

EFFECTIVE IMAGE BASED TOOLS IN THE KNOWLEDGE TRANSFER PROCESS OF OCCUPATIONAL THERAPISTS FOR SPECIAL EDUCATIONAL NEED STUDENTS

Simi Sonatun-Seegoolam*, Diroubinee Mauree-Narrainen

University of Technology Mauritius, La Tour Koenig, Pointe Aux Sables, Mauritius

Abstract

Students with special educational needs (SEN) are among those who can face barriers to full participation in education and are sometimes perceived as achieving less academically than their peers. One of their weaknesses, is cognitive difficulties which demand the need for different learning strategies. From a teaching perspective, images form part of impactful stimuli which can make processing and retention of information in young SEN students easier. It is on this basis that Occupational Therapists (OTs) have an unwavering role as educational stakeholders in view to leverage SEN students' strengths and guiding in their educational challenges. The outcome attributes towards equity and cultivate environments conducive for these students to thrive academically, socially, and emotionally. OTs are better equipped to transfer appropriate knowledge to SEN students using image-based tools. Yet very few studies have been undertaken in this particular area in the Mauritian context and is still an open topic for discussions. To that end, the purpose of this study is to evaluate the perceived effectiveness of 17 image-based knowledge transfer tools used by OTs with SEN students in Mauritius with objectives firstly to identify the mostly used image-based KT tools and secondly to rate their effectiveness. Data was collected through a survey using a closed-ended questionnaire which was personally administered to 55 OTs and the data was analyzed using statistical software namely IBM SPSS Statistics 26 and Microsoft Excel 2019. Results demonstrated that out of the 17 image-based KT tools, picture was rated having the highest usage and considered as the most effective KT tools used by Mauritian OTs. The other image-based tools mentioned are also being reflected on their effectiveness as KT tools. Graphs were rated least effective by respondents. Further studies on image-based KT tools are recommended specifically for each disability falling under the SEN category.

Keywords: *Image-based Knowledge Transfer tools, Knowledge Transfer, Occupational Therapists, Special Educational Needs students*

1. INTRODUCTION

Learning is a dynamic social process in which play, language and cognitive actions are intertwined. Cognitive skills include attention regulation, inhibitory control and cognitive flexibility, as well as reasoning, problem-solving and planning (Golinkoff *et al.*, 2010; Mackie *et al.*, 2013). These functions enable children to process information and to understand and make sense of the world together with other children (Zelazo and Müller 2002; Närhi and Korhonen, 2006). Mounting evidence has shown that the above-mentioned cognitive skills can be affected by a diverse range of cumulative learning difficulties (Diamond, 2013; Farrant *et al.*, 2014) as experienced by Special Educational Need (SEN) students. Therefore, when ineffective designs of instructional materials are presented to the learner, this can cause unnecessary cognitive load on their working memory that can prevent learning. Moreover, due to the impact of cognitive overload, SEN students are at increased risk of experiencing many negative educational outcomes, including academic failures and low levels of academic motivation (Alnahdi and Schwab, 2021; Chapman, 1988; Knickenberg *et al.*, 2020; Wang, 2009). Technically, these low educational levels influence subsequent opportunities, as students with SEN are more likely to suffer high unemployment rates, poverty, and wage discrimination (O'Keefe, 2007; Fuchs, 2014).

Nonetheless, Sweller and Chandler's theory of cognitive load suggests that effective instructional material facilitates learning by directing cognitive resources toward activities that are relevant to learning rather than toward preliminaries to learning (Paas *et al.*, 2003). It is on this basis that Occupational Therapists (OTs) have an unwavering role as educational stakeholders in view to leverage SEN students' strengths and guiding in their educational challenges. Occupational Therapy practice

addresses the physical, cognitive, psychosocial, sensory-perceptual, and other aspects of clients' performance in a variety of contexts to support their engagement in occupations that affect physical and mental health, well-being, and quality of life (AOTA, 2011). Hence, Occupational Therapists (OTs) are seen as a unique member of the team, who work as part of education team to maximize education goals (Queensland Department of Education, 2023) and they demonstrate professional and clinical reasoning to evaluate, analyze, and diagnose occupational challenges (issues with client factors, performance patterns, and performance skills) and provide occupation-based interventions to address them (ACOTE, 2018; AOTA, 2020c). One powerful intervention tool which OTs use is image. It is being said that "a picture is worth a thousand words" which suggest that a complex idea can be conveyed with just one image and eventually convey the power of participation in society as a bridge to health for people, regardless of age or ability (Pettersson, 2024).

However, research in the field of image based as knowledge transfer tools by OTs students with SEN in Mauritius is limited. To address this research gap, this issue emphasizes on the identification of the most effective image-based tools by OTs during the knowledge transfer process with SEN students in Mauritius. Hence, the first objective is to mark the most commonly used image-based KT tool by OTs with SEN in Mauritius and the second objective is to rate which one is the most effective based on the Mauritian culture.

2. LITERATURE REVIEW

The goal of educational systems is to prepare students for adult roles associated with work and community life. Unfortunately, many students are being left behind not all of them enter school exhibiting the same skills or readiness to learn (Claessens and Engel, 2013) having at times with a myriad of contributing factors (Duncan and Magnuson, 2011; Isaacs and Magnuson, 2011; Pettinger *et al.*, 2019; Ziolk-Guest and McKenna, 2014). These students are mainly SEN students. Since many educational systems around the world prioritize giving SEN students a high-quality education (Schwab, 2020), finding ways to help SEN students learn better has become essential to ensuring that they can attain and sustain an ideal level of learning that is in line with their abilities (Khusheim, 2022).

2.1. Special Educational Needs

SEN encompasses a wide range of children that require a special education setting in order to improve their social skills and academic performance (FernandezVillardón *et al.*, 2020). These students may have learning disabilities, behavioral issues, autism spectrum disorder, and other conditions (Mamas *et al.*, 2016). Physically, psychologically, cognitively, and socially, they differ greatly from other children, and they typically encounter obstacles that prevent them from reaching their objectives (Asya *et al.*, 2020). These challenges may stem from a variety of dysfunctions, such as motor impairments, a lack of linguistic abilities, and changes in their senses (McLaren and Rodger, 2003). As a result, pupils with SEN are defined by the European Agency for Special Needs and Inclusive Education (EASIE, 2022) as individuals who have learning difficulties or impairments and are considered eligible for additional educational help to meet their learning needs. Occupational therapists play a very significant role in the life of these children as they help these children to become autonomous in all the life domains.

2.2. Occupational Therapy

According to the American Occupational Therapy Association (2011), occupational therapists (OTs) who work in today's school systems have the exceptional chance to assist students with and without disabilities in maximizing their performance and participation in the student role and across educational environments. In order to achieve successful user participation, their main responsibilities are to improve people's ability to engage in desired, necessary, or prescribed occupations throughout their lifespan (WFOT, 2012). They do this by using knowledge about the person's interaction, engagement with occupations, and context to design interventions that facilitate change or growth in factors like body functions, values, beliefs, spirituality, and skills (motor, processing, and social interactions) (Boop *et al.*, 2020). Ultimately, OTs assist SEN students in reaching the intended academic objective or making

up for learning challenges in order to maximize their potential (Cubides-Arenas, 2021) and to facilitate the learning process of SEN students, OTs use the process of knowledge transfer.

2.3. Knowledge Transfer

According to Abou Hashish (2017), knowledge transfer is the transfer of knowledge from one person or organization to another via one or more channels. It refers to practices that include the exchange of individuals' experiences and work-related knowledge (Tassabehji et al., 2019). In the context of SEN, the role of OTs is to transfer knowledge to them in order to overcome their limitations during learning. Hence, to transfer knowledge to SEN students, OTs use different approaches, and one important approach is that of image based approach.

