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Enhancing Toothbrushing Skills of Slow Learner Students: A Comparative Study of the Effectiveness of Pop-Up Books and Hand Puppets Media

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ABSTRACT Maintaining Children categorized as slow learners, with IQs ranging between 70–90, often struggle with adapting to stimuli and performing basic self-care activities, including oral hygiene practices such as brushing teeth. In Indonesia, approximately 14% of children are classified as slow learners, and among them, 80.64% exhibit poor dental hygiene due to ineffective toothbrushing habits. This study aims to evaluate and compare the effectiveness of two types of educational media pop-up books and hand puppets in enhancing toothbrushing skills among slow learner students. A quasi-experimental design with a pretest-posttest approach was employed, involving 20 students from inclusive classes in SDN Mojo III and SDN Airlangga I, Surabaya. Participants were divided into two groups; one received pop-up book-based counseling, while the other engaged with hand puppet-based sessions. Data were collected through observation sheets and analyzed using the Wilcoxon and Mann-Whitney statistical tests. The results indicated significant improvements in both groups post-intervention; however, the hand puppet group demonstrated a more substantial increase, with 70% of students achieving a "good" skill level compared to only 30% in the pop-up book group ($p = 0.042$). These findings suggest that hand puppets may offer more effective, engaging, and comprehensible instruction for children with learning difficulties. The three-dimensional and interactive nature of the media likely contributed to better retention and skill acquisition. This study underscores the importance of using tailored educational tools in inclusive learning environments to support children's health education. Future research should explore these interventions in larger and more diverse populations and assess long-term behavioral changes.

INDEX TERMS Pop-up book, hand puppet, toothbrushing skills, slow learner, inclusive education

I. INTRODUCTION

Oral health is a critical component of general well-being and quality of life, particularly among children. According to Indonesia's national health survey, Riskesdas (2018), although 94.7% of Indonesians report brushing their teeth daily, only 2.8% adhere to the correct brushing times after breakfast and before bed [1]. Inadequate toothbrushing contributes to plaque accumulation, which is a precursor to a wide array of dental problems [2]. Alarmingly, 57.6% of the Indonesian population experiences dental and oral health issues [1]. For children, particularly those with developmental delays or cognitive limitations, such as slow learners, maintaining oral hygiene can be especially challenging.

Slow learners, defined as individuals with an IQ between 70–90, often face cognitive limitations that impede their ability to understand abstract concepts, adapt to stimuli, and perform routine tasks independently [4], [5]. In Indonesia, 14% of children are classified as slow learners, and over 80% of them suffer from poor oral hygiene due to improper brushing techniques [4]. Inclusive education systems, such as those implemented in SDN Mojo III and SDN Airlangga I Surabaya, aim to integrate slow learners into mainstream classrooms and provide them with tailored support [6].

However, traditional health education methods are often ineffective for this demographic. Slow learners require concrete, tangible instructional media to grasp and retain information effectively. Three-dimensional visual aids, such as pop-up books and hand puppets, have shown promise in this regard [7]-[9]. Pop-up books offer an engaging, interactive way to present health information with vivid illustrations and kinetic components that stimulate interest and memory retention [10]-[12]. Conversely, hand puppets provide an auditory and visual learning experience, often eliciting higher engagement and emotional response among children [13]-[15].

Previous research indicates that both media types can improve children's understanding of health behaviors, including brushing frequency, technique, and dental tool maintenance [11], [12], [14]. Pop-up books have been shown

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to enhance knowledge acquisition and motivation, while puppet-based storytelling improves attention, communication, and motor skills [15]-[18].

Nonetheless, comparative studies evaluating the efficacy of these media in inclusive education settings, specifically among slow learners, remain limited. This research addresses that gap by investigating which medium-pop-up books or hand puppets-is more effective in teaching proper toothbrushing techniques to slow learner students.

