; Lei, 2020). The provision of online learning is expected to continue beyond the pandemic (Effoduh, 2017).

While discussions on digital learning previously focused on improving access to digital technologies and reducing the digital divide, they now encompass the integration of digital technologies into teaching and learning, placing an accent on educators' dexterity to engage digital tools to enhance instructional practice and learners' fluency with digital tools to make the most of their learning. The purpose of this report is to present a blueprint of a digital andragogy framework that provides educators with recommendations on how they can effectively engage digital tools to facilitate instruction and learning. The framework places the design of learning experience at the core. Specifically, it is concerned with meaningful engagement with digital tools to enhance learners' interactions and scaffolding within the learning environment, or what Tawfik et al. (2020) would term as interaction with the learning space; it is also informed by instructional design principles and adult learning theory. A central premise of the framework is that digital learning should not be seen as an easy and quick fix to adult education and learning, and that the use of digital tools cannot compensate for lacklustre teaching and facilitation.

THE DEBUT OF THE DIGITAL ANDRAGOGY BLUEPRINT IS TIMELY AND NECESSARY.

While there is a deluge of digital tools that adult educators can avail themselves to, some may be overwhelmed by the alternatives they are presented with. The blueprint solves their conundrum by curating the appropriate digital tools they can engage to augment their teaching and learning experiences. More importantly, the curation of digital tools is tethered to Bloom's revised taxonomy of learning objectives, the ease of use of tools for teaching and learning and their cost-effectiveness. The blueprint's intent is to make it easier for adult educators to ascertain the digital tools they can leverage to achieve the intended learning objectives. The blueprint also aims to assuage the fears and anxieties of educators who may have reservations in using the digital tools as it features recommendations of tools they can employ for various learning objectives and lesson exemplars on digital andragogy. In many ways, it aims to bolster digital literacy, which PWC (2018) defines as the "knowledge, skills and confidence to use the available technology and device to deliver the outcomes you want" (p.7).

Digital literacy has been singled out as a major impediment to digital adoption (PWC, 2018). Critically, the blueprint seeks to answer the question of how to design an adult learning experience that is educational and engaging.
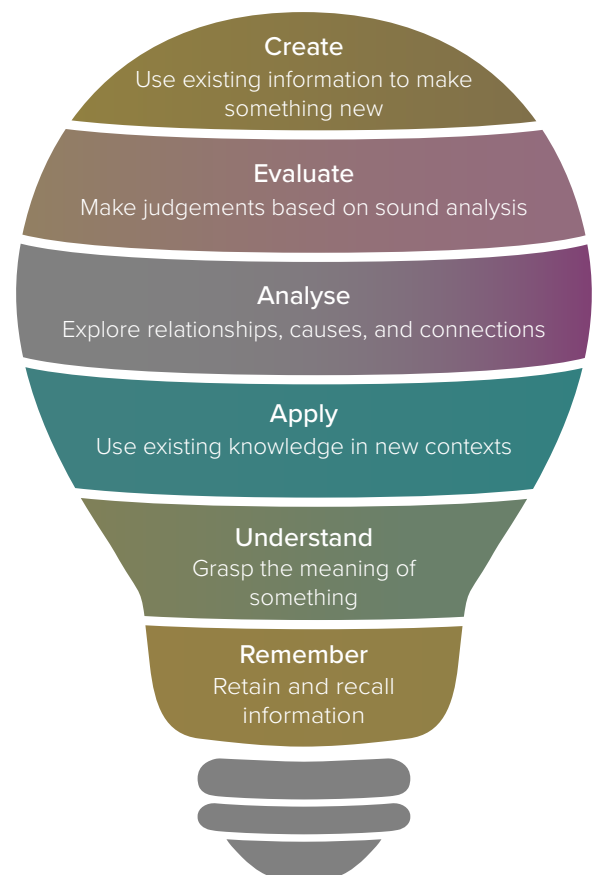
DIGITAL ANDRAGOGY

In this context, digital andragogy refers to the design of learning experience informed by instructional design principles, underpinned by adult learning theory, and supported by relevant digital tools to achieve intended learning objectives. Specifically, it places learning objectives and learners' profiles at the nexus, with digital tools playing a facilitating role. This approach recognises that adult learners bring different experiences and perspectives to their learning. It also acknowledges the importance of helping adult learners to construct knowledge and foster meaningful interactions among learners and educators.

In the subsequent sections of the blueprint, we will discuss the key elements of digital andragogy, namely, Bloom's revised taxonomy of learning objectives, adult learning principles and digital tools. We will also explain how they come together using illustrations and examples along with lesson exemplars on digital andragogy and guiding questions which readers can use to develop lesson plans that are rooted in digital andragogy. These resources will enable educators to create engaging and effective learning experiences that harness the power of digital tools while catering to the specific needs and preferences of adult learners.

BLOOM'S REVISED TAXONOMY OF LEARNING OBJECTIVES

Learning objectives in this context are based on Bloom's Revised Taxonomy that comprises six cognitive process categories — remember, understand, apply, analyse, evaluate, and create. The descriptions for the six cognitive process categories are as follows:

Fig 1: 6 Cognitive Process Categories of Bloom's Taxonomy

Create
Use existing information to make something new

Evaluate
Make judgements based on sound analysis

Analyse
Explore relationships, causes, and connections

Apply
Use existing knowledge in new contexts

Understand
Grasp the meaning of something

Remember
Retain and recall information

Adapted from the original graphic on Bloom's taxonomy verbs by Fractus Learning, licensed under Creative Commons.

THE ORIGINAL BLOOM'S TAXONOMY CATEGORIES

are based on the characteristics of learning tasks: knowledge, comprehension, application, analysis, synthesis, and evaluation. The revised Bloom's Taxonomy, in contrast, focuses on what learners should be able to do upon completion of the learning tasks, which is more congruent with the nature and purpose of learning objectives. It consists of "knowing what," the knowledge dimension and "knowing how," the cognitive process dimension.

The knowledge dimension comprises four categories of knowledge: factual, conceptual, procedural, and metacognitive.

Factual Knowledge
Knowledge basic to specific subjects or disciplines that learners must be acquainted with to understand or solve problems within the field of study. This may include terminologies and essential facts. The most concrete category of knowledge.
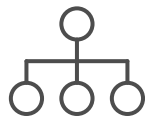
Conceptual Knowledge
Knowledge of classifications, principles or models related to a particular field of study.

Procedural Knowledge
Knowledge of algorithms, techniques, and methodologies that help learners do something specific within an area of study. It also includes knowledge about when to apply these procedures and is often subject or job specific.
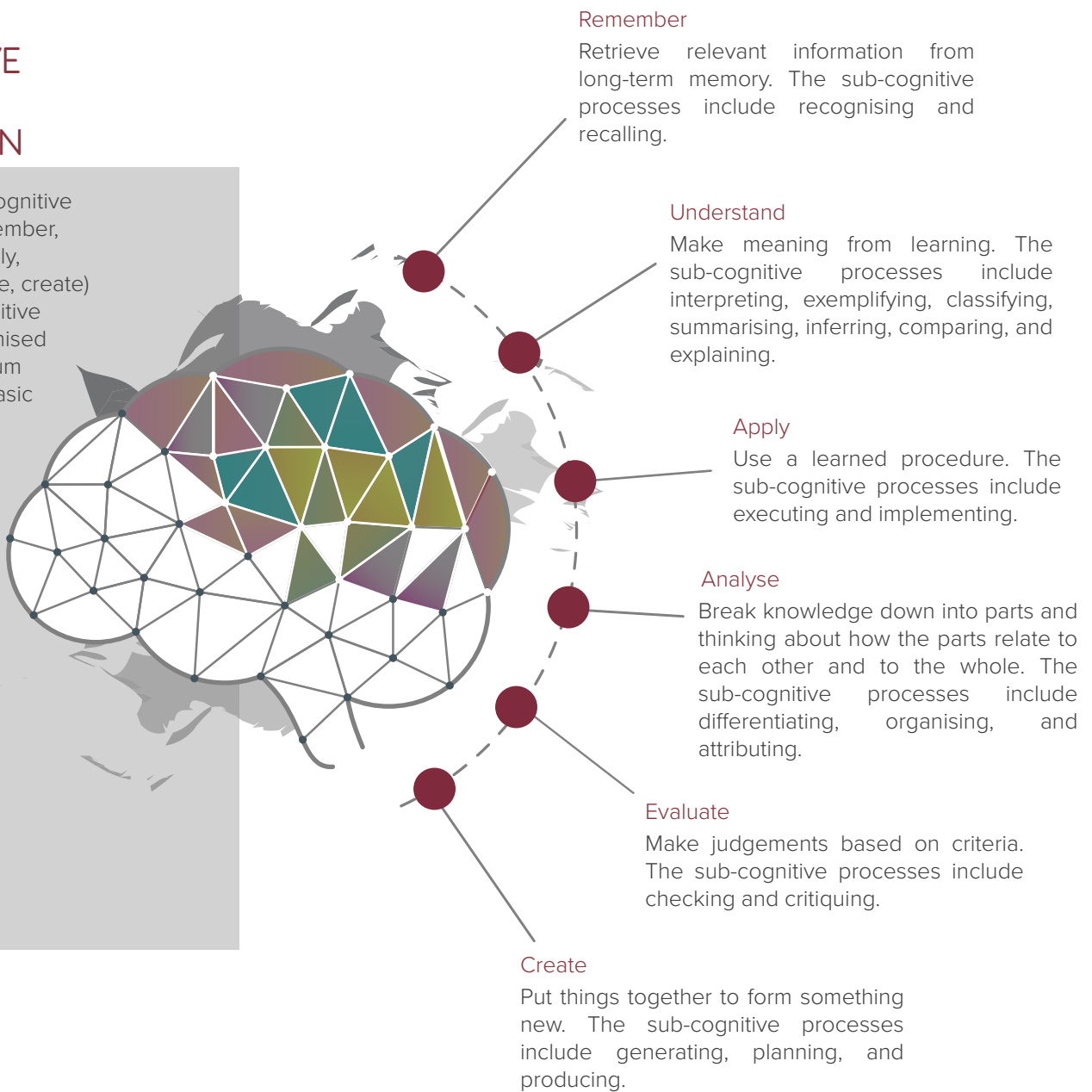

Metacognitive Knowledge
Knowledge of thinking and one's own thinking. The most abstract category of knowledge.

THE COGNITIVE PROCESS DIMENSION

consists of six cognitive processes (remember, understand, apply, analyse, evaluate, create) and 13 sub-cognitive processes organised along a continuum from the most basic to the most complex thinking.

Remember
Retrieve relevant information from long-term memory. The sub-cognitive processes include recognising and recalling.

Understand
Make meaning from learning. The sub-cognitive processes include interpreting, exemplifying, classifying, summarising, inferring, comparing, and explaining.

Apply
Use a learned procedure. The sub-cognitive processes include executing and implementing.

Analyse
Break knowledge down into parts and thinking about how the parts relate to each other and to the whole. The sub-cognitive processes include differentiating, organising, and attributing.

Evaluate
Make judgements based on criteria. The sub-cognitive processes include checking and critiquing.

Create
Put things together to form something new. The sub-cognitive processes include generating, planning, and producing.

In the revised Bloom's taxonomy, each level of knowledge can correspond to each level of cognitive process. A learner, for example, can remember factual or procedural knowledge, understand conceptual or metacognitive knowledge, analyse metacognitive or factual knowledge, evaluate conceptual or procedural knowledge, and create factual or conceptual knowledge. Table 1 shows the cognitive processes and knowledge dimensions of Bloom's revised framework.

Bloom's Taxonomy is widely engaged for instructional design as it places learning objectives at the core. It is specifically designed to help educators and instructional designers clearly define learning objectives and create lessons that meet learners' needs while ensuring close alignment of learning objectives, instructional activities, and assessments. In designing learning experiences that motivate and engage adult learners to learn better, it is crucial for educators and instructional designers to understand who their learners are and how they learn.

Table 1

Cognitive Processes and Knowledge Dimensions of Bloom's Revised Framework

Knowledge Type			Factual Knowledge	Conceptual Knowledge	Procedural Knowledge	Metacognitive Knowledge
Cognitive Process	Remember	Recognise				
		Recall				
	Understand	Interpret				
		Exemplify				
		Classify				
		Summarise				
		Infer				
		Compare				
		Explain				
	Apply	Execute				
		Implement				
	Analyse	Differentiate				
		Organise				
		Attribute				
	Evaluate	Check				
		Critique				
	Create	Generate				
		Plan				
		Produce				

ADULT LEARNING PRINCIPLES

The principles of adult learning, based on the insights of Malcolm Knowles, provide valuable understanding of how adults learn. These principles highlight six key characteristics that shape adult learning experiences.

1 Learner's Need to Know

Adults require a clear understanding of why they need to learn. When adults choose to learn something independently, they will invest much energy in understanding the relevance of the learning to their immediate needs, and what they stand to gain from it (Sogunro, 2015). Understanding learners' expectations and needs before designing learning content, making explicit how learning objectives will address learners' reason to attend training, and educating learners why a topic is important using real-life examples will allow practitioners to better connect lesson content to learners' purpose for attending the lesson (Palis & Quiros, 2014; Kamisli & Özonur, 2017).

2 Learner's Self-Concept

Adult learners possess an ardent desire for self-direction in their learning process. However, they may encounter a clash with traditional notions of learning, which often treat them as dependent individuals. To address this, educators must adopt a facilitative role, empowering learners to take charge of their educational journey (Knowles, 1975). This includes encouraging active learning through discussions, case studies, or providing time for learners to focus on areas they feel they need to work on the most (Palis & Quiros, 2014; Rodrigues, 2012).

3 Learner's Prior Experience

Adults have a more significant amount of experience and more varied differences in experiences than children. This is simply by virtue of having lived longer; adults naturally will have greater variability in background, learning styles, motivation, needs, interests, and goals. They also have greater rigidity in thinking because of this prior experience and have more habits and biases that can impede learning new materials. Hence, encouraging learners to reflect and review how their own experience connects with the learning facilitates the assimilation of new information into their existing repository of knowledge (Bryan et al., 2009, Palis & Quiros, 2014; Healy et al., 2020). Making explicit connection of life experiences or prior learning to the new information (Collins, 2004) or experiential techniques that use the learner's previous experience are also emphasised in adult learning to work around these issues.

4 Learner's Readiness to Learn

Adults perceive learning as a means of solving real-life problems. Thus, aligning learning objectives with the immediate practical challenges adults face is vital; when they understand the relevance of the learning in helping them address the problems they face, they are more ready to learn. For example, focusing on developing supervisory skills when individuals are due to take on additional responsibilities creates a contextually relevant and motivating learning experience. It is therefore important to include practices such as letting learners know why they need to understand the topic and what they can do with the knowledge acquired (Palis & Quiros, 2004), and adopting problem-based learning to show how learning the topic and its application can benefit them (Collins, 2004; Bryan et al., 2009).

5 Learner's Orientation to Learning

Adult learners are task-oriented and prefer learning that is problem-centred and focused on real-life applications. Their motivation to engage in learning is related to how they perceive its practicality in addressing the challenges they encounter in their daily lives. Neglecting this aspect in the curriculum can lead to decreased motivation, lower achievement scores, and higher dropout rates in adult education programs. Hence, it is important to contextualise the content learned to real-world applications (Palis & Quiros, 2014).
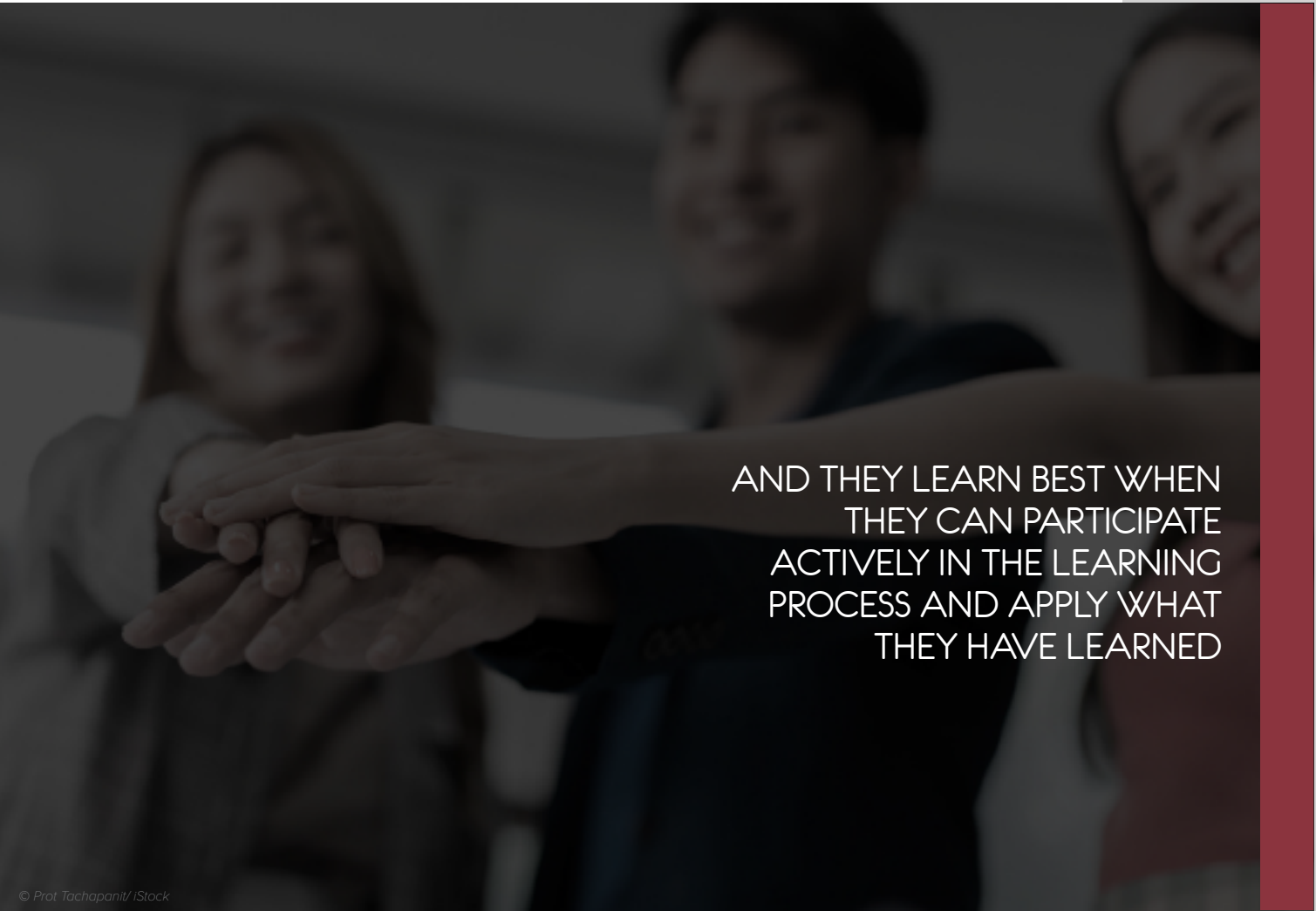
6 Learner's Motivation to Learn

