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Pengembangan Video Pembelajaran Interaktif Pengenalan Hewan Peliharan untuk Meningkatkan Kemampuan Dasar Kontak Mata pada Anak Autis

Development of Interactive Learning Video for Pet Recognition to Improve Basic Skills, Eye Contact, in Children with Autism

Eram Maling,[1*] **Pamuji**,[2] **Budiyanto**[3]
Universitas Negeri Surabaya, Surabaya, Indonesia[123]
Email: maling.eram@gmail.com[*]

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Abstract: *Anak-anak dengan gangguan spektrum autisme (Autism Spectrum Disorder) umumnya mengalami kesulitan dalam keterampilan dasar, seperti melakukan kontak mata, mempertahankan rentang perhatian, dan kemampuan mengikuti instruksi. Salah satu upaya yang dapat dilakukan untuk membantu meningkatkan keterampilan tersebut adalah melalui penggunaan media pembelajaran yang menarik dan interaktif. Penelitian ini bertujuan untuk mengembangkan video pembelajaran interaktif tentang pengenalan hewan peliharaan serta mengetahui kelayakan dan efektivitasnya dalam meningkatkan keterampilan dasar berupa kontak mata, fokus perhatian, dan kemampuan mengikuti instruksi pada anak dengan autisme. Metode penelitian yang digunakan adalah Research and Development (R&D), dengan tahapan analisis kebutuhan, perancangan, pengem-bangan, validasi, dan uji coba produk. Subjek penelitian adalah anak-anak dengan autisme tingkat fungsi ringan hingga sedang. Teknik pengumpulan data meliputi observasi, angket validasi oleh para ahli, serta tes keterampilan yang dilakukan sebelum dan sesudah penggunaan media. Validasi produk dilakukan oleh ahli media dan ahli materi. Kepraktisan dan efektivitas video pembelajaran diuji melalui uji coba lapangan yang melibatkan siswa autisme di Unit Layanan Anak Berkebutuhan Khusus. Hasil penelitian menunjukkan bahwa video pembelajaran interaktif yang dikembangkan dinilai sangat layak oleh ahli media dan ahli materi, dengan skor validasi masing-masing mencapai 100% dan 95%. Video pembelajaran ini juga dinilai praktis oleh para praktisi dengan skor kepraktisan sebesar 86% berdasarkan penilaian guru. Efektivitas video pembelajaran diuji melalui tes sebelum (pre-test) dan sesudah (post-test), yang menunjukkan adanya peningkatan yang signifikan pada kemampuan mengenali hewan peliharaan pada siswa autisme, dengan rata-rata nilai post-test sebesar 70,63, lebih tinggi dibandingkan rata-rata nilai pre-test sebesar 48,38. Dengan demikian, video pembelajaran interaktif tentang pengenalan hewan peliharaan dapat digunakan sebagai media pembelajaran yang efektif untuk mendukung proses belajar anak dengan autisme.*

Kontribusi: *Kontribusi utama artikel ini adalah menyediakan media pembelajaran interaktif berbasis video pengenalan hewan peliharaan yang tervalidasi sebagai alat bantu yang efektif dan praktis untuk terapi keterampilan dasar anak autis.*

Kata Kunci: *video pembelajaran interaktif; gangguan spektrum autisme; rentang perhatian; pemahaman instruksi; pengenalan hewan peliharaan; media pembelajaran interaktif.*

Abstract: Children with autism spectrum disorders generally experience difficulties in basic skills, such as eye contact, attention span, and the ability to follow instructions. One effort that can be made to help improve these skills is through the use of engaging and interactive learning media. This study aims to develop an interactive learning video for pet recognition and determine its feasibility and effectiveness in improving basic skills, eye contact, focus, and instruction in children with autism. The research method used was Research and Development (R&D), with stages of needs analysis, design, development, validation, and product trials. The study subjects were children with mild to moderate levels of functioning with autism. Data collection techniques included observation, expert validation questionnaires, and skills tests before and after media use. Product validation was conducted by media experts and material experts. The practicality and effectiveness of the learning video were tested through a field trial involving autistic students at the Children with Special Needs Service Unit. The results showed that the developed interactive learning video was deemed highly feasible by media experts and material experts, with validation scores reaching 100% and 95% for material transfer, respectively. This learning video was also assessed by practitioners with a practicality score of 86% based on teacher feedback. The effectiveness of the learning video was tested through pre- and post-tests, which showed a significant improvement in pet recognition skills in students with autism, with an average post-test score of 70.63, higher than the pre-test average score of 48.38. Thus, the interactive learning video on pet recognition can be used as an effective learning medium to support the learning process of children with autism.

Contribution: The main contribution of this article is providing a validated interactive pet recognition learning video as an effective and practical assistive tool for basic skills therapy in children with autism.

Keywords: interactive learning video; autism spectrum disorder; attention span; instruction comprehension; pet recognition; interactive learning media.