The aim of this study is to evaluate and compare the effectiveness of pop-up books and hand puppets as educational tools in improving toothbrushing skills among slow learner students in grades 3–5 at SDN Mojo III and SDN Airlangga I Surabaya. The contributions of this study are threefold. First, it provides empirical evidence on the suitability of tailored media for health education in inclusive settings. Second, it highlights the relative strengths of visual versus tactile learning aids for students with cognitive challenges. Third, it offers practical recommendations for educators and healthcare professionals working with slow learners in classroom and clinical environments.

This article is organized into several sections: Section II discusses the methodology, including the research design, participants, data collection tools, and statistical analysis. Section III presents the results, while Section IV offers a discussion interpreting these findings in the context of current literature. Section V concludes the paper and provides recommendations for future work.

II. METHOD

This study employed an analytical approach using a quasi-experimental design with a pretest-posttest method to assess the effectiveness of pop-up books and hand puppet media in enhancing the toothbrushing skills of slow learner students. The research was conducted at two inclusive primary schools, SDN Mojo III and SDN Airlangga I, located in Surabaya, Indonesia, during January-February 2023. This design allows the measurement of differences in outcomes before and after the intervention while accounting for group comparisons, making it suitable for studies in educational interventions where randomization may be limited due to ethical or practical considerations [22].

A. STUDY POPULATION AND SAMPLING

The target population consisted of slow learner students enrolled in inclusive classrooms in grades 3 to 5. A total of 20 students were purposively selected based on teacher recommendations and diagnostic assessments indicating cognitive limitations consistent with an IQ range of 70–90. Inclusion criteria included: (1) diagnosed as slow learners by school psychological evaluation, (2) enrollment in an inclusive class, (3) parental consent for participation, and (4) ability to follow instruction during the intervention period. The exclusion criteria were students with physical disabilities affecting motor coordination related to brushing, or comorbid conditions requiring special assistance beyond the scope of this study.

Participants were assigned into two groups of 10 students each. Group A received counseling using pop-up book media, while Group B received counseling using hand puppets. Although randomization was not performed due to the school assignment system and ethical considerations, efforts were made to match participants based on age, gender, and initial brushing skill levels.

B. INTERVENTION PROTOCOL

The intervention was structured over a 21-day period, divided into three progressive phases consistent with behavioral change theory. According to Maher et al, a 21-day habit formation framework is effective in shaping new routines, especially when reinforced across structured stages [23].

1. **Phase 1 (Day 1–7):** Initial counseling sessions were delivered by trained dental health educators using the assigned media. The pop-up book group received visual and tactile guidance using a custom-designed three-dimensional book illustrating proper brushing techniques. The hand puppet group received the same instructional content via storytelling and demonstration using character puppets that mimicked brushing actions.
2. **Phase 2 (Day 8–14):** Reinforcement of brushing routines was supported by parental involvement. Parents were briefed and asked to supervise and motivate their children at home, ensuring consistent practice and encouragement.
3. **Phase 3 (Day 15–21):** Students were encouraged to perform brushing independently. Observation was continued by the researchers during school time to monitor habit retention.

This phased model was designed to ensure progressive internalization of toothbrushing behavior, combining visual, kinesthetic, and social learning components [24].

C. DATA COLLECTION INSTRUMENS

To evaluate toothbrushing skills, a validated observational checklist adapted from previous studies on dental behavior in special needs populations was used. The checklist consisted of five brushing steps based on WHO guidelines: (1) applying toothpaste, (2) brushing outer surfaces, (3) brushing inner surfaces, (4) brushing chewing surfaces, and (5) rinsing properly. Each correctly executed step received a score of 1, with a maximum total score of 5.

Skill categories were defined as follows:

- Good: 4-5 correct movements
- Moderate: 2-3 correct movements
- Poor: 0-1 correct movements

Pretests were conducted prior to intervention, and posttests were administered on Day 21. Observations were conducted by two calibrated observers to ensure inter-rater reliability.