Adults' motivation to learn differs based on their educational levels. Adults with higher education levels tend to participate in learning for knowledge's sake (de Oliverisa Pires, 2009), followed by job-related reasons. Adults with lower educational levels have more extrinsic motives for learning such as better jobs, promotions, higher salaries, or meeting new people (Daehlen & Ure, 2009). Nonetheless, adults are generally motivated to improve and develop themselves for various reasons. However, this motivation may be marred by barriers such as a negative perception of themselves as students, and a lack of opportunities, resources, or time (Tough, 1979; Rothes et al., 2017).
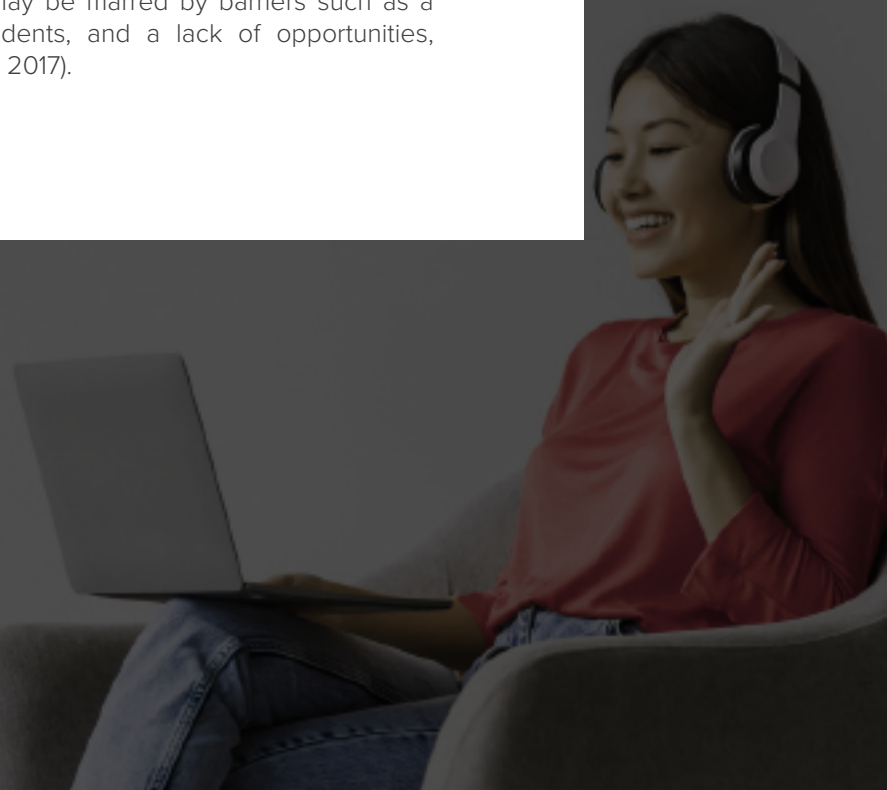
In brief, adult learners come to each learning experience with personal history and existing knowledge. They are motivated to learn if the learning solves a problem or satisfies a need they have. Additionally, they are motivated when they can share and build upon their existing knowledge and have some control over what they are learning.
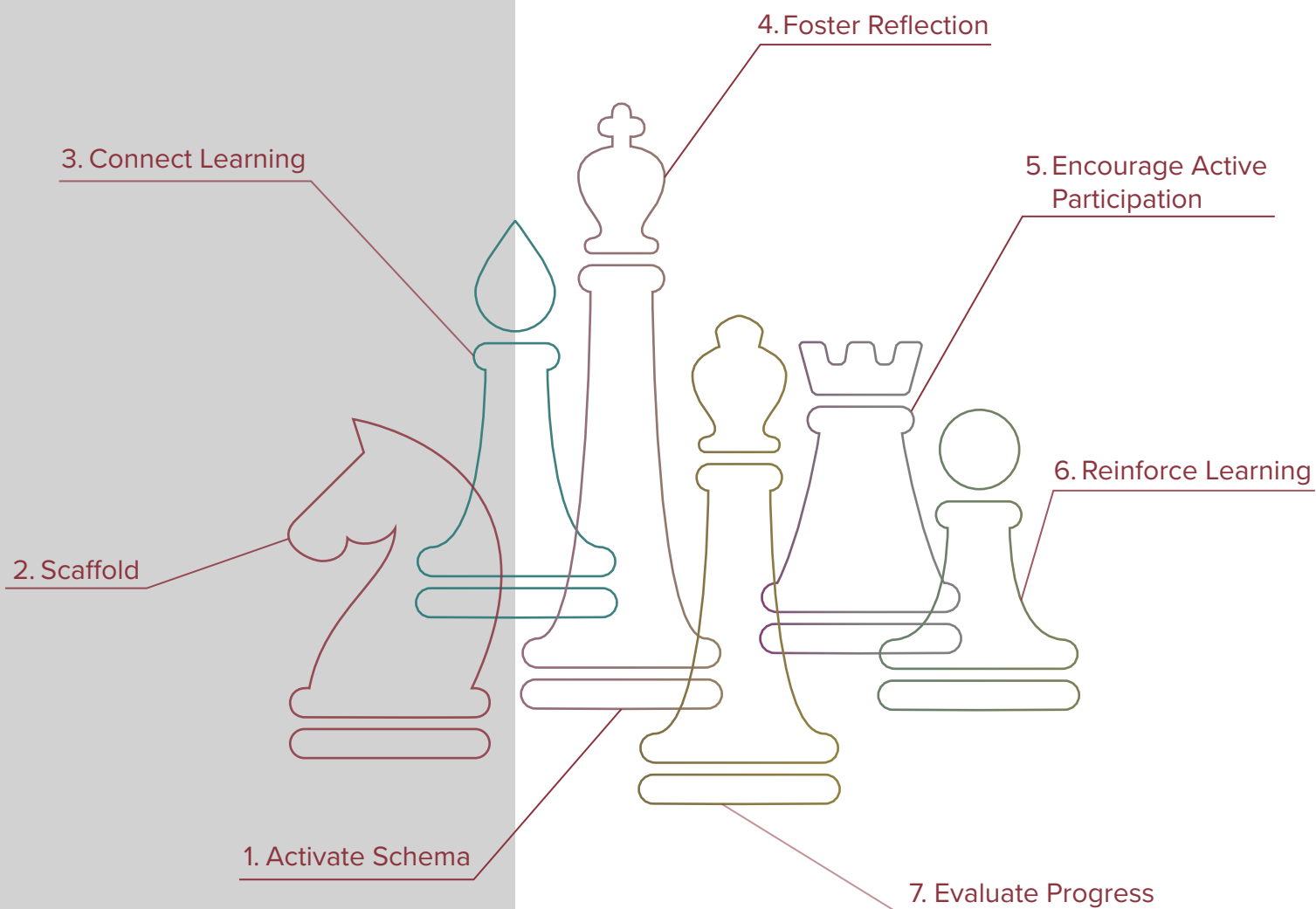
AND THEY LEARN BEST WHEN THEY CAN PARTICIPATE ACTIVELY IN THE LEARNING PROCESS AND APPLY WHAT THEY HAVE LEARNED

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When facilitating adult learning, educators must work with the "personal foundation of experience" (Boud, 1994, p.2) adult learners bring with them. They must also engage the "mind of learners with the experience of others so that the learners might identify with and make the experience of others part of themselves" (Boud, 1994, p.3).

ADULT LEARNING INSTRUCTIONAL STRATEGIES

Adult learning instructional strategies build upon the foundational principles of adult learning, acknowledging the unique characteristics and needs of adult learners. By acknowledging the wealth of knowledge and experiences adult learners bring, strategic instructional approaches can harness and maximise their learning potential.

The following strategies outline practical approaches educators can adopt when instructing adults:

4. Foster Reflection

3. Connect Learning

5. Encourage Active Participation

2. Scaffold

6. Reinforce Learning

1. Activate Schema

7. Evaluate Progress

Activate Schema

● ●

Activating schema involves leveraging learners' prior knowledge and experiences related to the topic. It acknowledges that adult learners come with existing knowledge and experiences that can be drawn upon to enhance understanding. By activating learners' existing schema, educators establish relevance and address learners' needs, promoting motivation and engagement. This strategy taps into learners' past experiences, facilitating meaningful connections with new information. It relates to the adult learning principles of prior experience of the learner and the learner's need to know. It is therefore essential to create an inclusive and engaging environment that values learners' wealth of prior knowledge and experiences.

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Educators should begin by encouraging learners to share their existing schema related to the topic at hand. This can be done through open-ended questions, small group discussions, or individual reflections. By activating learners' prior knowledge, they can help learners establish relevance and make connections with the new information. Educators should also be skilled in active listening, asking probing questions, and summarising key points to encourage learners' contributions and ensure a respectful and supportive learning environment.

Scaffold

● ●

Scaffolding involves breaking down complex concepts into manageable chunks, guiding adult learners through each step of the process as they acquire new knowledge and skills. The concept of scaffolding recognises that adult learners may require different levels of support, and the instruction should be adapted to meet their individual needs. This corresponds to the adult learning principle of readiness to learn. Adult learners appreciate clear instructions, demonstrations, and practical examples that demonstrate the relevance and applicability of the content. This will enable adult learners to take ownership of their learning journey, progress at their own pace, and comprehend the content effectively.

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To scaffold learning, educators should encourage self-directed learning by promoting independent thinking and problem-solving. They should be skilled at gauging learners' understanding and adjusting the level of support and instructions accordingly, fostering a sense of autonomy and competence among adult learners.

Connect Learning

● ●

Connecting learning involves bridging the gap between new information, learners' existing knowledge and real-life contexts. By associating ideas and facilitating meaningful connections, learners can deepen their understanding and retain information more effectively. It relates to the adult learning principle of prior experience. Educators can foster this connection by incorporating interactive discussions, group activities, and case studies that prompt learners to analyse, synthesise, and apply the newly acquired knowledge.

Educators should create a supportive environment where learners feel comfortable sharing their perspectives and insights. They should also ask thought-provoking questions, encourage dialogue among learners, and provide relevant examples to deepen understanding.

Foster Reflection

● ●

Reflecting on their learning experiences encourages adult learners to critically analyse and evaluate their progress, understanding, and application of the content. By providing time for reflection, educators foster metacognitive skills and promote deeper learning. Reflection supports the adult learning principle of self-concept; it promotes self-directed learning and autonomy of the learning process. Learners can engage in journalling, guided reflections, keeping a learning log, or participating in group discussions to actively process and internalise their learning experiences.

Educators should create a safe and supportive environment that encourages learners to freely share their thoughts and insights, fostering continuous growth and self-awareness. Educators should also provide timely feedback on their progress and incorporate reflective exercises to help them consolidate their learning and identify areas for improvement.
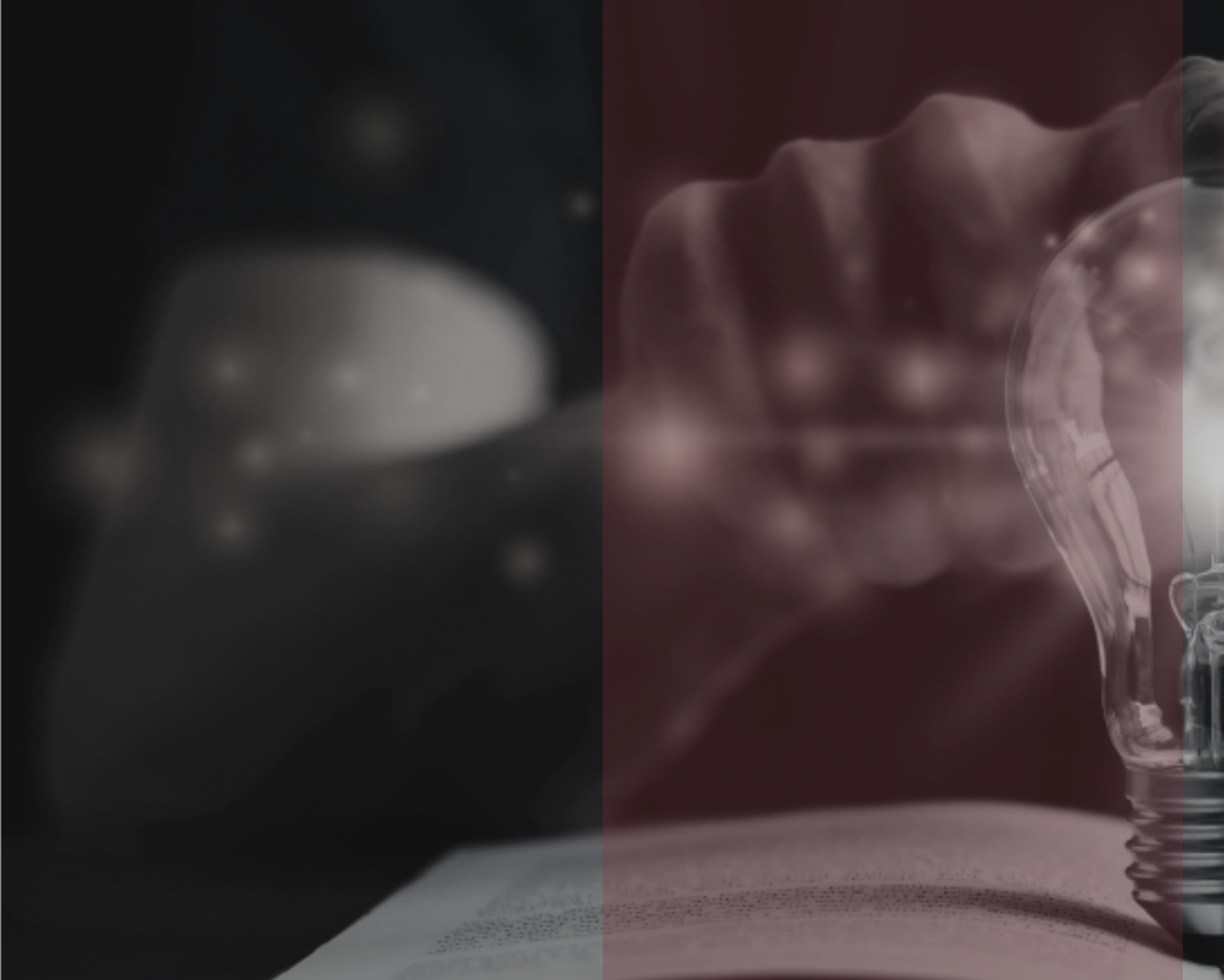
Encourage Active Participation

Going beyond passive learning and observation encourages opportunities for adult learners to actively engage with the content, interact with peers, and contribute their perspectives and insights. It recognises the importance of involving learners in the learning process and encouraging their active involvement. It corresponds to the adult learning principles of readiness to learn and orientation to learning, making the learning experience practical, relevant, and stimulating.

Educators should encourage open and interactive discussions among learners, allowing them to share their thoughts, ideas, and perspectives on the topic. Group activities such as role-plays, case studies, brainstorming etc., can be incorporated to promote engagement, collaboration and application of knowledge in practical contexts. They should also encourage participants to learn from each other, share insights, and develop a deeper understanding of the subject matter.

Reinforce Learning

● ●

Reinforcing learning emphasises the importance of repetition and review. It acknowledges that repetition helps to solidify knowledge and skills, and review activities enhance retention and deepen understanding. This step supports the adult learning principle of motivation, enabling adult learners to observe their progress through repetition and review. Educators can employ various strategies, such as practice exercises, simulations, and reflection activities to help adult learners internalise the content effectively.

Educators should provide opportunities for learners to engage with the content actively, apply what they have learned, and receive ongoing feedback. Educators can design meaningful practice tasks, offer constructive critiques, and encourage self-reflection to promote deep learning and long-term retention. They should also be responsive to learners' individual progress and adapt the reinforcement activities accordingly.

Evaluate Progress

● ●

Assessing the understanding and progress of adult learners is important as it provides a comprehensive recap of the lesson to evaluate the learners' comprehension and application of the content. By evaluating their knowledge and skills, educators can gauge the effectiveness of the instruction and identify areas where additional support may be needed. Educators may employ formative assessments, quizzes, or practical assignments to gauge learners' mastery of the content. This aligns with the adult learning principles of learners' need to know and orientation to learning. By providing constructive feedback and recognising achievements, educators motivate adult learners and promote accountability and self-reflection. This enables adult learners to evaluate their progress, identify areas for improvement, and build confidence in their abilities.
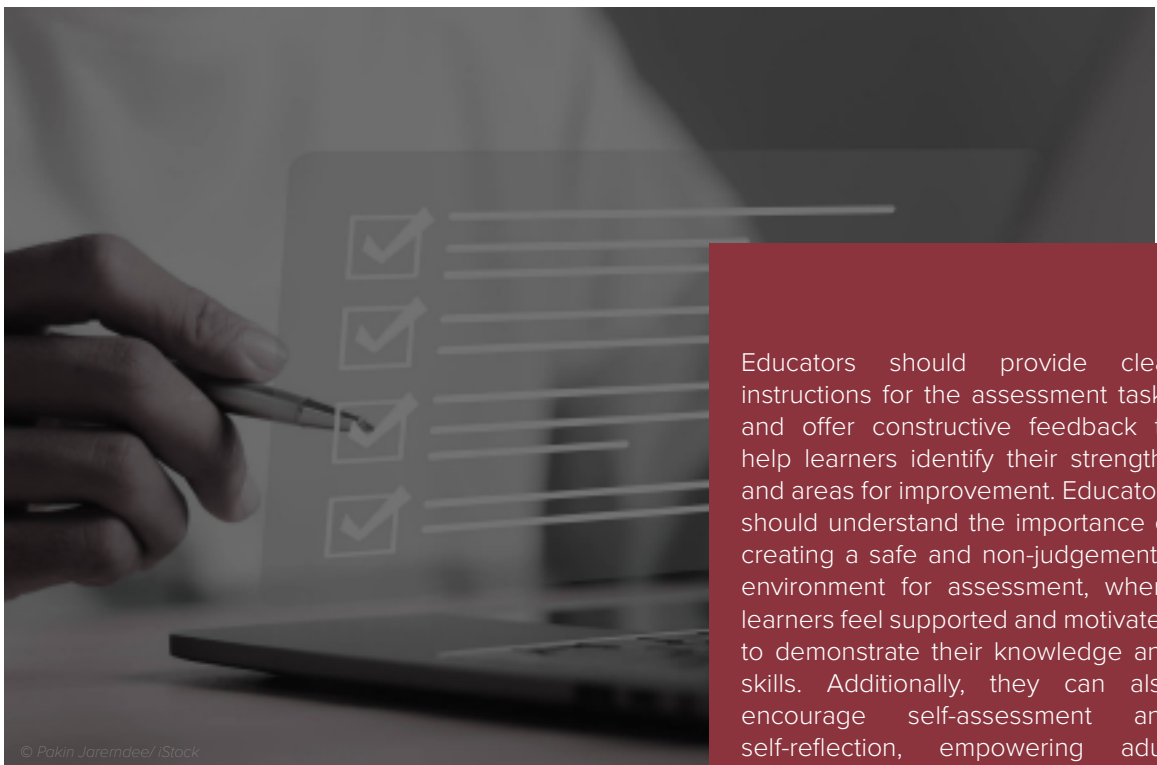
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Educators should provide clear instructions for the assessment tasks and offer constructive feedback to help learners identify their strengths and areas for improvement. Educators should understand the importance of creating a safe and non-judgemental environment for assessment, where learners feel supported and motivated to demonstrate their knowledge and skills. Additionally, they can also encourage self-assessment and self-reflection, empowering adult learners to evaluate their progress and set goals for further development.

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It is important to recognise that the instructional strategies outlined above are not exhaustive, but they provide a good representation of what typically occurs during adult learning. When planning lessons and considering the instructional strategies to use, educators may find it helpful to consider some guiding questions, as shown in Table 2.