INTRODUCTION

Basic skills are fundamental abilities that serve as prerequisites for individuals to perform specific tasks or activities effectively. These skills are generic in nature and form the foundation for daily life and the learning process. Children with autism spectrum disorders (ASD) experience neurodevelopmental disorders that impact communication abilities, social interaction, and behavioral patterns.[1] Based on the biological/ neurological perspective, this condition is characterized by the complexity of neurological disorders manifested in difficulties with social interaction (such as avoiding eye contact and minimal response to being called), limitations in verbal and non-verbal communication (e.g., limited speech and flat intonation), and repetitive or overly focused

[1] Zarratul Khairi and Asep Ahmad Sopandi, "Upaya Keluarga Dalam Menangani Perilaku Temper Tantrum Pada Anak Autis Kelas VI Di SLB Negeri 1 Padang," *Ranah Research: Journal of Multidisciplinary Research and Development* 2, no. 2 (2020): 111-116.

behavioral patterns on specific interests.[2] Difficulties in maintaining attention on ongoing tasks are also frequently encountered, making children easily distracted by external stimuli.[3] Furthermore, the process of understanding and complying with instructions can be disrupted, especially when instructions are lengthy or abstract, due to limitations in processing verbal information sequentially.[4] Sensory sensitivities, such as discomfort with loud noises or bright lights, also often become inhibiting factors that affect comfort and concentration in the learning environment.[5] Holistically, the convergence of social, communicative, cognitive, and sensory barriers necessitates a structured, visual, and interactive learning approach for children with autism.[6]

Data from the Central Bureau of Statistics (BPS) recorded 3.2 million children with autism in Indonesia, and one of the biggest obstacles is difficulty maintaining concentration, so the learning process often stops before the material is optimally absorbed.[7] Children with autism tend to be easily distracted by external stimuli such as fleeting sounds, movements around them, or the texture of certain objects. Short attention spans can cause loss of overall learning context. Research by Rahmawati and Sunardi emphasizes that low concentration levels affect basic cognitive abilities such as pattern recognition, concept generalization, and simple problem-solving.[8] Meanwhile, research by Telaumbanua and Bu'ulolo on learning process theory states that learning effectiveness greatly depends on consistent interaction between stimulus and response; without maintained attention, this mechanism will not function optimally, resulting in limited learning outcomes.[9]

Based on preliminary observations at the Children with Special Needs Service Unit of Universitas Negeri Surabaya, SLB Negeri Gedangan (Sidoarjo Regency), and SLB Negeri

[2] Sri Rahmawati and Sunardi, "Optimalisasi Fokus: Strategi Pembelajaran untuk Meningkatkan Konsentrasi pada Anak dengan Gangguan Spektrum Autisme (GSA)," *Didaktika: Jurnal Kependidikan* 13, no. 2 (2024): 2527-2534.

[3] Sri Wulan Anggraeni, Yayan Alpian, Depi Prihamdani, and Euis Winarsih, "Pengembangan Multimedia Pembelajaran Interaktif Berbasis Video untuk Meningkatkan Minat Belajar Siswa Sekolah Dasar," *Jurnal Basicedu* 5, no. 6 (2021): 5313-5327.

[4] Filemon Sinaga, Michael Bezaleel, and Jasson Prestiliano, "Perancangan Video Motion Graphic sebagai Media Terapi Komunikasi bagi Anak Autis," *IT-Explore: Jurnal Penerapan Teknologi Informasi dan Komunikasi* 2, no. 2 (2023): 118-137.

[5] Sinaga, Bezaleel, and Prestiliano, "Perancangan Video Motion Graphic," 118-137.

[6] Perlius Telaumbanua and Berkati Bu'ulolo, "Penerapan Metode Pembelajaran Audio Video Visual Terhadap Anak Berkebutuhan Khusus (ABK)," *Indo Green Journal* 2, no. 2 (2024): 138-145.

[7] Rahmawati and Sunardi, "Optimalisasi Fokus," 2527-2534.

[8] Rahmawati and Sunardi, "Optimalisasi Fokus," 2527-2534.

[9] Telaumbanua and Bu'ulolo, "Penerapan Metode Pembelajaran Audio Video Visual," 138-145.

1 Jayapura, it was found that children with autism show attention patterns that are very easily distracted. They tend to focus their gaze on sound sources or gadget screens and are more comfortable watching videos than paying attention to the teacher. Most are unable to maintain focus for more than a few minutes, especially when asked to sit still without additional visual stimulation. About 40% of children experience difficulties in carrying out simple instructions; they are more responsive to commands accompanied by visual aids such as pictures or movement demonstrations. Long verbal instructions are often not understood or ignored if not repeated in a structured manner. Additionally, eye contact is almost always avoided; children tend to look down, avert their gaze, or cover their faces when invited to interact, indicating that direct social situations trigger sensory and emotional discomfort. Overall, these observational findings confirm the urgency of developing interactive learning media that integrate attractive visual elements, structured instructions, and technological support to improve focus, instruction comprehension, and eye contact habits in children with autism. This research was conducted at the Children with Special Needs Service Unit of Universitas Negeri Surabaya. The selection of this location was based on the researcher's initial observations, which found that 45% or 7 out of the children with autism at that location experienced similar problems, namely a lack of basic skills despite having good academic abilities and memory in the learning process.

