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BASIC CONCEPT FOR USING INTERACTIVE VISUAL-BASED LEARNING TO STUDENTS WITH AUTISM

Siti Sopiah[1)] ; Edi Purnama[2)]
Universitas Nasional Pasim
ambusitisopiah28@gmail.com

ABSTRACT

The aim of this paper is to know and apply the using interactive visual based learning to students with autism in the area of inclusive elementary school. Using interactive visual based learning is important at the area of inclusive school and university. This paper uses multiple theories related with characteristics of Autism. This paper is a library based descriptive study. The sourced has been taken from website, any source from journals and e books. The sources are read, selected, analyzed and concluded. It concludes that the This study highlights key principles such as visual learning strengths, structured routines, multimodal engagement, and minimized language load. The goal is to support the development of practical and inclusive English learning media tailored for students with autism in inclusive classrooms.

Keywords: Interactive visual, inclusive, autism, teaching.

INTRODUCTION

Inclusive education is an approach that accommodates the diversity of learners, including children with Autism Spectrum Disorder (ASD). Autism is a neurodevelopmental condition that affects communication skills, social interaction, as well as repetitive and restricted behaviors. Data from the Ministry of Health of the Republic of Indonesia (2024) estimates that there are approximately 2.4 million children with autism in Indonesia, and the number continues to grow every year.

In the context of primary education, the presence of autistic students in inclusive schools poses specific challenges, particularly in English language learning. Autistic students tend to have a visual learning style and require clear instructional structure, yet they often struggle to understand verbal or abstract symbolic instructions. English learning media available in primary schools are generally conventional and do not fully consider the special needs of autistic students.

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A study by Goh and Bambara (2013) demonstrated that multimedia use can improve language abilities in children with autism. Another study by Tambunan and Matulessy (2015) found that flash card media positively impacted communication skills in autistic children. Furthermore, research by Andini et al. (2023) showed that using interactive games such as Wordwall can enhance student comprehension without continuous verbal explanations from teachers. These findings support the argument that interactive visual media can significantly improve concentration and understanding among students with autism.

However, to date, English learning media specifically designed for autistic students remain very limited, particularly in inclusive primary school settings. Suharsih (2022) revealed that although there are various English teaching strategies for students with special needs, few studies address their implementation in inclusive or special education classrooms. A report by the World Bank (2023) also stated that the availability of assistive technology for students with disabilities in inclusive schools is still very limited, with nearly 70% of Special Needs Education (SEN) teachers reporting a lack of assistive technology despite having students with disabilities at their schools.

Therefore, it is necessary to develop interactive visual-based English learning media that match the characteristics of autistic students. This media is expected not only to enhance student comprehension and motivation but also to serve as an effective teaching aid for teachers in inclusive classrooms. This research will adopt a simplified version of the Borg & Gall (1983) development model to produce a product that is valid, practical, and effective for use in English language learning.

METHODOLOGY

This paper is, indeed, a library based research and is descriptive in nature, the sources for this paper has been retrieved from online sources: Journals, E Books and any sources which is related to the topics furthermore that a clear and description of these sources and example are written here.

KEY CONCEPT AND PRINCIPLES

Visual Strengths as a Learning Foundation

Many students with autism are visual learners, meaning they understand and remember information better when it's presented in pictures, symbols, charts, or animations rather than spoken words alone. Interactive visual-based learning provides concrete representations of abstract English vocabulary and expressions. Studies by Temple Grandin, an autistic scholar, and others such as Kunda & Goel (2011). Many individuals with autism show enhanced visual processing and think in pictures ("visual thinkers"). The concept of "Visual Strengths as a Learning Foundation" for students with autism is grounded in research that shows many individuals on the autism spectrum are visual learners — they tend to understand and retain

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information better when it is presented visually rather than verbally. This concept is supported by several key theories and findings in educational psychology and autism research. Temple Grandin's Insight (1995, 2006). Temple Grandin, a prominent autism advocate and researcher, has often said: "I think in pictures. Words are like a second language to me". She emphasized that many autistic individuals think in visual images first, not in words, which supports the use of visual aids in teaching.