ENHANCING ADULT EDUCATION INSTRUCTION: EXPLORING GUIDING QUESTIONS FOR EFFECTIVE LESSON PLANNING

These questions are intended to stimulate critical thinking and facilitate the planning process, but it is important to note that they do *not* encompass all possible considerations. Instead, they serve as possible prompts to guide educators in creating effective and engaging lessons for adult learners.
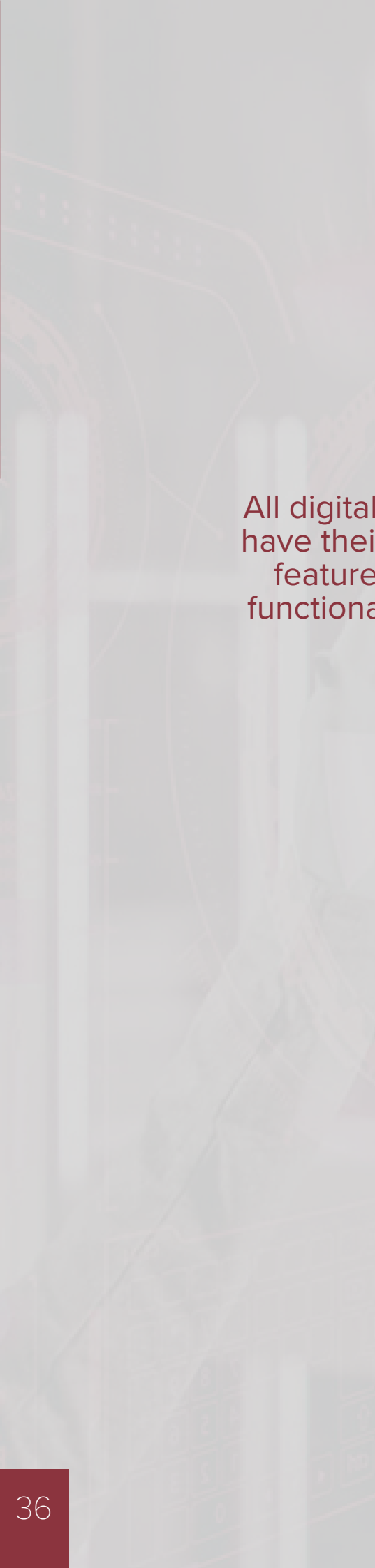
Table 2

Guiding Questions for Instructional Strategies

Instructional Strategies	Guiding Questions
■ Activate Schema ■ Scaffold ■ Connect Learning ■ Foster Reflection ■ Encourage Active Participation ■ Reinforce Learning ■ Evaluate Progress	**Prior Knowledge and Understanding** ▪ Do learners have prior knowledge of the topic? If so, does it prove beneficial to initiate the lesson with questions that elicit their existing knowledge? ▪ In cases where learners lack prior knowledge, can related knowledge be leveraged to establish connections that enhance their retention of new information? ▪ Should we assume that the learners can remember and understand what they know or what they have learned? ▪ When recall of prior knowledge or understanding is necessary, is it advantageous to draw learners' attention to it at the beginning? If so, should adult educators recap the information or encourage learners to demonstrate their recall before proceeding with the lesson? What are the assumptions of each? ▪ Is it better to begin with open-ended or close-ended questions, in this case, when assessing prior learning, bearing in mind the intent of the questions? **Facilitating Learning** ▪ Considering the unique characteristics of the learners, what is the most suitable approach of presenting and assessing knowledge? ▪ How can our understanding of cognitive processes of learning aid in effectively chunking and organising learning, considering the different profiles of the adult learners? ▪ How can we engage learners actively? ▪ How can we sustain learners' motivation? ▪ How can we encourage learners to make connections between what they have learned? **Sequencing Questions** ▪ What is the intent of the questions? ▪ How should the questions be sequenced to build comprehension of the required knowledge progressively? ▪ How should the questions be sequenced to facilitate deep learning? **Applying Knowledge** ▪ Is the application of knowledge straightforward, or does it require learners to assess and identify appropriate knowledge to apply? ▪ If the latter, is it better to initiate the lesson with questions that prompt learners to articulate their understanding of the concepts, rather than mere factual recall? ▪ Does the application of knowledge require pulling information from different avenues? ▪ Could incorporating a meta-analysis component, whereby learners analyse how they have applied their learning among themselves, enhance their understanding and retention? ▪ Is there intent for the learning experience to extend beyond the stated objectives? If so, what specific outcomes are desired, and how can they be achieved? **Contextualising Learning** ▪ Is it possible to situate the learning within the learners' contexts since recognising that relevance to their personal or professional lives will likely deepen their understanding and engagement? ▪ How can we get learners to contextualise what they have learned? Is it beneficial to get learners to share?

DIGITAL TOOLS

The strategies for teaching adults can be augmented by digital tools, which have been used to enhance meaningful interactions among learners and facilitate cognitive processes (Tawfik et el., 2020). When selecting digital tools to incorporate into instruction, it is crucial for educators to consider the specific learning objectives, desired outcomes, and the needs of the learners. The successful adoption of digital tools hinges on the ease in employing the digital tools; the more challenging it is to use the digital tools, the less likely they will be adopted (Baki et al., 2018). Hence, the chosen tools should be user-friendly, cost-effective, and capable of enhancing the instructional and learning effectiveness. A key consideration is how educators can employ digital tools to construct learning that not only addresses how adults learn but also contributes to the achievement of learning objectives.

All digital tools have their own features and functionalities,

and it is essential for educators to have a thorough understanding of these functions to determine which tool will best suit the specific learning objectives they are trying to achieve. Many of these digital tools can be used to achieve various learning objectives, ranging from the basic level of remembering and understanding to the higher levels of applying, analysing, evaluating, and creating. Simply put, a single digital tool has the potential to support a range of learning objectives depending on how it is being used.

Table 3 provides an overview of a selection of cost-effective and user-friendly digital tools that can significantly enhance the effectiveness of instruction and learning. Notably, Microsoft Edge offers a set of accessibility and learning tools, granting individual adult learners access to enhanced content without requiring a Microsoft 365 subscription. Further details on these tools can be found at https://www.microsoft.com/en-us/edge/features/learning-tools. Additionally, Annex A offers a detailed description of these cost-effective and user-friendly digital tools.

Table 3

Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Note: The features and functions of the digital tools listed in this section are based on information available online and are accurate as of 3 Aug 2023. However, technology is constantly evolving, and updates to these tools may occur beyond this date. Please verify the current information and availability of these tools before use.

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features
Activate Schema	**Microsoft Forms** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended	**Mentimeter** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Image Choice
	Microsoft PowerPoint Live Polls ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended	**Poll Everywhere** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Clickable Image **Slido** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Grid **Quizizz** ▪ MCQ ▪ Checkbox ▪ Open-Ended **Quizlet** ▪ Flashcards ▪ Gravity Game ▪ Matching Game ▪ Fill in the Blanks **Kahoot!** ▪ Word Cloud ▪ MCQ ▪ Slider ▪ Open-Ended **Padlet** ▪ Digital Posting
	Flip ▪ 'Show Me' Recording of Practical Performance ▪ Debate Platform	**Screen Castify** ▪ Screen Recorder ▪ Video Recording by Learners

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Scaffold	**Flip** ▪ Digital Flash Cards	**Wordwall** ▪ Match Up ▪ Matching pairs ▪ Find the Match ▪ Wordsearch ▪ Hangman ▪ Random Cards ▪ Random Wheel ▪ Gameshow Quiz ▪ Open the Box ▪ Flashcards ▪ Image Quiz	**Quizlet** ▪ Flashcards ▪ Gravity Game ▪ Matching Game ▪ Fill in the Blanks
	Microsoft PowerPoint ▪ Animation ▪ Slide Transition ▪ Clickable Button ▪ Hyperlink ▪ Real-Time AI Generated Subtitles (& Translation)	**Canva for Education** ▪ Digital Worksheets ▪ Online Whiteboard Templates ▪ Group Project Templates ▪ Animated Presentation Templates ▪ Infographic Templates ▪ Video Project Templates ▪ Lesson Plan Templates	**Genially** ▪ Animated Visual Templates ▪ Jeopardy Game ▪ Flashcards ▪ Hidden Image ▪ Pancakes & Waffles Game ▪ Drag & Drop ▪ Snakes & Ladders ▪ Escape Rooms ▪ Digital Portfolio
	Microsoft Whiteboard ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Design Templates ▪ Import/Export Function ▪ Collaborative & Sharing ▪ Embed Rich Media Content	**Miro** ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Connectors ▪ Mapping & Diagramming Templates ▪ Agile Workflow Templates ▪ Brainstorming & Ideation Templates ▪ Research & Design Templates ▪ Strategy & Planning Templates	

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Scaffold	**Microsoft OneNote** ▪ Audio & Video Recording ▪ Web Clipping ▪ Drawing Tools & Shapes ▪ Digital Inking (Ink to Text) ▪ Design Templates ▪ Collaborative & Sharing ▪ Speech to Text With Dictate	**Padlet** ▪ Digital Posting ▪ Drawing Tools ▪ Audio & Video Recording ▪ Timeline ▪ Map ▪ Embed Multimedia ▪ Collaborative & Sharing	
	Microsoft PowerPoint ▪ Record Powerpoint Presentations, Capture Voice, Ink Gestures, and Video Presence to Scaffold Concepts or Workflows	**YouTube** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos	
	Microsoft Stream [1] ▪ Video Uploading ▪ Comments & Discussion ▪ Collaborative & Sharing ▪ Analytics & Insights into Viewer Engagement ▪ Livestream to Large Audiences ▪ Screen Recording for Instructional Design ▪ Quizzes to Test for Understanding	**YouTube** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos	**Vimeo** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos
	Microsoft Sway ▪ Visual Storytelling ▪ Interactive Presentation ▪ Adaptive Rendering for Device Screensize ▪ Embed Rich Media Content	**Edpuzzle** ▪ Import & Edit Videos ▪ Post Notes Using Text or Voice to Draw Attention or Add Supplement Info ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended **Screen Castify** ▪ Screen Recorder ▪ Edit Videos with Text, Voiceover and Music ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ Drawing Tools for Annotation ▪ Video Recording by Learners ▪ Sharing Option	**Animoto for Education** ▪ Web-Based Animation Tool to Create Videos ▪ Templates and Themes ▪ Multimedia Integration ▪ Voiceover Recording ▪ Library of Music for Use **PowToon** ▪ Online Animation Software to Create Videos ▪ Templates and Themes ▪ Multimedia Integration ▪ Voiceover Recording and Music Options **H5P** ▪ Interactive Presentation ▪ Drag And Drop ▪ Timeline ▪ Flashcards ▪ Interactive Images ▪ Multimedia Integration ▪ Track User Engagement

[1] *Microsoft Stream (Classic) will be retired starting February 15, 2024, and will be replaced by Stream (on Sharepoint) Stream (classic) live events will be retired September 15, 2023 and replaced by teams live events. Microsoft Stream available in O365 E1 and up.*

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Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features
Connect Learning	**Flip** ▪ Video Discussion Board ▪ Debate Platform ▪ Audio & Video Recording ▪ Digital Journalling ▪ Collaborative & Sharing	**Parlay** ▪ Digital Discussion Platform ▪ Written & Verbal Roundtable ▪ Follow-up Questions Parlay Genie (AI) For Deeper Learning
	Microsoft OneNote ▪ Audio & Video Recording ▪ Web Clipping ▪ Drawing Tools & Shapes ▪ Design Templates ▪ Collaboration & Sharing	**Padlet** ▪ Digital Posting ▪ Drawing Tools ▪ Audio & Video Recording ▪ Timeline ▪ Map ▪ Embed Multimedia ▪ Collaborative & Sharing
	Microsoft PowerPoint ▪ Animation ▪ Slide Transition ▪ Clickable Button ▪ Hyperlink ▪ Real-Time AI Generated Subtitles (& Translation)	**Genially** ▪ Animated Visual Templates ▪ Jeopardy Game ▪ Flashcards ▪ Hidden Image ▪ Pancakes & Waffles Game ▪ Drag & Drop ▪ Snakes & Ladders ▪ Escape Rooms ▪ Digital Portfolio **Wordwall** ▪ Match Up ▪ Matching pairs ▪ Find the Match ▪ Wordsearch ▪ Hangman ▪ Random Cards ▪ Random Wheel ▪ Gameshow Quiz ▪ Open the Box ▪ Flashcards ▪ Image Quiz **Canva for Education** ▪ Digital Worksheets ▪ Online Whiteboard Templates ▪ Group Project Templates ▪ Animated Presentation Templates ▪ Infographic Templates ▪ Video Project Templates ▪ Lesson Plan Templates **H5P** ▪ Interactive Presentation ▪ Drag and Drop ▪ Timeline ▪ Flashcards ▪ Interactive Images ▪ Multimedia Integration ▪ Track User Engagement

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Connect Learning	**Microsoft Whiteboard** ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Design Video Project Templates ▪ Import/Export Function ▪ Collaborative & Sharing	**Miro** ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Connectors ▪ Mapping & Diagramming Templates ▪ Agile Workflow Templates ▪ Brainstorming & Ideation Templates ▪ Research & Design Templates ▪ Strategy & Planning Templates	
	Microsoft Stream ▪ Video Uploading ▪ Comments & Discussion ▪ Collaborative & Sharing ▪ Analytics & Insights into Viewer Engagement	**YouTube** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos	**Vimeo** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos
	Microsoft Sway ▪ Visual Storytelling ▪ Interactive Presentation ▪ Adaptive Rendering for Device Screensize ▪ Embed Rich Media Content	**Edpuzzle** ▪ Import & Edit Videos ▪ Post Notes Using Text or Voice to Draw Attention or Add Supplement Info ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended **Screen Castify** ▪ Screen Recorder ▪ Edit Videos with Text, Voiceover and Music ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ Drawing Tools for Annotation ▪ Video Recording by Learners ▪ Sharing Option	**Animoto for Education** ▪ Web-Based Animation Tool to Create Videos ▪ Templates and Themes ▪ Multimedia integration ▪ Voiceover recording ▪ Library of Music for Use **PowToon** ▪ Online Animation Software to Create Videos ▪ Templates and Themes ▪ Multimedia Integration ▪ Voiceover Recording and Music Options

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Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Foster Reflection	**Flip** ▪ Video Discussion Board ▪ Audio & Video Recording ▪ Digital Journalling ▪ Debate Platform ▪ Collaborative & Sharing	**Parlay** ▪ Digital Discussion Platform ▪ Written & Verbal Roundtable ▪ Follow-Up Questions by Parlay Genie (AI) for Deeper Learning	
	Microsoft Sway ▪ Digital Portfolio ▪ Collaborative & Sharing	**Edpuzzle** ▪ Import & Edit Videos ▪ Post Notes Using Text or Voice to Draw Attention or Add Supplement Info ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended	**Screen Castify** ▪ Screen Recorder ▪ Edit Videos with Text, Voiceover and Music ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ Drawing Tools for Annotation ▪ Video Recording by Learners ▪ Sharing Option
	Microsoft Stream ▪ Video Uploading ▪ Comments & Discussion ▪ Collaborative & Sharing ▪ Analytics & Insights into Viewer Engagement	**YouTube** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos	**Vimeo** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	**Comparable Tools/Features**
Encourage Active Participation	**Microsoft Forms** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended	**Mentimeter** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Image Choice
	Microsoft PowerPoint Live Polls ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended	**Poll Everywhere** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Clickable Image **Slido** ▪ Word Cloud ▪ MCQ ▪ Ranking/Rating Scale ▪ Open-Ended ▪ Grid **Quizizz** ▪ MCQ ▪ Checkbox ▪ Open-Ended **Quizlet** ▪ Flashcards ▪ Gravity Game ▪ Matching Game ▪ Fill in the Blanks **Kahoot!** ▪ Word Cloud ▪ MCQ ▪ Slider ▪ Open-Ended
	Microsoft PowerPoint Present Live ▪ Live Subtitles on the Audience's Devices, in Their Preferred Language, While the Presenter Speaks ▪ Live Reactions and Feedback to the Presenter ▪ Navigation to Review Previous Slides	**Helperbird** ▪ Captioning and Transcription Features **Mentimeter** ▪ Live Reactions and Feedback to the Presenter **YouTube** ▪ Captioning and Transcription Features

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features
Encourage Active Participation	**Microsoft Excel** ▪ Data Gathering ▪ Analytics ▪ Visualisation of Data ▪ Collaboration	**Tableau** ▪ Interactive Data Visualisations ▪ Patterns, Correlations, and Outliers ▪ Data Integration ▪ Basic Predictive Analytics Capabilities ▪ Collaborative & Sharing
	Microsoft OneNote ▪ Audio & Video Recording ▪ Web Clipping ▪ Drawing Tools & Shapes ▪ Design Templates ▪ Collaborative & Sharing ▪ Print to OneNote	**Padlet** ▪ Digital Posting ▪ Drawing Tools ▪ Audio & Video Recording ▪ Timeline ▪ Map ▪ Embed Multimedia ▪ Collaborative & Sharing **Genially** ▪ Animated Visual Templates ▪ Jeopardy Game ▪ Flashcards ▪ Hidden Image ▪ Pancakes & Waffles Game ▪ Drag & Drop ▪ Snakes & Ladders ▪ Escape Rooms ▪ Digital Portfolio **Wordwall** ▪ Match Up ▪ Matching Pairs ▪ Find the Match ▪ Wordsearch ▪ Hangman ▪ Random Cards ▪ Random Wheel ▪ Gameshow Quiz ▪ Open the Box ▪ Flashcards ▪ Image Quiz

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Encourage Active Participation	**Microsoft Whiteboard** ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Design Video Project Templates ▪ Import/Export Function ▪ Collaborative & Sharing	**Miro** ▪ Drawing Tools ▪ Shapes ▪ Sticky Notes ▪ Connectors ▪ Mapping & Diagramming Templates ▪ Agile Workflow Templates ▪ Brainstorming & Ideation Templates ▪ Research & Design Templates ▪ Strategy & Planning Templates **Canva for Education** ▪ Digital Worksheets ▪ Online Whiteboard Templates ▪ Group Project Templates ▪ Animated Presentation Templates ▪ Infographic Templates ▪ Video Project Templates ▪ Lesson Plan Templates	**H5P** ▪ Interactive Presentation ▪ Drag and Drop ▪ Timeline ▪ Flashcards ▪ Interactive Images ▪ Multimedia Integration ▪ Track User Engagement
	Flip ▪ Video Discussion Board ▪ Audio & Video Recording ▪ Digital Journalling ▪ Debate Platform ▪ Collaborative & Sharing	**Parlay** ▪ Digital Discussion Platform ▪ Written & Verbal Roundtable ▪ Follow-Up Questions by Parlay Genie (AI) for Deeper Learning	
	Microsoft Stream ▪ Video Uploading ▪ Comments & Discussion ▪ Collaborative & Sharing ▪ Analytics & Insights into Viewer Engagement ▪ Embed Poll, Quiz or Survey into Videos to Check for Comprehension and Learning ▪ Large Scale Live Streaming	**YouTube** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos	**Vimeo** ▪ Upload Videos ▪ Edit Videos ▪ Live Streaming Capability ▪ Comments & Discussion ▪ Track the Performance of Videos

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Encourage Active Participation	**Microsoft Sway** ▪ Visual Storytelling ▪ Interactive Presentation ▪ Digital Portfolio ▪ Collaborative & Sharing	Edpuzzle ▪ Import & Edit Videos ▪ Post Notes Using Text or Voice to Draw Attention or Add Supplement Info ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended	Screen Castify ▪ Screen Recorder ▪ Edit Videos with Text, Voiceover and Music ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ Drawing Tools for Annotation ▪ Video Recording by Learners ▪ Sharing Option
	Microsoft Teams ▪ Video Meeting ▪ Screen Sharing ▪ Live Caption ▪ Instant Messaging ▪ File Uploading ▪ Collaborative & Sharing ▪ Emojis (Thumbs Up, Laugh, Love, Heart, Etc.) ▪ Custom Avatars	Zoom ▪ Video Meeting ▪ Screen Sharing ▪ Virtual Background ▪ Live Transcription ▪ Instant Messaging ▪ Audio/ Video Recording ▪ File Uploading ▪ Collaborative & Sharing	