2.4. Image Based Approach

As Roberts (2021), we now live in the most visual era of human history where a complex idea can be conveyed with just one image. Image based approaches are commonly used with SEN students as it is easier to distinguish a picture rather than a text. Moreover, studies have proved that a human can recall delicate details in images longer, with 90% retention of information three days afterward and 63% retention of information a year (Brady *et al.*, 2008). Additionally, Eitel and Scheiter (2015) emphasized that pictures provide a backbone in which the pupils will use it as a basis of creating mental representations. Miller (2002) upholds this thought and defined image creation which is a part visualization as “forming a mental image in one’s mind.” Readers form mental pictures that represent the ideas in the texts. These images serve to enhance the interpretation of the written texts and may include our sense of sight, hearing, taste, smell, and touch.

Furthermore, visual based interventions respond to stimulus over selectivity by assisting students in focusing and maintaining attention to relevant stimuli (Shipley-Benamou *et al.*, 2002). Subsequently, it can enhance children’s abilities to independently complete unfamiliar or complex directions by condensing the content to only essential information (Williams, Goldstein, & Minshew, 2006). In addition, students have the capability to review cues, decreasing reliance on teacher prompts and increasing independence (Hodgdon, 1995). Besides, visually based interventions support students’ ability to shift attention (Quill, 1995, 1997, 1998), make abstract concepts more concrete (Peeters, 1997), and may be less socially stigmatizing than verbal reminders by adults or companions when in the presence of peers. To show its potentiality, image creation approach makes the story more fun, engaging, and understandable for the visual learners and even to the people with disability. Similarly, the study of Yusuf (2016) found that the pupils who were engaged in Image Creation Intervention got a higher score in the test after the intervention compared to the control group.

2.5. Image based Knowledge Transfer tools

Image based approaches have many benefits among others as stated above. Therefore, using images as a Knowledge Transfer tool can facilitate the process of knowledge transfer. Taking into account the well-known saying that a picture is worth a thousand words and the fact that students are more motivated and stimulated if their curriculum is presented graphically (Pettersson, 2024), this study investigated on the different image-based knowledge transfer tools used by OTs in Mauritius as detailed below.

Picture

Picture Exchange Communication System (PECS) is an intervention which uses pictures as a mean to achieve the desired outcome in SEN students. Previous literature indicated that PECS intervention yielded positive outcomes in promoting functional communication and have positive influence on teaching requesting behaviours in students attained of Autism Spectrum Disorders (ASD) (Flippin *et al.*, 2010; Preston and Carter, 2009; Angermeier *et al.*, 2008; Beck *et al.*, 2008; Ganz *et al.*, 2008; Schepis *et al.*, 1998; Schlosser *et al.*, 2009; Schlosser and Wendt, 2008). Moreover, using picture creation and visual tangible aids can help children with ASD better integrate sensory, cognitive experiences (Schweizer *et al.*, 2019) and encourage language development, expand children's vocabulary, and enhance reading activities (Madyawati, 2016).

Drawing

Drawing has positive effects on the performance of skills of ASD students allowing the latter to express themselves and communicate in indirect way with others (Schweizer *et al.*, 2019; Bharathi *et al.*, 2019; Brancatisano *et al.*, 2020; Corbett *et al.*, 2011). The results of two out of three studies which used creative activities (including drawing) as a tool observed positive effect on ASD students with an increase in social reply, consistency and level of intellectual response relating to others and another study found considerable improvements in visual response, verbal communications, and social communication (Chincholkar *et al.*, 2019; Koo and Thomas, 2019; Richard *et al.*, 2015).

Painting

Painting is known to develop crucial skills such as fine motor coordination, spatial awareness, and emotional expression (Hoffmann *et al.*, 2021). It also fosters confidence, resilience, and a sense of accomplishment as they see their ideas come to life on canvas or paper (Walshe *et al.*, 2020). Through painting, children with ASD who often have trouble communicating and interacting with others, started expressing themselves and communicating in an indirect way with others (Bharathi *et al.*, 2019; Brancatisano *et al.*, 2020; Corbett *et al.*, 2011; Schweizer *et al.*, 2019).

Graph

Graphs are commonly used to depict mathematical functions, display data from social and natural sciences, and specify scientific theories in textbooks and other print media in and out of the classroom (Kaput, 1987; Lewandowsky and Behrens, 1999; Mayer, 1993)

Photo

Participants who were involved in therapeutic photography intervention found the experience to be empowering because of peer support, enhanced therapeutic relationships, a sense of achievement, a feeling of connectedness and a chance to rebuild positive identities (Gibson, 2018 a, b; Tew *et al.*, 2012; Buchan, 2020). Moreover, the use of photo story media fostered students' skills and creativity in writing activities and improved the quality of Indonesian language learning in writing an essay, especially writing narrative essays (Citrawati *et al.*, 2018).

Infographic

Infographics are promising, powerful and effective tool for presenting data, explaining concepts, simplifying presentations, mapping relationships, displaying trends, and providing basic insights (Ozdamli *et al.*, 2016; Ibrahim and Maharaj, 2019; Basco, 2020). In a study of Lestari and Dody (2023), it was found that there is an effect of using infographics on students' reading comprehension and students felt helped, interested and more enthusiastic about reading when infographics were used.

Comics and Cartoons

Comics is thought to support students' learning as it makes stories become interesting for students and it establishes a meaningful bridge between the concepts discussed and the students' real life (Toh *et al.*, 2016). Comics both improve mental processes, which are the indispensable elements of the cognitive field, and develop aesthetic pleasure in students who are an important element of the emotional field (Akkaya, 2013). Animated cartoons are a popular and successful way to teach vocabulary to both students without special education needs and students with special education needs. Continually, Król (2013) states that in her research animated cartoons have positive effects on children's vocabulary comprehension.

Graphic Novels

The use of graphic novels helps visual learners to motivate reluctant and struggling readers, to develop higher order thinking skills, to address students having different learning styles, to provide rich context for increasing comprehension of the reading texts and to improve vocabulary instruction (Brozo *et al.*, 2013; Murakami and Bryce, 2009; Schwarz, 2002; Miller, 2005; Seelow, 2010; Brenna, 2013).

Leaflet

Leaflet as media or visual aid enhances learning outcome compared with learning without media at all. They are very effective in conveying concise messages (Supardi *et al.*, 2002; Simamora, 2009; Lestari *et al.*, 2021).

Traditionally printed books

Based on research result of Fitriah (2019), it is known that textbook containing local wisdom can improve student learning outcomes. Research was conducted to determine the textbooks effectiveness based on local wisdom in improving the writing and reading skills of elementary of 4th grade school students. The results found that there was an increase in the treatment effect using textbooks based on local wisdom. The integration of local wisdom in textbooks has been proven to improve students' writing and reading skills (Alfi *et al.*, 2021).

Manual

They are an important practice tool that contributes to training and implementation. In short, manuals are guides that practitioners must use with creativity and care (Castro *et al.*, 2004; Chambless and Ollendick, 2000; Galinsky *et al.*, 2012).

Guideline

Guidelines provide practical tips and information that anyone can use to help kids grow physically, intellectually and emotionally (Colorado Early Learning and Development Guidelines, 2025).

Poster

Posters make it conceivable to assimilate a lot of information rapidly (Lane, 2001). Poster presentations scores a significantly higher value compared to standard presentations. Posters supply the learner with the chance to connect the learning through visual representation and textbook reading, lectures, and conventional homework duties (Manarin, 2016). Research investigated the efficiency of activities based on a poster at the primary level and they discovered the positivity and efficiency of making posters part of the class routine. They additionally discovered that language proficiency was improved with the help of posters (Zerin and Khan, 2013)

Presentation

Presentations assess students' ability to prepare and display knowledge, while improving upon their communication skills (Levin and Topping, 2006). In a study of Acikalin *et al.*, (2005), PowerPoint presentations' effect was examined for academic achievement of Social and National Studies in the fifth-grade students at-risk for learning disabilities at primary schools. This indicates that the PowerPoint presentations helped the students at-risk for learning disabilities to understand the lessons of social and National studies recall the information and increase academic achievement in the experimental group.

