AIP Conference Proceedings

scitation.org/journal/apc

Volume 2524

International Conference on Education Science and Engineering (ICoESE) 2021

Batusangkar, Indonesia • 29–30 September 2021

Editors • M Haviz and Ika Metiza Maris

AIP Publishing

AIP Conference Proceedings

Volume 2524

ISBN: 978-0-7354-4215-3

ISSN: 0094-243X

scitation.org/journal/apc

AIP Publishing

AIP Conference Proceedings

International Conference on Education Science and Engineering (ICoESE) 2021

Volume 2524

Conference collection

International Conference on Education Science and Engineering (ICoESE) 2021

Batusangkar, Indonesia
29–30 September 2021

Editors
M Haviz
Ika Metiza Maris
IAIN Batusangkar, Batusangkar, Indonesia

Sponsoring Organizations
Faculty of Tarbiya and Teacher Training IAIN Batusangkar, Indonesia

All papers have been peer reviewed.

AIP Publishing

Melville, New York, 2022
AIP Conference Proceedings

Volume 2524

To learn more about AIP Conference Proceedings visit **http://proceedings.aip.org**

Editors

M Haviz
IAIN Batusangkar
Biology Education
Jalan Sudirman Nomor 137 Kubu Rajo Limo Kaum
Batusangkar, 27213
Indonesia

Email: mhaviz@iainbatusangkar.ac.id

Ika Metiza Maris
IAIN Batusangkar
Mathematics Education
Jalan Sudirman Nomor 137 Kubu Rajo Limo Kaum
Batusangkar, 27213
Indonesia

Email: ikametizamaris@iainbatusangkar.ac.id

ISBN 978-0-7354-4215-3
ISSN 0094-243X
Printed in the United States of America

AIP Conference Proceedings, **Volume 2524**
International Conference on Education Science and Engineering (ICoESE) 2021

Table of Contents

COMPUTER SCIENCE AND TECHNOLOGY

Preface: International Conference on Education Science and Engineering (ICoESE) 2021

We are delighted to present the proceeding of the International Conference on Education, Science and Engineering (ICOeSE). ICOeSE has held on September 29-30th, 2021 virtually in Batusangkar, West Sumatra, Indonesia with theme "Science, Technology, and Engineering in Educational Transformation in Society 5.0". This conference aims to provide to invite all parties who are concerned with global issues about improving the quality of the education system in facing the era of society 5.0 and to open international forums. So, that participants have the opportunity to convey ideas, experiences, expertise, and knowledge about global issues about education, science and technology and engineering as an effort to develop the quality of education. This theme has discussed in in spesific topics biology, physics, mathematics, chemistry and computer science and technology.

Finally, we like to express our gratitude to the Rector of IAIN Batusangkar, Dean of FTIK and all committee colleagues who have made efforts to organize this activity.

Thank You
Batusangkar, October 30th, 2021
Editor in Chief / Chairman of ICoESE 2021

Dr. M. Haviz, M.Si

International Conference on Education Science and Engineering (ICoESE) 2021
AIP Conf. Proc. 2524, 010001-1–010001-1; https://doi.org/10.1063/12.0013144
Published by AIP Publishing. 978-0-7354-4215-3/$30.00

Committee and Editorial Boards of International Conference on Education Science and Engineering (ICoESE) 2021

Chairman

Dr. M. Haviz, M.Si

Co-Chairman

Dr. Elda Herlina, M.Pd

Scientific Committees / Reviewers / International Advisory Board

Prof. Dr. Muhammad Ali Ramdani, STP., M.T (Universitas Islam Negeri Sunan Gunung Djati Bandung, Indonesia)

Prof. Dr. Akrajas Ali Umar (University Kebangsaan Malaysia, Malaysia)

Prof. Kiyomi Banda (University of Environment, Japan)

Prof. Inge Schwank (Universitat Osnabruck, Germany)