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools		
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features	
Reinforce Learning	**Microsoft PowerPoint** ▪ Animation ▪ Slide Transition ▪ Clickable Button ▪ Hyperlink ▪ PowerPoint Coach for Rehearsing Presentations with Feedback Generated in a Report After Rehearsal ▪ Live Subtitles Generated by AI with Translations	**Genially** ▪ Animated Visual Video Project Templates ▪ Jeopardy Game ▪ Flashcards ▪ Hidden Image ▪ Pancakes & Waffles Game ▪ Drag & Drop ▪ Snakes & Ladders ▪ Escape Rooms ▪ Digital Portfolio	
	Flip ▪ Digital Flash Cards ▪ Collaborative & Sharing	**Parlay** ▪ Digital Discussion Platform ▪ Written & Verbal Roundtable ▪ Follow-Up Questions by Parlay Genie (AI) for Deeper Learning **Wordwall** ▪ Match Up ▪ Matching pairs ▪ Find the Match ▪ Wordsearch ▪ Hangman ▪ Random Cards ▪ Random Wheel ▪ Gameshow Quiz ▪ Open the Box ▪ Flashcards ▪ Image Quiz	**Quizlet** ▪ Flashcards ▪ Gravity Game ▪ Matching Game ▪ Fill in the Blanks **Kahoot!** ▪ MCQ ▪ True Or False ▪ Puzzle ▪ Type Answer ▪ Open-Ended ▪ Drop Pin **Quizizz** ▪ MCQ ▪ Checkbox ▪ Fill in the Blanks ▪ Open-Ended **H5P** ▪ Flashcards
	Microsoft Sway ▪ Digital Portfolio ▪ Collaborative & Sharing ▪ Adaptive Rendering on Mobile Phones and Tablets so Content Is Accessible Anywhere	**Edpuzzle** ▪ Import & Edit Videos ▪ Post Notes Using Text or Voice to Draw Attention or Add Supplement Info ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended **Screen Castify** ▪ Screen Recorder ▪ Edit Videos with Text, Voiceover and Music ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ Drawing Tools for Annotation ▪ Video Recording by Learners ▪ Sharing Option	**Animoto for Education** ▪ Web-Based Animation Tool to Create Videos ▪ Templates and Themes ▪ Multimedia Integration ▪ Voiceover Recording ▪ Library of Music for Use **PowToon** ▪ Online Animation Software to Create Videos ▪ Templates and Themes ▪ Multimedia Integration ▪ Voiceover Recording and Music Options

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features
Evaluate Progress	**Microsoft Forms** ▪ MCQ ▪ Open-Ended	**Mentimeter** ▪ MCQ ▪ Open-Ended ▪ Image Choice
	Microsoft Stream ▪ Embed Poll, Quiz, or Survey into Videos to Check for Comprehension and Learning	**Edpuzzle** ▪ Embed Questions in Segments of Videos That Learners Must Answer Before Moving On ▪ MCQ ▪ Open-Ended
	Microsoft PowerPoint ▪ Powerpoint Speaker Coach ▪ Self-Directed Rehearsal for Presentation with Feedback Generated in a Report After Rehearsal	**Yoodli** ▪ Real-Time Feedback on Speech ▪ Report on Pace, Filler Words, and Monologue ▪ Suggestion to Improve Communication
	Microsoft Editor (in Word) ▪ AI-Enabled Analysis of a Writeup in Word ▪ Checks Grammar, Spelling, and More	**Grammarly** ▪ AI-Powered Writing Assistant Tool ▪ Checks Grammar, Spelling, Punctuation, Tone and Formality ▪ Sentence Structure, Writing Style and Vocabulary Enhancement ▪ Plagiarism Checker
	Microsoft Teams ▪ AI-Enabled Personalized and Independent Reading Practice Based on Words That a Learner Has Mispronounced	**Helperbird** ▪ Immersive Reader ▪ Text-to-Speech, Syllable and Phonetic Breakdown ▪ Translation of Websites in Multiple Languages

Table 3: Overview of Instructional Strategies and Their Corresponding User-Friendly Digital Tools

Instructional Strategies	Digital Tools	
	Microsoft 365 and Digital Learning Tools	Comparable Tools/Features
Evaluate Progress	**Microsoft PowerPoint Live Polls** ▪ MCQ ▪ Open-Ended	**Poll Everywhere** ▪ MCQ ▪ Open-Ended ▪ Clickable Image **Slido** ▪ MCQ ▪ Open-Ended ▪ Grid **Genially** ▪ Jeopardy Game ▪ Flashcards ▪ Hidden Image ▪ Drag & Drop ▪ Escape Rooms ▪ Digital Portfolio
	Flip ▪ Digital Flash Cards ▪ Record Videos to Demonstrate Knowledge Gain	**Wordwall** ▪ Match Up ▪ Matching Pairs ▪ Find the Match ▪ Wordsearch ▪ Hangman ▪ Gameshow Quiz ▪ Flashcards ▪ Image Quiz **Quizizz** ▪ MCQ ▪ Checkbox ▪ Fill in the Blanks ▪ Open-Ended **Screen Castify** ▪ Video Assessment **Quizlet** ▪ Flashcards ▪ Gravity Game ▪ Matching Game ▪ Fill in the Blanks **Kahoot!** ▪ MCQ ▪ True or False ▪ Puzzle ▪ Type Answer ▪ Open-Ended ▪ Drop Pin

EFFECTIVENESS OF DIGITAL ANDRAGOGY IN FACILITATING LEARNING

To evaluate the effectiveness of digital andragogy in facilitating learning, educators can consider the following: learner's engagement and achievement of learning objectives.

When adult learners are motivated to engage with the learning content, they are more willing to invest in their learning and "initiate efforts to acquire information" (Ornelles et al., 2019, p. 548) and hence are more likely to derive positive learning outcomes from lessons (Daumiller et al., 2021). According to Daumiller et al. (2021), engagement encompasses various aspects, including the following:
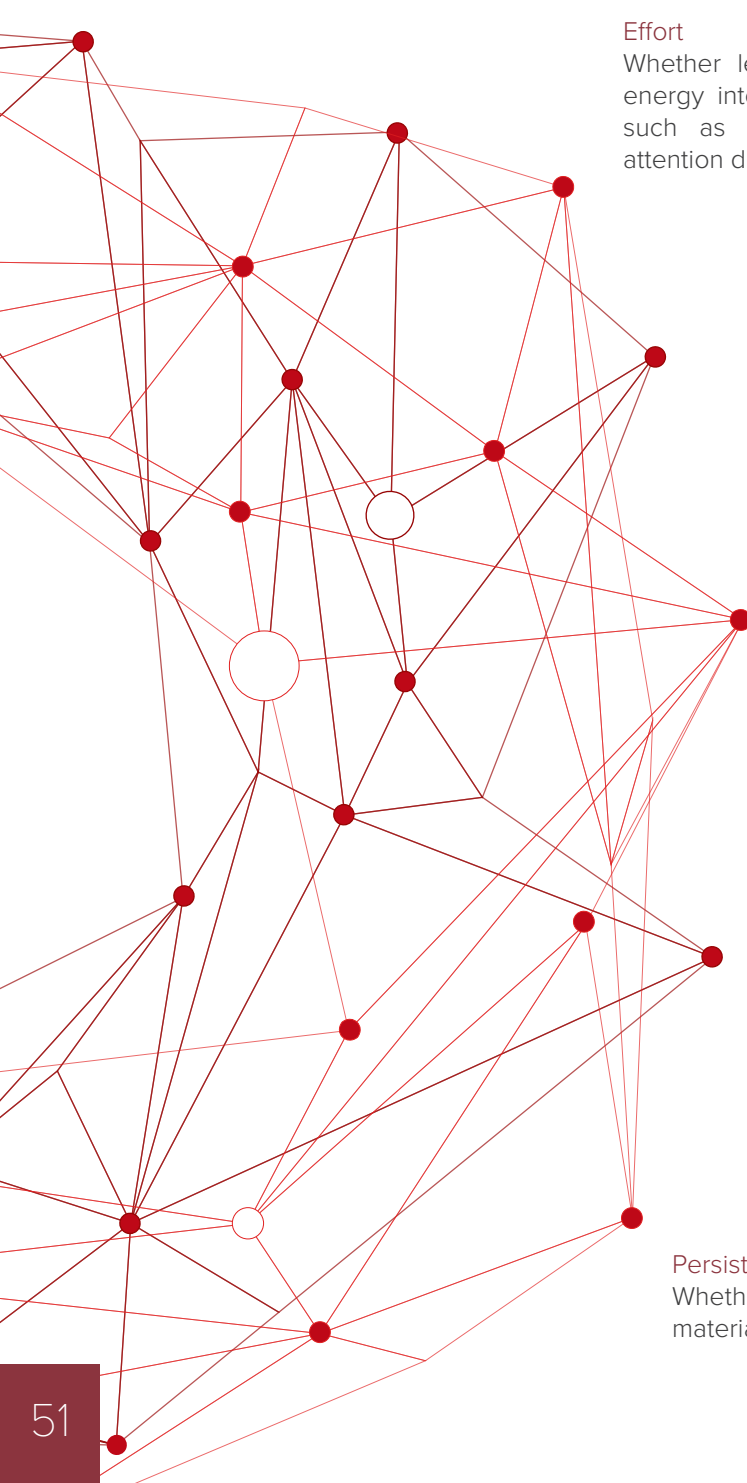
Effort
Whether learners invest a significant amount of energy into understanding the learning materials, such as through note-taking or paying close attention during lessons.

Learning Intensity
Whether learners actively and intentionally attempt to understand the learning materials.

Risk-Taking
Whether learners participate in lesson activities, even if they risk providing incorrect answers and potentially experiencing embarrassment.

Elaboration
Whether learners strive to make clearer connections between the learning materials and their existing knowledge.

Implementation
Whether learners consider applying what they have learned in their current context.

Persistence
Whether learners remain dedicated to learning the materials despite the challenges they face.

Table 4 presents a list of potential questions and statements that educators can use to evaluate the efficacy of digital tools in enhancing learner engagement. These questions and statements are adapted from various literature (Beghetto, 2009; Daumiller et al., 2021; Deng et al., 2020; Engelschalk et al., 2017; Eom and Ashill, 2016; Schmidt & Ford, 2003; & Wolters, 2004). It is important to note that these questions and statements serve as a reference and can be further adapted, improvised, or expanded upon to suit specific educational contexts and goals.

Table 4
Evaluating Learners' Engagement

Questions	Statements
▪ Did the digital tool(s) sustain your interest and captivate your attention throughout the learning experience? If yes, can you elaborate? If not, why not? ▪ In what ways did the digital tool(s) motivate you to engage with the provided content or activities actively? ▪ Were there specific interactive features or elements of the digital tool (s) that you found particularly engaging? If yes, can you elaborate? If not, why not? ▪ Did the digital tool(s) provide opportunities for (a) hands-on learning experiences, (b) interactive discussions, or (c) immersive exploration? Can you elaborate? ▪ Did the digital tool(s) foster a sense of enjoyment during your learning process? If yes, can you elaborate? If not, why not?	▪ The use of digital tool(s) has encouraged me to participate in class. ▪ The use of digital tool(s) has encouraged positive interactions between educator and learners. ▪ The interactions between educator and learners have helped me understand the topic better. ▪ The use of digital tool(s) has made it easier for me to understand lesson content. ▪ The use of digital tools has made me more willing to share my ideas even though I may make mistakes. ▪ The use of digital tool(s) has helped me relate what I am learning to what I already know, thereby reinforcing connections. ▪ The use of digital tool(s) has allowed me to be more intentional in my learning.

Evaluating learners' achievement of learning objectives can be accomplished, for example, by asking learners to rate themselves on ability statements pegged to the respective levels of Bloom's taxonomy. It is crucial as the data collected can assist educators in improving teaching and learning processes during the lesson (Knowles et al., 2014). They can also be used to "ensure educator's accountability, demonstrate achievement, and judge the quality of a program in its entirety" (Mubayrik, 2020, p. 2)". In the case where results are less than satisfactory, the data can be used to re-diagnose adult learning needs and inform the planning of future lessons.

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When evaluating the achievement of learning objectives, educators can include a range of open-ended and closed-ended questions and statements. Table 4 outlines possible questions and statements that educators can ask learners to evaluate their achievement of learning outcomes. They are adapted from various literature (e.g., Baker et al., 2011; Kember & Leung, 2008; Chun & Lee, 2015; Fu et al., 2009; Frick et al., 2010 & Nokelainen, 2006). It is important to note that these questions and statements serve as a reference and can be further adapted, improvised, or expanded upon to suit specific educational contexts and goals.

Table 5

Evaluating Achievement of Learning Objectives

Learning Outcome	Questions	Statements
Remember	• What are some of the key concepts you have learned about the topic? • How confident are you in recalling what you have learned? Why do you say so? • Can you provide an example of a concept you could remember?	• I can identify the key concepts taught. • I can recall the concepts I have learned. • I can summarise the key points of the lesson.
Understand	• Can you provide some specific examples demonstrating your understanding of the concept learned? • How would you summarise the concepts you have learned to someone who has not taken them before?	• I can explain the concepts that I have learned. • I can distinguish between different aspects of the concepts.
Apply	• How would you go about applying the concepts you have learned?	• I can apply the concepts that I have learned. • I can use the skills and knowledge taught. • I can solve problems using the concepts I have learned.
Analyse	• How did it help you develop your analytical skills, such as evaluating evidence or identifying assumptions? • Can you think of a challenge that you can apply the analytical skills you have learned? How would you go about analysing the challenge to arrive at a solution?	• I can identify the basic elements of an idea, experience, or theory. • I can critically analyse a problem situation to suggest solutions. • I can evaluate the strengths and weaknesses of different arguments. • I can organise the concept in a logical structure.
Evaluate	• How did it help you to develop the skills needed to evaluate information related to [insert concept]? • How did it help you to develop your ability to identify biases or assumptions that may affect your evaluation of [insert concept]?	• I can make judgments about the concepts that I have learned. • I can assess the effectiveness of different concepts. • I can recommend improvements to the concepts taught. • I can critique the concept from different perspectives.

EMBRACING DIGITAL ANDRAGOGY: ENHANCING LEARNING THROUGH CASE STUDIES

This section showcases a series of case studies that employ digital andragogy to enhance learning experiences. These case studies offer evidence of the potential effectiveness of digital andragogy in augmenting the learning experiences of diverse learner profiles within organisational settings. Importantly, these examples demonstrate that incorporating digital andragogy as an approach to enhance learning need not be a costly endeavour, as there is a plethora of cost-effective tools available to support the implementation of this approach. The case studies also reveal increased learner engagement during learning activities.

It is worth noting that adopting a digital andragogy approach does not necessitate incorporating digital tools throughout the entire lesson. Instead, it should be applied selectively when the use of such tools can effectively support the achievement of learning objectives and enhance the overall learning experience. By identifying specific segments where digital tools can add value, educators can strategically integrate them into their lesson plans, creating a balanced and purposeful blend of traditional and digital teaching methods. This approach ensures that the incorporation of digital andragogy contributes to achieving of learning objectives, promoting learners' engagement, and improving overall learning experiences.

The case studies are intended to be a pilot of the digital andragogy approach to assess the potential effectiveness of digital andragogy in augmenting learning experience. As such, the lessons presented in the case studies are only 30 minutes in duration.

CASE STUDY #1

The Organisation

The Institute for Military Learning (IML) is established as the executive arm of the SAF to professionalise the instructor corps and position the SAF as a leader in adult learning. IML conducts Training Development & Instructional (TD&I) courses and Continuing Professional Education programmes for all SAF TD&I practitioners, from junior instructors to Training Institute Commanders. As the Training Institute (TI) for all SAF TD&I practitioners, IML helps them enhance their competencies. Additionally, IML drives Training Institute Excellence across all SAF Training Institutes through the assessment and certification of the Training Institute Excellence Model (TIEM).

Anchoring the SAF's pursuit of becoming a leading military institution in Training Development and Instruction, IML fulfils its mission by providing certified/accredited programmes and training courses, as well as continuing professional education that are relevant and timely for Training Developers, Instructors, and Training Institute Commanders. IML also offers coaching and mentoring to practitioners based on their needs, develops, and implements a training excellence model to drive excellence in all SAF training institutes, and takes the lead in training performance and analysis within the SAF.

https://www.mindef.gov.sg/oms/safti/iml.html

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"Open up new possibilities to conduct a class where we are not just looking at fulfilling lower objectives. Digital andragogy further enables us, educators, to further support our learners in levelling up their critical thinking, analytical skills and the ability to bring learning to bear on performance. Even within lower objectives, it helps us be more attuned to seeing that we need more than just getting our learning to focus on performance but think deeply about applying their knowledge in a variety of situations. This makes learning even more engaging, effective and efficient."

Goh Swee Heng (Mr)
Senior Manager (Programme) and Faculty, Ministry of Defence

Learning Objective
Provide constructive feedback using the appropriate feedback model.

Topic	Duration	Target Audience	Number of learners
Providing Feedback	30 minutes	Instructors	22

The Existing Approach

This is an in-class lesson after the online self-study on 'Providing Feedback'. The materials comprise three segments: purpose of feedback, principles of feedback, and feedback models. For the in-class lesson, learners are required to do an activity which is to provide feedback using the feedback models they have learned during their online self-study. In the existing approach, the in-class lesson does not have any segment that bridges the online self-study and in-class practice; it assumes learners understand what they have learned in their online self-study and are expected to do the activity right away.

The Digital Andragogy Approach

The lesson was a proposed segment of the in-class lesson. In the existing approach, there was no such segment. The purpose of the lesson was to bridge the online self-study and in-class practice. When planning the lesson, one of the questions considered was, "Can we assume that the learners can recall and understand what they have learned?" Since the in-class activity required learners to recall and understand what they had learned about the topic, the consideration was that it was better to assess the learners' recall and understanding of what they had learned. The assessment was to get learners to demonstrate their understanding. Another question considered was the possibility of situating the learning within the learners' contexts, as making the relevance of learning to their personal or professional lives was conceivably going to deepen their understanding and engagement. Given that learners had most probably received and given feedback in some form or capacity, it was certainly helpful to relate questions asked to their context.

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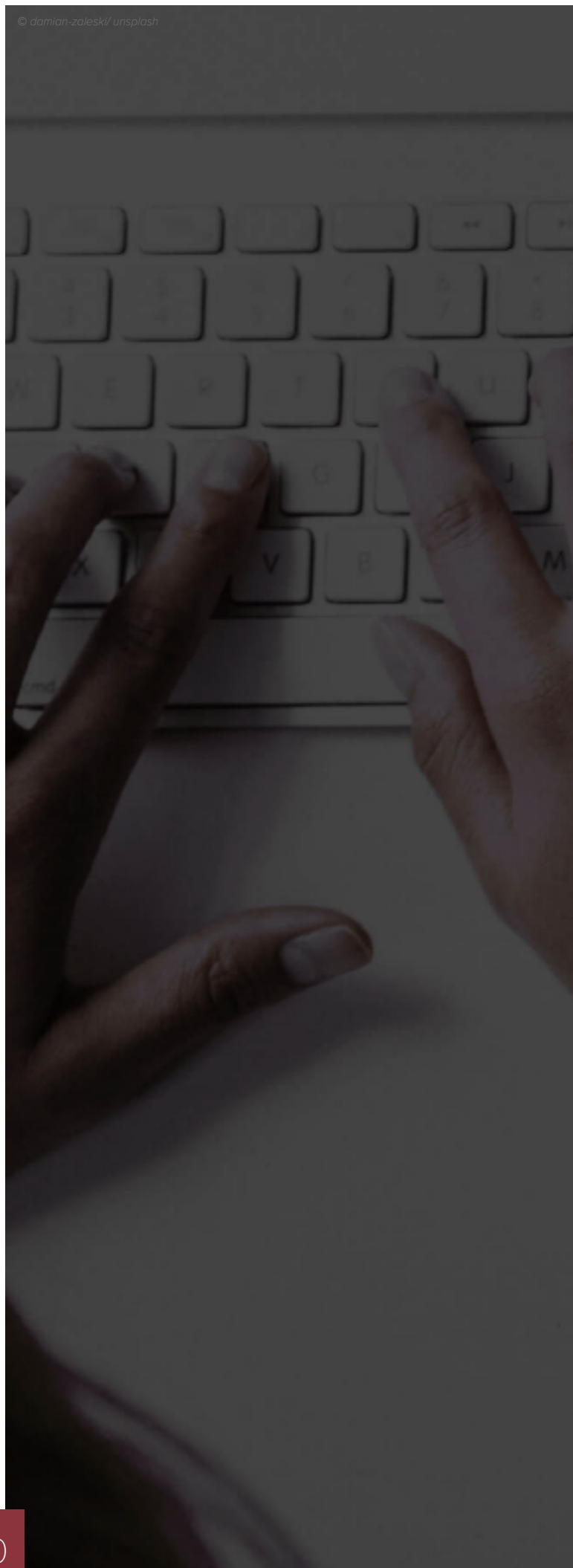
The lesson commenced with an open-ended question, "What do you understand by feedback?" to activate learners' schema on 'feedback'. It began with an open-ended question instead of a close-ended question, which required learners to choose the correct answer to a question. The intent was to assess learners' understanding of the topic rather than a mere recall of what they had learned. Using an open-ended question allowed learners to provide more detailed and deeper insights into what they had learned. It also allowed educators to assess learners' understanding of their learning. To avoid the situation where only the vocal ones responded, a free online random name picker (https://wheelofnames.com/) was used to randomly pick learners to answer the question. The learners' names were entered beforehand, and everyone had an equal chance of being chosen. This also ensured that educators had a good grasp of learners' understanding.

