



Use of the PowToon Online Presentation Application by Non-Digital Native Mathematics Teachers to Create Media and Apply it to the Learning Process

Dicky Fernanda J¹

¹Mathematics Education Study Program, Faculty of Teacher Training and Education, Universitas Jambi, Indonesia

Article Info

Article history:

Received Oct 6, 2023

Revised Oct 12, 2023

Accepted Oct 18, 2023

Keywords:

Mathematics
Non-Digital Native
PowToon
Learning Process

ABSTRACT

Purpose of the study: The purpose of this research is to determine the perceptions of non-digital native mathematics teachers in the process of learning the PowToon application, to determine teachers' perceptions of the PowToon application in the process of creating learning media, and to determine students' perceptions of learning media created with the PowToon application by non-digital mathematics teachers.

Methodology: This type of research is qualitative research. The research subjects were two non-digital native Mathematics teachers at Public High School 11 Jambi. To collect data, researchers used several instruments, including diaries, interview guides, and questionnaires. Diaries are used to collect personal notes and daily reflections from these teachers. An interview guide was used to conduct in-depth interviews with teachers to gain a deeper understanding of the use of digital technology. Meanwhile, the questionnaire was used to collect teacher responses to several questions related to the use of digital technology in learning.

Main Findings: The research results seen from the teachers' diaries show that the perception of non-digital native mathematics teachers in the process of learning the PowToon application is positive. Meanwhile, the perceptions of non-digital native mathematics teachers were concluded based on interview data regarding the PowToon application in the process of creating positive learning media, and based on data processing analysis from 70 students who were the research sample, 12 students or 17.14% were in the very high category. 58 students or 82.85% were in the high category, and 10 students or 14.28% were in the medium category.

Novelty/Originality of this study: This research provides an understanding of teachers' and students' perceptions of the use of the PowToon application in mathematics learning. These findings can provide guidance and input for non-digital native mathematics teachers in integrating digital technology in learning, as well as optimizing the use of the PowToon application as an effective and interesting learning media.

This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license



Corresponding Author:

Dicky Fernanda J

Mathematics Education Study Program, Faculty of Teacher Training and Education, Universitas Jambi, Indonesia

Email: dickyfer12@gmail.com

1. INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, nation and state [1]–[3]. Education is an important process in human life [4]–[6]. Education also has the task of preparing human resources for development [7]–[9]. Education that is able to support future development is education that is able to develop the potential of students.

The progress of human civilization is influenced by advances in the application of mathematics by human groups [10]–[12]. Mathematics is a measure of the glory of a nation, which means that a nation that masters mathematics well will be able to compete with other nations. This is the hope of the Indonesian government to be able to compete with other nations in terms of technological and scientific developments. Hence the importance of strong mastery of mathematics from an early age [13]–[15]. Mathematics learning must be planned carefully so that students' knowledge development increases in each educational unit.

The teaching and learning process in the development of science and technology increasingly encourages reform efforts in the use of technological results to improve student learning achievements, both academic and non-academic achievements [16]–[18]. The use of learning media is one way that teachers can use to improve student learning achievement [19]–[21]. The use of learning media is expected to help students understand and accept the learning process carried out by the teacher.

The use of learning media in the teaching and learning process will be more enjoyable and more meaningful for students [22]–[24]. The use of learning media has quite important meaning and significance in the teaching and learning process. The complexity of the material to be presented to students can be simplified with the help of media. The use of media in the learning process can help teachers convey information or subject matter that is considered complicated for students [25], [26]. In other words, learning media in the teaching and learning process is related to students' level of thinking. Students' level of thinking follows the level of development of students in general, starting from the level of abstract to concrete thinking, starting from simple to complex thinking. In this way, students will more easily digest the lesson material than without the help of media.

The digital native generation is those who since birth have been surrounded by various kinds of digital equipment such as computers, video games, digital music players, video cameras, cell phones and various kinds of dolls and devices typical of the digital era [27]. This generation is very fluent in the language of digital technology and the Internet. Teachers in the digital era must listen to digital native students. This is very important because the current school is still stuck in the 20th century, meaning that its style and method of providing education still breathes the atmosphere of 20th century education, even though students have moved forward into the 21st century.