Zamzami Zainudin, Ph.D (University of Hongkong, Hongkong)

Assoc. Prof. Yohandri, M.Si., Ph.D (Universitas Negeri Padang, Indonesia)

Assoc. Prof. Dr. Marjoni Imamora, M.Sc (Institut Agama Islam Negeri Batusangkar, Indonesia)

Dr. M. Haviz, M.Si (Institut Agama Islam Negeri Batusangkar, Indonesia)

Dr. Elda Herlina, M.Pd (Institut Agama Islam Negeri Batusangkar, Indonesia)

Dr. Dona Afriyani, M.Pd (Institut Agama Islam Negeri Batusangkar, Indonesia)

Dr. Elvy Rahmi, M.Si (Institut Agama Islam Negeri Batusangkar, Indonesia)

Venny Haris, M.Si (Institut Agama Islam Negeri Batusangkar, Indonesia)

International Conference on Education Science and Engineering (ICoESE) 2021
AIP Conf. Proc. 2524, 010002-1–010002-4; https://doi.org/10.1063/12.0014811
Published by AIP Publishing. 978-0-7354-4215-3/$30.00

Steering Committes

Assoc. Prof. Dr. Marjoni Imamora, M.Sc	(Rector of IAIN Batusangkar)
Dr. Ridwal Trisoni, M.Pd	(Vice Rector of Academic Affairs)
Dr. Adripen, M.Pd	(Dean of FTIK)
Dr. Masril, M.Pd	(Vice Dean of Academic Affairs)
Dr. Gustina, M.Pd	(Vice Dean of Financial Affairs)

Secretary

Aidhya Irhash Putra, S.Si., MP.

Anggi Rahmadika, S.Pd.I

Technical Program

Yulnetri, S.S., M.Pd.

Emeliya Hardi, M.Pd.

Najmiatul Fajar, M.Pd.

Putri Yeni, S.Pd.I

Secretariat

Drs. H.T. Idris, S.Pd., M.Ag.

Silfia Rahmi, M.Pd.

Diyyan Marneli, M.Pd.

Safrizal, M.Pd.

Muspardi, M.Pd.

Dwivelia Aftika Sari, M.Pd.

IT and Broadcasting

Syamsul Bahri, S.H.I

Riki Rinaldi, A.Md.

Andi Saputra, A.Md.

Riki Rikarno, M.Sn

Publication and IT

Dr. Dona Afriyani, S.Si., M.Pd.

Lely Kurnia, S.Pd., M.Si.

Hadiyati Idrus, M.Sc.

Dr. H. Kamaluddin, S.Ag., MA

Venny Haris, M.Si.

Annisaul Khairat, M.Pd.

Bushra Hamid, S.Pd.I

Treasurer

Riza Fatmawati, S.E.

Finance and Sponsorship

David Leondra, S.Ag.

Asma Ulya, A.Md.

Putri Yeni, S.Pd.I

Accommodation, Consumption and Transportation

Susi Herawati, S.Ag., M.Pd.

Afrizal, M.E.

Hauliya Rahmi Z, S.Si.

Husnani, M.Pd.

Zulinna, A.Md.

Documentation

Suyono, S.Pd., M.A.,(Tesol)., Ph.D.