Video

Research has confirmed that viewing video improves the audience's ability to visualize a phenomenon and commit different learning experiences to memory (Karsenti and Collin, 2013). YouTube can help students to improve their speaking skill, especially in increasing their knowledge about vocabulary, grammar, and pronunciation in English through the videos that are provided in it (Riswandi, 2016).

Tutorial

While the primary purpose of tutorials is often academic improvement, recent studies suggest additional non-academic benefits, such as improved social skills, reduced academic stress, and enhanced emotional resilience (Baker *et al.*, 2010; Cheung and Slavin, 2012).

Magazine

Print-based media such as magazines can encourage analogous authoring behavior (Fisch, 2004).

3. MATERIALS AND METHODS

3.1. Methods

For this particular research, a quantitative descriptive approach was employed to explore and describe the usage and effectiveness of image-based KT tools which are being used by OTs with SEN students in Mauritius. Since descriptive methods aid in describing the characteristics of a specific population being studied (Kothari, 2019), the choice was appropriate as it enabled the collection of data yielding insights from different OTs around the island regarding the use of image-based KT tools with SEN students.

3.2. Materials

A close ended questionnaire, divided into three sections, was the main instrument used for data collection in the present study. The first section recorded data on the demographics of the OTs, the second section covered questions on the usage of image-based KT tools and the third section gathered data on their effectiveness. The Likert scale questionnaire rated the items on scale ranging from 1 (rarely) to 5 (always) for the usage of image-based KT tool and from 1 (not effective) to 5 (very effective). It was then refined through pilot testing.

3.2.1. Sampling

Simply said, sampling is the process of gathering data on an entire population by examining only a small portion of it (Kothari, 2011). According to Mikecz (2012), researchers that wish to trace a process by interviewing a pre-defined and visible collection of elites chosen based on specified characteristics prefer purposeful sampling, which requires researchers to contact specific respondents. The OTs on the island of Mauritius made up the study's population. 63 participants were chosen by a purposive sample procedure. The following particular criteria were used to choose participants: Occupational therapists must: i. have worked with SEN students for at least a year; ii. be employed in Mauritius; and iii. be registered with the Allied Health Professional Council of Mauritius.

All the OTs on the register of the Allied Health Professional Council were contacted. During the initial phone conversation with the participants, the purpose and goals of the study were thoroughly discussed. Eight participants later left the research. Ultimately, 55 people made up the study's final sample. Out of the 55 participants, the majority of OTs who made up more than half of the sample (54.6%), have been practicing for 6–10 years, while 40.0% have been doing so for 11–15 years. In addition to having experience working in a pediatric context, 69.1% of OTs have their own private practice, and 45.5% have worked in the public sector. Of these, 56.4% claimed to have worked for non-governmental organizations. It should be mentioned that OTs may have been working many locations concurrently for this question, which is why the overall percentage exceeded 100%.

3.2.2. Data Collection

Data Collection was carried out individually with the 55 OTs who willingly accepted to participate in the survey when they were first contacted by the researchers. Upon their agreement, the questionnaire and the consent form were sent to them via email for them to be acquainted with the questionnaire before the survey. Based on their availability, they were phoned individually via the WhatsApp platform and the questionnaire was read and explained to them. Participants were also informed about the study's aims, confidentiality, anonymity, and data protection. The researcher went through all the questions with the participants and the responses were recorded accordingly.

3.2.3. Ethical Considerations

This study was conducted with the approval of the Research and Ethics Committee (REC) from the Ministry of Education, Tertiary Education, Science and Technology, Mauritius and obtained a 'No Objection' certificate. Participation in the study was voluntary and the participants were explicitly informed of their right to withdraw from the study and were also guaranteed of anonymity and confidentiality of the information given.

3.2.4. Data Analysis

For the data analysis process, statistical software named IBM SPSS Statistics 26 and Microsoft Excel 2019 were utilized. The responses were illustrated using descriptive statistics in form of tables, bar charts and in form of weighted means.

A measure of reliability that is most often used when an instrument contains groups of Likert-type statements is Cronbach's Alpha (Laerd Statistics, 2018a). Thus, the responses to the sets of statements measuring *Image based Knowledge Transfer* and *Effectiveness of Image Based Knowledge Transfer Tools* were tested for reliability in SPSS. The results are given in **Table 1** below.

Table 1. Results of reliability tests ($n = 55$)

	Number of items	Cronbach Alpha Coefficient
Tools for Knowledge Transfer		
Image-based	17	.890
Effectiveness of Knowledge Transfer Tools		
Image-based	17	.947

The Cronbach Coefficient for the image based was 0.89. Prior literature concluded that reliability coefficients that truly reflect an acceptable level of internal consistency of survey data should have a minimum threshold value of 0.7 (Bujang *et al.*, 2018), but have an upper bound of 0.95 (Nawi *et al.*, 2020; Dabbagh *et al.*, 2023). The coefficient being 0.89 confirmed the internal consistency of the survey questionnaire.

Since face and content validity were already tested during the piloting phase of the questionnaire, SPSS was used to measure the construct validity of the instrument. The results for construct validity are shown in **Table 2** below. It is observed that the p -values for Bartlett's test were all significant at the 1% level, indicating that the constructs passed construct validity testing, since these values were less than 0.01 (Field, 2016).

Table 2. Results of construct validity ($n = 55$)

	Bartlett test of Sphericity (Validity)	
	χ^2 -statistic	p-value
Tools for Knowledge Transfer		
Image-based	669.826	< .01
Effectiveness of Knowledge Transfer Tools		
Image-based	831.864	< .01

4. RESULTS

4.1. Usage of Image based KT tools by Occupational Therapists

The 17 image based knowledge transfer tools mentioned in the Literature section was analyzed on the usage basis and the responses has been illustrated as in **Figure 1** below.