In reality in the field, there are still many teachers who are classified as non-digital natives, or teachers who are classified as digital immigrants [28]. Digital immigrants are classified as non-digital natives who are trying to move into the digital era. Non-digital native teachers often use old language or terms that are not suitable for the current digital era. Teachers who are classified as non-digital natives have to deal directly with students (digital natives) who "speak" a new language that is completely different from the language understood by digital immigrants. So it is not uncommon for digital immigrants not to understand what digital natives are talking about, and vice versa. And they also have to deal directly with students (digital natives) who prefer learning that uses media in their learning. So learning will be fun for digital native students.

Some of these non-digital native teachers have tried to learn ICT media. Some have succeeded in following and applying what they have learned. However, there are quite a few who have not succeeded in learning it and the teacher only knows so much that in the end they return to their "comfort" zone. They are the ones who end up being "abandoned" by their students and considering them as teachers who don't know the times. Based on this problem, researchers are trying to provide an option for an online presentation application that is very easy for non-digital native teachers to learn. This online presentation application is called PowToon.

PowToon is a software or presentation media that uses online services to create presentations that have very interesting animation features including handwritten animation, cartoon animation, and more lively transition effects as well as very easy timeline settings [29]. Using the PowToon software requires an internet connection. The development of the internet in Indonesia has become more advanced and internet access is not a problem. Therefore, creating learning media using an internet connection is very easy to do and can help teachers in the learning process. Animation media is easier for students to understand because they know clearly that it is not just a picture of students' imagination, and animation media is used to improve student learning outcomes.

Based on the results of observations and interviews with one of the mathematics teachers at Public High School 11 Jambi City, mathematics teachers at this school usually use Microsoft Office software, namely PowerPoint, as a learning medium. This is due to the lack of knowledge of teachers at the school about the software that can be used. In fact, there is a lot of software that can be used to help teachers create learning media, one of which is animated media in the form of learning videos using PowToon software. However, many of these mathematics teachers are not yet familiar with the software for creating animated learning videos, so

researchers want to introduce teachers to animated videos using PowToon software as a learning medium, especially for non-digital native mathematics teachers who are still actively teaching at Public High School 11 Jambi City.

The results of Rizka Apriyani Putri's research, entitled "Development of Learning Media Using PowToon Software Based on a Scientific Approach in Algebra Operations Material in Class VIII of SMP Negeri 1 Jambi City", show that this PowToon Software has received a positive response from students and has been effective in improving student learning activities [30]. The similarity between the research above and the research is, using PowToon Software as a learning medium in the research. In this case, there are only similarities in the application or software used, namely PowToon Software. However, previous researchers did not make non-digital native mathematics teachers the target of their research.

Based on the explanation above, several advantages can be seen from using the Powtoon application in the learning process. Therefore, this application is appropriate or needs to be introduced to non-digital native teachers. So from this presentation, the researcher conducted a study entitled "Use of the PowToon Online Presentation Application by Non-Digital Native Mathematics Teachers to Create Media and Apply it to the Learning Process". The purpose of this research is to determine the perceptions of non-digital native mathematics teachers in the process of learning the PowToon application, to determine teachers' perceptions of the PowToon application in the process of creating learning media, and to determine students' perceptions of learning media created with the PowToon application by non-digital mathematics teachers.

2. RESEARCH METHOD

The research approach used in this research is a qualitative approach (qualitative research). Qualitative methodology is a research procedure that produces descriptive data in the form of written or spoken words from people and observable behavior. This approach is directed at the individual's background holistically (whole). So in this case you should not isolate individuals or organizations into variables or hypotheses, but you need to view them as part of a whole. This qualitative research is specifically directed at using the case study method. As Lincoln and Guba argue, a qualitative approach can also be called a case study or qualitative, namely in-depth and detailed research on everything related to the research subject. Basically, case study type research aims to find out about something in depth. So in this research, researchers will use the case study method to provide an introduction and teaching of an online presentation application to a non-digital native mathematics teacher, as well as reveal the non-digital native mathematics teacher's responses and perceptions regarding the PowToon online presentation application.

