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Exploring Teaching Strategies for Food Preparation Skills to Students with Autism

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Abstract

This study explored teaching strategies implemented by teachers to teach food preparation skills to students with autism. Using a qualitative research methods approach, an exploratory case study was conducted to explore the teaching strategies implemented by two special education teachers at an intervention center in Bangi, Selangor, Malaysia. Data were collected using a triangulation technique that involved interviews, observations, and document analysis. The data was analysed through thematic analysis. The findings revealed five main themes: (i) minimal verbal instruction; (ii) visual support; (iii) behavioural strategies; (iv) academic strategies; and (v) technology-based strategies. The results of the study suggest that effective teaching strategies in teaching and learning sessions enhance the acquisition of food preparation skills. These insights carry implications for educators and all stakeholders, emphasising the importance of incorporating effective teaching strategies proven by research into their teaching practice.

Keywords: Autism Spectrum Disorder, Special Education Teacher, Teaching Strategies, Food Preparation Skills, Independent Living Skills

Introduction

In education, teachers play an important role in teaching sessions that employ effective teaching strategies to ensure their students receive proper education, and autism students are no exception. Autism, or autism spectrum disorder, is complex and experienced throughout life, as well as a condition of developmental and neurological disorders as listed in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) (Dayana & Aliza, 2020). According to the American Psychiatric Association (2013), autism is defined based on two main characteristics: (i) a deficit in the development of social interaction and communication skills; and (ii) repetitive behaviour and limited interest. This developmental delay affects and challenges students with autism to live their daily lives independently (Aljehany & Bennett, 2019; Kung-Teck et al., 2017). Grab & Belfiore (2016) stated that

students with autism developmental of daily living skills were delayed than their peers. Therefore, this causes students with autism to have a high dependence on others to live independently as possible (Anderson et al., 2018). Therefore, through teaching these skills in schools, it can provide opportunities for students with autism to apply the skills they learn in their daily lives and subsequently as preparation for independence when they transition to adulthood (Ford et al., 2020).

One of the skills that students with autism need to master is food preparation or cooking skills (Kim & Kang, 2020). Students with autism need to build their abilities in food preparation skills and choose nutritious foods in their daily diet, as this skill is one of the critical aspects of being as independent as possible (Kanfush & Jaffe, 2019; Kellems et al., 2016). Mastering food preparation skills among students with autism can help improve their ability to lead independent lives (Spencer, 2017). However, autism students face challenges in mastering these skills because they find it difficult to follow practical learning and have multi-step instructions (Cruz-Torres et al., 2020). They also find it difficult to understand verbal instructions (Kellems et al., 2016; Leach, 2018) and need prompting and repetition in learning sessions to master a skill taught to them (Fantasia et al., 2020). Therefore, students with autism need support in learning sessions. In relation to that, teacher teaching strategies are very important to help students with autism master these skills and actively engage in learning (Omar et al., 2020).

Literature Review

Autism and Learning Challenges

According to the Centers for Disease Control (2020), statistics show that autism is four times more often identified among boys than girls. In the United States, 8-year-old children with autism were diagnosed in 1 in 54 cases in 2016, compared to 1 in 68 cases in 2014. Autism spectrum disorder (ASD) is a neurological and developmental disorder that affects how people interact with others, communicate, learn, and behave (American Psychiatric Association, 2013). According to the American Psychiatric Association (2013), as many as 85% of the population of individuals suffering from autism have disabilities in cognitive development, and they face difficulties focusing in learning sessions. Accordingly, it was found that these individuals also show low achievement in daily life skills compared to their peers who do not suffer from autism but have an equivalent level of intelligence (IQ) (Wertalik & Kubina, 2018). Accordingly, the cognitive abilities and abilities of each student are diverse, which will cause the level of mastery of skills among students to also vary and will affect the result of learning despite using the same teaching and learning approach (Duncan & Bishop, 2015; Ford et al., 2021).

In fact, students with autism affect the way they receive, choose, and process information, which causes them to experience difficulties in learning (Fantasia et al., 2020). They were also found to be poor in the skills of imitating, understanding verbal instruction and following multi-step tasks (Aljehany & Bennett, 2018; Leach, 2018). For skills that are practical, such as food preparation skills, students with autism experience difficulty learning these skills because they have many multi-step and sequential work steps (Cruz-Torres et al., 2020; Monaco & Wolfe, 2018). In addition, students with autism also have short-term memory, making it difficult for them to remember learning sessions and maintain the skills they learn (Fantasia et al., 2020; Gardner & Wolfe, 2019). This causes them to need prompting and repetition of learning sessions, which takes a long time for them to master a skill (Domire &

Wolfe, 2014; Fantasia et al., 2020).