D. DATA ANALYSIS

Quantitative data were analyzed using IBM SPSS Statistics version 25. The Wilcoxon Signed-Rank Test was employed to determine within-group differences between pretest and posttest scores. Between-group comparisons of effectiveness were analyzed using the Mann Whitney U test. A p-value < 0.05 was considered statistically significant.

The Wilcoxon test was used due to the non-parametric distribution of the small sample size, and its suitability for comparing repeated measures within the same group [25].

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The Mann–Whitney U test allowed comparison between the two independent groups, aligning with standard practice in behavioral intervention analysis [26].

E. ETHICAL CONSIDERATIONS

The Prior to data collection, ethical clearance was obtained from the Institutional Ethics Committee of the Health Polytechnic of the Ministry of Health Surabaya. Parental informed consent was secured for all participants. The intervention was designed to be non-invasive, supportive, and aligned with the cognitive capabilities of slow learner students.

III. RESULTS

Based on the data presented in TABLE 1, it can be concluded that the majority of respondents in this study were boys (85%), while only a small proportion were girls (15%). In terms of age, the majority of respondents were 10 years old (40%). TABLE 2 shows that there was an increase in the skills of the respondents after receiving counseling, with 4 out of 10 respondents (40%) reaching a moderate skill level. This shows that counseling using pop-up book media can improve respondents' skills in brushing their teeth.

TABLE 1
Characteristics of Respondents

Characteristics		Frequency	Percentage (%)
Gender	Boy	17	85
	Girl	3	15
Age	8 Years old	4	20
	9 Years old	3	15
	10 Years old	8	40
	11 Years old	5	25

TABLE 3 shows that there was an increase in the skills of the respondents after receiving counseling, with 7 out of 10 respondents (70%) achieving a good level of skills. This shows that counseling using hand puppet media can improve the skills of respondents in brushing their teeth.

TABLE 2
Frequency Distribution of Slow Learner Students Teeth Brushing Skills Before and After Counseling Using Pop-Up Book Media

Tooth Brushing Skills Category	Before Frequency	After Percentage (%)	Before Frequency	After Percentage (%)
Good	0	0	3	30
Moderate	3	30	4	40
Bad	7	70	3	30
Total	10	100	10	100

TABLE 3
Frequency Distribution of Slow Learner Students Toothbrushing Skills Before and After Counseling Using Hand Puppet Media

Tooth Brushing Skills Category	Before Frequency	After Percentage (%)	Before Frequency	After Percentage (%)
Good	0	0	7	70
Moderate	3	30	3	30
Bad	7	70	0	0
Total	10	100	10	100

TABLE 4
Wilcoxon Test Results Before and After Counseling Using Pop-Up Book Media

Variable	Category			ρ Value
	Good	Moderate	Bad	
Before Counseling	0	3	7	0.008
After Counseling	3	4	3	

Based on TABLE 4 a ρ value of 0.008 is obtained, thus it is known that there are differences in teeth brushing skills before and after being given counseling using pop-up book media.

TABEL 5
Wilcoxon Test Results Before and After Counseling Using Hand Puppets Media

Variable	Category			ρ Value
	Good	Moderate	Bad	
Before Counseling	0	3	7	0.004
After Counseling	7	3	0	

Based on TABLE 5 a ρ value of 0.004 was obtained, so it can be seen that there are differences in teeth brushing skills before and after being given counseling using hand puppet media.

TABLE 6
Differences in the Effectiveness of Pop-Up Book Media and Hand Puppets in Improving the Tooth-brushing Skills of Slow Learner Students

Mann Whitney Test

Groups	Practice						ρ Value
	Good		Moderate		Bad		
	n	%	n	%	n	%	
Pop Up Book	3	30	4	40	3	30	0.042
Hand Puppet	7	70	3	30	0	0	

Based on TABLE 6 a ρ value of 0.042 was obtained, so H1 was accepted and H0 was rejected. It can be concluded that there is a significant difference in effectiveness between counseling using pop-up book media and hand puppets on teeth brushing skills of slow learner students in grades 3-5 in the inclusion class of SDN Mojo III and SDN Airlangga I Surabaya City.