Interactive learning videos for pet recognition are designed as a solution to overcome obstacles in focus, instruction comprehension, and eye contact in children with autism. This media combines attractive animal images and animations, short verbal narratives, and interactive response buttons to train attention and instruction comprehension gradually. Each module features pets/poultry introduced through real movement clips, characteristic sounds, and short "guess the animal" questions that encourage children to look at the screen and press response icons, thus building eye contact habits and active engagement. Pet materials are chosen because they are concrete and close to children's daily experiences, making them suitable for the concrete concept recognition phase (pre-operational according to Piaget), where effective learning is done through real objects and direct visualization before moving on to abstract concepts. Thus, the use of this interactive video not only facilitates understanding and compliance with instructions but also optimizes attention and basic social interaction through structured visual and kinesthetic stimulation.

Based on the background described, this development research aims to: (1) describe the product profile of the interactive learning video for pet recognition designed to improve basic skills of eye contact, focus, and instruction comprehension in children with autism; (2) describe the product validation results by media and material experts; (3) analyze the level of product practicality in learning application. The novelty of the media lies in the presentation of pet/poultry materials (such as chickens, ducks, birds of paradise, and cassowaries) in the form of animation and real footage equipped with animal sounds as auditory stimulation. The featured "guess the animal" feature asks children to recognize animal sounds or characteristics and then choose answers on the screen. This interactivity is supported by enjoyable automatic feedback to maintain children's focus and engagement, presenting an integrated visual, auditory, and motoric learning experience that has not been applied in similar media.

LITERATURE REVIEW

Basic Skills in Children with Autism

Basic skills are fundamental abilities that serve as prerequisites for individuals to perform specific tasks or activities effectively. According to research by Cooper, Heron, and Heward, basic skills in children with autism refer to early competencies that underlie the development of cognitive, social, communication, motor, and behavioral functions, which serve as a crucial foundation for participation in daily activities and formal and non-formal learning.[10] Children with autism spectrum disorders (ASD) experience neurodevelopmental disorders that impact communication abilities, social interaction, and behavioral patterns.[11]

The characteristics of children with autism include difficulties in social interaction, communication, and repetitive behaviors.[12] In terms of social interaction, children with autism often avoid eye contact, show minimal response when called, and have difficulty understanding social cues. In communication, they may experience delays in speech development, use flat intonation, and have difficulty understanding non-verbal

[10] John O. Cooper, Timothy E. Heron, and William L. Heward, *Applied Behavior Analysis*, 3rd ed. (Hoboken, NJ: Pearson, 2023).
[11] Khairi and Sopandi, "Upaya Keluarga Dalam Menangani Perilaku Temper Tantrum," 111-116.
[12] Rahmawati and Sunardi, "Optimalisasi Fokus," 2527-2534.

communication. In behavior, children with autism often show repetitive patterns, have overly focused interests, and experience difficulties in adapting to change.[13]

Eye Contact, Focus, and Instruction Comprehension

Eye contact is the most fundamental social-nonverbal aspect that facilitates face-to-face interaction. According to Kennedy and Shawn in Hendarko and Anggraika, eye contact is not merely looking but includes facial orientation and shifts in visual attention that indicate readiness to communicate.[14] Carbone, O'Brien, Sweeney-Kerwin, and Albert in Hendarko and Anggraika emphasize that the duration and quality of eye contact function as a regulator in two-way communication; the smoother the eye contact, the smoother the exchange of non-verbal messages.[15] However, for children with autism, eye contact is often avoided or causes emotional discomfort due to sensory overload, thus hindering social interaction. Children tend to look down, avert their gaze, or even cover their faces when invited to communicate[16] This obstacle not only affects relationships with teachers and therapists but also hinders the formation of social bonds with peers.

Focus, or the ability to maintain attention on an activity, is a major challenge for many children with autism. Children with autism tend to be easily distracted by external stimuli such as fleeting sounds, movements around them, or the texture of certain objects. Short attention spans can cause loss of overall learning context. Research by Rahmawati and Sunardi emphasizes that low concentration levels affect basic cognitive abilities such as pattern recognition, concept generalization, and simple problem-solving.[17]

The ability to understand and follow instructions is also often an area of weakness for children with autism, especially when faced with lengthy or abstract verbal instructions. Research by Sinaga, Bezaleel, and Prestiliano shows that about 39% of children with autism are more responsive to instructions accompanied by visual elements such as pictures, symbols, or movement demonstrations compared to verbal instructions alone.[18] When instructions are delivered without visual media support or repeated in an

[13] Rahmawati and Sunardi, "Optimalisasi Fokus," 2527-2534.

[14] Kennedy and Shawn, cited in Anita Carolina Hendarko and Ike Anggraika, "Efektivitas Teknik Prompting dan Positive Reinforcement untuk Meningkatkan Frekuensi Kontak Mata pada Anak Prasekolah dengan Autisme," *Journal Psikogenesis* 6, no. 2 (2018): 176-185.

[15] Carbone, O'Brien, Sweeney-Kerwin, and Albert, cited in Hendarko and Anggraika, "Efektivitas Teknik Prompting," 176-185.

[16] Anggraeni et al., "Pengembangan Multimedia Pembelajaran Interaktif," 5313-5327.

[17] Rahmawati and Sunardi, "Optimalisasi Fokus," 2527-2534.