After assessing their understanding of feedback, *Poll Everywhere* was used to ask the following question: "Do you prefer to provide or receive feedback?" The question of preference was posed to situate learning within their context. It also sought to underscore to learners that though this lesson was on providing feedback, how they would like to receive feedback would have implications on how they would give feedback. Following their preference, they were to explain why they preferred to provide or receive feedback. This allowed learners to apply the principles of feedback they had learned in a contextualised manner and helped them to connect their learning. Furthermore, in contrast to giving learners the choice to raise their hands to indicate their preference, employing a digital polling tool ensured active participation in the question-and-answer interaction by everyone. By pondering the question, learners activated their existing knowledge of the subject, which was further reinforced through subsequent questions using the same digital polling tool.

The follow-up question, "What types of feedback appeal to you?" served as an assessment of the learners' recall of feedback principles while contextualising their learning. This subsequently strengthened the retention of these principles. While the online self-study materials have explained the two possible feedback models available for learners to provide feedback and the associated steps, they give the impression that these models can be used interchangeably. However, the hamburger model and the SMB model possess distinct strengths and limitations. Although the in-class activity required learners to identify the suitable feedback model before giving feedback, the online self-study materials did not outline the strengths and limitations of the presented techniques; they focused solely on the 'how' of their use. To apply them sensibly, learners must be able to establish the strengths and limitations of each feedback model to identify the appropriate feedback model to use for different situations. The next four slides fostered reflection in learners and required them to provide short responses to the questions on the strengths and limitations of each feedback model.

The sequence of the questions was characterised by the following intent: first, to mine learners' understanding of feedback, followed by situating learning within their context and homing into the specific and essential aspects of the knowledge they were expected to be conversant with and ending with a reflection of the feedback models which harmonised with the in-class activity that followed. For this lesson, Mentimeter and Kahoot! can also be used. However, Mentimeter was not used as the free version allows only three slides (additional slides require payment, and there were more than three slides). Kahoot! was also ruled out because polling is a paid function. Poll Everywhere was used for several reasons. It engaged learners as they could share their thoughts anonymously and encouraged active participation; it could also be used to poll learners on their views and preferences and to elicit short answer responses to open-ended questions. Furthermore, there is no limit to the number of slides that can be created in the free version. It was also used for this class because the class size was fewer than 25 learners; the response limit for the free plan is 25, and since only one response was required per question, it could be used for free.

Learning Objective	Instructional Strategies	Guiding Questions (During Planning)	Additional Questions (During Lesson)	Digital Tools
Provide constructive feedback using the appropriate feedback model.	■ Activate Schema ▢ Scaffold ■ Connect Learning ■ Foster Reflection ■ Encourage Active Participation ▢ Reinforce Learning ■ Evaluate Progress ▢ Others	▪ Should we assume that the learners can recall and understand what they have learned? ▪ Is the application of knowledge straightforward, or does it require learners to assess and identify appropriate knowledge to apply? ▪ If the latter, is it better to initiate the lesson with questions that prompt learners to articulate their understanding of the concepts, rather than mere factual recall? ▪ Is it possible to situate the learning within the learners' contexts since recognising that relevance to their personal or professional lives will likely deepen their understanding and engagement? ▪ What is the intent of the question?	▪ Why do you prefer to be the provider/receiver of feedback? ▪ (Slide 2) ▪ Why does this type of feedback appeal to you? (Slide 3) ▪ Why don't other types of feedback appeal to you? (Slide 3) ▪ What is common among the comments given (Slides 4-6)? ▪ When is it better to use the hamburger feedback model? When is it better to use SBI feedback model? (Slide 6)	Poll Everywhere

Lesson Plan

Time	Activity (Current Approach)	Time	Activity (Digital Andragogy Approach)
30 mins	Presently, the learners will do the activity in the following lesson after their online self-study.	5 mins	▪ Ask learners the question: "What do you understand by feedback?" using a free online random name picker to select learners to answer the question.
		5 mins	▪ Ask learners the question: "Do you prefer to be the provider or receiver of feedback?" using Poll Everywhere ▪ Following the tabulation of the responses, select some learners and ask them to elaborate on why they prefer one role over the other.
		5 mins	▪ Ask the learners the question: "What types of feedback appeal to you?"
		15 mins	▪ Ask the learners to briefly articulate the strengths and limitations of the feedback models.
		5 mins	▪ Ask the learners to evaluate the lesson.

Evaluation

After this segment of the lesson, an evaluation was done to assess whether the learning objective was achieved and whether learners were engaged during the lesson. Below are the questions asked and the findings.

● Yes
● No

100%
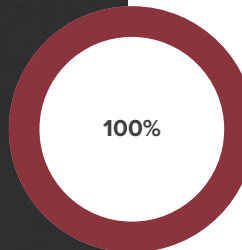
The use of digital tools has encouraged me to participate in class.
22 Responses

● Yes
● No
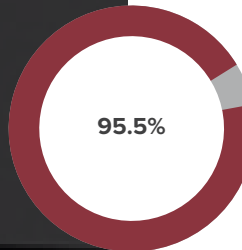
95.5%

The use of digital tools has encouraged positive interactions between educator and learners.
22 Responses

● Yes
● No
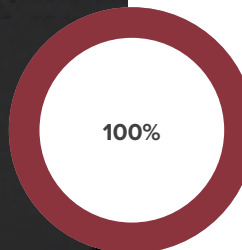
100%

The interactions between educator and learners have helped me to understand the topic better.
22 Responses

● Yes
● No

100%
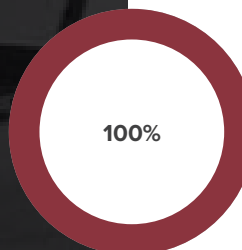
This lesson has enhanced my knowledge on the concepts.
22 Responses

● Yes
● No

100%
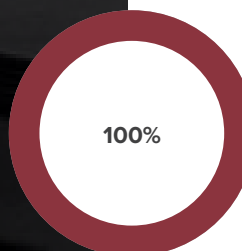
I think I will be able to apply what I have just learned.
22 Responses

TS GROUP

TS Group Pte Ltd

The Organisation

Established in 2009, TS Group is a leading company specialising in co-developing, managing, and operating large-scale communities for foreign workers and the elderly. With over 20 years of experience, their community innovations encompass a wide range of services, including in-house banking, catering, housekeeping, medical assistance, transport services, and providing 24/7 assistance to clients and residents. The organisation continuously explores the integration of mobile apps and big data to enhance daily living. Its thriving communities span across Singapore, Malaysia, and Thailand, making TS Group a renowned brand in foreign worker accommodation and management facilitation. It strives to provide secure and hygienic accommodation that aligns with the safe living measures and infection prevention control guidelines set by various government agencies. Through this focused approach, TS Group ensures its accommodation meets the highest standards while promoting the well-being and safety of its residents.

https://www.tsgrp.sg/about-us/

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Learning Objective

Remember the dormitory rules and regulations.

Topic	Duration	Target Audience	Number of learners
Induction (Dormitory Rules and Regulations)	30 minutes	Foreign workers (Indians & Bangladeshis)	15

The Existing Approach

This session is designed to provide an induction for new migrant workers residing in the dormitory. The session comprises several topics, such as an introduction to the layout of the dormitory; fire escape plans and routes; dormitory rules and regulations; a list of prohibited and permitted items in the dormitory; and emergency contact information. One of the most important segments of this session is the learning of the dormitory rules and regulations. This class is usually conducted for foreign workers who are new to staying in this dormitory, and it may consist of workers from different countries, namely India, China, Bangladesh, Myanmar, and Vietnam. To facilitate understanding, the original slides included translations of the dormitory rules and regulations in different languages (see below for an example). During the session, the educator who is called the instructor in this context, guides learners through each slide, allowing them to read and comprehend the content.
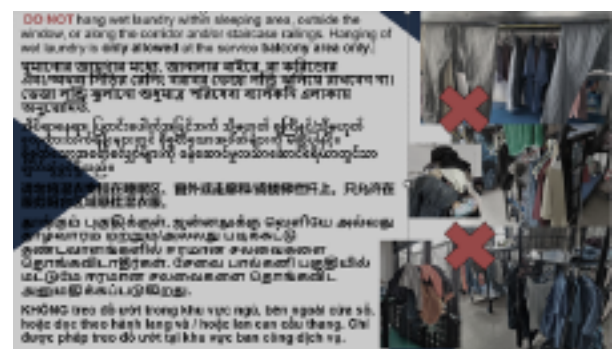
The Digital Andragogy Approach

The focus of this lesson is to instruct the dormitory rules and regulations to new workers with the learning objective of ensuring that learners can remember them by the end of the session. During the planning phase, considerations were made regarding the approach to present and assess the retention of learning, taking into account the diverse profiles of the learners. Another consideration was how to organise and chunk the learning content to facilitate easy recall.

Since assessing the learners' prior knowledge in class was challenging due to language barriers, it was not feasible to gather that information. The class consisted of both Indian and Bangladeshi workers who spoke Tamil, Bengali, and limited English. To overcome this language barrier, the instructor conducted the class in simple English, with assistance from the dormitory manager, who could speak Tamil. To scaffold and reinforce the learners' understanding, Kahoot! and Wordwall were utilised.

© jacoblund/ iStock
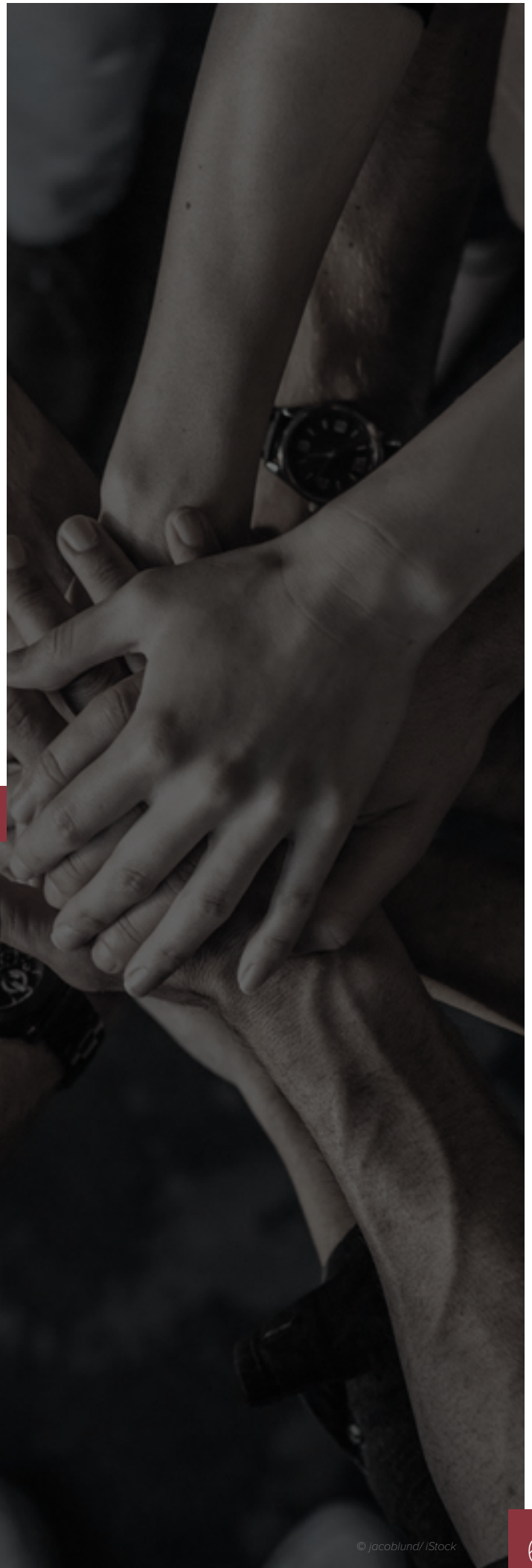
Kahoot! was used to conduct quizzes because it is regarded as fun and engaging with the inclusion of music and a countdown timer. Besides conducting quizzes, Kahoot! can also be used to present information. To scaffold learning, the lesson was organised as follows. Instead of presenting all the dormitory rules and regulations at once, the instructor chunked the learning, walking the learners through two rules and regulations at a time. After each presentation, the learners were assessed on their recall of the instructed rules and regulations. Visuals were incorporated with each presentation, such as displaying a visual of cigarettes for the rule on 'no smoking.' The assessment required learners to choose between 'true' or 'false' statements.

Since the free version of Kahoot! only allowed up to 10 players, placards were distributed to the remaining learners who could not participate in the Kahoot! quiz. In this case, there were 15 learners in the session, so the placards were distributed to the remaining five learners. The placards, one blue and one red, represented the 'true' and 'false' options in Kahoot!. This contingency plan was also prepared in case some learners did not have smartphones and could not participate in the quiz. This way, all learners were able to actively participate.

To sustain learners' motivation, the instructor praised the learners for correct answers and encouraged them to applaud themselves. For incorrect answers, she encouraged them to try again. To evaluate their progress, learners were asked to complete another quiz using the 'Flash Cards' feature on Wordwall. This time, they were assessed on eight questions simultaneously, with the questions randomised for each learner. They had to flip the digital cards and choose between 'right' or 'wrong' statements. As there is no cap on the number of players in Wordwall, all learners could participate in the quiz. This assessment helped determine if the learning objective had been achieved.

To gather feedback on learners' engagement, learners were asked to write their thoughts in their conversant language after the lesson. A questionnaire was not administered due to the language barrier. The manager and team assisted in translating the comments from Tamil and Bengali to English.

Learning Objective	Instructional Strategies	Guiding Questions (During Planning)	Additional Questions (During Lesson)	Digital Tools
Remember the dormitory rules and regulations.	■ Activate Schema ■ Scaffold ▢ Connect Learning ▢ Foster Reflection ■ Encourage Active Participation ■ Reinforce Learning ■ Evaluate Progress ▢ Others	▪ Do learners have prior knowledge of the topic? If so, does it prove beneficial to initiate the lesson with questions that elicit their existing knowledge? ▪ Considering the unique characteristics of the learners, what is the most suitable approach of presenting and assessing knowledge? ▪ How can our understanding of the cognitive processes of learning aid in effectively chunking and organising learning, considering the different profiles of the adult learners? ▪ How can we engage learners actively? ▪ How can we sustain learners' motivation?		▪ Kahoot! ▪ Wordwall

Lesson Plan

Time	Activity (Current Approach)	Time	Activity (Digital Andragogy Approach)
30 mins	Currently, instructor goes through each slide and learners just read it.	15 mins	▪ Get learners to go through two rules and regulations at a time, followed by an assessment of their recall of the instructed rules and regulations. ▪ The presentation of each rule and regulations presentation was accompanied by visuals to reinforce the learning; for example, 'no smoking' was supplemented by the visual of cigarettes. The assessment required learners to choose either 'true' or 'false' for the statements given.
		10mins	▪ Ask learners to do the quiz in 'Flash Cards' of Wordwall.
		5 mins	▪ Ask the learners to evaluate the lesson.

Evaluation
Learners were asked to pen their thoughts after their lessons.

• •

"The session led by Associate Professor Justina Tan was incredibly productive, and the residents have absolutely enjoyed the innovative engagement approach. It was highly interactive, allowing our residents to actively participate and comprehend the content without overwhelming them with excessive information. The Q&A session, in particular, left a lasting impression with them regarding the house rules, ensuring better retention and understanding. We should explore and adopt a particular methodology that has been effectively implemented, as it will serve as a superior approach for presenting our induction slides to our residents in the future."

TS Group Pte Ltd
Operations Management Team
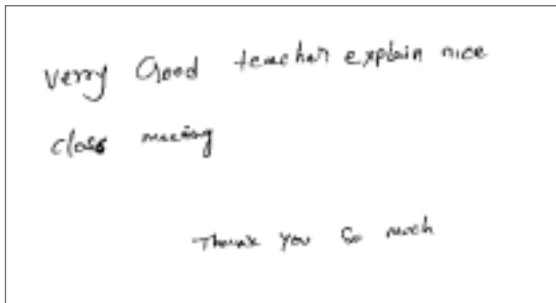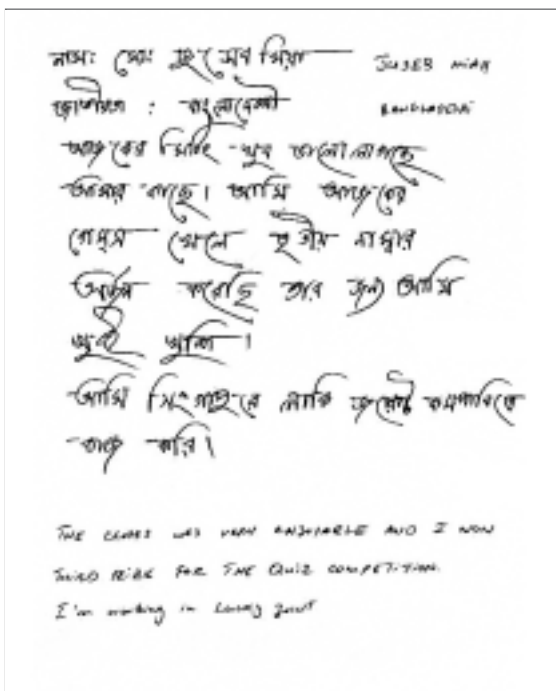
* Today was one of my favourite class

* Today I could've done better with the quiz

WHAT WE LEARN TODAY

1) we enjoy the class
2) the rules regulations
3) we enjoyed the games

THE CLASS WAS A GOOD EXPERIENCE
THE INSTRUCTOR EXPLAINED VERY WELL & CLEARLY.

SARDER SHAKIL

শাকিল সারদার

We enjoyed the short class and the rules & regulations
were explained very clearly.
The refreshments are a plus for us to enjoy.

Barmon UDAY

I enjoyed attending to this class and
learnt a lot of things.

---

vallu

I like this class
thank you so mach.
I Very happy. Thank for
give this Experience.

* It was good experience
* The topic was easy to remember.

FOZLUL HAQUE

It was very nice and I feel better

Taoshib md

I am Taoshib, I coming to Singapore and feel better. I didn't expect to be here in Singapore but after the class I felt calm & enjoyable.

