Development of Learning Media Based on Smart Apps Creator (SAC) to Improve Student Learning Outcomes

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ABSTRACT

The rapid development of technology makes students need practical learning media that are easily accessible. Smartphone-based learning media is an alternative solution to facilitate student learning activities. This study aims to produce learning media that are feasible to use and can improve student learning outcomes. This research method is (Research and Development) by adapting the ADDIE model. The test subjects were 36 students from class X PM 2 SMKN 1 Ngawi. Questionnaire data were analyzed using percentage descriptive techniques while learning outcomes were evaluated by post-test. The results of research and development are learning media based on Smart Apps Creator named Digilearn which has gone through validation tests by media validators and material validators. The results of the media feasibility test obtained the criteria of "Very Feasible" from the results of expert validation and student responses. The trial results showed that the average student learning outcomes increased after using Digilearn learning media in both cognitive and psychomotor aspects. So it is concluded that the Digilearn learning media is very feasible and proven to improve learning outcomes. The media's minimalist appearance and file size of only 12MB makes it easy to install. Suggestions for further development can be in the form of media with HTML or .exe file formats.

Keywords: Learning media, Smart Apps Creator, learning outcomes

1. INTRODUCTION

Education is defined as developing and maximizing knowledge and skills to prepare highly competitive human resources. Education has an essential role in creating a country. Education is not static but is a continuous process that is dynamic and responsive to change [1]. The many changes in the world of education make a person push himself to have the ability to face every progress caused by the development of science and technology. The rapid growth of science and technology makes the world of education always need learning media innovations to facilitate the learning process.

Media in the learning process is everything that functions to convey messages, stimulate thoughts, feelings, and willingness of students to form a good learning process and achieve learning objectives [2]. The role of media in the learning process is inseparable unity because the media is a means that provides convenience between teachers and students to improve the quality of education [3]. The existence of media as an intermediary in the learning process can also facilitate interaction between teachers and students. The higher the interaction that can be created, the more influential the learning activities will be. Learning is effective when teacher and student interactions are active so that goals can be achieved [4].

The development of technology has made learning media also experience the dynamics of rapid change. Various devices are designed to help teachers deliver material and help students learn more efficiently. The development of technology such as smartphones and the Internet makes students easily reach various learning resources. Smartphones and the Internet also provide many opportunities for students to determine their learning strategies, choose their learning resources, and determine what they want to learn. This is one of the factors causing the large number of smartphone and internet users among

students. In addition, the comprehensive coverage of smartphone signals and networks, supported by affordable smartphone prices, always increases the trend of using smartphones every year. Data from the Central Bureau of Statistics show that in 2021 90.54% of people in Indonesia already had cell phones. This figure increased compared to 2018, which was only 88.46% [5].

The increase in smartphone users in Indonesia brings not only positive but also many negative impacts because smartphone users cannot utilize them properly. For example, in the field of education, during teaching and learning activities, many students are distracted to check messages, check notifications, and even play online games in the middle of teaching and learning activities in the classroom. The high number of smartphone users by students certainly impacts how students learn. The learning styles of students born in the digital era must be balanced with adjustments to teaching methods, teaching materials, and the media used by teachers so that teaching and learning activities run well and learning objectives can be achieved [6]. Technological developments encourage teachers to maximize creativity and innovation in utilizing facilities such as smartphones and the Internet as media that can support the effectiveness and efficiency of the learning process [7].

Based on the interview results, teachers have used varied learning models and media such as package books, google, and PowerPoint in teaching and learning activities for productive subjects. However, it has not been able to make student learning outcomes improve. In addition, the media that is not too practical also makes some students lazy to access it. On the other hand, the high intensity of smartphone use by students provides an opportunity to utilize it as a learning medium to improve the quality of education [8]. Seeing these conditions and some of these problems, this research and development is essential because the existence of varied media is expected to foster students' enthusiasm for learning and increase learning outcomes. Various learning media could boost student motivation and confidence in education. This study aims to see differences in student learning outcomes by focusing on indicators of cognitive and psychomotor aspects [9].

One software that is often used to create Android-based learning media is Smart Apps Creator (SAC). Smart Apps Creator is a digital media often used to create multimedia content, and the results can be

adjusted for Android, laptops, or personal computers [10]. The final results of this media development can be customized in many formats, such as apps that can be used on Android operating systems, laptops, and computers using the .exe format and web with html5 format [11]. Smart Apps Creator has many tools and features that can easily insert images, videos, animations, and questions and quizzes without knowing a programming language. The development of this software can also be adjusted to the needs and created according to the imagination and ideas that have been designed.