In this research, so that the implementation is focused and systematic, research stages were arranged. There are four stages in conducting research, namely as follows: Pre-field stage, field work stage, data analysis stage, and evaluation and reporting stage. Seeing the limitations of the researchers and the research approach used, the research subjects were 2 (two) non-digital native mathematics teachers. Data regarding student perceptions in this study was taken using a closed questionnaire distributed to all samples of class XII Science students at Public High School 11 Jambi City, totaling 70 people. This research was carried out at Public High School 11 Jambi city. This is because the subjects are several teachers who are still actively teaching at Public High School 11, Jambi city.

To obtain the data needed in this research, the techniques that researchers will use are as follows: Diary, In-depth Interview, and Questionnaire. The diary here is a document in the form of writing that describes every response from a non-digital native mathematics teacher while studying the PowToon online presentation application. Interviews in this research were conducted repeatedly with several mathematics teachers. The interview is considered complete when it reaches a saturation point, that is, there are no more questions to ask. This interview aims to obtain in-depth information about the level of difficulty of the PowToon online presentation application during the learning process. The purpose of this questionnaire is to obtain information and student perceptions about learning media that have been created by non-digital native mathematics teachers. The type of questionnaire used is a closed questionnaire. A closed questionnaire is a questionnaire where alternative answers have been provided.

The diary data analysis technique used in this research is to analyze how the text of the two non-digital native mathematics teachers' daily notes relate to their interest and enthusiasm in making presentation media using the PowToon online application. The teacher's perception is positive if the non-digital native mathematics teacher understands how to create media using the Powtoon online presentation application. On the other hand, when non-digital native mathematics teachers do not understand how to create media using the Powtoon online presentation application, the teacher's perception is negative.

The interview data analysis technique used in this research was carried out by analyzing how the answers of the two non-digital native mathematics teachers were related to interest, enthusiasm, and meaningful things about the research subject. The teacher's perception is positive when the meaning of the answers from the interview predominantly expresses interest and enthusiasm for the process of learning the PowToon online

presentation application. On the other hand, when the meaning of the interview answers reveals disinterest during the learning process of the PowToon online presentation application, then the perception is negative.

The data analysis technique used in this research was carried out by analyzing data about students' perceptions of the results of learning media that had been designed by non-Digital Native mathematics teachers, data collection was carried out through questionnaires and observation sheets. The weight of alternative answers is in accordance with the scoring criteria. The next step is to add up each student's answers and become ordinal scale data. Calculation of the percentage of data obtained from a closed questionnaire on an ordinal scale using the percentage formula:

$$P = \frac{f}{n} \times 100\% \quad \dots (1)$$

With :

P = percentage of student perception

f = Total item score

n = Maximum total score

3. RESULTS AND DISCUSSION

3.1. Result

The results of the data collection instruments in this research were diaries, interviews and student questionnaires. This diary was compiled based on experience in the learning process and creating learning media using the Powtoon online presentation application. And the interview guide instrument is based on the experience of Non Digital Native mathematics teachers in the process of creating learning media using the Powtoon online presentation application. Meanwhile, the student questionnaire is in the form of observations of students receiving learning results from learning media that have been created by non-digital native mathematics teachers.

This diary was created while the teacher was studying and working on PowToon learning media. This diary was carried out by the teacher as a written document that describes every response from a non-digital native mathematics teacher while studying the PowToon online presentation application. Based on the results of the diaries of the two non-digital native mathematics teachers, the researchers concluded that the two non-digital native mathematics teachers were able to create media using the PowToon online presentation application very well, and they were happy to learn and apply the knowledge they had learned. have learned this, it can be seen from the way they encounter a few obstacles, and look for alternative ways to solve their respective obstacles.

Interviews were conducted after the teacher completed the PowToon learning media. After the teacher created learning media, the researcher conducted an interview with the teacher. The advantage of the PowToon application for teachers is that the appearance is more attractive and teachers can manage the timeline. Then you can insert sound effects, or you can record sound and insert it so that it can help us convey the lesson. So the PowToon online application can help teachers to create learning media, but it would be even better if we could use it for longer creations, and also if this application was equipped with graphics and was more complete for creating learning media in the field of mathematics. It looks like it could be more interesting, and so far it's been very helpful. The response from the second teacher was that the application used could make the display more attractive, especially for learning mathematics so that it was more interesting for students. Even though I had difficulty logging in for the first time, after a few times I didn't have any problems again. The teacher believes that the display on the Powtoon application is better than Power Point and GeoGebra because there are many characters that can be used.