TODAY, WE LEARNED A LOT OF THINGS IN THIS CLASS AND THANK YOU VERY MUCH

The Quiz that were provided was very engaging and eye opener.
The instructor was very helpful and it was an enjoyable experience.

K. Manjini

1) I love this class alot.
2) I understand the quiz
3) The way the professor taught us was great.

SANTHOSH KUMAR

APARTMENT Rules Very important

*Dormitory rules are important

* We should strictly follow the rules

---

* Today *

* Today's class helped me alot.
* It was an easy and interactive quiz session.
* Something I can remember for a lifetime

CASE STUDY #3

The Organisation

SUSS is a university with a rich heritage in inspiring lifelong education and transforming society through applied social sciences. It develops students and alumni to be work-ready and work-adaptive, aspiring to reach their full potential, through our 3H's education philosophy — 'Head' for professional competency with applied knowledge, 'Heart' for social awareness to meet the needs of the society, and 'Habit' for passion towards lifelong learning.

It offers more than 90 undergraduate and graduate programmes, available in full- and part-time study modes, which are flexible, modular and inter-disciplinary, catering to both fresh school leavers and adult learners. SUSS also offers a broad range of continuing education and training modular courses for the professional skills upgrading of Singapore's workforce.

Adapted from https://www.suss.edu.sg/about-suss/who-we-are

Learning Objective
- Understand the Black Swan concept.
- Apply the understanding of the Black Swan concept.

Topic	**Duration**	**Target Audience**	**Number of learners**
Black Swan	30 minutes	Dean, Vice-Dean, Heads, Lead and Specialists	17

The Existing Approach
SUSS does not offer any lesson on 'Black Swan', and hence there is no existing approach.

The Digital Andragogy Approach

To appraise the feasibility of the digital andragogy approach in a university context, we decided to conduct a lesson grounded in this approach. We chose 'Black Swan' because we assumed not all are acquainted with the concept, and while some people may have heard of it, the general understanding is that it is an uncommon event; however, it goes beyond that. In this class of 17 learners, except for one, the rest were not familiar with the concept.

The learning objectives are that at the end of the lesson, learners can understand the Black Swan concept and apply their understanding of the concept. The planning phase was underpinned by the assumption that learners generally lack knowledge of the concept. For that reason, a question considered was whether related knowledge can be leveraged to establish connections that enhance their retention of the new knowledge. Instead of beginning with the three characteristics of 'Black Swan', the lesson started with learners accessing Edpuzzle to watch two videos: one on 9-11 attack and the other on the rise of the internet. The preference was to get learners to watch rather than read on 9-11 attack and the rise of the internet. It was because people tend to retain visual content better. Edpuzzle was chosen because it allows the embedding of questions (multiple-choice and short answer questions) within different segments of the video. The examples of 9-11 attack and the rise of the internet were chosen because learners can relate to both examples and henceforth, can be leveraged to facilitate learners' learning of the new concept.
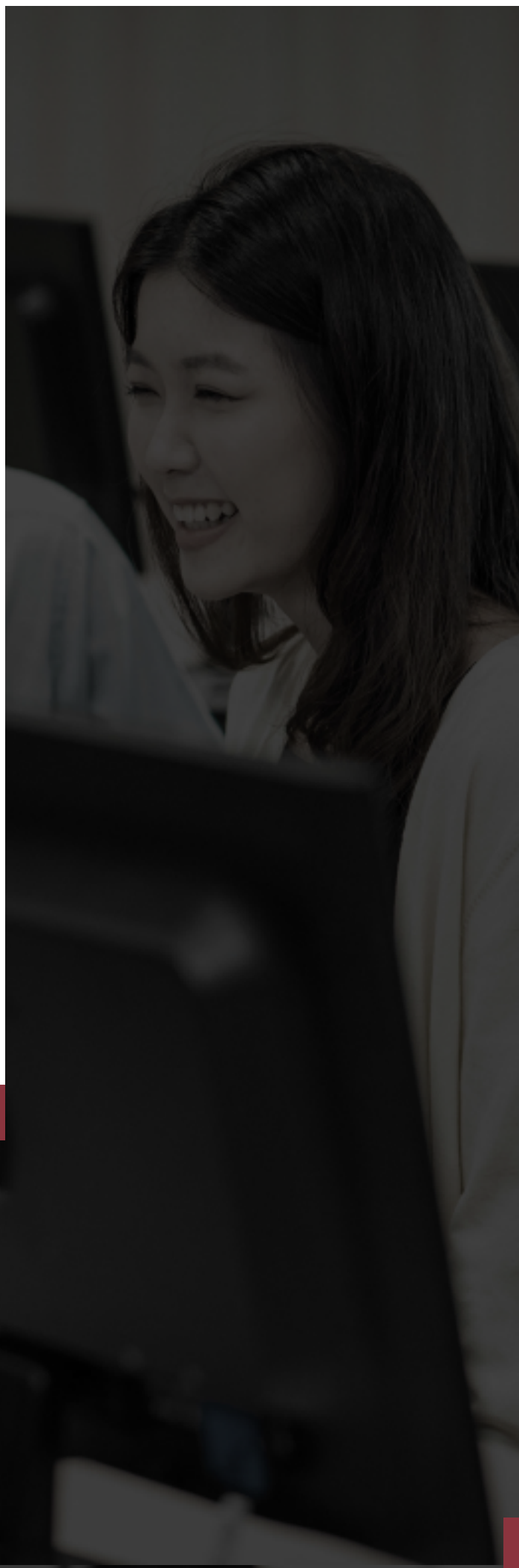
Learners were asked to watch the video on 9-11 attack first and answer the question "How would you describe the 9-11 attack?". It was a multiple-choice question and learners were given two options: unexpected, extreme impact, can only be rationalised in hindsight; expected, limited impact, can be predicted in advance. Learners were then asked to explain their choice of responses before moving on to watch the video on the rise of the internet and answer the following questions. The first question was "How would you describe the rise of the internet?" and learners were given two options: expected, limited impact, can be predicted in advance; unexpected, extreme impact, can only be rationalised in hindsight. Learners were then asked to explain the choice they selected. The second question was "What are the similarities between the rise of the internet and 9-11 attack?" and it was a short-answer question.

Instead of stating these were Black Swan events because they shared the same characteristics, learners were shown a visual of all white swans and asked to respond to the following question "If every single swan you have seen in your life is white, can you make the statement that all swans are white?" in Mentimeter. They were then asked to explain their choice of answers before being shown a visual of a black swan and told that people in the Old World were convinced that ALL swans were white until they discovered Australia. Learners were thereafter shown a visual of a black swan amongst many white swans and asked to draw parallels between the visual and the 9-11 attack and the rise of the internet videos to encourage them to make connections. How the questions were sequenced was guided by the consideration to progressively build comprehension of the required knowledge.
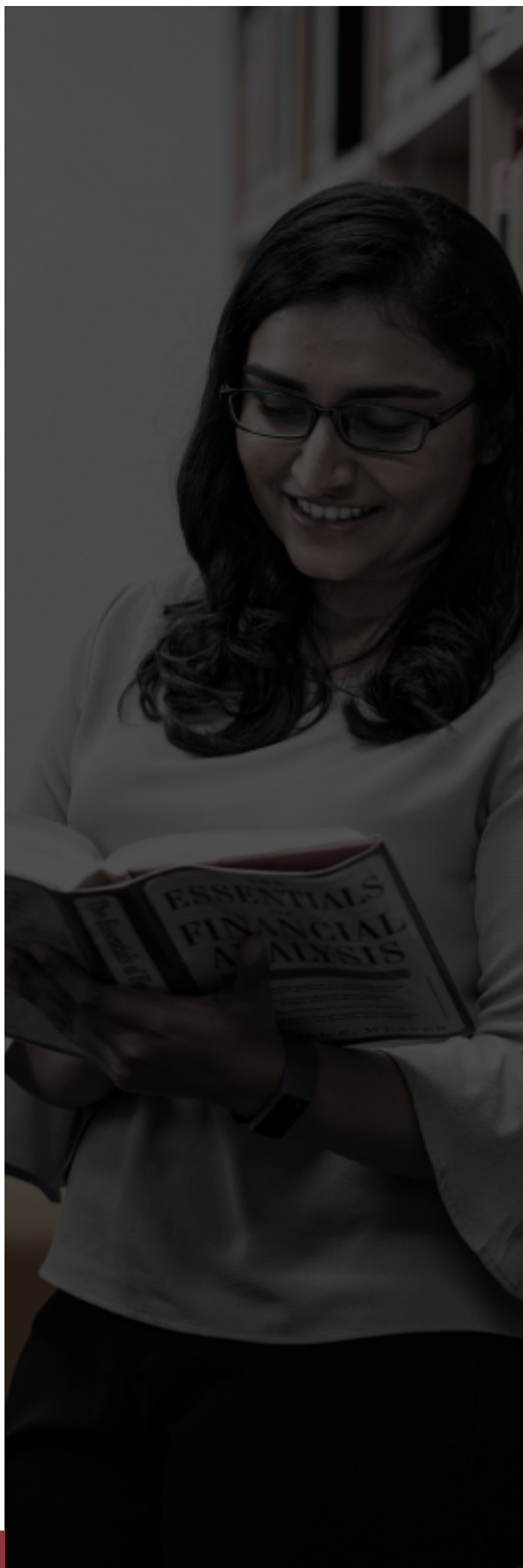
Subsequently, the characteristics of the Black Swan were recapped and to reinforce learning, learners were asked to give examples of Black Swan events to demonstrate their understanding of the concept and ability to apply what they had learned. All of them were able to do so. Some gave the example of Covid-19 pandemic which coincidentally was the next question asked, and which served as a prelude to the teaching of the next concept of Black Swan, and that is, the same event can both be and not be a Black Swan to two observers with a difference in knowledge. Learners were asked to respond to the question "Is Covid-19 pandemic a Black Swan event?" in Mentimeter which was chosen because it could be used for free as we were only using it to make two slides (the free version allows up to only three slides). For this question, the options were 'yes', 'no' and 'depends' and learners were asked to elaborate on their choice before they were told that Bill Gates warned that the world is not prepared for an epidemic, pandemic, or outbreak in his TED Talk in 2015. To him, the Covid-19 pandemic may not be a Black Swan because he had some knowledge of it. This was followed by a recapitulation of the learning that Black Swans are relative to knowledge and to foster reflection, learners were asked to articulate their understanding of the concepts by providing examples of events that can both be and not be a Black Swan to two observers with a difference in knowledge. This also encouraged them to contextualise what they had learned.

Learning Objective	Instructional Strategies	Guiding Questions (During Planning)	Additional Questions (During Lesson)	Digital Tools
• Understand the Black Swan concept. • Apply the understanding of the Black Swan concept.	■ Activate Schema ■ Scaffold ■ Connect Learning ■ Foster Reflection ■ Encourage Active Participation ■ Reinforce Learning ▪ Evaluate Progress ▪ Others	• In cases where learners lack prior knowledge, can related knowledge be leveraged to establish connections that enhance their retention of new information? • How should the questions be sequenced to progressively build comprehension of the required knowledge? • Is the application of knowledge straightforward, or does it require learners to assess and identify appropriate knowledge to apply? • If the latter, is it better to initiate the lesson with questions that prompt learners to articulate their understanding of the concepts, rather than mere factual recall? • How can we get learners to contextualise what they have learned? Is it beneficial to get learners to share? • How can we engage learners actively?	• Why do you say so? • Can you elaborate? • What do you have to say in response to your friend's comment? • What parallels can you see between and among them?	• Edpuzzle • Mentimeter

Lesson Plan

Time	Activity (Current Approach)	Time	Activity (Digital Andragogy Approach)
30 mins	There is no lesson on Black Swan.	15 mins	▪ Get learners to watch the videos '9-11 attack' and 'The rise of the internet' on Edpuzzle. ▪ Ask learners the following questions: "How would you describe the 9-11 attack?"; "How would you describe the rise of the internet?"; "What are the similarities between the rise of the internet and 9-11?" ▪ Get learners to elaborate on their answers. ▪ Show visual of the white swans and ask learners the following question: "If every single swan you have seen in your life is white, can you make the statement that all swans are white?" in Mentimeter. ▪ Get learners to elaborate on their answers. ▪ Show a visual of a black swan amongst many white swans and asked learners to draw parallels between the visual and the 9-11 attack and the rise of the internet videos. ▪ Recap the characteristics of the Black Swan. ▪ Ask learners to give examples of Black Swan events.
		10 mins	▪ Get learners to respond to the question "Is Covid-19 pandemic a Black Swan event?" in Mentimeter. ▪ Ask learners to elaborate on their answers. ▪ Get learners to give further examples of Black Swan events.
		5 mins	▪ Ask the learners to evaluate the lesson.

Evaluation

After the lesson, learners were asked to do an evaluation to assess whether the learning objective was achieved, and learners were engaged during the lesson. The following questions were asked, and the findings were as shown.

- Yes
- No

100%

The use of digital tools has encouraged me to participate in class.
17 Responses

- Yes
- No

100%

The use of digital tool has encouraged positive interactions between educator and learners.
17 Responses

- Yes
- No

100%

The interactions between educator and learners have helped me to understand the topic better.
17 Responses

- Yes
- No

100%

The use of the digital tools has facilitated the achievement of the learning objectives.
17 Responses

- Yes
- No

100%

The use of the digital tools has made it easier for me to understand the concept taught.
17 Responses

- Yes
- No

100%

How the digital tools are used to facilitate learning has enhanced my ability to apply the concept.
17 Responses

● ●

"Thanks, Justina, for conducting the concise workshop. We found it interesting and highly interactive. Digital Andragogy helps to redefine Experiential Learning. Leveraging on the range of digital tools, we can facilitate a high level of engagement, understanding of concepts, and most of all, the construction of personal meanings rather than the reproduction of meanings. Student SUcceSS Centre looks forward in adopting and applying Digital Andragogy in our programs."

Dr Yap Meen Sheng
Dean of Students
Singapore University of Social Sciences

CASE STUDY #4

The Organisation

Singapore Flying College is a Civil Aviation Authority of Singapore (CAAS) approved flight school headquartered at SIA Training Centre Singapore. Established in 1988 under the Singapore Airlines Group to ensure pilot training included the core values required for airline pilots. SFC expanded to its Western Australia base at Jandakot in 1990 due to the prevailing climate and weather conditions favoured for continuity of flight training. Airline Transport Pilot License (ATPL) ground training is completed in Singapore, with flight training conducted at its Jandakot base. The accommodation facility at Jandakot was opened in 1992.

Adapted from https://www.sfcpl.com/about-sfc

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Learning Objective

* Describe indication of slow decompression.
* Describe the procedures to take in the event of slow decompression.

Topic	Duration	Target Audience	Number of learners
Decompression of Pressurised Cabin	30 minutes	Cadet Pilots	25

The Existing Approach

The lesson on 'Decompression of Pressurised Cabin' is part of the theoretical training that learners must go through for their commercial pilot license qualification. Currently, it is a face-to-face lesson and the educator will go through the individual slides with learners who must remember a lot of content as part of their theoretical training.

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The Digital Andragogy Approach

Instead of going through the content which is mostly self-explanatory with learners and may not be the best use of time in class, the in-class lesson on 'Decompression of Pressurised Cabin' was turned into an online self-study lesson using the digital andragogy approach. One of the questions considered was whether the learners have prior knowledge of the topic and if yes, whether it is helpful to start the lesson with questions that elicit their existing knowledge. They did indeed have some prior knowledge of 'slow decompression' which is the segment that was turned into online learning using the digital andragogy approach. As opposed to opening the lesson with simply a question that assessed learners' prior knowledge on slow decompression directly, they were asked to watch a short video clip featuring slow decompression with questions embedded within the different segments of the clip, the first of which was a multiple-choice question "What do you think happened?", followed by a short-answer question "Do you think this is a case of slow or rapid decompression?" and a multiple-choice question "What do you think are the causes of slow decompression?" to activate their schema. The use of a video clip with embedded questions instead of posting questions to assess learners' prior knowledge is anchored in the assumption that the former engages learners more than the latter. As such, we engaged Edpuzzle as it allows for embedding of questions within video clips.

Following this, we used Quizlet to communicate the learning content to learners using the flashcards feature. We used Quizlet instead of Cram for the flashcards feature because Quizlet allows for visuals to be presented alongside the content which can reinforce learning whereas Cram does not allow it. Also, Quizlet allows learners to learn and test themselves at the same time and this sustains their motivation and enhances their recall of what they have learned (see next page for examples). It also has an audio feature which learners can make use of if they want, and this is useful especially for learners who embrace a more auditory learning style.

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This lesson could be concluded with Quizlet as it included a self-assessment component, or it could end with Wordwall which could be engaged to assess learning formally. Both assessments were in the form of multiple-choice questions as this is the format that learners are assessed at the end of their modules. For the quiz hosted on Wordwall, it was interactive as learners could choose to complete the quiz in the form of Gameshow, Open-the-box, or Maze Chase. Edpuzzle, Quizlet and Wordwall can be embedded in PowerPoint slides and presented as an online lesson.

In essence, an online self-study lesson can go beyond a collection of PowerPoint slides; it can be engaging and achieves its intent. In this case, the educator can use the in-class time to go through trickier questions with learners.

Learning Objective	Instructional Strategies	Guiding Questions (During Planning)	Additional Questions (During Lesson)	Digital Tools
▪ Describe indication of slow decompression. ▪ Describe the procedures to take in the event of slow decompression.	■ Activate Schema ■ Scaffold ■ Connect Learning ■ Foster Reflection ■ Encourage Active Participation ■ Reinforce Learning ■ Evaluate Progress ■ Others	▪ Do learners have prior knowledge of the topic? If so, does it prove beneficial to initiate the lesson with questions that elicit their existing knowledge? ▪ When recall of prior knowledge or understanding is necessary, is it advantageous to draw learners' attention to it at the beginning? If so, should adult educators recap the information or encourage learners to demonstrate their recall before proceeding with the lesson? What are the assumptions of each? ▪ How can our understanding of cognitive processes of learning aid in effectively chunking and organising learning, considering the different profiles of the adult learners? ▪ How can we engage learners actively? ▪ How can we sustain learners' motivation?		▪ Edpuzzle ▪ Quizlet ▪ Wordwall

Lesson Plan

Time	Activity (Current Approach)	Time	Activity (Digital Andragogy Approach)
30 mins	The lesson on 'Decompression of Pressurised Cabin' is part of the theoretical training that learners must go through for their commercial pilot license qualification. Currently, it is a face-to- face lesson and the educator will go through the individual slides with learners.	30 mins	▪ Get learners to watch a video clip showing slow decompression in Edpuzzle and answer three questions as part of activating their schema. ▪ Get learners to learn the content using the flashcards feature of Quizlet and test themselves at the same time. ▪ Get learners to assess themselves formally using Wordwall.

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Evaluation

After the lesson, learners were asked to do an evaluation to assess whether the learning objectives were achieved, and whether they were engaged during the lesson. The following questions were asked, and the findings were as shown.