Doni Oktarizal, S.E.I

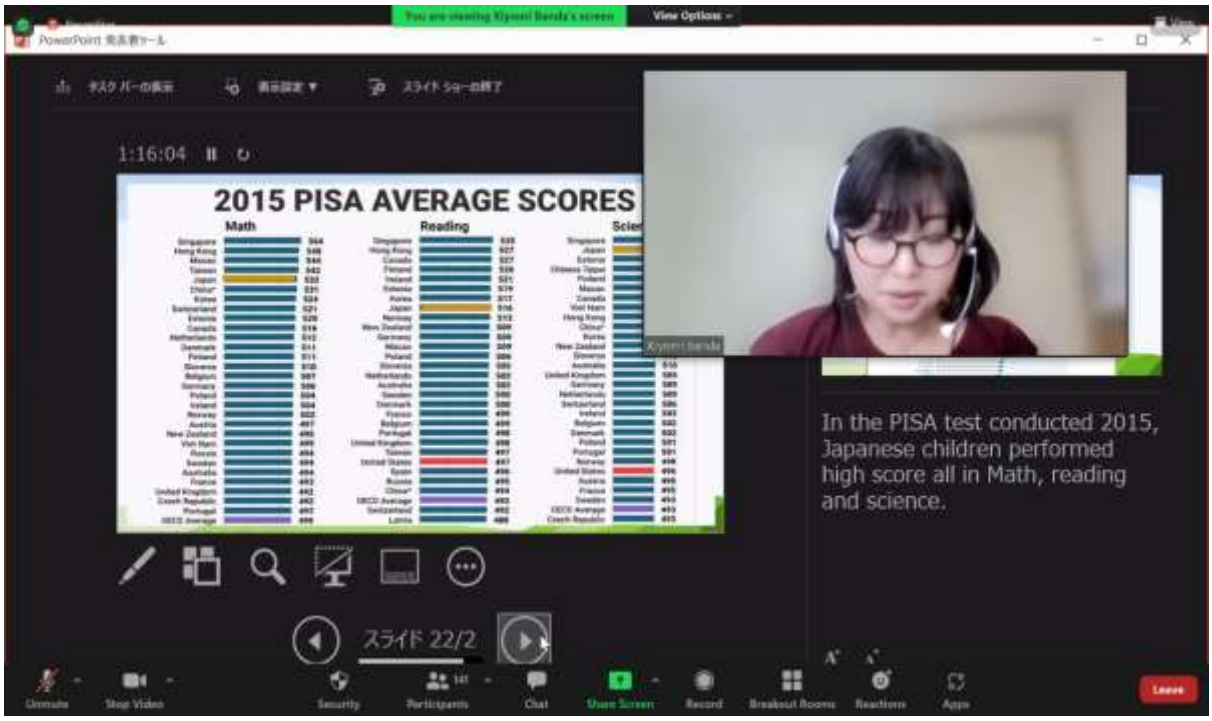
Syahrul AS

Photographs of International Conference on Education Science and Engineering (ICoESE) 2021

Blended Opening Ceremony of ICoESE, Live from Auditorium IAIN Batusangkar and Shared via Zoom Meeting at September, 29th 2021

International Conference on Education Science and Engineering (ICoESE) 2021
AIP Conf. Proc. 2524, 010002-1–010002-4; https://doi.org/10.1063/12.0014812
Published by AIP Publishing. 978-0-7354-4215-3/$30.00

Report from Chairman (Dr. M. Haviz, M.Si), Welcome Speech from Dean FTIK (Dr. Adripen, M.Pd), and Opening Speech from Rector IAIN Batusangkar (Dr. Marjoni Imamora, M.Sc)



Plennary Speaker by Prof. Dr. Kiyomi Banda from University of Environment Japan

Plennary Speaker by Zamzami Zainuddin, Ph.D from University of Hongkong, Hongkong

Closing Speech by Dean FTIK IAIN Batusangkar, Dr. Adripen, M.Pd. Live from Auditorium IAIN Batusangkar and also Shared via Zoom Meeting at September, 30th 2021

The Committes of ICoESE 2021

Developing Animated Video Using Sparkol VideoScribe to Optimize Listening Skills of Children

Nurlaila[1, a)], Rahma Khairowati[1, b)], Elis Komalasari[1, c)], Wahidah Fitriani[1, d)], and Kamaluddin[1, e)]

[1]*Institut Agama Islam Negeri Batusangkar, West Sumatra, Indonesia.*

[a)] *Corresponding author: nurlaila@iainbatusangkar.ac.id*
[b)] *rahmakhairowati24@gmail.com*
[c)] *eliskomalasari@iainbatusangkar.ac.id*
[d)] *wahidahfitriani@iainbatusangkar.ac.id*
[e)] *kamaluddin@iainbatusangkar.ac.id*