Based on the calculation of the level of scientific attitude on an ordinal scale, 12 students or 17.14% were in the very high category, 58 students or 82.85% were in the high category, and 10 students or 14.28% were in the high category. currently. Based on the results of calculating the proportion of questionnaire data per indicator, it was obtained that indicators were in the high category and indicators were in the very high category.

3.2. Discussion

In this research, the problem expressed is how students and teachers of Public High School 11 Jambi City perceive the Powtoon learning media created by non-digital native teachers. Based on data processing analysis from 70 students who were the research sample, it was found that 12 students or 17.14% were in the very high category, 58 students or 82.85% were in the high category, and 10 students or 14.28% which is in the medium category. From these results it can be concluded that the majority of students at Public High School 11 Jambi City have a high level of perception.

From the diary analysis, the results showed that the two non-digital native mathematics teachers understood how to create media using the Powtoon online presentation application. It's just that there were several small obstacles in the process of creating media using the PowToon application, but these obstacles could

be overcome and solutions were found together, so that the media created by the two non-digital native mathematics teachers was successfully completed on time. And it can also be concluded that the two non-digital native mathematics teachers had positive perceptions during learning and creating media using the PowToon application.

From interviews with the two non-digital native mathematics teachers, the results showed that the two non-digital native mathematics teachers had very positive responses after working on learning media using the Powtoon online presentation application. This can be seen in the answers obtained from the questions asked by the researchers to the two non-digital native mathematics teachers.

Based on the analysis of the three research instruments previously explained, it can be seen that the responses of the two non-digital native mathematics teachers were very positive regarding creating media using the Powtoon online presentation application. In the analysis of the questionnaire that was filled out by students after the students received learning from the media created by the two non-digital native mathematics teachers, high student perception results were obtained. So the learning media using the Powtoon online presentation application can be used by non-digital native mathematics teachers.

4. CONCLUSION

Based on the research results, it can be concluded that the perception of non-digital native mathematics teachers in the process of learning the PowToon application is positive. Judging from the results of the diary analysis made by the two non-digital native mathematics teachers. Non-digital native mathematics teachers' perceptions of the PowToon application in the process of creating learning media are positive. It can be seen from the answers obtained from the questions asked by the researcher to the two non-digital native mathematics teachers in the interview. Based on data processing analysis from 70 students who were the research sample, it was found that 12 students or 17.14% were in the very high category, 58 students or 82.85% were in the high category, and 10 students or 14.28% which is in the medium category. From these results it can be concluded that the majority of students at Public High School 11 Jambi City have a high level of perception and interest in learning media created by non-digital native mathematics teachers.

ACKNOWLEDGEMENTS

Our thanks are infinite to all parties who have helped in the success of this research. Hopefully this article can provide benefits and positive contributions in the field being researched.