Structure and Predictability

Visual media can offer clear, consistent, and predictable formats that help reduce anxiety and cognitive overload. Interactive elements allow step-by-step navigation, which supports understanding and autonomy in learning. Structure and predictability are fundamental principles in teaching students with autism spectrum disorder (ASD). These principles help create a safe, understandable, and manageable learning environment, which reduces anxiety, increases focus, and promotes independence. Why Structure and Predictability Matter. Cognitive Load Theory (Sweller,1988) states that predictable routines reduce unnecessary cognitive load, allowing students to focus cognitive resources on the task instead of figuring out the structure or next steps.

Multimodal and Interactive Engagement

Combining text, audio, images, animation, and feedback helps students stay engaged and supports multisensory learning. Interactivity (e.g., drag-and-drop, clickable images, matching games) promotes active participation, not passive learning. Theoretical Foundations

Multisensory Learning Theory (Fleming's VARK, 1987)
Students learn best when instruction targets Visual, Auditory, Reading/Writing, and Kinesthetic modalities. For autistic learners, combining these supports diverse sensory processing styles.

Constructivist Learning Theory (Piaget, Vygotsky)
Learners construct meaning through active engagement. Interaction—both with materials and with others—enhances understanding and promotes social learning, which is often an area of need in AS

Examples of Multimodal and Interactive Strategies

Mode	Example Activities
Visual	Animated stories, charts, digital illustrations

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Auditory	Songs, sound cues, narrated instructions
Kinesthetic	Role-play, movement games, touch-based learning (e.g., matching cards)
Tactile	Puzzle pieces, manipulatives, textured learning tools
Digital Interactive Media	Genially-based modules, quizzes, drag-and-drop activities, clickable learning paths

Repetition and Reinforcement

Interactive visual tools can offer controlled repetition, allowing students to review material as many times as needed. Reinforcement through instant feedback (e.g., "Correct!" or visual rewards) strengthens memory and motivation. Repetition and reinforcement are essential instructional strategies in teaching children with Autism Spectrum Disorder (ASD). These approaches are not just beneficial but often necessary, as learners with autism typically require multiple, consistent exposures to new information and positive reinforcement to internalize concepts, build skills, and generalize knowledge to different contexts.

Repetition and Reinforcement Matter is important because of some reasons. Firstly, it supports memory and learning retention. Children with autism may need more frequent and structured repetition to store information in long-term memory. Repeated practice helps solidify understanding and builds automaticity, especially in language, routines, and social behaviors. Secondly, it promotes Skill Mastery and Generalization. Repetition across various settings, materials, and formats supports generalization, the ability to apply learned skills in new environments. For example, recognizing a word in a flashcard, a storybook, and a classroom Familiarity through repetition reduces the fear of failure, builds confidence, and creates a sense of predictability, which is crucial for learners who struggle with change and uncertainty.

Strategies for Effective Repetition and Reinforcement

Strategy	Description
Spaced Repetition	Practice over time, not all at once, to boost retention
Errorless Learning	Repeated practice with immediate support to prevent mistakes

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Visual and Auditory Cues	Use consistent prompts to reinforce concepts
Token systems and rewards	Tangible or social reinforcement for effort and success
Multiple formats	Repeating the same concept through songs, images, games, stories
Daily routines	Embedding learning targets into regular classroom rituals

Minimized Language Load

Complex language can be a barrier for autistic learners. Visual-based platforms simplify learning by: Using symbols and images to clarify meaning. Reducing reliance on abstract verbal explanations. Allowing nonverbal responses (e.g., clicking or dragging) rather than requiring spoken answers. Minimized language load refers to the instructional practice of reducing the complexity, quantity, and ambiguity of spoken or written language to make communication clearer and more accessible—especially for learners with Autism Spectrum Disorder (ASD), who often experience challenges in language comprehension and processing.