Abstract. Listening is the most basic language skill that must be mastered by children. In order for children's listening skills to develop properly, it is necessary to present supporting tools based on learning technology so that they can attract children's interest. This study aims to develop an animated video using sparkol videoscribe to optimize children's listening skills and can be used in learning for children aged 5-6 years in kindergarten. This study used research and development method. Data was collected through a questionnaire which was then analyzed quantitatively and qualitatively. Quantitative analysis is used to determine the validity and practicality of animated video, while qualitative analysis is used to determine the revised aspects of the developed product. The results showed that the developed animated video using the sparkol videoscribe application was in accordance with the needs of children in optimizing their listening skills. In order for developed animated video to be used in learning for children aged 5-6 years in kindergarten, it contains appropriate learning materials and is equipped with appropriate audio, images, and backsound. The results of the validity and practicality test showed that the developed animation video using sparkol videoscribe is in the very valid and very practical category, so that developed animated video can be used and is suitable to optimize listening skills of children aged 5-6 years in kindergarten.

INTRODUCTION

Early childhood education is a form of education given to children aged 0-6 years in order to help their growth and development. Education for early childhood is carried out with the aim that all potentials possessed by children can grow and develop in accordance with the expected level of achievement. One aspect that needs to be developed in children is the language aspect, because every human being initiates interaction with the world around him through language. According to Ganetti [1], language can be interpreted as a tool of human communication and social interaction where humans use the language to communicate and interact with others for a wide variety of purposes. Yusuf [2] reveals that language is a power used to communicate with other creatures. Good communication skills are developed from four skills, namely listening, speaking, reading, and writing.

There are three issues related to language development, especially related to listening skill of children in Kindergarten. First, the development of children's listening skills is still lacking. Second, children's focus in listening is still low. Third, the children did not listen to the teacher when the teacher explained the learning material. To address this problem and to realize good language development in children, the right way is needed. One of them is by presenting learning support tools such as learning media that can attract children's attention so that they are motivated in learning to listen, because interesting things make children better understand what the teacher teaches at school.

Learning media is a form that involves software and hardware that can be used to provide material content from learning resources to students. It can stimulate the learners' thoughts, feelings, concerns, and interests in such a way

International Conference on Education Science and Engineering (ICoESE) 2021
AIP Conf. Proc. 2524, 060004-1–060004-6; https://doi.org/10.1063/5.0112521
Published by AIP Publishing. 978-0-7354-4215-3/$30.00

so that the learning process (indoor/outdoor) becomes more effective [3]. In choosing learning media, there are several things that must be considered, one of them is that the media chosen should be adapted to the circumstances of the students (in terms of age, intelligence, educational background, culture, and environment) [4].

Sparkol videoscribe is a software that produces an animated whiteboard that can include images, text, and sound. Various studies have been conducted regarding the developing learning videos using sparkol videoscribe for Elementary School students [5] [6], Junior High School students [7], and college students [8]. Researchers have also researched the effectiveness of sparkol videoscribe in improving student learning outcomes [9] and students' analytical skills [10].

Learning videos developed with sparkol videoscribe is also used in language learning. SiRecord & Yunus [11] explored learners' perceptions on the use of videoscribe in improving their listening and speaking skills. Analysis of the data indicated positive perceptions of the learners on the use of videoscribe in improving their listening and speaking skills. Maulina, Hikmah, & Pahamzah [12] found that sparkol videoscribe gave the influence to improve students' speaking skills. Almatiana, Astuti, & Ramadhiyanti [13] also found the contribution of using sparkol videoscribe media in teaching writing skill. Several researchers also developed learning media using sparkol videoscribe for language learning. Alif, Salam, & Arifin [14] designed video using sparkol videoscribe for teaching grammar. Aryuntini, Astuti, & Yuliana [15] developed learning media based on videoScribe to improve writing skill.