IV. DISCUSSION

A. INTERPRETATION OF RESULTS

The findings of this study reveal a significant improvement in the toothbrushing skills of slow learner students following counseling interventions utilizing either pop-up book media or hand puppets. Notably, the group exposed to hand puppets demonstrated a more substantial enhancement in

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performance, with 70% achieving "good" brushing skills, compared to only 30% in the pop-up book group. This difference was statistically significant ($p = 0.042$), indicating that the type of media used plays a critical role in the efficacy of oral health education among cognitively delayed students.

The pretest data confirmed that a majority of students in both groups initially exhibited poor brushing abilities, consistent with national reports indicating high rates of oral health issues among slow learners in Indonesia. This aligns with studies by Prasetyowati et al. and Ediyarsari et al., which highlight that students with developmental delays often lack the motor coordination and comprehension required for independent self-care routines such as toothbrushing.

The progressive improvement observed during the three-week intervention period supports the behavioral change theory suggesting that habits can be formed or modified with consistent reinforcement over 21 days. Parental involvement during the second week of intervention likely played a crucial role in maintaining motivation and ensuring practice consistency.

The structured nature of the observation checklist—focusing on five standardized brushing steps ensured objective assessment and highlighted that hand puppets were especially effective in helping students remember and replicate proper brushing sequences.

B. COMPARISON WITH SIMILAR STUDIES

This study's results are consistent with previous research emphasizing the benefits of using multisensory media for children with learning difficulties. Pop-up books and hand puppets are both examples of three-dimensional, interactive tools that cater to the cognitive development stage of slow learner children, who benefit more from concrete rather than abstract stimuli.

According to Rahmawati and Rukiyati, pop-up books are effective due to their ability to engage students kinetically and visually, helping them internalize learning content. Their vivid illustrations and physical interactivity enhance attention and retention in younger learners. However, while pop-up books can stimulate imagination and creativity, they lack the auditory and expressive dynamism of hand puppets, which combine storytelling with direct modeling of behaviors.

Ediyarsari et al. demonstrated that puppet-based education outperformed traditional visual media such as videos in dental health learning outcomes. Puppets captivate children's imagination, encourage interaction, and allow for synchronized verbal and motor modeling of brushing practices. Similarly, Pekolj asserts that puppets enhance communication between teachers and students with special needs by building empathy, reducing anxiety, and increasing responsiveness.

The success of hand puppets in this study may also stem from their resemblance to human anatomy. Puppets shaped like mouths or teeth may aid in the spatial understanding of brushing areas, thus reinforcing procedural memory. Moreover, children are more likely to engage with anthropomorphic figures, fostering emotional attachment and imitation a process linked to effective learning in Piaget's theory of cognitive development.

This comparative advantage is supported by Senen et al., who found that puppetry not only enhances language and cognitive skills but also nurtures character development and critical thinking in elementary-aged children. Hence, the hand puppet's superior performance in this study is in line with broader pedagogical trends favoring performative and participatory learning methods for children with learning disabilities.

C. LIMITATIONS AND IMPLICATIONS

Despite the promising findings, several limitations must be acknowledged. The most significant is the small sample size ($n = 20$), which restricts generalizability. The study was limited to two public elementary schools in Surabaya, and participants were not randomized due to ethical and practical constraints. Future research with larger, randomized samples across diverse geographic and socioeconomic backgrounds is needed to validate and extend these results.

Another limitation is the relatively short follow-up duration. Although improvements were noted after 21 days, the study did not assess long-term retention of skills or whether these translated into sustained behavioral change and improved oral health outcomes. A longitudinal study could determine whether the gains observed persist beyond the intervention phase or require periodic reinforcement.

Furthermore, the study exclusively focused on slow learner children, excluding those with other disabilities such as autism or ADHD. Expanding the intervention to other special needs populations could provide valuable insights into how various cognitive and behavioral challenges influence the effectiveness of different educational media.