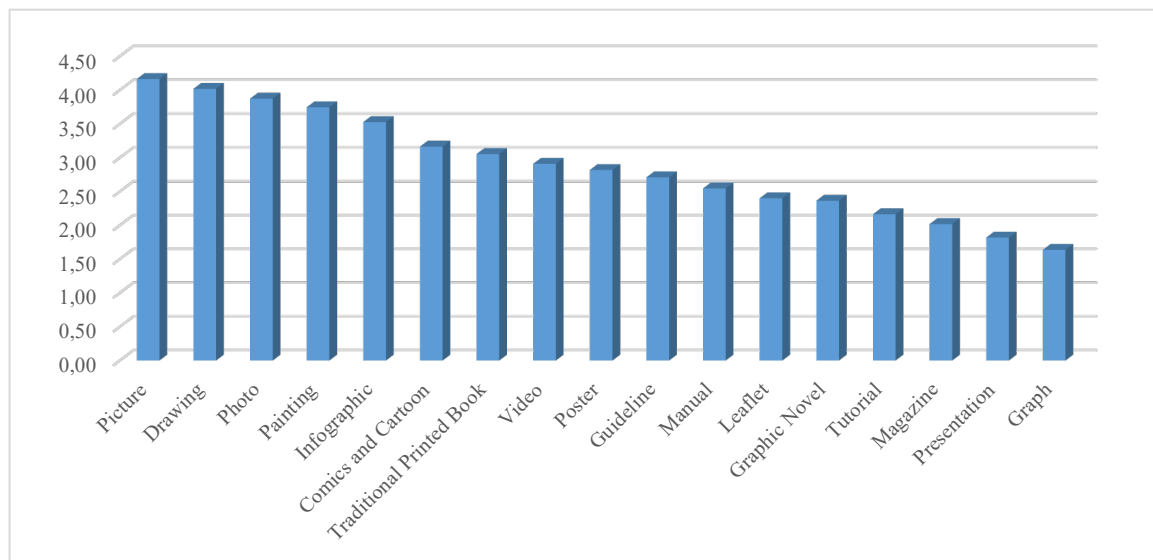


Fig. 1. Usage of Image based knowledge transfer tools used by OTs

Source: Authors' own compilation

Among the 17 image-based knowledge transfer tools, pictures ($M = 4.16$) and drawings ($M = 4.02$) were most frequently used by OTs. Photos ($M = 3.87$), paintings ($M = 3.75$) and infographics ($M = 3.53$) were also often used by OTs, but to a lesser extent, as compared to pictures and drawings. While using comics and cartoons ($M = 3.16$), traditional printed books ($M = 3.05$), varied among sampled OTs, with some using them extensively, others occasionally and others very scarcely, a similar pattern in the responses was observed for OTs using videos ($M = 2.91$), posters ($M = 2.82$) guidelines ($M = 2.71$) and manuals ($M = 2.55$), but with more OTs using them rarely, thus recording sub-neutral means. OTs made use of leaflets ($M = 2.40$), graphic novels ($M = 2.36$), tutorials ($M = 2.16$) and magazines ($M = 2.02$) even more rarely, whilst the use of presentations ($M = 1.82$) and graphs ($M = 1.64$) almost did not figure in their list of image-based knowledge transfer tools.

4.2. Effectiveness of Image-Based Knowledge Transfer Tools

Image-based tool	NE	SE	ME	E	VE	Mean
Picture	0%	5%	8%	40%	47%	4.29
Drawing	0%	4%	12%	40%	44%	4.24
Photo	4%	2%	14%	36%	44%	4.15
Painting	8%	0%	17%	30%	45%	4.06
Video	6%	6%	27%	28%	33%	3.78
Infographic	4%	7%	36%	22%	31%	3.69
Comics and cartoon	8%	12%	30%	27%	23%	3.46

Tutorial	10%	16%	25%	27%	22%	3.35
Traditional printed book	2%	19%	45%	19%	15%	3.26
Poster	15%	21%	18%	25%	21%	3.15
Presentation	10%	27%	23%	20%	20%	3.14
Manual	14%	31%	21%	16%	18%	2.92
Guideline	16%	27%	21%	20%	16%	2.92
Leaflet	14%	20%	46%	12%	8%	2.80
Graphic Novel	20%	22%	36%	8%	14%	2.75
Magazine	23%	23%	29%	10%	15%	2.71
Graph	47%	32%	10%	0%	11%	1.96

NE = Not effective; SE = Slightly effective; ME = Moderately effective; E = Effective;
VE = Very effective

Table 3. Image-based knowledge transfer tools

Source: Authors' own compilation

From **Table 3** above, it is observed that the most effective image based tools, according to sampled OTs, are pictures ($NE/SE = 5\%$, $ME = 8\%$, $E/VE = 87\%$, $M = 4.29$), drawings ($NE/SE = 4\%$, $ME = 12\%$, $E/VE = 84\%$, $M = 4.24$), photos ($NE/SE = 6\%$, $ME = 14\%$, $E/VE = 80\%$, $M = 4.15$) and paintings ($NE/SE = 8\%$, $ME = 17\%$, $E/VE = 75\%$, $M = 4.06$), thus justifying why they are the most frequently used as well (see **Figure 1** above).

Videos ($NE/SE = 12\%$, $ME = 27\%$, $E/VE = 61\%$, $M = 3.78$) and infographics ($NE/SE = 11\%$, $ME = 36\%$, $E/VE = 53\%$, $M = 3.69$) were rated as effective in general, whereas comics and cartoons ($NE/SE = 20\%$, $ME = 30\%$, $E/VE = 50\%$, $M = 3.46$) and tutorials ($NE/SE = 26\%$, $ME = 25\%$, $E/VE = 49\%$, $M = 3.35$) were between effective and moderately effective. To a slightly lesser extent, traditional printed books ($NE/SE = 21\%$, $ME = 45\%$, $E/VE = 34\%$, $M = 3.26$), posters ($NE/SE = 36\%$, $ME = 18\%$, $E/VE = 46\%$, $M = 3.15$) and presentations ($NE/SE = 37\%$, $ME = 23\%$, $E/VE = 40\%$, $M = 3.14$) were rated by OTs as moderate in terms of their effectiveness in transferring knowledge to SEN children.

In the second part of **Table 3**, the means recorded by the image-based tools were below 3, meaning that OTs rated them as less than moderately effective, that is, either slightly effective or not effective. Thus, manuals ($NE/SE = 45\%$, $ME = 21\%$, $E/VE = 34\%$, $M = 2.92$), guidelines ($NE/SE = 43\%$, $ME = 21\%$, $E/VE = 36\%$, $M = 2.92$), leaflets ($NE/SE = 34\%$, $ME = 46\%$, $E/VE = 20\%$, $M = 2.80$), graphic novels ($NE/SE = 42\%$, $ME = 36\%$, $E/VE = 22\%$, $M = 2.75$) and magazines ($NE/SE = 46\%$, $ME = 29\%$, $E/VE = 25\%$, $M = 2.71$) were tools that OTs considered less effective than expected to be. Graphs ($NE/SE = 79\%$, $ME = 10\%$, $E/VE = 11\%$, $M = 1.96$) were rated as close to being ineffective in transferring knowledge.

5. DISCUSSIONS

Since educational systems are meant to prepare students for adult roles associated with work and community life (Claessens and Engel, 2013), the use of potent tools is of utmost importance. Prior literatures proved that ineffective instructional materials cause unnecessary cognitive load on their working memory that can prevent learning (Alnahdi and Schwab, 2021; Chapman, 1988; Knickenberg *et al.*, 2020; Wang, 2009) in students. Since SEN students faces diverse dysfunctions including motor impairments, a lack of verbal skills, and sensory alterations (McLaren and Rodger, 2003) and are significantly different from other children physically, psychologically, cognitively and socially usually

facing more obstacles in achieving their goals. (Asya *et al.*, 2020), they are more prone to cognitive overload which may be very harmful to them. This study gained momentum by investigating into the usage and effectiveness of image-based KT tools currently being used by OTs in Mauritius.

Based on the outcome of the study, the most used and the most effective image-based KT tool was picture with a mean of 4.16 as most used and mean of 4.29 as most effective. This aligned with previous literatures indicating that Picture Exchange Communication System (PECS) intervention yielded positive outcomes in promoting functional communication and have positive influence on teaching requesting behaviours in students attained of Autism Spectrum Disorders (ASD) (Flippin *et al.*, 2010; Preston and Carter, 2009; Angermeier *et al.*, 2008; Beck *et al.*, 2008; Ganz *et al.*, 2008; Schepis *et al.*, 1998; Schlosser *et al.*, 2009; Schlosser and Wendt, 2008).

The second most used (M= 4.02) and second most effective (M = 4.24) is drawing. The outcome of this study corroborated with prior literature which showed that drawing had to have positive effects on the performance of skills of ASD students and it allows them to express themselves and communicate in indirect way with others (Schweizer *et al.*, 2019; Bharathi *et al.*, 2019; Brancatisano *et al.*, 2020; Corbett *et al.*, 2011).

The third most used (M = 3.87) and the third most effective (M = 4.15) was photo. It was observed in a study that participants who were involved in therapeutic photography intervention found the experience to be empowering because of peer support, enhanced therapeutic relationships, a sense of achievement, a feeling of connectedness and a chance to rebuild positive identities (Gibson, 2018 a,b; Tew *et al.*, 2012; Buchan, 2020). Moreover, the use of photo story media fostered students' skills and creativity in writing activities and improved the quality of Indonesian language learning in writing an essay, especially writing narrative essays (Citrawati *et al.*, 2018) showing reasons why OTs found that photo was effective with SEN.