Based on the literature review, it can be concluded that learning videos using sparkol videoscribe have been developed for students from elementary school to college, but there is no development of learning videos using sparkol videoscribe for children in kindergarten. Later on, learning videos using sparkol videoscribe have been also developed for language learning, but not for children in kindergarten too. Besides that, the developed language learning videos using sparkol videoscribe are only for teaching grammar and writing, not for teaching listening. Therefore, developing learning videos using sparkol videoscribe for teaching listening for children of kindergarten is important.

Learning videos in the form of an animated videos developed with sparkol videoscribe is one of the appropriate media used for children to improve their listening skills. Susiani, Farizawati, Dauyah, & Riska [16] found that the use of animation videos can improve students' listening skills. Sihotang, Cendana, & Kristidhika [17] also found that the use of video can improve students' attention in learning process of Kindergarten students. Besides that, SiRecord & Yunus [11] also found that videoscibe creates fun environment and motivates learners. This study aims to develop an animated video using sparkol videoscribe to optimize children's listening skills, so that they can be used in learning for children aged 5-6 years in kindergarten.

METHOD

The development of animated videos based on sparkol videoscribe used the Research & Development (R&D) method. This research procedure is limited to several stages, namely the stage of needs analysis, literature review, formulating product design, product development, validity testing, practicality testing, and revision. This development research was conducted in the 2020-2021 Academic Year at Dharma Bunda Kindergarten, Sungayang, Tanah Datar Regency, West Sumatra Province, Indonesia.

Data was collected by interviews, documentation, and questionnaires. Interviews were conducted with teachers in Kindergarten. Documentation studies were conducted on learning themes in Kindergarten, indicators of listening skills of children, and an analysis of their characteristics. The questionnaire was given to experts to test the validaty of the product and to the teacher to test the practicality of the product. Data obtained from interviews and documentation were analyzed qualitatively. The data obtained from the questionnaire was analyzed quantitatively, in which the data was convered in percentage form. Through this research and development process, a product is produced in the form of an animated video that is feasible and practical so that it can be used in learning listening skills by children in Kindergarten.

RESULTS AND DISCUSSION

The needs analysis stage is the basis of the development that the researchers did. At this stage, the researcher identified the problems found and faced by the teacher in developing listening skills of children in Kindergarten. At this stage, researchers observed children's listening skills at Dharma Bunda Kindergarten, Sungayang, Tanah Datar Regency. The researchers found that children's listening skills were not yet satisfactory. It was detected that only about 40% of

children can follow some directions at a time, only about 30% of children are able to repeat more complex sentences, and only about 40% of children are able to understand simple commands and questions. While the children's ability in other aspects of listening skills tends to be better, for example 75% of children have been able to repeat descriptive words and 60% of children have been able to understand opposite words.

Furthermore, the researchers also conducted interviews related to the use of media in developing listening skills in Dharma Bunda Kindergarten, Sungayang, Tanah Datar Regency. It was known that the teachers did not have adequate skills and sufficient time to develop technology-based learning media. Later on, researchers also analyzed the learning characteristics of children in this school. It was known that the children tend to like audio-visual media and they are enthusiastic when watching animated videos.

The results of this needs analysis are used as the basis to design animated videos using sparkol videoscribe. Researchers designed an animated video to optimize listening skills of children aged 5-6 years with five indicators, they are 1) children can follow some directions at a time, 2) children are able to repeat more complex sentences, 3) children are able to understand simple commands and questions, 4) children are able to repeat descriptive words, and 5) children are able to understand opposite words.

The animated videos were developed according to the theme of learning in kindergarten, namely "profession". The duration of the animated video is 42 minutes with 7 sub-themes as follows: teacher (6 minutes), farmer (7 minutes), doctor (7 minutes), firefighter (6 minutes), police (6 minutes), army (5 minutes), and pilot (5 minutes). Animated videos that are developed have pictures, sounds, and background music. The following is animated videos development flowchart (**Figure 1**).