[18] Sinaga, Bezaleel, and Prestiliano, "Perancangan Video Motion Graphic," 118-137.

unstructured pattern, children tend to lose track of the task and switch to other activities. Therefore, the application of simple sentences, spaced repetition, and positive reinforcement through direct feedback has been proven to increase the effectiveness of instruction comprehension and encourage children's independence in completing tasks.

Interactive Learning Media for Children with Autism

The importance of creativity in developing learning media for children cannot be overstated. As emphasized by Atty, Eusun, Kim, Yanti, Marlita, and Blegur, creativity is fundamental in teaching children because generally children's understanding is formed through teaching and activities through means or things that interest them, such as pictures, videos, props, movements and songs.[19] The challenge, however, lies in the fact that creativity in teaching children is not easy both in terms of human resources (teachers) and the facilities used (preparation and use of teaching aids).[20] This aligns with the obstacles faced in developing interactive media for children with autism, where the need for creative and innovative approaches is paramount. Furthermore, the use of e-learning and technology-based learning media has become increasingly relevant in the digital era, as it offers flexibility and accessibility that traditional methods may lack.[21]

Interactive learning videos for pet recognition are designed as a solution to overcome obstacles in focus, instruction comprehension, and eye contact in children with autism. This media combines attractive animal images and animations, short verbal narratives, and interactive response buttons to train attention and instruction comprehension gradually.[22] Each module features pets/poultry introduced through real movement clips, characteristic sounds, and short "guess the animal" questions that encourage children to look at the screen and press response icons, thus building eye contact habits and active engagement. Pet materials are chosen because they are concrete and close to children's daily experiences, making them suitable for the concrete concept

[19] Sonya Debora Atty, Eusun, Doye Kim, Yanti, Leni Marlita, and Romelus Blegur, "Workshop Dan Pelatihan Kreativitas Dalam Pelayanan Anak Terhadap Mahasiswa Sekolah Tinggi Teologi ATI," *SERVIRE: Jurnal Penelitian dan Pengabdian* 3, no. 2 (2023): 102-117.

[20] Atty et al., "Workshop Dan Pelatihan Kreativitas," 103.

[21] Arifman Gulo and Yusak Tanasyah, "E-Learning Dalam Metode Pembelajaran Pendidikan Agama Kristen Di Era Industrial 4.0," *Indonesian Journal of Religious* 5, no. 1 (2022): 1-16.

[22] Icha Biassari, Kharisma Eka Putri, and Siti Kholifah, "Peningkatan Hasil Belajar Matematika pada Materi Kecepatan Menggunakan Media Video Pembelajaran Interaktif di Sekolah Dasar," *Jurnal Basicedu* 5, no. 4 (2021): 2322-2329.

recognition phase (pre-operational according to Piaget), where effective learning is done through real objects and direct visualization before moving on to abstract concepts.[23]

Various previous studies have explored the use of interactive media to support basic skills in children with autism. Nugrahani, Sihombing, Idris, Windiarti, and Diana reported improvements in cognitive, language, and adaptive behavioral skills in early childhood children with autism through interactive visual media.[24] Using the Single Subject Research (SSR) approach with a B1-I-B2 design involving three children aged 4-5 years, the study showed increased joint attention and engagement with the media. Hendarko and Anggraika reported an increase in eye contact frequency from 5% to 75%-80% after prompting and positive reinforcement technique intervention, with parental involvement and consistent stimulus as key factors.[25]

Research by Polychronis, Johnson, and Christensen using the mobile app "We Are Friends" with 44 ASD students demonstrated significant improvement in eye contact duration from 8.8% (baseline) to 47.1% (post-intervention) for the full intervention group.[26] Farhan, Utama, and Mastur developed interactive learning media based on short video learning which received a "very feasible" validation (94%) from media experts and "feasible" (75%) from material experts, with an N-gain of 0.72 in learning outcomes.[27] Hidayati and Rafikayati developed video learning and games for autistic and blind university students, obtaining feasibility scores of 3.6/4 from content experts and 3.5/4 from users.[28]

Rafikayati, Rachmadtullah, Perdanake, and Fauziah demonstrated that the TEACCH program assisted by interactive learning video media increased self-development skills

[23] Hersiyati Palayukan, Evy Lalan Langi, Septi Triyani, Inelsi Palengka, and Indah Rahayu Panglipur, "Pendampingan Belajar Mandiri Siswa Disabilitas Spektrum Autis Pada Materi Aljabar Matematika," *Jurnal STIA Pembangunan Jember* 6, no. 2 (2023): 139-149.

[24] Rahina Nugrahani, Riama Maslan Sihombing, Muhammad Zaffwan bin Idris, Rina Windiarti, and Diana, "Enhancing Cognitive Skills in Early Childhood Autism through Visual Interactive Media," *Jurnal Sosioteknologi* 23, no. 2 (2024): 175-185.

[25] Hendarko and Anggraika, "Efektivitas Teknik Prompting," 176-185.

[26] P. D. Polychronis, A. Johnson, and J. Christensen, "Use of a Mobile App With Embedded Video Modeling to Increase Eye Contact," *Journal of Positive Behavior Interventions* 25, no. 4 (2023): 199-208.