Based on the explanation above, researchers chose Smart Apps Creator because they were interested in developing learning media in Marketing Basics subjects, with the final result in the form of learning media with an app file format that can be used on Android operating systems or student smartphones. The development raised is entitled "Development of Smart Apps Creator (SAC) Based Learning Media to Improve Student Learning Outcomes."

2. METHOD

The Research and Development (R & D) method in this study adapted the ADDIE model Branch with 5 stages of the development process: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model is chosen because the research concept is arranged systematically and straightforwardly so that it is easy to understand and apply. The following is the research concept:
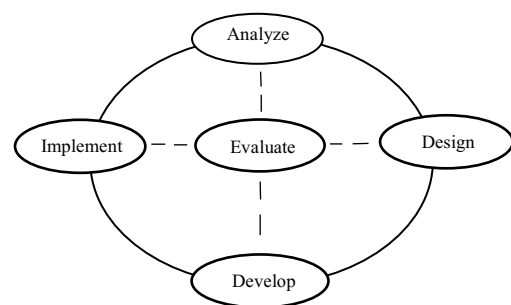
Figure 1. The ADDIE Model Research Concept [12]

All of these stages are carried out systematically. In the first step, researchers conducted interviews to determine the problems and needs of learning media based on current demands. The second step is to arrange the material and create a product design. The third step is developing media based on the initial design and conducting product validation tests on media and material validators. In the fourth step, the

researchers conducted a product trial with 36 students in class X PM 2 SMKN 1 Ngawi. In the fifth step, the researcher evaluates and repairs the parts that do not meet the proper criteria.

Data collection techniques are interviews, questionnaires, tests, and observation. The test is a data collection technique to measure students' knowledge of cognitive aspects. In this study, the instrument used was a written test in the form of a post-test presented as multiple-choice questions and essays. Observation is a data collection technique to measure students' knowledge of psychomotor aspects. The instrument used is a rating scale with a rating scale in the form of numbers (5,4,3,2,1) in the psychomotor aspect assessment column.

This research and development produces two types of data: qualitative and quantitative. Qualitative data include opinions, criticisms, and suggestions from media and material expert validators. While the quantitative data is in the form of validator questionnaire results for the media, student response questionnaires for the media, and student learning outcomes before and after using the media. The data from the expert validation results were then calculated and analyzed to determine the feasibility level of the media using the percentage descriptive method. While the following formula measures the average data on student learning outcomes [13]:

$$X=\frac{\Sigma P}{N}$$

Explanation:
X   = Average
ΣP   = Total student scores
N   = Number of students

The average student learning outcomes per individual on the psychomotor aspect is taken from the practicum score and calculated by the formula [14]:

$$NP=\frac{R}{SM}\times 100$$

Explanation:
NP   = Expected percent value
R   = Raw score obtained by students
SM   = Maximum score
100   = Constant

Classical mastery of the cognitive and psychomotor aspects is achieved if there are at least 85% of students who score ≥ 75. Classical completeness is calculated using the formula below [15]:

$$KK=\frac{X}{Z}\times 100\%$$

Explanation:
KK   = classical completeness
X   = Number of students completed studies
Z   = Total number of students
100%   = Constant

3. RESULT AND DISCUSSION

3.1 Learning Media Based on Smart Apps Creator

This research produced a learning media based on Smart Apps Creator in the subject of Marketing Basics class X PM 2 called "Digilearn" (Digital Learning). Digilearn learning media contains material on elements of sales service and customer satisfaction. Figure 1 is a preview of the start menu, main menu, and home element menu display in Digilearn learning media.