Since students with autism are unique and experience challenges in learning, the learning process and approach methods are different (Ford et al., 2020; Hariguna et al., 2017). Therefore, students with autism need teaching strategies that suit their learning style and are supported in their learning process for them to understand instructions and follow multi-step tasks independently (Kellems et al., 2018; Omar et al., 2020). Therefore, this study was conducted to explore teaching strategies for food preparation skills for students with autism at a private intervention center in Bangi, Selangor, Malaysia.

Methodology

Research Design

An exploratory study conducted using a qualitative approach and carried out with a single case study design. According to Creswell (2009); Yin (2003), the design of case studies is suitable for the study of a unit, program, activity, process, individual, or group that allows studying the information as a whole and in depth by using various means to obtain data. Therefore, in this study, a single case study is used because researchers want to explore teachers teaching strategies to train students with autism food preparation skills at an intervention center.

Participants and Environment

Creswell (2009) states that purposive sampling techniques are the best way to help researchers understand problems and get answers to study questions. The participants were two teachers who taught skills related to food preparation that met the purpose of the study and met the criteria set: (i) teachers who have at least a year's experience teaching students with autism; and (ii) teachers who teach food preparation skills. The location of the study was an intervention center in Bangi, Selangor. The selection of this location is due to logistical factors, and the intervention center offers food preparation skills training and intervention services to students with special educational needs, including autism students.

Data Collection

There were three data collection methods used in this study, (i) interviews, (ii) observations and (iii) document analysis which are appropriate to the purpose of the study (Creswell, 2009; Merriam, 2009). Interviews with participants of this study were to obtain specific information on food preparation skills teaching strategies conducted at an intervention centre that included teaching strategies used by teachers and teachers' and students' acceptance of video-based teaching methods to train students with autism food preparation skills. Interviews conducted individually use semi-structural questions to obtain information from study participants including unobservable information (Creswell, 2009; Merriam, 2009). The interview data is used as the main data that will be supported by data from the observation and analysis of the contents of the document. Non-participating observations were carried out to focus on the behaviours to be studied during the teaching and learning sessions. Observations are not used to understand the processes, situations and problems faced (Creswell, 2009; Merriam, 2009). Field annotations or notes will be used as supporting data.
Documents are a ready-made data source that is easily accessible and indispensable for a good data collection to support the data from interviews and observations (Merriam, 2009). In this study, the documents analysed included several relevant documents (i) the individual education plan (IEP) document of the students; (ii) the Student Achievement Monitoring and

Assessment Form related to the implementation of food preparation skills. The purpose of the analysis of such documents is to obtain information officially or in writing about the teaching strategies implemented at the center. The analysis of the documents will provide accurate and complete information on the material that is indispensable in this study. The document content analysis report will also be used as supporting data to further strengthen the data from the interviews with the study participants.

Data Analysis

The results of the study discussed are analysed thematically based on the themes that have been identified to achieve the objective of the study.

Reliability and Validity

According to Merriam (2009), data triangulation methods and member checking are strategies to increase validity and reliability in data analysis. In this study, the triangulation of this interview data with observational data and document analysis strengthened the reliability of the data and the themes because the triangulation method between data was made to obtain qualitative data with a high degree of trust. Both observational data and the analysis of this document are used as supporting data. Consent and review of data from participants (member check) involves examining data and interpreting it to be referred to study participants to enable them to verify the accuracy of the study information and reports.

Findings

The findings presented are data obtained from the case studies of two female teachers as participants and presented according to each of them. The analyses of the findings did not compare between Teacher 1 and Teacher 2, but combined the two data analyses to enrich the understanding for the purpose of understanding the study phenomenon more deeply.

Table 1
Research participants' demographic profile

Participants	Experience Teaching children with autism	Experience teaching autism students' daily life skills training
T1	5 years	2 years
T2	2 years	5 months

Teaching strategies of food preparations skills to student with autism

As a result of the findings, there were five themes identified related to the teacher's teaching strategy in food preparation training for autism students: (i) minimal verbal instruction; (ii) visual support; (iii) behavioural strategies; (iv) academic strategies; and (v) technology-based strategies. Table 2 shows the themes generated from data analysis.