[27] Muhammad Farhan, Agus Hadi Utama, and Mastur Mastur, "Pengembangan Media Pembelajaran Interaktif: Integrasi Short Video Learning Untuk Meningkatkan Hasil Belajar," *Jurnal Riset dan Inovasi Pembelajaran* 4, no. 2 (2024): 907-917.

[28] Nurul Hidayati and Ana Rafikayati, "Pengembangan Video Pembelajaran Dan Games Untuk Meningkatkan Konsentrasi Belajar Mahasiswa Autis Dan Tunanetra," *Didaktika: Jurnal Kependidikan* 13, no. 001 (2024): 1073-1082.

in autistic children from 60% mastery in cycle I to 80% in cycle II.[29] Patti, Vona, Barberio, Buttiglione, Crusco, Mores, and Garzotto developed the Wildcard virtual reality application using eye-tracking technology, showing improved visual attention skills in 38 participants with neurodevelopmental disorders, with SUS scores of 80.26 (Good category).[30] Research by Biassari, Putri, and Kholifah showed that the use of interactive learning video media increased mathematics learning outcomes from 36.88 (pre-cycle) to 89.38 (cycle II) with classical mastery increasing from 28.13% to 87.5%.[31]

Although various previous studies have demonstrated the effectiveness of visual learning strategies, educational games, and interactive media in improving basic skills in children with autism such as focus, eye contact, and instruction comprehension, most of these approaches still focus on one skill separately. Furthermore, the interactive media used often relies on text, static images, or general videos without real responsive interaction. Learning materials also have not fully utilized concrete topics that are familiar and emotionally appealing to children, such as pets. This gap indicates that there is no interactive learning media that simultaneously integrates pet material with dynamic audio-visual elements and interactive features (e.g., guess the animal) to train three basic skills at once: focus, instruction comprehension, and eye contact. Therefore, this research is present to fill this gap through the development of an interactive learning video for pet recognition specifically designed to meet the learning needs of children with autism holistically and enjoyably.

The theoretical implications of this research contribute to the development of knowledge in the field of special education, particularly regarding the use of interactive multimedia for children with autism. This study provides empirical evidence that a structured, visual, and interactive approach can simultaneously address multiple basic skill deficits. The practical implications of this research offer concrete solutions for teachers, therapists, and parents in providing engaging and effective learning media for children with autism. This interactive learning video can serve as an alternative and

[29] Ana Rafikayati, Reza Rachmadtullah, Yehezkiel Anugerah Kusuma Perdanake, and Alfinda Oktadifa Fauziah, "Meningkatkan Keterampilan Bina Diri Anak Autis melalui Program TEACCH Berbantuan Media Video Pembelajaran Interaktif," *Special and Inclusive Education Journal (SPECIAL)* 5, no. 2 (2024): 124-132.

[30] Alberto Patti, Francesco Vona, Anna Barberio, Marco Domenico Buttiglione, Ivan Crusco, Marco Mores, and Franca Garzotto, "Training Attention Skills in Individuals with Neurodevelopmental Disorders using Virtual Reality and Eye-tracking," *Human-Computer Interaction* (2024): 2404.15960.

[31] Biassari, Putri, and Kholifah, "Peningkatan Hasil Belajar Matematika," 2322-2329.

supplementary tool in therapy and learning activities, both at school and at home. Additionally, this media can be used as a model for developing similar products with different themes, following the same systematic development framework.

METHODS

This research is a development study (*Research and Development*) aimed at producing an interactive learning video for pet recognition to improve basic skills such as eye contact, focus, and the ability to follow instructions in children with autism. The development model used is the ADDIE model which includes the stages of *Analysis*, *Design*, *Development*, *Implementation*, and *Evaluation*.[32] However, this research is limited to the practicality evaluation stage, so product effectiveness testing has not yet been conducted.

Data collection in this research was conducted to evaluate the validation results and practicality of the developed learning video. Product validation was conducted by material experts and media experts to assess the feasibility of the interactive learning video based on material suitability, clarity of instructions, visual and audio display, and suitability with the characteristics of children with autism. Validation data were obtained through questionnaires given to the validators, using a Likert scale measurement.[33]

In addition, practicality data were obtained through questionnaires given to teacher assistants of children with autism as users of the learning video. Practicality assessment included ease of use of the video, clarity of instructions, media appeal, and the usefulness of the video in training basic skills of eye contact, focus, and the ability to follow instructions in children with autism. The practicality questionnaire used a rating scale adapted from previous studies on media development.[34]

Data obtained from validation and practicality results were analyzed using descriptive quantitative analysis techniques by calculating the average score of each assessment aspect. The analysis results were used to describe the level of validity and practicality of the developed interactive learning video for pet recognition. This research

[32] A. Prastowo, *Media Pembelajaran Interaktif untuk Anak Berkebutuhan Khusus* (Yogyakarta: Pustaka Pelajar, 2023).

[33] Viktor Handrianus Pranatawijaya, Widiatry, Ressa Priskila, and Putu Bagus Adidyana Anugrah Putra, "Pengembangan Aplikasi Kuesioner Survey Berbasis Web Menggunakan Skala Likert dan Guttman," *Jurnal Sains dan Informatika* 5, no. 2 (2019): 128-137.