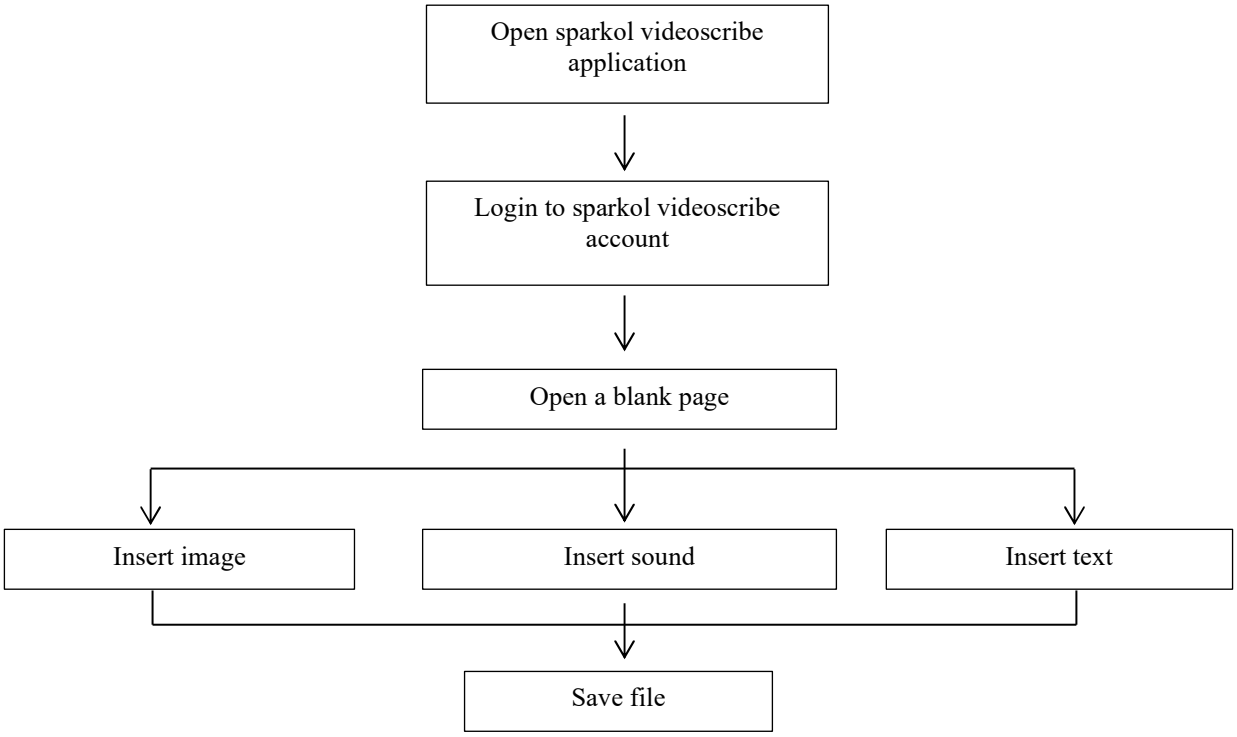


FIGURE 1. Flowchart of animated videos development

The following are examples of the display of animated videos that have been developed (**Figure 2**)

FIGURE 2. Animated videos display examples with many sub-themes in profession: (a) teacher, (b) farmer, (c) doctor, (d) firefighter, (e) police, (f) army, and (g) pilot

Animated videos using sparkol videoscribe are validated by two validators with three assessment aspects, namely construct aspects, content aspects, and language aspects. The feasibility of the animated video developed using sparkol videoscribe has 7 points of assessment of the construct aspect, 6 points of assessment of the content aspect, and 2 points of assessment of the language aspect. The following are the results of the validation of the all aspects of the two validators (**Table I**).