Figure 2. Preview of Digilearn learning media

The product developed is learning media in the apk format that can be used on students' smartphones. The product resulting from this development is expected to be an attractive alternative learning media and can support the learning activities of class X PM 2 SMKN 1 Ngawi. The existence of engaging learning media such as videos or pictures makes it easier for students to remember and absorb the learning material delivered by the teacher [16]. This Digilearn media has an attractive design with pastel colors equipped with

various features that can help student learning activities, such as material features, evaluation questions, learning videos, material summaries, etc. The attractiveness of physical appearance greatly influences the learning process because the more attractive the arrival of the media can motivate students to learn, which can affect student learning outcomes [17]. The Digilearn media that has been developed contains two elements of the basics of marketing subjects, namely aspects of sales service and customer satisfaction. Each component has support through videos, evaluation questions, and material summaries. All material and evaluation questions are prepared based on learning outcomes and the flow of learning objectives. In addition, this learning media is also equipped with a user manual that contains user instructions. Digilearn Learning Media is designed for 12MB, so students can easily download it.

3.2 Feasibility of Smart Apps Creator-Based Learning Media

Before the Digilearn learning media was tested on students, they first went through the validity test stage to determine the eligibility of the media by Mr. Jeffry Aulia Martha, S.Pd., M.Pd. Table 1 below shows the results of media expert validation:

Table 1. Media Validation Results

No	Aspect	Number of statement	Empirical score (Tse)	Expectation score (Tsh)
1	Integration	4	19	20
2	Balance	4	19	20
3	Font	2	9	10
4	Color	3	14	15
5	Language	2	10	10
	Total		71	75
	Percentage			94,6%

Based on the empirical score of the results of the media expert validator, all aspects related to the media show a score of 71 out of an expected score of 75. If the score is presented, a result of 94.6% is obtained with very valid media criteria from the aspects of integration, balance, Font, color, and language. The media expert validator also provided some input, including arranging the numbering to make it tidier, giving question numbers, and videos in Digilearn media which should come from Google Drive.

The learning media also went through the material expert validation stage, carried out by Ms. Markanthi, S.Pd, who teaches the Basics of Marketing subject for class X PM 2 SMKN 1 Ngawi. Table 2 below shows the results of the material expert validation:

Table 2. Material Validation Results

No	Aspect	Number of statement	Empirical score (Tse)	Expectation score (Tsh)
1	Content quality and purpose	6	28	30
2	Quality of learning	3	14	15
3	Question quality	6	27	30
	Total		69	75
	Percentage			92%

Based on the empirical score of the results of the material expert validator, all aspects related to the material in learning media show a score of 69 out of an expected score of 75, and 92% is obtained with very feasible criteria if the score is presented. The material expert validator notes that learning media development is good and has adapted to the times. The results of student responses to the media are shown in Table 3 below:

Table 3. Results of Student Responses to Media

No	Aspect	Number of statement	Empirical score (Tse)	Expectation score (Tsh)
1	Content quality and purpose	4	683	720
2	Display quality	3	516	540
3	Quality of learning	3	509	540
	Total		1708	1800
	Percentage			94,8%

Based on the results of the student's responses to the media with the subject of 36 students of class X PM 2 for all aspects, they received an empirical score of 1708 out of an expected score of 1800. If the score is presented, the result is 94.8% and meets the very feasible criteria in terms of quality of content and purpose, display quality, and learning rate. The data from the questionnaire results were then analyzed to find out the overall average percentage. The following is a recapitulation of the comprehensive validation result data:

Table 4. Recapitulation of Questionnaire Results

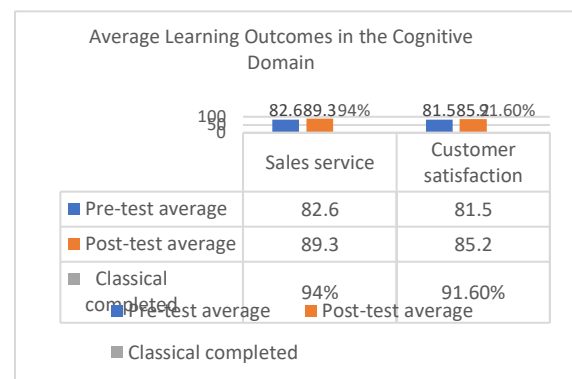| No	Hasil Angket	Percentage	Criteria
1	Media Expert	94,6%	Very Feasible
2	Material expert	92%	Very Feasible
3	Student response to the media	94,8%	Very Feasible
	Average percentage	93,8%	Very Feasible

Based on Table 4, the recapitulation of the questionnaire results obtained a percentage of 93.8% with very valid criteria. The conclusion from the recapitulation of the questionnaire data is that the Digilearn learning media is very useful or feasible and meets completeness to support teaching and learning activities.