Likewise, the fourth most used (M = 3.75) and fourth most effective (M = 4.06) was painting. Painting is known to develop crucial skills such as fine motor coordination, spatial awareness, and emotional expression (Hoffmann *et al.*, 2021). It also fosters confidence, resilience, and a sense of accomplishment as they see their ideas come to life on canvas or paper (Walshe *et al.*, 2020). Through painting, children with ASD who often have trouble communicating and interacting with others, started expressing themselves and communicating in an indirect way with others (Bharathi *et al.*, 2019; Brancatisano *et al.*, 2020; Corbett *et al.*, 2011; Schweizer *et al.*, 2019).

In the same vein, it was also observed that pictures and drawings had a 0%. This probed the OTs towards their effectiveness. 47% of OTs rated pictures as Very Effective and 44 % rated drawings as Very Effective which shows that almost half of the OT population consider picture and drawing as Very Effective KT tools with SEN students. Research revealed that Picture Exchange Communication System (PECS) is an intervention which uses pictures as a mean to achieve the desired outcome in SEN students and picture creation and visual tangible aids can help children with ASD better integrate sensory, cognitive experiences (Schweizer *et al.*, 2019), encourage language development, expand children's vocabulary, and enhance reading activities (Madyawati, 2016). The results of two out of three studies which used creative activities (including drawing) as a tool observed positive effect on ASD students with an increase in social reply, consistency and level of intellectual response relating to others and another study found considerable improvements in visual response, verbal communications, and social communication (Chincholkar *et al.*, 2019; Koo and Thomas, 2019; Richard *et al.*, 2015). The benefits of pictures and drawings mentioned by the researchers above might be reasons why half of the OT sample rated them as very effective.

Moreover, from this study results, the 5 least used image-based KT tools were graphic novels, tutorials, magazines, presentation and graphs and the 5 least effective image-based KT tools were guidelines, leaflets, graphic novel, magazines, and graphs. Out of the set of least used and least effective, 3 KT tools were found to be common in both and they were graphic novels, magazines and graphs. The use of graphic novels helps visual learners to motivate reluctant and struggling readers, to develop higher order thinking skills, to address students having different learning styles, to provide rich context for increasing comprehension of the reading texts and to improve vocabulary instruction (Brozo *et al.*, 2013;

Murakami and Bryce, 2009; Schwarz, 2002; Miller, 2005; Seelow, 2010; Brenna, 2013). Print-based media such as magazines can encourage analogous authoring behavior (Fisch, 2004). Graphs are commonly used to depict mathematical functions, display data from social and natural sciences, and specify scientific theories in textbooks and other print media in and out of the classroom (Kaput, 1987; Lewandowsky and Behrens, 1999; Mayer, 1993).

It has been there highlighted in this study that visual based interventions respond to stimulus over selectivity by assisting students in focusing and maintaining attention to relevant stimuli (Shipley-Benamou *et al.*, 2002). This is a classic example whereby children's abilities are enhanced to independently complete unfamiliar or complex directions by condensing the content to only essential information (Williams *et al.*, 2006). Students can also review cues, decreasing reliance on teacher prompts and increasing independence (Hodgdon, 1995). Yet, not all image-based tools are adapted to SEN students. Despite the fact that several benefits of image-based tools have been highlighted in this study detailing each image base tool, there is a further research need in this field to improve the OT services with SEN students towards improving their inclusion in Mauritius.

6. CONCLUSIONS

As a conclusive note, the results attempted to provide a comprehensive review of on the usage and perceived effectiveness of image-based KT tools by OTs with SEN in Mauritius. The image-based KT tool ranked as the most used and the most effective was picture followed by drawing and photo. The least used and effective were graphic novels, magazines and graphs. However, finding the most used and effective image-based KT tool is not the end task. Further studies need to be investigated on different disabilities which are grouped under the umbrella term of SEN. As a further matter, emphasis should not only be on OT intervention on individual basis, but on the evaluation of the perceived effectiveness of these image-based tools in OT group sessions and in classroom settings as well. As this study has the inclination to address the gaps in KT and OT field with SEN, some limitations were observed through previous literature on KT and image-based tools. A noteworthy fact of this research pinpoints no such study was conducted previously in the Mauritian context and it has attempted to set the mark for some KT tools being currently used in Mauritius. Other limitations are that digital image-based tools were not explored fully in this study, while the chosen population was restricted to OTs in Mauritius. De facto, there are other different stakeholders involved in SEN children learning process who should also be considered. Another key fact worth remembering according to Eitel and Scheiter (2015), pictures provide a backbone whereby pupils use them as a basis of creating mental representations. Nonetheless, further studies may be conducted with psychologists on detailing the types of mental representations created in the minds of SEN students which differentiate them with the students without identified SEN of the same classroom.

ACKNOWLEDGMENTS

The researchers wish to thank the Higher Education Commission of Mauritius for their support.

REFERENCES

1. Accreditation Council for Occupational Therapy Education. (2018). 2018 Accreditation Council for Occupational Therapy Education (ACOTE®) Standards and Interpretive Guide (effective July 31, 2020). American Journal of Occupational Therapy, 72(Suppl. 2), 7212410005. <https://doi.org/10.5014/ajot.2018.72S217>
2. Acikalin Mehmet, and Duru Erdinc. (2005). "THE USE OF COMPUTER TECHNOLOGIES IN THE SOCIAL STUDIES CLASSROOM." TOJET: The Turkish Online Journal of Educational Technology, 4: 2, 1303-6521.

3. Akkaya, A. (2013). A different activity in grammar learning in Turkish course: educational comic strips. *International Journal of Academic Research Part B*, 5(5), 118-123. <https://doi.org/10.7813/2075-4124.2013/5-5/B.18>
4. Alfi, L, Budiningsih, C.S, (2021), Syamsi, K 'Textbooks based on local wisdom to improve reading and writing skills of elementary school students,' *International Journal of Evaluation and Research in Education (IJERE)* Vol. 10, No. 3, September 2021, pp. 886~892 ISSN: 2252-8822, DOI: 10.11591/ijere.v10i3.21683
5. Alnahdi, G. H., & Schwab, S. (2021). Inclusive education in Saudi Arabia and Germany: Students' perception of school well-being, social inclusion, and academic self- concept. *European Journal of Special Needs Education*, 36, 773–786. <https://doi.org/10.1080/08856257.2020.1823163>
6. American Occupational Therapy Association. (2011). Definition of occupational therapy practice for the AOTA Model Practice Act. <https://www.aota.org/media/Corporate/Files/Advocacy/State/Resources/>
7. American Occupational Therapy Association. (2020c). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(Suppl. 2), 7412410010. <https://doi.org/10.5014/ajot.2020.74S2001>
8. Angermeier, K., Schlosser, R. W., Luiselli, J. K., Harrington, C., & Carter, B. (2008). Effects of iconicity on requesting with the Picture Exchange Communication System in children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 2(3), 430-446.
9. Asya, U.A.; Huriati, Amal,A.A.; Arbianingsih (2020) 'Occupational Therapy in Children with Special Needs: Systematic Review,' *Journal Of Nursing Practice*, Vol.3 No.2. April 2020. Page.268-278
10. Baker, D. P, et *al.* (2010). Worldwide shadow education: outside-school learning, institutional quality of schooling, and cross-national achievement. *Educational Evaluation and Policy Analysis*, 23(1), 1-17.
11. Basco, R. O. (2020). Effectiveness of science infographics in improving academic performance among sixth grade pupils of one laboratory school in the Philippines. *Research in Pedagogy*. 10. 313-323. 10.5937/IstrPed2002313B.
12. Bechtel, S.; Jeschonek, S.; Pauen, S. (2013), 'How 24-month-olds form and transfer knowledge about tools: The role of perceptual, functional, causal, and feedback information,' *Journal of Experimental Child Psychology* 115 (2013) 163–179.
13. Beck, A. R., Stoner, J. B., Bock, S. J., & Parton, T. (2008). Comparison of PECS and the use of a VOCA: A replication. *Education and Training in Developmental Disabilities*, 43(2), 198-216.
14. Bharathi, G., Jayaramayya, K., Balasubramanian, V., & Vellingiri, B. (2019). The potential role of rhythmic entrainment and music therapy intervention for individuals with autism spectrum disorders. *Journal of Exercise Rehabilitation*, 15, 180–186. <https://doi.org/10.12965/jer.1836578.289>
15. Boop, C.; Cahill, S.M.; Davis, C.; Dorsey, J.; Gibbs, V.; Herr, B. Occupational Therapy Practice Framework: Domain and Process—Fourth Edition. *Am. J. Occup. Ther.* 2020, 74 (Suppl. S2), 7412410010p1-87.
16. Brady, T., Konkle, T., Alvarez, G., & Olivia, A. (2008). Scene Memory Is More Detailed Than You Think: The Role of Categories in Visual Long-Term Memory. Retrieved from <https://doi.org/10.1177/0956797610385359>
17. Brancatisano, O., Baird, A., & Thompson, W. F. (2020). Why is music therapeutic for neurological disorders? The Therapeutic Music Capacities Model. *Neuroscience and Biobehavioral Reviews*, 112, 600–615. <https://doi.org/10.1016/j.neubiorev.2020.02.008>