[34] Farhan, Utama, and Mastur, "Pengembangan Media Pembelajaran Interaktif," 907-917.

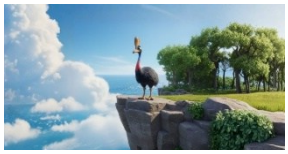
did not reach the effectiveness testing stage, so the research results only focus on the feasibility and practicality of the resulting product.

RESULTS

This development research produced an interactive learning video product for pet/poultry recognition specifically designed to improve basic skills of eye contact, focus, and instruction comprehension in elementary school-aged children with autism. Stage 1 *Analysis* identified the specific needs of children with autism at the research location, namely preference for dynamic visual stimuli (animation), bright colors, familiar animal sounds, and simple response activities. The analysis also considered the contextualization of materials with the cultural environment of students in Papua, so the media displays animals such as chickens, ducks, geese, cassowaries, and birds of paradise. Stage 2 *Design* produced a *storyboard* detailing the learning flow, visuals, narration, sound effects, and interaction moments. The *storyboard* was designed with gradual, repetitive, simple principles and minimizing cognitive load to adjust to the information processing characteristics of children with autism. Stage 3 *Development* produced an interactive animated video prototype in MP4 format (720p) with a duration of 2 minutes 24 seconds. The video can be accessed *offline* and *online* (via Google Drive), featuring animal introduction, interactive mini-*games* (e.g., choosing animal food/habitat), and sequential instruction exercises. Interaction features are activated when the video is paused by the teacher/therapist, asking the child to provide response choices. The flow and visuals of the learning video media can be seen in Table 1 below.

Stage 4 *Implementation/Product Quality Testing* included validity and practicality testing. Validity testing was conducted by one media expert (educational technology lecturer) and one material expert (special education lecturer). The validation results showed a very high level of feasibility. The media expert gave a score of 55 out of 55 (percentage 100%), with visual display, audio quality, and interactivity aspects rated as very appropriate. The material expert gave a score of 69 out of 70 (percentage 95%), with very good ratings on aspects of material suitability with learning objectives, accuracy, and up-to-dateness. Some minor improvement suggestions (such as consistency of text background color and adding a cage for cassowary visuals) have been revised in the final product.

Table 1. Flow of Interactive Learning Video Media.

Video Section	Content & Visual Description
	Chicken Introduction Animated chicken walking, pecking seeds, accompanied by "kukuruyuk" sound.
	Interaction: Duck Habitat Three image choices of environments (water, tree, sand). Video paused.
	Interaction: Cassowary Habitat Three choices (forest, sea, sky). Video paused.
	Bird of Paradise Introduction Colorful bird of paradise image with dancing movements.

Sources from authors, 2025.

Furthermore, practicality testing was conducted involving one practitioner (therapist) from the Children with Special Needs Service Unit as a direct user. The assessment used a questionnaire with a total score of 49 out of 50, resulting in a percentage of 86%. The practitioner rated the media as very practical, with indicators of material suitability with children, children's interest when watching, and ease of delivering instructions achieving maximum scores. Only the narration intonation aspect received a slightly lower score (4), but it did not reduce the practicality category of "very easy to use."

Overall data summary can be seen in Table 2 below. Stage 5 (*Evaluation*) was conducted based on the validity and practicality test results. The evaluation concluded that the media product has met academic, pedagogical, and technological feasibility standards, and is rated as very feasible and very practical to be applied in the context of learning or therapy for children with autism.

Table 2. Data Summary.

Test	Validator/User	Assessed Aspects	Score	Percentage
Validity	Media	Visual display, audio	55 of	100%
	Material Expert (Special Education Lecturer)	Material suitability with learning	69 of 70	95%
Practicality Test	Practitioner (Therapist at ABK Service Unit)	Material suitability with children,	49 of 50	86%

Sources from authors, 2025.

DISCUSSION

Based on the validation results by media experts and material experts showing a very feasible assessment, it indicates that the developed interactive learning video media has met high academic, pedagogical, and technical feasibility standards. The high scores on aspects of *visual display, audio quality, and interactivity* from media experts align with the findings of Sinaga, Bezaleel, and Prestiliano which state that motion graphics with clear audio-visual elements and immediate feedback are able to create a structured and engaging learning environment for children with autism, while reducing sensory overload.[35] Simple interface design with high-contrast colors and intuitive navigation is also in line with the principles of Universal Design for Learning (UDL) which emphasizes information presentation through multiple means of representation to accommodate the neurological diversity of learners.[36]

Meanwhile, the very positive assessment from material experts on aspects of *material suitability with learning objectives, accuracy, and contextualization* reinforces the argument that learning for children with autism will be more effective when using materials that are concrete, relevant to daily life, and presented gradually.[37] The choice of poultry pet themes, including endemic Papuan animals such as cassowaries and birds of paradise, not only increases appeal but also builds emotional connection and cultural ties

[35] Sinaga, Bezaleel, and Prestiliano, "Perancangan Video Motion Graphic," 118-137.
[36] CAST (Center for Applied Special Technology), *Universal Design for Learning Guidelines* (Wakefield, MA: CAST, 2018).
[37] Nugrahani et al., "Enhancing Cognitive Skills in Early Childhood Autism," 175-185.