TABLE I. The results of the validity test

Aspect	Percentage	Criteria
Construct	90,8	Very Valid
Content	85	Valid
Language	93,7	Very Valid

Based on the results of the validity test of the animated video developed using sparkol videoscribe to improve the listening ability of children, it can be concluded that the animated videos are valid from the construct aspect with a percentage of 90.8%, from the content aspect with a percentage of 85%, and from the language aspect with a percentage 93.7%. The average percentage of the validity test is 89.8% in the very valid category. Thus, it can be concluded that the animated video developed using sparkol videoscribe to improve the listening skills of early childhood children at Dharma Bunda Kindergarten, Sungayang is on very valid criteria so that it can be used for listening learning for early childhood. This animated video makes it easier for children to remember and understand the material they hear because it is accompanied by audio and visuals that are interesting for children.

After the validity stage, a revision was made to the animated video. Revisions are made based on suggestions from validators and practitioners. Revisions were made to several aspects, namely background image, image layout, image completeness, image suitability, text simplicity, voice clarity, and presentation of learning materials. The following are some comparisons of the appearance of animated videos before and after revisions.

(a)

(b)

FIGURE 3. Comparisons of animated videos display before and after revisions: (a) before revision (b) after revision.

To find out the practicality of the animated video developed using sparkol videoscribe, the video was assessed by two practitioners with four assessment aspects, namely use aspects, efficiency of learning aspects, attractiveness aspects, and benefits aspects. The practicality of the animated video developed using sparkol videoscribe has 4 points of assessment of the use aspect, 3 points of assessment of the efficiency of learning aspect, 3 points of assessment of the attractiveness aspect, and 3 points of assessment of the benefits aspect. The following are the results of the practicality test from the two practitioners (**Table II**).

TABLE II. The results of the practicality test

Aspect	Percentage	Criteria
Use	85	Practice
Efficiency of learning	82.5	Practice
Attractiveness	87.5	Very Practice
Benefits	90	Very Practice

Based on the assessment of practitioners who have used the animated videos developed, it is known that the animated videos are practical from the use aspect with a percentage of 85%, from the efficiency of learning aspect with a percentage of 82.5%, from the attractiveness aspect with a percentage of 87.5%, and from the benefits aspect with a percentage of 90%. The average percentage of the practicality test is 86.25% in the vary practice category. In general, the practitioners judge that the animated videos developed are very easy to use in the learning process, so they make it easier for teachers to use these technology-based learning media in the classroom. The practitioners also consider that the animated videos developed using sparkol videoscribe are intuitive videos. Therefore, they are interesting for children.

The trend of using video in children's learning is increasing in over time, especially in online learning and blended learning. Video is considered a very relevant medium to convey learning informations to students when teachers cannot convey them directly. Yousef, Chatti, & Schroeder [18] stated that video is a learning tool in learning process and a powerful learning resource in online learning. Brame [19] also stated that video has become the main information-delivery tool in online learning and a cornerstone of blended learning. Multiple studies have shown that children liked videos and enjoyed watching them [20] [21], so using videos in learning is effective for children and can increase their knowledge [20] [22] [23]. Animated videos are the most widely used in childrens's learning. Martzoukou [24] found that majority of children enjoyed watching animated videos. Neeley & Schumann [25] also found that animated spokes-characters increased attention of children.

CONCLUSION

Research and development has resulted in an animated video created using sparkol videoscribe. This animated video was developed based on a needs analysis of children in Kindergarten. The results of the validity test of the animated

video are 89.8% in the very valid category, while the practicality test results are 86.25% in the very practical category. Based on the results of the validity and practicality tests, it can be concluded that the animated video developed can be used and is suitable to optimize listening skills of children aged 5-6 years in Kindergarten.

ACKNOWLEDGMENTS

Thank you to the teachers and students of Dharma Bunda Kindergarten, Sungayang, Tanah Datar Regency, West Sumatra Province. Thanks also to the lecturers and students in the Department of Early Childhood Islamic Education of Institut Agama Islam Negeri Batusangkar.