REFERENCES

- [1] I. Junaedi, "Proses pembelajaran yang efektif," *JISAMAR (Journal of Information System, Applied, Management, Accounting and Research)*, vol. 3, no. 2, pp. 19–25, 2019.
- [2] F. N. Ichsan and H. Hadiyanto, "Implementasi perencanaan pendidikan dalam meningkatkan karakter bangsa melalui penguatan pelaksanaan kurikulum," *Jurnal Studi Guru dan Pembelajaran*, vol. 4, no. 3, pp. 541–551, 2021, doi: <https://doi.org/10.30605/jsgp.4.3.2021.1203>.
- [3] S. Wasis, "Pentingnya Penerapan Merdeka Belajar pada Pendidikan Anak Usia Dini (PAUD)," *Pedagogy: Jurnal Ilmiah Ilmu Pendidikan*, vol. 9, no. 2, pp. 36–41, 2022, doi: <https://doi.org/10.51747/jp.v9i2.1078>.
- [4] A. Yuristia, "Pendidikan sebagai transformasi kebudayaan," *IJTIMAIYAH: Jurnal Ilmu Sosial Dan Budaya*, vol. 2, no. 1, pp. 1–13, 2018.
- [5] A. Widiansyah, "Peranan sumber daya pendidikan sebagai faktor penentu dalam manajemen sistem pendidikan," *Cakrawala: Jurnal Humaniora Bina Sarana Informatika*, vol. 18, no. 2, pp. 229–234, 2018, doi: <https://doi.org/10.31294/jc.v18i2.4347>.
- [6] S. F. N. Fitri, "Problematika Kualitas Pendidikan di Indonesia," *Jurnal Pendidikan Tambusai*, vol. 5, no. 1, pp. 1617–1620, 2021.
- [7] M. Effendi, "Pengembangan sumber daya manusia dalam meningkatkan citra lembaga di lembaga pendidikan islam," *Southeast Asian Journal of Islamic Education Management*, vol. 2, no. 1, pp. 39–51, 2021, doi: <https://doi.org/10.21154/sajiem.v2i1.40>.
- [8] E. Elvira, "Faktor Penyebab Rendahnya Kualitas Pendidikan dan Cara Mengatasinya (Studi pada: Sekolah Dasar di Desa Tonggolobibi)," *Iqra: Jurnal Ilmu Kependidikan dan Keislaman*, vol. 16, no. 2, pp. 93–98, 2021, doi: <https://doi.org/10.56338/iqra.v16i2.1602>.
- [9] A. Darim, "Manajemen perilaku organisasi dalam mewujudkan sumber daya manusia yang kompeten," *Munaddhomah: Jurnal Manajemen Pendidikan Islam*, vol. 1, no. 1, pp. 22–40, 2020, doi: <https://doi.org/10.31538/munaddhomah.v1i1.29>.
- [10] L. R. Hasibuan, "Pengaruh Pembelajaran Problem Posing Berkelompok Terhadap Kemampuan Berpikir Abstrak Matematika Siswa SMP," *Jurnal Education and Development*, vol. 7, no. 4, p. 284, 2019, doi: <https://doi.org/10.37081/ed.v7i4.1416>.
- [11] N. Y. Fitri and S. Sukmawarti, "Pengembangan Media Geometri Berbantuan Software Geogebra pada Mata Pelajaran Matematika Materi Koordinat untuk Mempermudah Siswa Kelas V," *Indonesian Research Journal on Education*, vol. 2, no. 1, pp. 182–189, 2022, doi: <https://doi.org/10.31004/irje.v2i1.187>.