● Yes
● No

96%

The use of digital tools has sustained my interest throughout the learning experience.
25 Responses

● Yes
● No

96%

The use of digital tool has motivated me to engage with the proved content and activities.
25 Responses

● Yes
● No

96%

The use of the digital tools has facilitated the achievement of the learning objectives.
25 Responses

● Yes
● No

92%

The use of the digital tools has made it easier for me to remember the concepts taught.
25 Responses

● ●
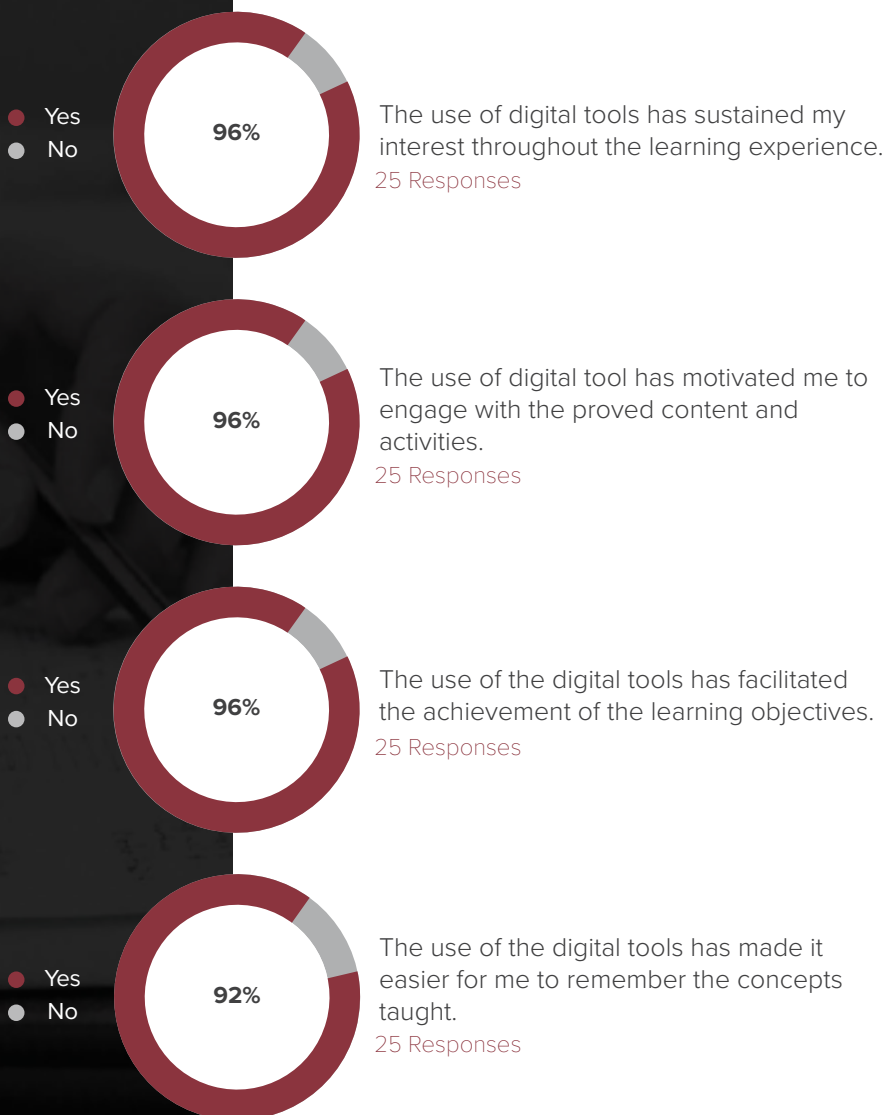
"SFC was honoured to serve as the test bed for Dr. Justina's research project, the Digital Andragogy Blueprint. Her adeptness at simplifying abstract concepts made it seamless for our cadet pilots to navigate the content-heavy subject matter. The incorporation of user-friendly design and interactive elements, such as online quizzes and games, kept the cadets engaged and actively participating throughout the sessions. The presentation was impressive, leaving a lasting positive impression on all attendees. SFC is eagerly looking forward to observing the continued growth of Digital Andragogy and the substantial benefits it will bring to the learning and teaching of our future pilots."

Head of Ground School
Singapore Flying College

Animoto for Education

- Animoto is a web-based animation tool that provides a range of features and functionalities, such as templates, animations, multimedia integration, and the ability to select music from Animoto's library.
- Offers a variety of themes and styles, as well as the ability to add text overlays, captions, and voiceovers.
- Powerful and user-friendly tool for creating high-quality videos without the need for specialized skills or equipment.
- The free version of Animoto limits users to videos 15 seconds long and limits features.
- The free version will output video with the Animoto watermark and with lower resolution than the paid version.

Canva for Education

- Canva for education provides a user-friendly and versatile platform for creating visually appealing and engaging educational materials.
- Offers a wide variety of professional templates for presentations, infographics, posters, worksheets, lesson plans, that can be customised by modifying colours, fonts, layouts, and backgrounds, to suit specific educational needs.
- Offers tools and templates specifically designed for creating infographics and visualising data using charts, graphs, and visual elements, which help in creating compelling data-driven visuals for reports, presentations, or educational materials.
- Free version has limited features, such as limited customisation options, limited storage space, and a limit on the number of team members who can collaborate on a design project.

Edpuzzle

- Edpuzzle is an interactive educational platform that allows educators to create engaging video lessons for their learners.
- Edpuzzle is designed for creating video lessons and assessing learner understanding.
- Enables educators to customize existing videos or upload their own videos to create interactive lessons. They can crop videos, add voiceovers, embed questions, and include additional resources to tailor the content to their instructional needs.
- Educators can insert questions, quizzes, and annotations at specific points within the video content.
- Provides real-time data and analytics on learner performance, tracks progress, views responses to embedded questions, and identifies areas where learners may need additional support or clarification.
- Offers closed captioning and language translation options, making video content accessible to learners with hearing impairments or non-native language speakers.
- Allows content sharing and collaboration.

Flip

- Microsoft Flip is an interactive video discussion platform that enables educators to pose questions to learners, who respond and articulate their thoughts and ideas by recording short videos.
- Microsoft Flip focuses on fostering and promoting social learning.
- Learners can enhance their video responses by incorporating multimedia elements such as images, stickers, drawings, and text overlays.
- Provides various accessibility features such as closed captioning, screen reader compatibility, and language translation to ensures that all learners, regardless of their abilities or language preferences, can engage fully in the video discussions.
- Allows educators to assess learner understanding and provide feedback through video-based assessments.
- Provides opportunities for global connections and cultural exchange by allowing classrooms from different locations to engage in video discussions and share perspectives.
- Integrates with other Microsoft and third-party tools, enabling seamless sharing and collaboration.

Genially

- Genially is a versatile online tool that allows users to create suitable content for adult learning, including interactive presentations, animations, infographics, posters, and more.
- Enables the creation of interactive eLearning modules for adult learners by incorporating multimedia elements, interactive quizzes, assessments, and gamification features to make the learning experience more interactive and dynamic.
- Examples of games include Jeopardy game, flashcards, hidden image games, Pancake and Waffle, drag and drop, Snakes and Ladders, Escape rooms and Digital portfolios.

Grammarly

- Grammarly is an AI-powered writing assistant tool, available as a web application, browser extension, and a plugin for various writing platforms, that helps users improve their writing by providing real-time feedback.
- Detects and highlights grammatical and spelling mistakes, checks for proper punctuation usage and ensures consistent capitalisation.
- Analyses the sentences for clarity and readability, providing suggestions to improve sentence structure and eliminate run-on sentences or fragments.
- Offers style recommendations to enhance the writing's overall tone, clarity, and coherence.
- Suggests synonyms and word choices to help vary the language and avoid repetitive or overused words.
- Grammarly's premium version includes a plagiarism checker to help identify potential unintentional plagiarism.
- Provides insights into the tone of your writing, indicating whether it sounds formal, informal, or neutral, allowing users to adjust their style based on the context.
- Offers genre-specific writing suggestions based on the type of document or content, such as academic papers, business emails, creative writing, etc.

H5P

- H5P is a free online authoring tool that allows users to create interactive content such as quizzes, games, presentations, and videos.
- Offers a range of multimedia and customisation options, including support for audio, video, and images.
- Compatible with various learning management systems (LMS) and web browsers.
- Provides analytics to track user engagement and performance.
- Free and open-source software.
- The free version of H5P limits up to 1000 content views per month. Some advanced features are limited in the free version.

Helperbird

- Helperbird is a browser extension designed to enhance accessibility for users on the web.
- Immersive Reader provides tools such as text-to-speech, syllable, and phonetic breakdown.
- Includes tools such as background themes and word-by-word highlighting to help users to better engage with the text.
- Provides translation of websites and PDFs, text-to-speech, and phonetic breakdown for multiple languages.

Kahoot!

- Kahoot! is an interactive learning platform that offers a range of features and functions to engage learners through gamified quizzes, surveys, and discussions.
- Kahoot! focuses on game-based learning, turning quizzes and assessments into interactive and engaging experiences.
- Educators can create and host live games, quizzes, surveys, and discussions in real-time using a wide variety of question types, including multiple choice, true/false, and puzzles.
- The real-time element encourages learners to answer quickly, increasing engagement and friendly competition through gamified quizzes with leaderboards and rankings.
- Supports formative assessment by providing instant feedback to learners. After each question, learners receive immediate feedback on their responses, allowing them to gauge their understanding and track their progress.
- Allows educators to assign challenges as homework or self-paced activities. Learners can complete the challenges at their convenience, enabling asynchronous or remote learning.

Mentimeter
- Allows users to create live polls, word clouds, quizzes, surveys, Q&A and competitions.
- Options for quizzes include multiple-choice questions, scale/ranking questions, open-ended questions, and image choice questions.
- Educators can create questions displayed on a screen or sent to learners' devices in real time.
- Collects real-time responses anonymously.

Microsoft Editor in Word
- Microsoft Editor in Word is a comprehensive writing assistant that checks and provides accurate grammar and context-aware spelling suggestions in real-time.
- Examines sentence structures, word choice, and overall readability to offer writing style suggestions for well-structured and coherent sentences.
- Promotes inclusive language to avoid biased and gender-specific terms, creating a more welcoming and respectful tone in written communication.
- Suggests vocabulary enhancements to help users diversify their language and avoid repetitive words or phrases for impactful writing.
- Offers translation capabilities into different languages to enable seamless communication.

Microsoft Excel
- Microsoft Excel is a versatile and widely used spreadsheet application that offers a user-friendly interface and flexibility in handling different data formats from various sources, including databases, text files, CSV files, and online sources.
- Supports advanced functions suitable for more complex analytical tasks and statistical analysis.
- Offers a wide array of charts, graphs and sparklines that complement pivot tables to draw meaningful data trends, patterns, and outliers and represent them in a visually appealing manner.
- Facilitates teamwork through various features that allow multiple users to work on a spreadsheet simultaneously in the online version or through shared workbooks.

Microsoft Forms
- Microsoft Forms is a lightweight application with AI-powered suggestions and tips that enables the creation of surveys, quizzes, polls, and other types of forms.
- Offers a wide range of question types and the ability to create branching questions.
- Collects and exports both anonymous and sign-in responses.
- Uses built-in analytics to evaluate responses.
- Generates dynamic real-time results as submitted and exports results to Excel for additional data analysis.
- Offers live presentation capability.
- Free version limits the maximum number of forms made and the number of responses to a form.

Microsoft OneNote
- Digital note-taking software.
- Enables users to collaborate and share their notes with multiple others and content that they take down with others in real-time on a virtual, unlimited scale canvas.
- Offers features like customisable tags, highlighting, and drawing tools.
- Supports multiple multi-modal inputs such as voice, video, typing and digital inking.
- Users can organise notes into notebooks, sections, and pages.
- Integrate easily with other Microsoft Office applications, such as Word, Excel, and Outlook.
- Export content to PDF.
- The free version of OneNote comes with limited features and integration options.
- Embed rich media content from other sources such as internet video and Office documents
- Print content from other Office apps directly into OneNote (e.g. Word, Outlook, PowerPoint).

Microsoft PowerPoint
- Enables interactive elements, including clickable buttons, hyperlinks, and navigation menus that can be used for self-assessment, branching scenarios, interactive quizzes, or guided activities, encouraging active participation and reinforcing learning outcomes.
- PowerPoint Speaker Coach helps presenters prepare in private, by evaluating the pacing, pitch, the use of filler words, informal speech, euphemisms, and culturally sensitive terms. It detects when the presentation is overly wordy or the presenter simply read the text on a slide.
- After each rehearsal, it provides a report that includes statistics and suggestions for improvements.

Microsoft PowerPoint Live Polls
- Poll creation software.
- Educators can create live polls with multiple-choice questions and display them on the slide during the presentation.
- Real-time results and analysis.
- Integration with Microsoft 365 apps.
- PowerPoint Live Polls is a free feature available to Microsoft 365 (formerly Office 365) subscribers who have access to PowerPoint for the web, PowerPoint for Windows/Mac, or PowerPoint for iPad.

Microsoft Stream

- Microsoft Stream is a video hosting platform designed for businesses and enterprises.
- Allows users to upload, share, and manage videos, and offers features such as comments, likes, and tagging.
- Integrates with other Microsoft tools such as SharePoint and Teams and embeds directly into OneNote digital notebooks.
- Microsoft Stream requires an Office 365 subscription to be used. Features also differ with different Office 365 plans. A free trial is available.
- Add poll, quiz or survey into Microsoft Stream to assess learners' comprehension at various points of the video
- Use the mobile phone Stream app for offline content and provide content as a podcast style learning resource.
- Screen recording for instructional design/tuition.
- Live streaming of very large-scale meetings.

Microsoft Sway

- Microsoft Sway is a free web-based digital storytelling tool.
- Offers a variety of design templates that can be used to create visually appealing presentations, reports, and webpages as well as automatic design suggestions.
- Allows multiple users to work on the same project.
- Users can add images, videos, audio, and other multimedia content. Interactive elements such as polls and live web content can also be added.
- Provides analytics that allow educators to track how the content is being viewed and shared.
- Advanced features and functionalities, such as access to premium content, branding, and analytics require a paid subscription.
- Responsive design allows Sway to be viewed natively on different device screen sizes I.e., Laptop, tablet, phone.

Microsoft Teams

- Microsoft Teams is a collaboration and communication platform that allows video meetings with up to 10,000 participants, with features such as screen sharing, background blur, and live captions.
- Enables users to send instant messages, make audio or video calls and recordings, share files, co-author documents, and collaborate in real time using Microsoft Office applications.
- Supports the Reading Coach with customisable tools, including text to speech, syllable breaking, and picture dictionary.
- AI-fueled summary capability to record and produce detailed meeting notes.
- Meeting management tools aid the smooth running of meetings.
- Teams can be integrated with other Microsoft apps such as Forms, Outlook, SharePoint, and OneDrive, as well as third-party apps.
- The free version limits users to a team of up to 300 users.

Microsoft Whiteboard

- Microsoft Whiteboard is a virtual whiteboard where users can draw, write, type, insert images, and work collaboratively in real-time.
- Converts hand-drawn shapes and tables into clean, digital versions.
- Integrates seamlessly with other Office 365 applications like PowerPoint, Word, and Teams.
- Launch Whiteboard in virtual Teams meetings for real-time collaboration on a call.
- Embed rich media content from the internet into a Whiteboard
- Pre-built templates allow for rapid ideation and teamwork across a range of projects.

Miro

- Miro is an online infinite whiteboard where users can draw, write, and create visual content for real-time collaboration.
- Offers an extensive range of customisable templates and frameworks to support and facilitate various collaboration activities, including brainstorming, user journey mapping, agile frameworks, diagramming, mind maps and design thinking processes.
- Integrates with various third-party tools and platforms, including project management tools, and allows users to embed multimedia content directly onto the board.
- Provides built-in voting and survey features, allowing participants to make decisions collectively and democratically.

Parlay

- Parlay is an online discussion and collaboration platform that can be effective in adult education settings.
- Supports discussion topics or prompts within the Parlay platform, which can be open-ended questions, statements, or multimedia content that spark conversation and critical thinking.
- Educators can customise the discussion settings, such as RoundTable, Fishbowl, or Jigsaw, which provide different frameworks for interaction, collaboration, and deeper exploration of the topic, as well as time limits, guidelines, and privacy options.
- Learners can read the prompt, review any supporting materials provided, and begin sharing their thoughts and ideas.
- Parlay encourages thoughtful responses by prompting students to provide evidence, reasoning, or personal experiences to support their viewpoints.

Powtoon

- PowToon is a free online animation tool.
- Offers a range of templates, themes, and multimedia options.
- Allows customisation of characters, backgrounds, and objects and provides voiceover recording and music options.
- The free version of PowToon limits users to videos up to 3 minutes in length with limited features such as limited templates and music tracks.
- The free version will output video with the PowToon watermark and with lower resolution than the paid version.

Poll Everywhere

- Responds to polls via text messages, allowing learners with no internet access to participate.
- Poll options include word clouds, multiple-choice questions, open-ended questions, clickable image questions, rating/ranking scales, Q&A, surveys and competitions.
- The Bulletin function can be used to communicate event updates, instructions and guidelines, reminders and deadlines, and sharing of additional resources or links.
- Real-time data collection and visualisation.
- Free version of Poll Everywhere limits responses to 25 per poll, with a maximum of 40 participants, and limits users to a maximum of 3 polls.

Quizlet

- Quizlet is an online learning platform that offers a range of tools and resources for studying and memorisation.
- It primarily focuses on creating digital flashcards and study materials.
- Allows users to create digital flashcards using text, images, and audio.
- Offers several study modes, "Learn", "Write", and "Test", to help users learn and review flashcards effectively.
- Quizlet Live is a collaborative and competitive game mode that randomly groups learners and requires them to work together to match terms and definitions correctly.
- Allows users to create diagrams, charts, and images to supplement their study materials.
- Offers a vast library of user-generated study sets and collections that cover a wide range of subjects and topics.
- Provides progress tracking features that allow users to monitor their study progress, including the number of flashcards studied, accuracy rates, and completion time.

Quizizz

- Quizizz is a free interactive learning platform that allows users to create and play engaging quizzes.
- Incorporates game-like elements to make self-paced learning more engaging and interactive.
- Learners can compete individually or in teams, earning points for correct answers and racing against the clock.
- Enables custom quizzes with multimedia and various question types, including multiple-choice, true/false, and open-ended questions.
- Provides a question bank where users can access a wide range of pre-made quiz questions created by others for easy adaptation.
- Offers a "Learn" mode that allows learners to review and study quiz content at their own pace, reinforcing learning and promoting self-directed study.
- Offers detailed analytics and reports to track learner performance and progress, and helps identify areas of strength and weakness for further instruction.

Screen Castify

- Screen Castify is a screen recording and video creation tool that allows users to capture and share their screen activity.
- Enables users to record their screen activities, including their webcam feed and audio narration, and allow effective communication and explanation while creating instructional videos, tutorials, or demonstrating workflows.
- Provides annotation and drawing tools that users can utilise during screen recording for highlighting important areas, adding text, drawing shapes, or making notes on the screen to emphasise key points.
- Offers basic video editing capabilities to trim the recordings, crop the video, and merge multiple recordings together.
- Supports giving feedback and assessment through video recordings.

Slido

- Create live polls, surveys, and quizzes.
- Integrates with other digital tools such as PowerPoint and Zoom.
- Ability to create questions on the fly.
- Range of question types available.
- Provides real-time data and analytics.
- The free version of Slido limited participants to 100 per event. Advanced question types are not available. Branding and design of events is limited. Data and analytics cannot be downloaded.

Tableau

- Tableau is a data visualisation and business intelligence tool that transforms raw data into interactive and visually compelling dashboards, charts, and reports.
- Allows real-time data analysis by enabling users to drag and drop data elements to create interactive and dynamic visualisations.
- Seamlessly connects to various data sources in one unified platform, including spreadsheets, databases, cloud services, and big data platforms.
- Facilitates data consolidation and integration of complex data sets from multiple sources
- Offers advanced analytics capabilities for insights and data-driven decisions based on statistical modelling, forecasting, clustering, and trend analysis.
- Tableau interactive dashboards allow for dynamic filtering and highlighting to explore data in real time and answer specific questions.
- Visualisations and dashboards are adaptive and accessible on desktops, tablets, and smartphones.
- Allows control data access and sharing of visualisations and reports with colleagues and stakeholders.