Table 2
Research findings on teachers' teaching strategies

Theme	Subtheme	Data
Minimal verbal instruction	Clear and simple instructions	*"the instructions I used must be simple" (T1)* *"I give clear instructions to the students" (T2)*
Visual Support	Visual method	*"The approach used is the use of visual materials" (T1)* *"'Using visual images in the form of photographs and picture cues to help students understand instructions"(T2)*
Behavioural strategies	Rewards	*" I also used the concept of reward .. We know he likes biscuits. So his reward is biscuits.." (T1)* *"We'll praise them..and say good job.."(T1)* *"when student has completed the task, the teacher will reward him based on the favorite of each student.. for example oreo, playground, and exercise on 'treadmill.' (T2)*
	Prompting	*"I'll prompt to help him do it first ..that's how it is.. physical prompt"(T1)*
	Modelling	*"I'll do it first then the students follows" (T1)*
Academic strategies	Task analysis	*"I'm going to use the task analysis method. I broke down the task into smaller units... For example, for that objective is to make toast.. for the process of making the toast.. I will prepare or list down.... step by step, the ingredients to make the toast" (T1)*
Technology-based strategies	Technology approach	*"This video method... I've so far never used it... (T1)* *"Huh, I also used the video method to teach students daily life skills. For example in preparing a simple cooking menu of egg salute bread. Most importantly, the step of preparation should be clearly indicated.. I use the video method during online learning. I use a mobile phone device and share videos with their parents at home. .. I haven't used the video method in this center because of the limited time to prepare and teach them (T2)*

Theme 1: Minimal Verbal Instruction

The findings show that both teachers used minimal verbal instruction with clear and simple instruction when teaching their students with autism food preparation skills. According to Teachers 1 and 2, both of whom addressed the issue of teaching students with autism, teachers need to give clear and simple instructions and minimal verbal instruction.

Theme 2: Visual Support

A visual method was used in their teaching materials in the form of photographs and picture cues as learning support. From their responses, this method helps students better understand instructions once verbal instruction is given.

Theme 3: Behavioural Strategies

The third theme is behavioural strategies, with three subthemes identified: (i) rewards; (ii) prompting; and (iii) modelling. The findings of the study show that both applied the concept of reward to enable students to follow instructions and maintain positive behaviour by using tangible rewards such as food or a student's favourite activity as a reward. Teacher 1 also shows that she not only uses tangible items but also uses praise as motivation. The subtheme modelling, which was only obtained from Teacher 1's response, in which she made a live demonstration to her students, then let them imitate the behaviour to perform the task of cooking. The subtheme prompting, which was also only obtained from Teacher 1's response. The prompting, such as a physical prompt, was given to the students with autism, then faded to make them perform the task independently.Teacher 2 did not mention about modelling and prompting methods.

Theme 4: Academic Strategies

The fourth theme was academic strategies; subtheme task analysis was only obtained from Teacher 1's response. In which she uses the task analysis method to break down the skills of preparing toast into smaller work steps, including the preparation of toast ingredients. Teacher 2 did not mention this method.

Theme 5: Technology-based Strategies

This study also found that both teachers never used the video-based teaching methods approach at the intervention center to teach food preparation skills to their students. But only Teacher 2 used the video method for online learning sessions during the closure of the operations center during the COVID-19 pandemic.

Discussion

Teaching Strategies of Food Preparation Skills to Students with Autism

Based on our findings, there were six themes identified related to teaching strategies in food preparation skills for autism students: (i) minimal verbal instruction; (ii) visual support; (iii) behavioural strategies; (iv) academic strategies; and (v) technology-based strategies.

The use of clear instructions and a combination of visual support can help autism students understand the instructions and tasks they need to complete due to a deficit in processing verbal instructions (Kellems et al., 2016; Leach, 2018). According to Fantasia and colleagues (2020), most students with autism are dependent on people around them to carry out daily tasks independently. They also require repeated instructions, reminders, or promptings to perform their daily tasks. In this regard, through the implementation of an evidence-based teaching approach by teachers, they can encourage students to actively engage in teaching and learning activities, thus helping them to master critical skills such as food preparation.

Students with autism are also identified as having lack of motivation and interest in a learning session (Macoun et al., 2021). In relation to that, when teaching students with autism, teachers need to identify their preferred rewards, such as favourite toys, activities, or treats. Reinforcement strategies can include verbal praise, physical touch, or access to preferred activities. Teaching strategies that involve training a behaviour by providing reinforcement could be used to increase social behaviours such as communication and social interaction (Schuetze et al., 2017). Through a reward or reinforcement approach, they can stimulate their interest and motivation to complete learning activities as well as maintain active student

involvement in learning activities (Kelsey et al., 2021). According to Anderson (2020), students with special educational needs need various forms of encouragement or prompting to master a skill. However, the reduction of assistance should be done by teachers in stages if students are already adept at doing independent tasks to avoid reliance on teacher assistance. Through this teaching approach, students with autism are given the opportunity to complete activities independently to help them master the skills (Kodak et al., 2018).