18. Brenna, B. (2013). How graphic novels support reading comprehension strategy development in children. *Literacy*, 47(2), 88-94. <http://dx.doi.org/10.1111/j.1741-4369.2011.00655.x>
19. Brozo, W. G., Moorman, G., & Meyer, C. (2013). *Wham! Teaching with graphic novels across the curriculum*. Teachers College Press.
20. Buchan, C. A. (2020) 'Therapeutic benefits and limitations of participatory photography for adults with mental health problems: A systematic search and literature review', *Journal of Psychiatric and Mental Health Nursing*, 27(5), pp. 657–68.
21. Castro, F. G., Barrera, M., Jr., & Martinez, C. R. (2004). The cultural adaptation of prevention interventions: Resolving tensions between fidelity and fit. *Prevention Science*, 5, 41–45. doi:10.1023/B:PREV.0000013980.12412.cd
22. Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, 52, 685–716. doi:10.1146/annurev.psych. 52.1.685
23. Chapman, J. W. (1988). Learning disabled children's self-concepts. *Review of Educational Research*, 58, 347–371. <https://doi.org/10.3102/0034654305800334>
24. Cheung, A., & Slavin, R. E. (2012). How tutoring impacts cognitive and non-cognitive development: a meta-analysis: *educational Research Review*, 9 88-113.
25. Chincholkar, V., Veeraraghavan, S., & Mangla, P. (2019). The unfinished painting—An arts based therapy approach as an early intervention module for children with autism spectrum disorder. *Journal of Evidence Based Medicine and Healthcare*, 6, 2663–2665.
26. Citrawati, T., Supriyanto, T., & Suminar, T. (2018). Developing Photonovella Adventure Media to Improve Primary Students Storytelling of Place Where I Live Theme. 7(2), 129–136.
27. Claessens, A., & Engel, M. (2013). How important is where you start? Early mathematics knowledge and later school success. *Teachers College Record*, 115(6), n6.
28. Colorado Early Learning and Development Guidelines (2025), Available on: <https://el.cob-webcreations.com/child-advocates/how-the-guidelines-help-kids/>. Accessed on 06.04.25.
29. Corbett, B.A., Gunther, J.R., Comins, D. et al. Brief Report: Theatre as Therapy for Children with Autism Spectrum Disorder. *J Autism Dev Disord* 41, 505–511 (2011). <https://doi.org/10.1007/s10803-010-1064-1>
30. Cubides-Arenas, J. Revisión Sistemática en la Afectación del Desempeño Escolar Debido a la Alteración de los Hábitos y Rutinas de los Niños y Niñas Desde Terapia Ocupacional y Profesiones Afines. 4 de Junio de 2021. Available online: <https://repositorio.udes.edu.co/entities/publication/fbff2e43-563e-410d-94fb-2bc9e888b9c2/full> (accessed on 26 May 2023).
31. Defining occupational therapy, WFOT, 2012. *World Fed. Occup. Ther. Bull.* 2015, 71, 18. [CrossRef]
32. Diamond, Adele. 2013. "Executive Functions." *Annual Review of Psychology* 64 (1): 135–168. doi:10.1146/annurev-psych-113011-143750.
33. Duncan, G., & Magnuson, K. (2011). The nature and impact of early achievement skills, attention skills, and behavior problems. In G. J. Duncan, & R. J. Murnane (Eds.), *Whither opportunity: Rising inequality, schools, and children's life chances* (pp. 47–70). Russell Sage.
34. EASIE. (2022). European Agency for Special Needs and Inclusive Education. Retrieved from <https://easie.uib.no>
35. Eitel, A. & Scheiter, K. (2015). Picture or Text first? Explaining Sequence Effects When Learning with Pictures and Text. <https://doi.org/10.1007/s10648-014-9264-4>

36. Farrant, Brad M., Janet Fletcher, and Murray T. Maybery. 2014. "Cognitive Flexibility, Theory of Mind, and Hyperactivity/Inattention." *Child Development Research* 2014: 1–10. Article ID 741543. doi:10.1155/2014/741543.
37. Fernandez-Villardón, A., Pilar Alvarez, L., & Itxaso, T. (2020). Fostering the social development of children with special educational needs or disabilities (SEND) through dialogue and interaction: A literature review. *Social Sciences*, 9(6). <https://doi.org/10.3390/socsci9060097>
38. Filieri, R. and Alguezaui, S. (2014), "Structural social capital and innovation. Is knowledge transfer the missing link?". *Journal of Knowledge Management*, vol. 18 no. 4, pp.728-757.
39. Fisch, S.M. (2004), What's so "new" about "new media?": Comparing effective features of children's educational software, television, and magazines., pp 105-112.
40. Flippin, M., Reszka, S., & Watson, L. R. (2010). Effectiveness of the Picture Exchange Communication System (PECS) on communication and speech for children with autism spectrum disorders: A meta-analysis. *American Journal of Speech-Language Pathology*, 19(2), 178-195.
41. Fuchs, M. (2014). Quota Systems for disabled Persons: Parameters, Aspects, Effectivity. Vienna: European Centre for social Welfare policy and research.
42. Galinsky, M.J.; Fraser, M.W; H. Day, S.H, and Richman, J.M. (2012), 'A Primer for the Design of Practice Manuals: Four Stages of Development,' *Research on Social Work Practice* 00(0) 1-10.
43. Ganz, J. B., Simpson, R. L., & Corbin-Newsome, J. (2008). The impact of the Picture Exchange Communication System on requesting and speech development in pre schoolers with autism spectrum disorders and similar characteristics. *Research in Autism Spectrum Disorders*, 2(1), 157-169.
44. Gibson, N. (2018a) *Therapeutic Photography: Enhancing Self-Esteem, Self-Efficacy and Resilience*, London, Jessica Kingsley Publishers.
45. Gibson, N. (2018b) *Is there a Role for Therapeutic Photography in Social Work with Groups?* (Doctoral dissertation), Aberdeen, Robert Gordon University.
46. Golinkoff, R. M., K. Hirsh-Pasek, and D. G. Singer. 2010. "Why Play=Learning: A Challenge for Parents and Educators." In *Play=Learning: How Play Motivates and Enhances Children's Cognitive and Socio-Emotional Growth*, edited by D. G. Signer and R. Michnick, 3–12. New York, United States: Oxford University Press.
47. Hoffmann, T., Desha, L., & Verrall, K. (2011). Evaluating an online occupational therapy community of practice and its role in supporting occupational therapy practice. *Australian Occupational Therapy Journal*, 58(5), 337–345. <https://doi.org/10.1111/j.1440-1630.2011.00954.x>
48. Ibrahim, T. & Maharaj, A. (2019). The Impact of Infographics on Language Learning. *International Journal of Computer Science and Network Security (IJCSNS)*, 19(12), 47-60, http://paper.ijcsns.org/07_book/201912/20191208.pdf
49. Isaacs, J., & Magnuson, K. (2011). Income and education as predictors of children's school readiness. Center on Children and Families at Brookings. https://www.brookings.edu/wp-content/uploads/2016/06/1214_school_readiness_isaacs.pdf
50. Kaput, J. J. (1987). Representation and mathematics. In Janvier, C. (ed.), *Problems of Representation in Mathematics Learning and Problem Solving*, Erlbaum, Hillsdale, NJ, pp. 19–26.
51. Karsenti T, Collin S. Avantages et de'fis inhe'rents à l'usage des ordinateurs portables au primaire et au secondaire. *E' ducation Francoph*. 2013; 41(1):94–122.
52. Khusheim, S. M. (2022). Students with special educational needs: Explaining their social integration and self-concept. *Journal of Education and Learning*, 11, 54–64. <https://doi.org/10.5539/jel.v11n1p54>