Vimeo

- Vimeo is popular video hosting platform, often used by professionals and businesses. Users can watch and upload videos.
- Allows users to upload, edit, organise, and manage their videos.
- Provides analytics tools to help users track the performance of their videos.
- Offers various customisation options for videos and player, such as custom thumbnails, logos, and colours.
- Users can create custom video websites with a Vimeo Pro or Business subscription.
- Allows users to engage with their audience through comments, likes, and shares.
- Offers monetisation options for creators, such as selling their videos or offering subscriptions to their channels. Creators can also earn revenue through Vimeo's on Demand program, which allows them to sell their videos directly to viewers.
- Provides live streaming capabilities for events and webinars with a Vimeo Premium subscription.
- The free plan has limitations on the size and number of videos users can upload. Vimeo's paid plans provide additional features such as more storage space, customisation options, and analytics.

Wordwall

- Wordwall is an interactive teaching tool that focuses on creating and delivering engaging learning activities and games.
- Allows users to create a wide range of interactive activities and games, including quizzes, word search, crossword puzzles, matching games, sorting activities, and more. These activities can be customised to suit specific learning objectives and content.
- Provides a library of ready-made templates for various activities, saving time and effort in activity creation. Users can choose from a variety of templates and customise them with their own content and design.
- Examples of games include match up, matching pairs, wordsearch, random cards, random wheel, gameshow quizzes, flash cards, image quizzes, hangman and more.
- Offers options of interactive quizzes and games that can be used for formative assessment purposes in adult learning.
- Allows tracking of learners' progress, identifying areas of strength and weakness, and providing targeted feedback to support their ongoing learning journey.

Yoodli

- Yoodli is a free AI speech coach software that offers real-time analytics and feedback.
- Provides non-distracting real-time alerts to users to slow down, stop rambling, and avoid filler words during online meetings.
- Yoodli can be used with any video conferencing platform (Zoom, Google Hangouts, Microsoft Teams, Webex etc.). It joins the conference call as a participant and provides analytics for every speaker.
- In the private mode, it only analyses and records the user's voice and no other participants.
- At the end of the meeting, users get a report with suggestions to improve and track their progress over time.

YouTube

- YouTube is one of the most popular video hosting platforms. Users can watch and upload videos.
- Allows users to upload, edit, organise, and manage their videos.
- Provides analytics tools to help users track the performance of their videos.
- Allows users to engage with their audience through comments, likes, and shares.
- Offers monetisation options for creators, such as displaying ads on their videos and offering subscriptions to their channels.
- Provides live streaming capabilities.
- YouTube also offers a premium subscription service called YouTube Premium, which provides ad-free viewing, access to exclusive content, and other features for a monthly fee.

Zoom

- Conducts video meetings with up to 1,000 participants (paid version) or 100 participants up to 40 minutes (free version)
- Features include screen sharing, virtual backgrounds, and live transcription.
- Users can send instant messages, make audio, or video calls, and share files within a meeting or with individuals.
- Users can record meetings, save them in the cloud, and playback later.
- Collaboration on documents or whiteboards in real time.
- Zoom can be integrated with other tools such as Google Drive, Slack, and Microsoft Office.
- Offers features for hosting and managing virtual events, including webinars, virtual conferences, and live streaming.

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Icebreakers and Energisers:** Polling tools offer engaging icebreaker activities and energisers to create an interactive and lively atmosphere at the beginning of a class or during breaks.

b. **Interactive Presentations and Real-Time Feedback:** Educators utilise polls and surveys to foster active participation and engagement among learners (Remembering). The real-time feedback obtained through polls and surveys aids in assessing learners' understanding, identifying misconceptions, and providing immediate intervention or clarification (Understanding).

c. **Formative Assessment:** Educators employ quizzes as knowledge checks during or after a lesson, enabling them to gather insights into learners' comprehension and retention (Remembering and Understanding).

d. **Class Discussions and Debates:** Live polls and open-ended questions facilitate class discussions and debates, allowing learners to express their opinions and engage in analytical and evaluative thinking (Analysing and Evaluating).

MICROSOFT 365 AND DIGITAL LEARNING TOOLS	OTHER COMPARABLE DIGITAL TOOLS
Microsoft Forms Collect Better Data and Make Better Decisions with Microsoft Forms *https://aka.ms/msforms* Tips and Tricks for Using Forms *https://aka.ms/forms-tips* Latest Features of Forms for 2023 *https://aka.ms/forms-2023updates*	▪ Mentimeter
Microsoft PowerPoint Live Polls	▪ Poll Everywhere ▪ Slido

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

One of the most important features of polling tools is its leveraging of computing technology, which enables instant compilation and presentation of results. This functionality allows educators to gather real-time feedback and gauge learner comprehension to adjust their instructional strategies accordingly.

By utilising related questions, the results can be displayed back-to-back, making trends and patterns immediately apparent. This empowers educators to emphasise certain trends or ideas that emerge from the questions they pose, facilitating focused discussions and informed decision-making.

Polling tools promote active learning by involving learners and keeping them focused, attentive, and mentally involved in the learning process. Shy or introverted learners may feel more comfortable expressing their thoughts through anonymous responses, increasing their participation in class.

Links to Microsoft Learning Resources

Microsoft Digital Literacy
https://aka.ms/digital-literacy

Microsoft 365 Apps Certification
https://aka.ms/m365apps-certification

Microsoft Learn
https://aka.ms/learn

Microsoft Edge Learning Tools
https://aka.ms/edge-learningtools

Note: The features and functions of the digital tools listed in this section are based on information available online and are accurate as of 3 Aug 2023. However, technology is constantly evolving, and updates to these tools may occur beyond this date. Please verify the current information and availability of these tools before use.

MICROSOFT 365 AND DIGITAL LEARNING TOOLS	OTHER COMPARABLE DIGITAL TOOLS
Microsoft PowerPoint Microsoft Powerpoint Help and Learning *https://aka.ms/mspowerpoint* Record a Slideshow with Narration and Timing *https://aka.ms/ppt-recordslideshow* Present Live: Engage Your Audience with Live Presentations *https://aka.ms/ppt-presentlive* Rehearse Your Slideshow with Speaker Coach *https://aka.ms/ppt-speakercoach*	▪ Wordwall ▪ Genially ▪ Quizlet ▪ Quizizz ▪ Kahoot!

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Interactive Presentations:** Multimedia integration can enhance the delivery of content, making it more engaging and memorable (Remembering).

b. **Infographics and Visualisations:** Infographic creation features allow users to present data, concepts, and processes in visually appealing and easily understandable formats, aiding comprehension and retention (Understanding).

c. **Team-Based Activities:** Quizzes, races, and collaborative challenges are powerful tools to foster collaboration, build relationships, and create a positive learning environment in adult learning settings.

d. **Interactive Quizzes and Assessments:** The gamification features make the learning experience more dynamic and interesting (Remembering and Understanding).

e. **Collaboration and Feedback:** Allows adult learners to work together on group projects, presentations, or interactive assignments with options for receiving feedback and comments (Applying, analysing and evaluating).

f. **Quizzes and Surveys:** These tools aid learners in recalling information (Remembering) and understanding the relationships between different concepts (Understanding).

g. **Scenario-Based Questions or Case Studies:** They challenge learners to apply their knowledge to specific situations or real-world problems (Applying).

h. **Open-Ended Questions or Compare and Contrast Questions**: These types of questions promote reflection, analysis, and synthesis of the material presented (Analysing).

i. **Group Discussions and Feedback:** Learners are encouraged to evaluate different arguments or perspectives, fostering critical thinking and evaluation skills. It also allows for peer assessment and feedback, as well as assessment by educators (Evaluating).

j. **Collaborative Brainstorming Activities:** These activities serve to gather information about learners' existing knowledge and identify areas requiring additional support. They also stimulate learners to generate original ideas and solutions (Creating).

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

The gamified approach motivates learners, promotes active participation, and fosters a fun learning environment.

When the adult learners are engaged, actively involved in the learning process, have personalised learning experiences, and are exposed to visual and multimedia content, several positive outcomes occur.

These include increased motivation, improved information retention, enhanced critical thinking and problem-solving skills, better transfer of knowledge to real-life contexts, and a more enjoyable learning experience overall.
Ultimately, these factors contribute to the effectiveness and success of adult learning initiatives.

Note: The features and functions of the digital tools listed in this section are based on information available online and are accurate as of 3 Aug 2023. However, technology is constantly evolving, and updates to these tools may occur beyond this date. Please verify the current information and availability of these tools before use.

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Flashcards, Quizzes, and Brainstorming:** Tools like OneNote and Padlet aid learners in reviewing and recalling information (Remembering). OneNote enables the creation of digital flashcards and quizzes, while Padlet facilitates interactive brainstorming activities.

b. **Collaborative Activities:** OneNote serves as a platform for notetaking and concept mapping, enabling learners to organise and comprehend new information. Padlet supports collaborative discussions and group activities, fostering peer interaction and clarification of concepts (Understanding).

c. **Application of Knowledge and Skills:** OneNote facilitates case studies and problem-solving activities, allowing learners to apply new knowledge in real-world situations. Padlet supports project-based learning and reflective activities, empowering learners to create and produce original work (Applying).

d. **Analysis and Evaluation:** OneNote enables annotation, highlighting, and summarising texts, promoting analysis of main ideas. Padlet facilitates digital bulletin boards for comparing and contrasting ideas and perspectives (Analysing).

e. **Evaluation and Judgment:** OneNote supports peer feedback, encouraging learners to evaluate and provide constructive feedback on each other's work. Padlet facilitates critical thinking exercises, where learners evaluate and analyse various sources of information (Evaluating).

f. **Creation and Production:** OneNote enables the creation of digital journals or blogs for reflection and sharing of ideas. Padlet supports the creation of digital collages or multimedia projects, showcasing learners' creativity and expression (Creating).

MICROSOFT 365 AND DIGITAL LEARNING TOOLS	OTHER COMPARABLE DIGITAL TOOLS
Microsoft OneNote Introduction to OneNote *https://aka.ms/msonenote* Tips and Tricks on How to Use OneNote *https://aka.ms/using-onenote*	▪ Padlet

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

Online note-taking tools have also become indispensable in the realm of collaboration.

These tools offer the benefit of collaboration, enabling multiple individuals to contribute to shared notes in real time. The diverse range of contributors ensures that the notes capture a variety of perspectives, ideas, and experiences.

Moreover, the ability to incorporate different media types, such as images, links, and multimedia files, enhances the richness and depth of the notes. Unlike traditional note-taking methods, online note-taking tools enable easy saving and sharing, ensuring that everyone participating in the collaboration can access and reference the collective knowledge gathered.

Note: The features and functions of the digital tools listed in this section are based on information available online and are accurate as of 3 Aug 2023. However, technology is constantly evolving, and updates to these tools may occur beyond this date. Please verify the current information and availability of these tools before use.

MICROSOFT 365 AND DIGITAL
LEARNING TOOLS

Microsoft Whiteboard

Getting Started with Microsoft Whiteboard
https://aka.ms/mswhiteboard

Meet the New Microsoft Whiteboard for
Hybrid Work
https://aka.ms/m365whiteboard

Using Microsoft Whiteboard
https://aka.ms/using-Whiteboard

OTHER COMPARABLE
DIGITAL TOOLS

- Miro
- Parlay

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Visual Representations**: Features such as templates, sticky notes, shapes, and frameworks in both tools help learners organise information, categorise ideas, and create visual structures that aid understanding and information retention (Remembering).

b. **Collaborative Discussion:** The ability to explain concepts using texts, images and drawings on the whiteboard enhances understanding and facilitates deeper comprehension of complex topics (Understanding).

c. **Problem Solving:** Through visual representations, learners apply what they learn to create practical solutions collaboratively (applying).

d. **Structured Discussions:** Help to maintain focus, encourage diverse perspectives and facilitate critical thinking. Moderation tools allow educators to review and approve comments to ensure respectful and productive dialogues.

e. **Analysis and Evaluation:** Learners visually analyse information, brainstorm ideas and make connections. Peer feedback and evaluation can be done in real time to reach decisions as a team. The syncing capabilities to cloud storage support documentation, review and reflection in the learning process (Analysing and Evaluating).

f. **Content Creation:** Learners can collaborate and co-create content, visual artefacts, and presentations to demonstrate their innovative solutions (Creating).

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

Digital whiteboards provide learners with powerful tools to visualise concepts, express ideas, and engage in meaningful interactions, fostering a dynamic learning environment and achieving enhanced social learning experiences. Furthermore, they allow learners to work together in real-time regardless of their physical location and across platforms by using different devices, enabling learning to take place anytime, anywhere and on various devices.

Parlay supports the exploration of complex topics and encourages learners to delve deeper into the subject matter. It prompts learners to think critically and engage in thoughtful discussions. It also prompts learners to analyse information, make connections, draw conclusions, and apply their knowledge to real-world scenarios. By engaging in higher-level thinking, learners develop critical analysis skills and are better equipped to tackle complex challenges.

Note: The features and functions of the digital tools listed in this section are based on information available online and are accurate as of 3 Aug 2023. However, technology is constantly evolving, and updates to these tools may occur beyond this date. Please verify the current information and availability of these tools before use.

MICROSOFT 365 AND DIGITAL LEARNING TOOLSt	OTHER COMPARABLE DIGITAL TOOLS
Flip Flip Product Page *https://aka.ms/msflip* Video Tutorial on How to Use Flip *https://aka.ms/start2flip*	▪ Edpuzzle ▪ Screen Castify

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Instructional Videos:** Flip promotes understanding as learners engage in video discussions, articulate their thoughts, and explain concepts to their peers. Edpuzzle facilitates comprehension by presenting information in a visual and engaging manner, allowing learners to process and understand the content. Screen Castify creates explanatory videos that enhance learners' understanding of complex topics through visual demonstrations (Understanding).

b. **Learners' Response Through Videos:** Flip encourages learners to apply their knowledge and skills by responding to prompts or questions with real-life examples or practical applications. Edpuzzle's interactive questions prompt learners to apply their understanding of concepts by answering questions within the context of the video content. Screen Castify can be used to demonstrate the application of knowledge or skills by recording and sharing their own screen activities or presentations (Applying).

c. **Analysis and Evaluation:** Flip and Edpuzzle enable learners to analyse the video content, provide feedback, evaluate options, make connections and draw conclusions (Analysing and Evaluating).

d. **Content Creation:** All three applications foster creativity as learners express their ideas and share perspectives through multimedia elements and creative presentations (Creating).

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE
Instructional videos enable learners to absorb information through visual cues, demonstrations, and examples, benefiting visual, auditory, and kinesthetic learners to different extents.

Visual learners benefit from visual stimulation and seeing concepts in action. Auditory learners benefit from spoken explanations and narration. Kinesthetics learners can follow along with physical actions demonstrated in the videos.

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MICROSOFT 365 AND DIGITAL LEARNING TOOLS	OTHER COMPARABLE DIGITAL TOOLS
Microsoft Stream How to Get Started with Stream *https://aka.ms/start2stream* How to Add Forms in Stream *https://aka.ms/stream-addforms* What You Can Do with Microsoft Stream *https://aka.ms/m365stream*	▪ **YouTube** ▪ **Vimeo**

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Instructional Videos** aid recall and retention through visuals and narration. Learners watch videos to remember important details. (Remembering)

b. **Tutorial Videos** break down complex concepts into smaller parts for comprehension. Learners watch videos to gain a deeper understanding. (Understanding)

c. **Instructional/Simulation/Case Study Videos** demonstrate tasks for knowledge and skills application. Learners watch videos to learn how to apply skills in practical situations. (Applying)

d. **Data Visualisation/Case Study/ Scientific Experiment** videos aid in analysing by presenting examples and patterns. Learners watch videos to make connections and draw conclusions. (Analysing)

e. **Debate/Analysis/Critical Thinking Videos** present different perspectives for evaluation. Learners watch videos to assess arguments and form opinions. (Evaluating)

f. **Art and Design/Project** showcase videos inspire creation. Learners use tools and resources to produce their own content and receive feedback. (Creating)

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

Video hosting services have emerged as valuable supplements to other learning tools. While many learning resources can be content-heavy and prosaic, videos offer a refreshing approach to knowledge acquisition.

Combining visual and audio elements, videos provide a multi-sensory experience that engages learners on multiple levels.

This dynamic format allows for the effective communication of complex concepts, demonstrations of practical skills, and the delivery of engaging narratives.

By incorporating videos into the learning process, educators can tap into the power of visual storytelling to enhance comprehension and retention among learners.

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HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Interactive Multimedia Presentations:** Engage learners and aid in information retention through interactive and memorable presentations. (Remembering)

b. **Visuals and Multimedia:** Enhance understanding by using infographics, diagrams, and animated videos to provide clear explanations and examples. (Understanding)

c. **Interactive Simulations, Scenarios, and Case Studies:** Promote application of knowledge through practice in realistic situations. (Applying)

d. **Data Visualisation and Charts:** Facilitate analysis and interpretation of complex data sets. (Analysing)

e. **Self-Assessment Quizzes and Peer Review Exercises:** Enable learners to evaluate information and develop judgment through self-assessment and peer feedback. (Evaluating)

f. **Creative Expression and Innovation:** Empower learners to express their original ideas, perspectives, skills, and knowledge through animated stories, presentations, and multimedia portfolios. (Creating)

MICROSOFT 365 AND DIGITAL LEARNING TOOLS

Microsoft Sway

Learn How to Create and Preview Your First Sway, How to Add and Embed Content, and How to Share Your Finished Creation with Others
https://aka.ms/start2sway

Sway – Create, Collaborate, Seal the Deal!
https://aka.ms/microsoftsway

OTHER COMPARABLE DIGITAL TOOLS

- Canva for Education
- Animoto for education
- PowToon
- H5P

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

Online media authoring tools play a significant role in enhancing the learning experience. With streamlined and intuitive interfaces, these tools empower learners with little to no experience in content creation to produce creative and engaging materials. This accessibility allows learners to harness the benefits of content creation without having to invest substantial time in learning complex professional software. By simplifying the content creation process, authoring tools enable learners to focus on expressing their ideas and exploring their creativity, leading to a more fulfilling and meaningful learning journey.

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MICROSOFT 365 AND DIGITAL LEARNING TOOLS

Microsoft Teams

Get Started with Microsoft Teams
https://aka.ms/using-Teams

Microsoft Teams Help and Learning
https://aka.ms/teamshelp

Introduction to Teams
https://aka.ms/intro2Teams

OTHER COMPARABLE DIGITAL TOOLS

▪ **Zoom**
▪ **HelperBird**

HOW FEATURES ACCOMPLISH LEARNING OUTCOMES

a. **Video Conferencing and Screen Sharing:** These tools facilitate quick recall of facts and information through video conferences and screen sharing. (Remembering)
b. **Chat and Messaging:** They enable learners and educator to engage in discussions and exchange information swiftly. (Understanding)
c. **File Sharing:** Users can share files, granting access to important resources for collaborative real-time work, such as group projects or problem-solving. (Applying)
d. **Recording and Playback:** Tools allow the recording of video conferences for later review, promoting critical reflection and analysis of past discussions. (Analysing)
e. **Polls and Surveys:** Built-in polling and survey tools evaluate concepts or ideas, enabling learners to provide feedback for assessing learning effectiveness. (Evaluating)
f. **Breakout Rooms:** The feature creates smaller teams to foster collaboration and creativity. Learner's brainstorm and work on tasks, then share ideas with the larger group. (Creating)

HOW TOOL FUNCTIONS IMPROVE THE LEARNING EXPERIENCE

Online meeting tools have revolutionised the way meetings and discussions take place by providing an inclusive platform that can accommodate a large number of participants.

Unlike traditional mediums such as whiteboards and meeting rooms, which have limitations on the number of participants, collaboration tools offer the unique advantage of allowing many individuals to share their screens and contribute their ideas.

This opens new possibilities for collaborative brainstorming sessions, where multiple perspectives can be shared simultaneously.

In a world where connectivity and global communication are increasingly important, these tools have become invaluable in facilitating multi-faceted dialogues.

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