that can facilitate the skill generalization process. This approach aligns with the research of Palayukan, Langi, Triyani, Palengka, and Panglipur which emphasizes that contextual and personally meaningful learning materials can increase engagement and memory retention in children with Autism Spectrum Disorder (ASD).[38]

The practicality test results obtaining a very practical rating from direct users (therapists) are a crucial indicator that this media is not only theoretically feasible but also easily integrated into real learning practices. High scores on indicators of *material suitability with child characteristics* and *children's interest* show that the media successfully bridges structured learning needs with enjoyable intrinsic motivational elements. This finding is consistent with the research of Farhan, Utama, and Mastur which concluded that the practicality of a learning media, characterized by ease of use without complex training, is a major determining factor in the adoption and sustainability of assistive technology use in special education settings.[39]

Although the *narration intonation* aspect received a slightly lower score (4 out of 5), this does not reduce the overall practicality value, but rather provides room for technical refinement. Optimization of articulation clarity and intonation variation in narration is important to ensure that verbal instructions are easily processed by children with autism, who often experience difficulties in processing secondary auditory information.[40] This recommendation aligns with the principles of applied behavior analysis (ABA) which emphasize clarity and consistency of stimuli as the foundation for building expected responses, as discussed by Yenni and Anisa in their research on communication patterns between teachers and autistic children.[41]

The importance of creativity in developing teaching media for children is further underscored by the findings of Atty, Eusun, Kim, Yanti, Marlita, and Blegur, who note that creativity in teaching children is not easy both in terms of human resources and the facilities used.[42] Their workshop on creativity in children's ministry demonstrated that students were able to make props from simple and easily available materials, and through such activities, their creativity was increased to carry out new innovations in teaching

[38] Palayukan et al., "Pendampingan Belajar Mandiri Siswa Disabilitas Spektrum Autis," 139-149.
[39] Farhan, Utama, and Mastur, "Pengembangan Media Pembelajaran Interaktif," 915.
[40] Wilda Sinaga, Nur Insani, and Reta Renylda, "Faktor Interaksi Sosial Pada Anak Autis di Pusat Layanan Autis," *Journal of Telenursing (JOTING)* 4, no. 2 (2022): 636-645.
[41] Elvita Yenni and Risma Sri Anisa, "Pola Komunikasi antara Guru Dengan Anak Autis dalam Proses Belajar Mengajar di SLB-C Syauqi Day Care Serdang Bedagai," *Jurnal Somasi* (2021): 44-50.
[42] Atty et al., "Workshop Dan Pelatihan Kreativitas," 104.

children.[43] This directly supports the approach taken in this research, where the development of interactive video media required creative use of available resources to produce engaging and effective learning tools.

Furthermore, the integration of technology in learning, as discussed by Gulo and Tanasyah, highlights that in the era of industrial digitalization 4.0, the education system that is currently emerging is the e-learning technique and educational information system (online learning) that has no space or time constraints.[44] This is particularly relevant for reaching children with autism in various locations, including remote areas. E-learning facilitates interaction between students and materials, allowing students, their facilitators, and peers to repeatedly exchange information and access learning materials at any time.[45] The flexibility and accessibility offered by e-learning align with the goals of this research to create a learning medium that can be accessed both offline and online, making it a versatile tool for therapy and education.

Implications of the Research

Theoretical Implications. The findings of this research contribute to the development of knowledge in special education, particularly concerning the effectiveness of interactive multimedia for children with autism. This study provides empirical evidence supporting the integration of visual-cognitive theory with structured learning principles for children with special needs.[46] The success of this media development demonstrates that a design combining visual scaffolding, interactive prompting, and positive reinforcement in one cohesive multimedia package can create effective built-in instructional support. This finding enriches the existing literature by showing that interactive learning videos can simultaneously address three basic skills (eye contact, focus, and instruction comprehension) which have typically been studied separately in previous research.

Furthermore, this research contributes to the theoretical understanding of how contextual and culturally relevant content can enhance learning engagement for children with autism. By incorporating endemic Papuan animals such as cassowaries and birds of

[43] Atty et al., "Workshop Dan Pelatihan Kreativitas," 112.
[44] Gulo and Tanasyah, "E-Learning Dalam Metode Pembelajaran," 2.
[45] Gulo and Tanasyah, "E-Learning Dalam Metode Pembelajaran," 4.
[46] Telaumbanua and Bu'ulolo, "Penerapan Metode Pembelajaran Audio Video Visual," 138-145.

paradise, this study demonstrates that learning materials that are familiar and emotionally connected to children's daily experiences can facilitate the generalization of skills. This aligns with the theoretical framework that emphasizes the importance of using concrete and meaningful materials in the pre-operational cognitive stage.

Practical Implications. The results of this research offer several practical implications for various stakeholders:

For Teachers and Therapists: This interactive learning video provides a ready-to-use, flexible (accessible offline/online), and low-cost resource to support early intervention in developing prerequisite learning skills of eye contact, focus, and instruction comprehension in children with autism. Carefully designed digital media can function as a co-therapist or assistive tool that reinforces the intensity and consistency of practice, which is key to the success of behavioral intervention. Teachers can incorporate this video into their daily teaching activities as a supplementary tool alongside established therapies such as Applied Behavior Analysis (ABA).