53. Knickenberg, M., Zurbriggen, C. L. A., Venetz, M., Schwab, S., & Gebhardt, M. (2020). Assessing dimensions of inclusion from students' perspective—measurement invariance across students with learning disabilities in different educational settings. *European Journal of Special Needs Education*, 35, 287–302. <https://doi.org/10.1080/08856257.2019.1646958>
54. Koo, J., & Thomas, E. (2019). Art therapy for children with autism spectrum disorder in India. *Art Therapy*, 36, 209–214. <https://doi.org/10.1080/07421656.2019.1644755>
55. Król, W. (2013). Research Communiqué on the Use of Animated Cartoons in Teaching English to Children with Disorders and Disabilities. *Procedia - Social and Behavioral Sciences*, 106, 2259–2268. <https://doi.org/10.1016/j.sbspro.2013.12.257>
56. Lane, T. K. (2001). Promoting Posters. Pac3 at JALT2001 Conference Proceeding, (C), 1–7.
57. Lestari, S and Dody, W.P. (2023), 'The Effectiveness Of Infographics Towards Students' Reading Comprehension,' *Journal on Education*, Volume 06, No. 01, pp.395-405
58. Levin, P., & Topping, G. (2006). Perfect presentations. In L. Irvine (Ed.), *Orals ain't orals: How instructions and assessment practices affect delivery choices with prepared student oral presentations*. Paper presented at the Australian and New Zealand Communication Association Conference, Brisbane. Berkshire, England: Open University Press.
59. Lewandowsky, S., and Behrens, J. T. (1999). Statistical graphs and maps. In Durso, F., Dumais, S., Nickerson, R., Schvaneveldt, R., Chi, M., and Lindsay, S. (eds.), *The Handbook of Applied Cognitive Psychology*, Wiley, Chichester, England, pp. 513–549.
60. Mackie, Melissa-Ann, Nicholas T. Van Dam, and Jin Fan. 2013. "Cognitive Control and Attentional Functions." *Brain and Cognition* 82 (3): 301–312.
61. Madyawati, L. (2016). *Strategi Pengembangan Bahasa pada Anak*. Jakarta: Prenadamedia Group
62. Mamas, C., Daly, A. J. & Schaelli, G. (2016). Responsive classrooms for SEND students. Available at: https://www.researchgate.net/publication/311227823_Socially_responsive_classrooms_for_SEND_students.
63. Manarin, K. (2016). Interpreting Undergraduate Research Posters in the Literature Classroom. *Teaching & Learning Inquiry* 4.1: 1-15
64. Mayer-Benarous H, Benarous X, Vonthron F and Cohen D (2021) Music Therapy for Children With Autistic Spectrum Disorder and/or Other Neurodevelopmental Disorders: A Systematic Review. *Front. Psychiatry* 12:643234. doi: 10.3389/fpsyt.2021.643234
65. Mazorodze and Buckley. (2020), 'A review of knowledge transfer tools in knowledge-intensive organisations.' *South African Journal of Information Management*. Vol. 22. No. 1. Pp 1-6.
66. McLaren, C.; Rodger, S. Goal attainment scaling: Clinical implications for paediatric occupational therapy practice. *Aust. Occup. Ther. J.* 2003, 50, 216–224. [CrossRef]
67. McNamara, D. S. & Kendeou, P. (2011). Translating advances in reading comprehension research to educational practice. *International Electronic Journal of Elementary Education*, 4(1), 33-46. Retrieved from www.iejee.com.
68. Miller, D. (2002). *Reading with Meaning*. Portland, OR: Stenhouse Publishers.
69. Miller, S. (2005). *Developing and promoting graphic novel collections*. Neal Schuman Pub.
70. Murakami, S., & Bryce, M. (2009). Manga as an Educational Medium. *The International Journal of the Humanities*, 7(10), 47-55. <http://dx.doi.org/10.18848/1447-9508/cgp/v07i10/42761>
71. Närhi, Vesa, and Tapani Korhonen. 2006. "Toiminnanohjauksen Kehitys [Development of Executive Functions]." In *Mieli ja aivot, Kognitiivisen neurotieteen oppikirja [Mind and Brain, The Textbook of Cognitive Neuroscience]*, edited by Heikki Hämäläinen, Matti Laine, Olli Aaltonen, and Antti Revonsuo, 261–267. University of Turku: Centre for Cognitive Neuroscience.

72. O’Keefe, P. B. (2007). *People With Disabilities in India: From Commitments to Outcomes*. Washington, DC: World Bank Group. Available online at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/577801468259486686/people-with-disabilities-in-indiafrom-commitments-to-outcomes> (accessed February 1, 2021).
73. Ozdamli, F., Kocakoyun, S., Sahin, T. and Akdag, S. (2016). Statistical Reasoning of Impact of Infographics on Education, *Procedia Computer Science*, Volume 102, 2016, pp. 370-377, <https://doi.org/10.1016/j.procs.2016.09.414>
74. Paas, F; Renkl, A and Sweller, J “Cognitive load theory and instructional design: recent developments.” *Educational Psychologist*, 38(1), pp:1-4, 2003.
75. Peeters, T. (1997) *Autism: From theoretical understanding to educational intervention*. San Diego, CA: Singular.
76. Pettinger, K. J., Kelly, B., Sheldon, T. A., Mon-Williams, M., Wright, J., & Hill, L. J. B. (2019). Starting school: Educational development as a function of age of entry and prematurity. *Archives of Disease in Childhood*, 105, 160–165. <https://doi.org/10.1136/archdischild-2019-317124>
77. Preston, D., & Carter, M. (2009). A review of the efficacy of the picture exchange communication system intervention. *Journal of Autism and Developmental Disorders*, 39(10), 1471-1486.
78. Queensland Department of Education; 2023 [cited 2024 May 01]. Available from: <https://alt.qed.qed.qld.gov.au/working-with-us/induction/queensland-state-schools/support-staff/specialist-support-officers/occupational-therapists>.
79. Quill, K. (1998). Environmental supports to enhance social-communication. *Seminars in Speech and Language*, 19, 407–422. doi: 10.1055/s-2008-1064057
80. Quill, K. A. (1997). Instructional considerations for young children with autism: The rationale for visually cued instruction. *Journal of Autism and Developmental Disorders*, 27, 697–714. doi: 10.1023/A:1025806900162
81. Quill, K.A. (1995). *Teaching children with autism: Strategies to enhance communication and socialization*. Albany, NY: Delmar.
82. Richard, D. A., More, W., & Joy, S. P. (2015). Recognizing emotions: Testing an intervention for children with autism spectrum disorders. *Art Therapy*, 32, 13–19. <https://doi.org/10.1080/07421656.2014.994163>
83. Riswandi, D. (2016). Use of YouTube-Based Videos to Improve Students’ Speaking Skill. *Proceeding of the International Conference on Teacher Training and Education*, [online] 2(1), pp.298–306. Available at: <https://jurnal.uns.ac.id/ictte/article/view/8150>.
84. Roberts, D. (2021). I see, therefore I learn: pedagogic innovation in the cognitive-visual era. *Journal of Business and Social Science Review* 2, 5, 16-26.
85. Rune Pettersson ‘Using Images’, Institute for Infology ISBN 978-91-85334-44-8 © Rune Pettersson Sweden, Tullinge 2024, pp 1-378
86. Schepis, M. M., Reid, D. H., Behrmann, M. M., & Sutton, K. A. (1998). Increasing communicative interactions of young children with autism using a voice out put communication aid and naturalistic teaching. *Journal of Applied Behavior Analysis*, 31(4), 561-578.
87. Schlosser, R. W., & Wendt, O. (2008). Effects of augmentative and alternative communication intervention on speech production in children with autism: A systematic review. *American Journal of Speech-Language Pathology*, 17(3), 212-230.
88. Schwab, S. (2020). Inclusive and special education in Europe. In U. Sharma, & S. J. Salend (Eds.), *The oxford encyclopedia of inclusive and special education* (pp. 807–819). Oxford University Press.