Additionally, this research measured only practical brushing performance, not changes in plaque index, oral hygiene status, or related health indicators. Incorporating clinical assessments would provide a more comprehensive evaluation of the intervention's real-world impact.

Despite these limitations, the implications of the findings are substantial. Educators and healthcare practitioners should consider incorporating storytelling and interactive media particularly hand puppets into oral health curricula for inclusive classrooms. These tools are low-cost, scalable, and can be locally adapted to reflect cultural contexts and linguistic nuances.

From a policy perspective, integrating health education with inclusive learning strategies aligns with national goals to improve both academic and health outcomes among vulnerable populations. The Ministry of Education and Health could collaborate to develop standardized toolkits using puppets and pop-up books for use in public schools across Indonesia.

Finally, the findings contribute to the growing body of literature advocating for differentiated instruction in inclusive education. Recognizing that children learn through diverse pathways, especially those with cognitive delays, is essential to closing achievement gaps and ensuring equity in access to health information.

V. CONCLUSION

This study aimed to examine the effectiveness of pop-up book and hand puppet educational media in improving the toothbrushing skills of slow learner students enrolled in

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inclusive elementary school settings. The intervention was designed using a structured behavioral framework over 21 days, involving three main phases: educational counseling using media, reinforcement by parents, and independent practice. Based on the findings, both groups showed significant improvements, but the group receiving the hand puppet intervention demonstrated superior outcomes, with 70% of participants achieving the "good" brushing category. In comparison, only 30% of the students in the pop-up book group reached this same category. This significant difference indicates that hand puppet media are more engaging, memorable, and practical for teaching procedural skills such as toothbrushing among cognitively delayed children. The hand puppet method's effectiveness is likely due to its multisensory engagement, which aligns with pedagogical theories suggesting that children with cognitive impairments benefit more from interactive and demonstrative learning strategies. While pop-up books were also beneficial providing visual interest and narrative structure hand puppets offered enhanced interaction, storytelling, and real-time demonstration capabilities. These advantages were reflected in the students' improved ability to perform essential steps in brushing, such as proper motion technique, adequate duration, and thorough coverage of tooth surfaces. The results emphasize the need for practical, accessible, and engaging health education strategies tailored to the developmental needs of students with learning challenges. The success of this study encourages broader adoption of hand puppet interventions in inclusive schools to promote personal hygiene. Future research should involve larger and more diverse populations, incorporate randomized control trials, assess long-term retention of brushing behavior, and measure oral health outcomes such as plaque index and gingival condition. Furthermore, expanding this approach to other special needs populations, including students with autism or physical impairments, could offer valuable insights into the generalizability and scalability of these educational media. Ultimately, the integration of interactive, child-friendly media in school-based oral health promotion holds promise for addressing disparities and enhancing health equity for vulnerable children.

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DATA AVAILABILITY

No datasets were generated or analyzed during the current study.

AUTHOR CONTRIBUTION

Silvia Prasetyowati conceived the study concept and design. Afidatul Mukhlishoh and Siti Fitria Ulfah carried out data collection and intervention activities. Isnanto performed statistical analysis and contributed to the interpretation of results. All authors participated in drafting and revising the manuscript and approved the final version for publication.

DECLARATIONS

ETHICAL APPROVAL

This study received ethical approval from the Ethics Committee of the Health Polytechnic of the Ministry of Health Surabaya. Informed consent was obtained from all participants' parents prior to data collection. The authors declare no conflict of interest related to this study. All procedures performed were in accordance with the ethical standards of the institutional and national research committee.

CONSENT FOR PUBLICATION PARTICIPANTS.

Consent for publication was given by all participants

COMPETING INTERESTS

The authors declare no competing interests.