REFERENCES

1. C. Ganetti, "Introduction: Language, Languages, and Linguistics," in *How Languages Work*, edited by C. Ganetti (Cambridge University Press, New York, 2014), p. 3–24.
2. S. Yusuf, *Psikologi Perkembangan Anak dan Remaja* (PT. Remaja Rosdakarya, Bandung, 2005).
3. N. Jalinus, and Ambiyar, *Media dan Sumber Pembelajaran* (Kencana, Jakarta, 2016).
4. M. B. Usman and Anaswir, *Media Pembelajaran* (Ciputat Press, Jakarta, 2002).
5. L. E. R. Widiari and I. G. Astawan, International Journal of Elementary Education **5**, 231-239 (2021).
6. D. A. Rahmah and Arwin, Journal of Basic Education Studies **4**, 2011-2023 (2021).
7. R. A. P. Indah, A. Fadila, and I. Syafei, "Pengembangan Media Pembelajaran Sparkol Berbantuan Edutainment pada Materi Aritmatika Sosial Kelas VII SMP/MTs," Prosiding Seminar Nasional Matematika dan Pendidikan Matematika **2**, 153-161 (2019).
8. F. Nurrohmah, F. G. Putra, and Farida, Formatif: Jurnal Ilmiah Pendidikan MIPA **8**, 233-250 (2018).
9. P. E. Prasetyo and O. Anggraeni, Journal of Critical Reviews **7**, 2699-2707 (2020).
10. U. Pratiwi, R. A. Setyaningrum, and E. S. Kurniawan, Gravity: Jurnal Ilmiah Penelitian dan Pembelajaran Fisika, **6**, 21-27 (2020).
11. T. S. Ricord and M. M. Yunus, Asian EFL Journal **20**, 56-68 (2018).
12. U. Maulina, S. Hikmah, and & J. Pahamzah, International Journal of Linguistics, Literature and Translation (IJLLT) **2**, 132-140 (2019).
13. D. Almatiana, D. S. Astuti, and Y Ramadhiyanti, JELTE: Journal of English Language Teaching and Education **2**, (2021).
14. M. Alif, U. Salam, and Z. Arifin, Jurnal Pendidikan dan Pembelajaran Khatulistiwa **8**, 1-8 (2019).
15. N. Aryuntini, I. Astuti, and Y. G. S. Yuliana, Journal of Education, Teaching and Learning **3**, 187-194 (2018).
16. R. Susiani, Farizawati, E. Dauyah, and K. Riska, Jurnal Dedikasi Pendidikan **4**, 277-288 (2020).
17. R. A. Sihotang, W. Cendana, and D. C. Kristidhika, International Journal of Elementary Education **4**, 496-502 (2020).
18. A. M. F. Yousef, M. A. Chatti, and U. Schroeder, International Journal on Advances in Life Sciences 6, 122-135 (2014).
19. C. J. Brame, CBE Life Sci Educ **15**, 1-6 (2016).
20. A. Sadik and K. Badr, Journal on Educational Psychology **5**, 21-34 (2012).
21. B. Izci, I. Jones, T. Ozdemir, L. Alktebi, and E. Bakir, *Children, Families and Technology in Today's Society: What Challenges? Which Paths?* (Lisbon School of Education, Lisbon, 2019), p. 81-92.
22. N. Yaqoob, T. Bibi, and M. O. Mansoor, Journal of Early Childhood Care and Education **2**, 35-50 (2018).
23. H. Sabila and F. Kurniawati, Indonesian Journal of Disability Studies (IJDS) **7**, 72-80 (2020).
24. K. Martzoukou, Journal of Research in Innovative Teaching and Learning, 1-19 (2020).
25. S. M. Neeley and D. W. Schumann, Journal of Advertising **33**, 7-23 (2004).