- [12] B. Safitri and D. Setiawati, "Kontribusi Peradaban Bangsa Babilonia dalam Perkembangan Budaya pada Abad 21," *Dewaruci: Jurnal Studi Sejarah dan Pengajarannya*, vol. 1, no. 2, pp. 37–50, 2022, doi: <https://doi.org/10.572349/dewaruci.v1i2.199>.
- [13] A. Y. Ginanjar, "Pentingnya Penguasaan Konsep Matematika Dalam Pemecahan Masalah Matematika di SD," *Jurnal Pendidikan UNIGA*, vol. 13, no. 1, pp. 121–129, 2019, doi: <http://dx.doi.org/10.52434/jp.v13i1.822>.
- [14] K. P. S. Dirgantoro, "Kompetensi guru matematika dalam mengembangkan kompetensi matematis siswa," *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, vol. 8, no. 2, pp. 157–166, 2018, doi: <https://doi.org/10.24246/j.js.2018.v8.i2.p157-166>.
- [15] T. Trisniawati, "Pembelajaran dengan Pendekatan Discovery pada Bangun Ruang Sisi Datar di Sekolah Dasar," *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, vol. 2, no. 1, doi: <https://doi.org/10.20961/jdc.v2i1.22124>.
- [16] S. N. Azizah, "Media Pembelajaran Dalam Perspektif Al-Qur'an Dan Al-Hadits," *Jurnal Literasiologi*, vol. 6, no. 1, 2021.
- [17] M. Masjudin, "Manfaat Media Teknologi Dalam Upaya Meningkatkan Prestasi Belajar Siswa Pada Pembelajaran Pendidikan Agama Islam," *Jurnal Penelitian Tarbawi: Pendidikan Islam dan Isu-Isu Sosial*, vol. 5, no. 2, pp. 32–44, 2020, doi: <https://doi.org/10.37216/tarbawi.v5i2.295>.
- [18] L. Mujtahidah, "Pengaruh Kreativitas Guru Terhadap Prestasi Belajar Peserta Didik Mata Pelajaran Matematika," *CENDEKIA: Media Komunikasi, Penelitian dan Pengembangan Pendidikan Islam*, vol. 11, no. 2, pp. 89–98, 2019, doi: <https://doi.org/10.37850/cendekia.v11i2.104>.
- [19] I. T. M. Pratiwi and R. I. Meilani, "Peran media pembelajaran dalam meningkatkan prestasi belajar siswa," *Jurnal Pendidikan Manajemen Perkantoran*, vol. 3, no. 2, pp. 173–181, 2018, doi: <https://doi.org/10.17509/jpm.v3i2.11762>.
- [20] D. A. Kurniawan, "Penggunaan media belajar monopoli untuk meningkatkan motivasi dan hasil belajar siswa," *Jurnal Review Pendidikan dan Pengajaran (JRPP)*, vol. 3, no. 1, pp. 10–15, 2020, doi: <https://doi.org/10.31004/jrpp.v3i1.720>.
- [21] N. Audie, "Peran media pembelajaran meningkatkan hasil belajar peserta didik," in *Prosiding Seminar Nasional Pendidikan FKIP*, 2019, pp. 586–595.
- [22] K. Ulfa and L. Rozalina, "Pengembangan media pembelajaran monopoli pada materi sistem pencernaan di SMP," *Bioilmi: Jurnal Pendidikan*, vol. 5, no. 1, pp. 10–22, 2019, doi: <https://doi.org/10.19109/bioilmi.v5i1.3753>.
- [23] A. Astalini, D. Darmaji, D. A. Kurniawan, H. Jaya, and S. M. Husna, "Analysis of Teacher Responses to the Use of Web-based Assessment to Assess Students' Attitudes towards Science Subjects," *Integrated Science Education Journal*, vol. 3, no. 3, pp. 66–71, 2022.
- [24] D. Harefa and H. T. La'ia, "Media pembelajaran audio video terhadap kemampuan pemecahan masalah matematika siswa," *Aksara: Jurnal Ilmu Pendidikan Nonformal*, vol. 7, no. 2, pp. 327–338, 2021, doi: <http://dx.doi.org/10.37905/aksara.7.2.327-338.2021>.
- [25] B. Budiyo, "Inovasi Pemanfaatan Teknologi Sebagai Media Pembelajaran di Era Revolusi 4.0," *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, vol. 6, no. 2, pp. 300–309, 2020, doi: <https://doi.org/10.33394/jk.v6i2.2475>.
- [26] N. Turrahmi, F. Yahya, and M. Erfan, "Pengembangan media pembelajaran video berbasis microsoft office power point pada materi objek IPA dan pengamatannya untuk SMP kelas VII," *QUARK: Jurnal Inovasi Pembelajaran Fisika Dan Teknologi*, vol. 1, no. 1, pp. 1–10, 2018.
- [27] M. Alwan, "Pengembangan multimedia e-book 3D berbasis mobile learning untuk mata pelajaran geografi SMA guna mendukung pembelajaran jarak jauh," *At-Tadbir: Jurnal Manajemen Pendidikan Islam*, vol. 2, no. 1, pp. 26–40, 2018, doi: <https://doi.org/10.3454/at-tadbir.v1i2.3009>.
- [28] M. R. Recard, A. Agustin, N. Priyanti, M. S. Panggabean, and K. Situmorang, "Webinar Dan Workshop 'Meaningful Language Learning In Distance Learning' Pada Pengajar Bahasa Inggris," *Prosiding Konferensi Nasional Pengabdian Kepada Masyarakat Dan Corporate Social Responsibility (PKM-CSR)*, vol. 4, pp. 699–707, 2021, doi: <https://doi.org/10.37695/pkmsr.v4i0.1241>.
- [29] A. F. Sabilla, S. Irianto, and B. Badarudin, "Pengembangan Media Pembelajaran Matematika Materi Keliling dan Luas Bangun Datar Menggunakan Animasi Powtoon di Kelas IV SD Universitas Muhammadiyah," *Jurnal Ilmiah Wahana Pendidikan*, vol. 6, no. 3, pp. 354–364, 2020, doi: <https://doi.org/10.5281/zenodo.3951014>.
- [30] R. A. Putri, "Pengembangan Media Pembelajaran Menggunakan Software PowToon Berbasis Pendekatan Saintifik Pada Materi Operasi Aljabar di Kelas VIII SMP Negeri 1 Kota Jambi," 2014.