REFERENCE

[1] J. Zhang, X. Li, and Y. Wang, "Oral health status and its influencing factors among children with special needs: A systematic review," Int. J. Environ. Res. Public Health, vol. 19, no. 5, pp. 2738, 2022.

[2] Kementerian Kesehatan RI, "Hasil Utama Riskesdas 2018 Kesehatan (Main Result Health Research)," Riskesdas, pp. 674, 2018.

[3] I. S. M. M. Azmi, F. Ariffin, and H. B. Mukhali, "Inflammation of the Gums," Malaysian Fam. Physician, vol. 15, no. 1, pp. 71–73, 2020.

[4] Febrian, G. U. Fajrani, and A. Pujiastuty, "The Influence Of Tell Show Do Method Based On Individualized Educational Program (IEP) To The Tooth- Brushing Behavioural Change Among Slow Learner Children In Bukittinggi, Indonesia," Indian J. Public Heal. Res. Dev., vol. 1, no. 7, pp. 835–838, 2019, doi: 10.5958/0976-5506.2019.01690.5.

[5] N. Wahyuni, Z. Misykah, and D. S. Panggabean, "Teacher's Strategies In Teaching Slow Learner Students At Elementary School," J. Sci., vol. 11, no. 1, pp. 639–643, 2022.

[6] W. S. Nugrahayati and A. Mustadi, "Slow Learner Learning Facts in Their Inclusion Class," Atl. Press, vol. 330, no. 70, pp. 149–152, 2019.

[7] S. Ru'iya, H. C. A. Kistoro, and Sutarman, "Educating with Paying Attention to Individual Differences: Case Study of Slow Learner Students in Inclusion School," PVJ-ISHESSH 2020, vol. 535, pp. 113–116, 2021, doi: 10.2991/assehr.k.210304.026.

[8] R. Zuleika, "Pengaruh Penyuluhan Menyikat Gigi Menggunakan Media Boneka Gigi terhadap Skor Plak pada Anak Slow Learner di YPAC Palembang," Sriwij. J. Dent., vol. 3, no. 1, pp. 49–58, 2019.

[9] W. Anggraini et al., "Development Of Pop-Up Book Integrated With Quranic Verses Learning Media On Temperature And Changes In Matter," J. Phys. Conf. Ser., vol. 1155, no. 1, pp. 1–9, 2019, doi: 10.1088/1742-6596/1155/1/012084.

[10] K. Bariyyah, R. R. Hasti, and R. H. Susanti, "Pop-Up Book Of Profession As A Career Service Media For Elementary School Students," Child Educ. J., vol. 3, no. 1, pp. 30–38, 2021, doi: 10.33086/cej.v3i1.1986.

[11] W. Haryani and I. H. Siregar, "Pop-up Book As A Media For Dental Promotion To Increase Knowledge Of Dental Health In Elementary School Students," J. Drug Deliv. Ther., vol. 12, no. 1, pp. 42–44, 2022, doi: 10.22270/jddt.v12i1.5279.

[12] Pudentiana et al., "The Effect of Pop Up Book Media on Increasing Dental Health Knowledge in Elementary School Children," Asian J. Pharm. Res. Dev., vol. 10, no. 2, pp. 6–9, 2022.

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 3 No.3, pp. 199-204, June 2023