Live modelling, or live demonstration in classes, is another method that has been successfully used in teaching behaviour chains to children with autism that are effective in teaching various skills to children with autism (Ergenekon et al., 2014). Modelling is an instructional strategy that involves a teacher as a model who demonstrates to students how to do a task. Learning through observation and imitation of others promotes or facilitates the acquisition of new skills. This teaching strategies approach is based on Bandura's behaviourism theory, which blends behaviourism with constructivism by showing that learning can occur through observation (Bandura, 1977). However, for students with autism who need repeated reminders and lessons, this method may be less suitable and less effective than practical teaching and learning sessions such as food preparation skills. According to Ali and Zawawi (2018), it takes a long time, and the repetition of a task cannot be completed in a short period of time. In this regard, teachers need to identify the teaching methods that can be repeated so that a short period of teaching sessions can be used properly.

The tasks associated with learning daily living skills, such as food preparation, are complex and can involve many steps from beginning to end. However, students with autism have difficulty following multiple and sequential steps (Cruz-Torres et al., 2020). The use of the task analysis approach can help students with autism master a skill (Pratt & Steward, 2020; Sam & AFIRM Team, 2015). A task analysis is a tool that is commonly used to teach important life skills. Using this approach, a task can be broken down into smaller and more manageable steps. The teacher shows the task while also breaking it down into small steps. This helps students see how to complete the task. It is suitable for students with special needs, especially those who have low functional cognitive development.

Video-based teaching methods are already widely applied in education in line with the technological advances delivered by mobile devices to improve students' understanding (Kamlin & Keong, 2020). According to Aljehany and Bennett (2019), video-based teaching helps students with autism master daily life skills such as laundry, cooking, kitchen packing, and vocational skills. However, the findings show that the teacher did not use technology-based teaching such as video to teach these important skills to their students. Previous studies mention that the use of technology-based teaching materials among special education teachers was found to be limited (Anderson & Putman, 2020; Kung-Teck et al., 2019). In addition, they are less skilled in the use of this alternative teaching approach (Aqilah et al., 2019; Rajasree et al., 2020). This affects the use of video and technology-based teaching methods in teaching and learning among teachers in Malaysia (Sidek & Hashim, 2019).

Overall, the findings show that the diverse approach of teaching strategies were implemented to teach food preparation skills among students with autism. According to Hsiao and Petersen (2019), the Individuals with Disabilities Education Improvement Act (IDEIA) 2004, recommend that teachers are advised to implement teaching strategies that are proven to be effective in their teaching and learning. The teachers also suggested to apply and implement the

technology-based teaching and more interactive teaching materials, such as video, in teaching and learning sessions (Azim & Hanafi, 2021; Norshila & Norshidah, 2021).

Conclusion

The teachers play an important role in stimulating students with autism, implementing evidence-based teaching strategies in learning activities, and helping them master the skills taught. So that they can be as independent as possible during their transition to adulthood. In conclusion, this study addressed teaching strategies that were implemented by teachers in teaching and learning food preparation skills among students with autism. The themes driven by the analysis were (i) minimal verbal instruction; (ii) visual support; (iii) behavioural strategies; (iv) academic strategies; and (v) technology-based strategies related to teaching strategies in food preparation skills among students with autism. The results of the study suggest that effective teaching strategies in teaching and learning sessions will promote the acquisition of food preparation skills. These insights carry implications for educators and all stakeholders, emphasizing the importance of incorporating effective teaching strategies proven by research into their teaching practice.

Limitations and Recommendations

There are several limitations to this study. This study was limited to a small sample of studies and included only one intervention center. Therefore, the results of the study cannot be generalized to all special education teachers in Malaysia. Therefore, future research recommendations for intervention centers or special education schools involve teaching and learning food preparation skills for students with autism. Due to the COVID-19 pandemic, observation of teaching and learning sessions cannot be conducted. In relation to that, we believe that it was affected by the findings of this study. Therefore, future studies are recommended to replicate and repeat this study to get a better understanding of the findings. Teachers are advised to be more open-minded and implement alternative teaching methods, such as video-based teaching methods, to further enhance the mastery of food preparation skills among autism students. This is because video-based teaching helps many students with special needs and autism master a variety of skills to be independent. The findings of this study will serve as a guide for further study of video-based teaching methods to teach food preparation skills to students with autism.

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