For Parents: This media can be used consistently at home with active accompaniment to ensure continuity between therapy centers and family environments. The video provides parents with a structured and engaging resource that they can use to support their children's learning, even without professional training. The simple instructions and interactive features make it accessible for parents to use in home-based learning activities.

For Curriculum Developers and Policymakers: The findings of this research provide evidence that interactive learning media can be effectively developed and implemented in special education settings. This supports the need for policies that encourage the development and dissemination of such media across various regions in Indonesia. The success of this media development model can serve as a reference for creating similar products with different themes and for different types of disabilities.

For Future Researchers: This research provides a foundation for further studies exploring the effectiveness of interactive learning media for children with autism. The ADDIE development model and the validation instruments used in this study can be adapted for similar research in different contexts. Moreover, the findings highlight the need for experimental studies employing rigorous designs such as single-subject research or randomized controlled trials to substantiate the media's scientific effectiveness.

Limitations

Despite the promising results, this research has several limitations that should be acknowledged. First, the validation and practicality tests involved a limited number of expert validators (one media expert and one material expert) and only one practitioner (therapist). This small sample size may affect the generalizability of the findings and does not fully capture the diversity of perspectives from various stakeholders in special education.

Second, this research did not conduct rigorous experimental effectiveness testing, such as randomized controlled trials or single-subject experimental designs, to quantitatively measure the empirical impact of the interactive learning video on eye contact duration, focus retention, or instruction compliance. The pre-test and post-test results, while showing improvement, cannot be conclusively attributed to the media intervention without a control group comparison.

Third, the media was specifically tailored to poultry and pet themes within the Papuan cultural context, incorporating endemic animals such as cassowaries and birds of paradise. While this contextualization enhances cultural relevance and engagement for Papuan children, it potentially restricts the generalizability of the media to other regions in Indonesia with different cultural contexts and animal species.

Fourth, the study focused on elementary school-aged children with mild to moderate autism, and the results may not be generalizable to children with severe autism, different age groups, or other types of disabilities. Each child with autism has unique characteristics and needs, and the effectiveness of this media may vary depending on individual differences.

Fifth, the research was conducted in a specific setting (the Children with Special Needs Service Unit of Universitas Negeri Surabaya), and the results may not be directly transferable to other educational contexts such as inclusive schools, mainstream classrooms, or home settings.

Sixth, the practicality assessment relied on questionnaire data from one practitioner, which may be subject to social desirability bias. Future research should incorporate more objective measures of practicality, such as direct observation of media usage and structured interviews with multiple users.

CONCLUSION

This research successfully developed an interactive learning video for pet recognition specifically designed to enhance basic skills (eye contact, focus, and following instructions) in children with autism, grounded in the ADDIE development model. The product demonstrated exceptional feasibility, achieving a 100% validation score from media experts and 95% from material experts, alongside a high practicality rating of 86% from practitioners (therapists). These findings underscore that a structured, visual, and interactive multimedia approach—integrating concrete pet-themed content, dynamic animations, characteristic animal sounds, and responsive interactive feedback—effectively addresses the sensory, cognitive, and communicative learning needs of children with ASD. The media successfully bridges the gap between theoretical instructional design and practical therapeutic application, offering an engaging and accessible tool that can be utilized both offline and online.

Despite these promising outcomes, this research has several limitations that must be acknowledged. First, the validation process involved only one media expert and one material expert, and the practicality testing involved only one practitioner, which limits the generalizability and robustness of the findings. Second, the study did not employ rigorous experimental designs such as randomized controlled trials or single-subject research to empirically measure the causal impact of the media on eye contact, focus, and instruction comprehension. The pre-test and post-test results, while showing improvement, cannot be definitively attributed to the intervention without a control group. Third, the media was specifically designed for the Papuan cultural context with endemic animal themes, which may limit its applicability to other regions with different cultural backgrounds. Fourth, the study focused on elementary-aged children with mild to moderate autism, and the effectiveness for other age groups or severity levels remains unknown. Fifth, the research was conducted in a single location, and the results may not be generalizable to other educational settings such as inclusive schools or mainstream classrooms. Sixth, the practicality assessment relied on self-report questionnaire data, which may be subject to bias.

To address these gaps, future research is strongly urged to expand validation to include a broader panel of experts (e.g., developmental psychologists, speech therapists, and occupational therapists) and to test the media on larger, more diverse populations across various regions in Indonesia. Furthermore, empirical studies employing

experimental designs, such as single-subject research or randomized control trials, are critically needed to substantiate the media's scientific effectiveness. For practitioners, it is recommended to integrate this video alongside established therapies like Applied Behavior Analysis (ABA) and to adjust usage duration based on individual child tolerance to prevent sensory overload, while parents are encouraged to use the media consistently at home with active accompaniment to ensure continuity between therapy centers and family environments. These limitations should be considered when interpreting the findings of this research. Nevertheless, the positive results obtained provide a foundation for future research to address these limitations and further explore the potential of interactive learning media for children with autism.

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