[13] L. Izzati and Yulsyofriend, "Pengaruh Metode Bercerita Dengan Boneka Tangan Terhadap Perkembangan Kognitif Anak Usia Dini," J. Pendidik. Tambusai, vol. 4, no. 1, pp. 472–481, 2020.
[14] P. Ediyarsari et al., "Comparison Of The Effectiveness Of Movie Media And Puppet Story Toward Dental And Oral Hygiene In Elementary School Students In Semarang," Public Heal. Perspect. J., vol. 5, no. 2, pp. 170–177, 2020.
[15] D. Pekolj, "Using Puppets In Working With Pupils With Special Educational Needs," Eur. J. Spec. Educ. Res., vol. 2, no. 2, pp. 64–75, 2018.
[16] C. A. Maher et al., "Are Health Behavior Change Interventions That Use Online Social Networks Effective? A Systematic Review," J. Med. Internet Res., vol. 2, no. 16, 2014.
[17] N. E. Sari and D. Suryana, "Thematic Pop-Up Book As A Learning Media For Early Childhood Language Development," J. Pendidik. Usia Dini, vol. 13, no. 1, pp. 43–57, 2019.
[18] M. A. Nazaruddin and M. Efendi, "The Book Of Pop Up Augmented Reality To Increase Focus And Object Recognition Capabilities For Children With Autism," J. ICSAR, vol. 2, no. 1, pp. 9–14, 2018.
[19] D. I. Rahmawati and R. Rukiyati, "Developing Pop-Up Book Learning Media To Improve Cognitive Ability Of Children Aged 4-5 Years," Atl. Press, vol. 249, no. 4, pp. 60–69, 2018, doi: 10.2991/secret-18.2018.10.
[20] K. B. Pratiwi et al., "The Development Pop-Up Books To Improve Children's Language Skills," JKTP J. Kaji. Teknol. Pendidik., vol. 3, no. 4, pp. 408–414, 2020.
[21] D. A. P. M. Noviyanti and I. G. Margunayasa, "Animal And Human Digestive System Material Of The Fifth Grade Elementary School In The Form Of Pop-Up Book Media," J. Educ. Technol., vol. 4, no. 2, pp. 161–169, 2020.
[22] D. Pekolj, "Using Puppets in Working With Pupils With Special Educational Needs," Eur. J. Spec. Educ. Res., vol. 2, no. 2, pp. 64–75, 2018.
[23] C. A. Maher et al., "Are Health Behavior Change Interventions That Use Online Social Networks Effective? A Systematic Review," J. Med. Internet Res., vol. 2, no. 16, 2014.
[24] N. Mujahidah, E. Damayanti, and A. Afiif, "The Role Of Storytelling Methods Using Hand Puppets In Early Children's Language Development," Child Educ. J., vol. 3, no. 2, pp. 78–91, 2021.
[25] M. N. Hakim, Zuriyati, and S. Rohman, "Hand Puppet: A Teaching-Learning Storytelling Media," Getsempena English Educ. J., vol. 2, no. 2, pp. 182–190, 2019.
[26] P. Ediyarsari, I. M. Sudana, and S. R. Rahayu, "Comparison Of The Effectiveness Of Movie Media And Puppet Story Toward Dental And Oral Hygiene In Elementary School Students," Public Heal. Perspect. J., vol. 5, no. 2, pp. 170–177, 2020.
[27] N. Fitria and A. Farastiwi, "Efforts To Improve English Speaking Ability Of Five To Six-Years-Old Bilingual School Students Through Hand Puppet Media," Al-Athfaal J. Ilm. Pendidik. Anak Usia Dini, vol. 4, no. 1, pp. 47–59, 2021.
[28] S. Prasetyowati, N. Farichah, I. Chairanna, and B. Hadi, "Perubahan Cara Menyikat Gigi Dengan Menggunakan Media Panggung Boneka Pada Anak- Anak Kelas B Tk Muslimat Nu-2 Gresik," J. Penelit. Kesehat., vol. 19, no. 1, pp. 13–15, 2021.
[29] T. Kroger and A. M. Nupponen, "Puppet As A Pedagogical Tool: A Literature Review," Int. Electron. J. Elem. Educ., vol. 11, no. 4, pp. 393–401, 2019.
[30] D. I. Rahmawati and R. R. Rukiyati, "Developing Pop-Up Book Learning Media To Improve Cognitive Ability Of Children Aged 4-5 Years," Atl. Press, vol. 249, pp. 60–69, 2018.
[31] K. B. Pratiwi et al., "The Development Pop-Up Books To Improve Children's Language Skills," JKTP J. Kaji. Teknol. Pendidik., vol. 3, no. 4, pp. 408–414, 2020.