Minimizing Language Load Is Important for Students with Autism for some reasons

1. Supports language processing difficulties. Many autistic students have difficulty understanding figurative language, abstract vocabulary, or lengthy instructions. By minimizing language load, teachers reduce cognitive burden and increase the chance of comprehension.
2. Enhances focus on key concepts simplified, direct language allows learners to focus on essential ideas rather than getting overwhelmed by extraneous words or confusing grammar.
3. Reduces anxiety and frustration. When instructions are clear and concise, students are less likely to feel confused or anxious, which creates a more emotionally supportive learning environment.
4. Promotes independence simple, repeatable phrases help students internalize routines and instructions, allowing them to act with less reliance on adult prompting.

Theoretical Foundations

1. Cognitive Load Theory (Sweller, 1988)
    - Learners have a limited capacity for processing new information.

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- Reducing language complexity lowers extraneous cognitive load, making it easier for students with ASD to absorb content.

2. Theory of Mind Deficits (Baron-Cohen et al., 1985)
   - Many autistic individuals struggle with interpreting implied meaning, inference, or figurative speech.
   - Direct, literal language helps bridge this gap in understanding.
3. Universal Design for Learning (UDL)
   - Encourages providing multiple means of representation, including simplified text and visuals, to support diverse learners.

Strategies to Minimize Language Load

Strategy	Example
Use short, clear sentences	"Open your book. Page 5." instead of "Let's all turn to page five in your textbooks now."
Avoid idioms and figurative speech	Say "Wait" instead of "Hold your horses."
Use consistent wording	Use the same words for instructions daily (e.g., "Line up," "Sit down")
Pair language with visuals	Add icons or images to instructions
Use first-then language	"First write, then play" to clarify sequence
Limit instructions to one step at a time	Especially important for tasks with multiple actions

Facilitating Independent Learning

Digital interactive media can be accessed independently, allowing autistic students to learn at their own pace. With platforms like Genially, content can be customized and used repeatedly without teacher intervention, increasing accessibility and confidence.

Contextual and Functional Vocabulary

Visual-based media help contextualize English vocabulary (e.g., daily expressions, objects, actions) through real-life visuals or scenarios. Students learn words in functional contexts (e.g., "brush your teeth," "go to school"), improving generalization to daily communication.

Benefits of Interactive Visual-Based English Learning for Students with Autism

Benefit	Explanation
Enhances comprehension	Visuals help clarify word meaning and context.
Increases engagement	Interactivity sustains attention and

	participation.
Supports varied learning styles	Combines visual, auditory, and kinesthetic input.
Promotes independent learning	Learners can explore and repeat content on their own.
Reduces language anxiety	Minimizes reliance on spoken language and avoids pressure to speak.
Offers immediate feedback	Corrective or affirming feedback helps reinforce learning in real-time.

Example Tools and Media Features

- Digital Flashcards with pictures and sounds
- Clickable vocabulary games (e.g., match the picture to the word)
- Interactive stories with voice narration and illustrations
- Drag-and-drop spelling or word matching activities
- Genially-based modules with animations and quizzes tailored for ASD learner

CONCLUSION

Interactive visual-based learning is a helpful and effective way to teach English to students with autism. Since many autistic students are strong visual learners, using pictures, videos, symbols, and interactive tools makes it easier for them to understand and remember new words and ideas.

This approach also gives clear structure and routine, which helps reduce stress and confusion. By combining different ways of learning, like seeing, hearing, touching, and doing, students stay more engaged and enjoy learning. Repeating the same content with helpful feedback also helps students build confidence and remember better.

Using simple language, visual instructions, and digital tools like Genially allows students to learn independently at their own pace. It also helps them learn useful vocabulary for daily life, making communication easier.

In short, interactive visual-based learning supports the strengths of students with autism and creates a more inclusive and enjoyable learning environment for them.

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