89. Schwarz, G. E. (2002). Graphic books for diverse needs: Engaging reluctant and curious readers. *ALAN Review*, 3(1), 54-57. <http://dx.doi.org/10.21061/alan.v30i1.a.10>
90. Schweizer, C., Knorth, E. J., van Yperen, T. A., & Spreen, M. (2019). Consensus-based typical elements of art therapy with children with autism spectrum disorders. *International Journal of Art Therapy*, 24, 181–191. <https://doi.org/10.1080/17454832.2019.1632364>
91. Seelow, D. (2010). The graphic novel as advanced literacy tool. *Journal of Media Literacy Education*, 2(1), 57-64.
92. Shipley-Benamou, R., Lutzker, J. R., & Taubman, M. (2002). Teaching daily living skills to children with autism through instructional video modeling. *Journal of Positive Behavior Interventions*, 4, 165–175. doi: 10.1177/10983007020040030501
93. Simamora, R. . (2009). *Buku Ajar Kependidikan dalam Keperawatan*. Penerbit Buku Kedokteran EGC.
94. Supardi S, Sampurno OD, Notosiswoyo M. The influence of lecture and leaflet media methods on self-medication behavior in accordance with the rules. *Health research bulletin*. 2002; 30 (3): 128-38.
95. Szulanski, G. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strateg. Manag. J.* 1996, 17, 27–43. [CrossRef]
96. Tew, J., Ramon, S., Slade, M., Bird, V., Melton, J. and Le Boutillier, C. (2012) ‘Social factors and recovery from mental health difficulties: A review of the evidence’, *British Journal of Social Work*, 42(3), pp. 443–60.
97. Thomas, R., Appelhans, S., Kozick, R., Matlack, C., Asare, P., Thompson, M., Thomas, S. J., Nickel, R., & Cheville, A. (2023). Addressing the Barriers of Knowledge Transfer: Using ePortfolios to Enhance Student Reflection in Technical Courses. In 2023 IEEE Frontiers in Education Conference (FIE) (pp. 1–9). IEEE. 2023 IEEE Frontiers in Education Conference (FIE). <https://doi.org/10.1109/fie58773.2023.10343477>
98. Toh, T. L., Cheng, L. P., Jiang, H. & Lim, K. M. (2016). Use of comics and storytelling in teaching mathematics. In P. C. Toh & B. Kaur (Eds.), *Developing 21st century competencies in the Mathematics classroom* (pp. 241-259). Singapore: World Scientific.
99. Wang, H. L. (2009). Should all students with special educational needs (SEN) be included in mainstream education provision? A critical analysis. *International Education Studies*, 2, 154–161. <https://doi.org/10.5539/ies.v2n4p154>
100. Williams, D. L., Goldstein, G., & Minshew, N. J. (2006). Neuropsychologic functioning in children with autism: Further evidence for disordered complex information-processing. *Child Neuropsychology*, 12, 279–298. doi: 10.1080/09297040600681190
101. Yusuf, H. (2016). Effectiveness of Using Creative Mental Images in Teaching Reading Comprehension in Primary Schools in Nigeria. From Science and Education Publishing.
102. Zelazo, Philip D., and Ulrich Müller. 2002. “Executive Function in Typical and Atypical Development.” In *Childhood Cognitive Development*. Handbooks of Developmental Psychology, edited by Usha Coswami, 445–469. Blackwell Publishing
103. Zerín, S., & Khan, S. A. (2013). Poster- A visual stimulus for active learning. *GSTF International Journal of Law and Social Sciences*, 3(1), 129-134.
104. Ziol-Guest, K. M., & McKenna, C. C. (2014). Early childhood housing instability and school readiness. *Child Development*, 85(1), 103–113. <https://doi.org/10.1111/cdev.12105>
105. Kothari C.R. (2019). *Research Methodology. Methods and Techniques*. New Age International Limited.

106. Mikecz, R. (2012). Interviewing elites: Addressing methodological issues. *Qualitative Inquiry*, 18(6), 482–493. <https://doi.org/10.1177/1077800412442818>

APPENDIX

(Questionnaire Items)

Tools for Knowledge Transfer

This section of the questionnaire will query about the frequency with which you use various methods in your Occupational Therapy sessions to transfer knowledge to SEN children.

	1 = Never 2 = Rarely 3 = Sometimes	4 = Often 5 = Always	1	2	3	4	5
IMAGE-BASED KNOWLEDGE TRANSFER TOOLS							
1.	Picture		☐	☐	☐	☐	☐
2.	Drawing		☐	☐	☐	☐	☐
3.	Painting		☐	☐	☐	☐	☐
4.	Graph		☐	☐	☐	☐	☐
5.	Photo		☐	☐	☐	☐	☐
6.	Infographic		☐	☐	☐	☐	☐
7.	Comics and Cartoon		☐	☐	☐	☐	☐
8.	Graphic Novel		☐	☐	☐	☐	☐
9.	Leaflet		☐	☐	☐	☐	☐
10.	Traditional Printed Book		☐	☐	☐	☐	☐
11.	Manual		☐	☐	☐	☐	☐
12.	Guideline		☐	☐	☐	☐	☐
13.	Poster		☐	☐	☐	☐	☐
14.	Presentation		☐	☐	☐	☐	☐
15.	Video		☐	☐	☐	☐	☐
16.	Tutorial		☐	☐	☐	☐	☐
17.	Magazine		☐	☐	☐	☐	☐

Effectiveness of Knowledge Transfer Tools

This section of the questionnaire will query about the effectiveness of the knowledge transfer tools used in your Occupational Therapy sessions to transfer knowledge to SEN children.

	1 = Not effective 2 = Slightly effective 3 = Moderately effective	4 = Effective 5 = Very effective	1	2	3	4	5
IMAGE-BASED KNOWLEDGE TRANSFER TOOLS							
1.	Picture		☐	☐	☐	☐	☐
2.	Drawing		☐	☐	☐	☐	☐
3.	Painting		☐	☐	☐	☐	☐
4.	Graph		☐	☐	☐	☐	☐
5.	Photo		☐	☐	☐	☐	☐
6.	Infographic		☐	☐	☐	☐	☐
7.	Comics and Cartoon		☐	☐	☐	☐	☐
8.	Graphic Novel		☐	☐	☐	☐	☐
9.	Leaflet		☐	☐	☐	☐	☐
10.	Traditional Printed Book		☐	☐	☐	☐	☐
11.	Manual		☐	☐	☐	☐	☐
12.	Guideline		☐	☐	☐	☐	☐
13.	Poster		☐	☐	☐	☐	☐
14.	Presentation		☐	☐	☐	☐	☐
15.	Video		☐	☐	☐	☐	☐
16.	Tutorial		☐	☐	☐	☐	☐
17.	Magazine		☐	☐	☐	☐	☐