A validity test is essential to assess the effectiveness of a measuring instrument or measuring media in collecting data [18]. The percentage of media validation results showed 94.6% with very valid or very feasible criteria from combination, balance, font, color, and language. While the results of the material validation showed a percentage of 92% with very feasible criteria in terms of content and objectives, quality of learning, and quality of questions. Student response data to learning media were taken by conducting field trials involving 36 students in class X PM 2. Student response results showed a percentage of 94.8% with very feasible criteria in terms of quality of content and objectives, quality of appearance, and quality of learning. The results of the feasibility of this media are supported by previous research conducted by Mahuda which developed learning media based on Smart Apps Creator in mathematics [19]. The results show that the media validity test shows very valid criteria and can be used without revision. In addition, research from Yanti which developed Android-based informatics learning media using the Smart Apps Creator, showed very valid criteria based on validity,

practicality, and effectiveness tests by media experts, teachers, and students [20].

### 3.3 Student Learning Outcomes through Smart Apps Creator-Based Learning Media

After the learning media went through the validation stage, the media was tested on 36 class X PM 2 SMKN 1 Ngawi students. The purpose of conducting the trial is to determine whether there are differences in student learning outcomes after carrying out learning activities using Digilearn learning media. The learning outcomes studied are indicators of the cognitive and psychomotor aspects with two elements: sales service and customer satisfaction. The results of data analysis on the cognitive domain are described in the following figure:

Average Learning Outcomes in the Cognitive Domain

	Sales service	Customer satisfaction
Pre-test average	82.6	81.5
Post-test average	89.3	85.2
Classical completed	94%	91.60%

Cognitive Domain

From the diagram above, the average student learning outcomes in the sales service element have increased. The pre-test average showed a result of 82.6, and there was an increase in the post-test results, which showed an average of 89.3. In addition, classical completeness shows a result of 94%. So that it can be said that classical wholeness was achieved because more than 85% of students scored ≥ 75. In customer satisfaction, the average student learning outcomes also increased. The intermediate learning outcomes in the increased customer satisfaction element can be seen from the average pre-test, with a result of 81.5, and an increase in the post-test, which shows an average of 85.2. In addition, classical completeness offers a mark of 91.60%. So that it can be said that classical wholeness is achieved because more than 85% of students score ≥ 75.

Then the data on student learning outcomes in the psychomotor domain on the elements of sales service and customer satisfaction are described in the following figure:
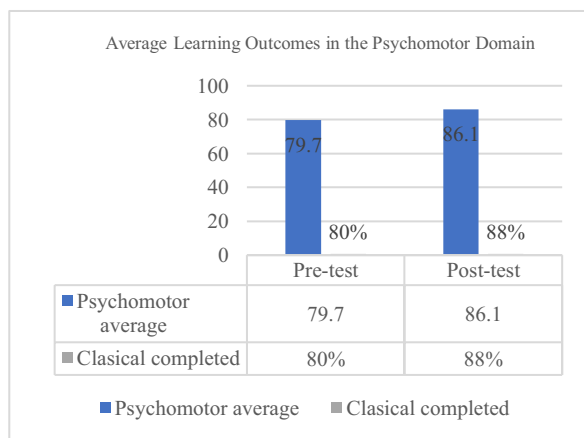
Figure 4. Average Learning Outcomes in the Psychomotor Domain

Based on the diagram above, the average student learning outcomes in psychomotor aspects show an increase. In the psychomotor element, the average pre-test score for students is 79.7, with classical completeness of 80%, which means that it cannot be said to be complete. However, the post-test results on the psychomotor aspect showed an increase with an average score of 86.1 and classical completeness of 88%, which means that classical wholeness was achieved because more than 85% students scored ≥ 75.

Data analysis on the average student learning outcomes on the cognitive aspect shows an increase. One of the reasons for increasing students' cognitive abilities is the increased ability to think and solve problems [21]. The achievement of learning outcomes in this cognitive aspect is based on the learning achievements that have been defined in the 2022 independent curriculum, namely being able to understand the concept of sales service, understand the application of verbal and non-verbal communication, understand the idea of customer satisfaction and determine the right strategy to deal with customer complaints.

Data on student learning outcomes in the psychomotor domain on the elements of sales service and customer satisfaction are taken from the value of the practice of combining the two elements. This is because the two elements are still interconnected. Several components are observed, from service preparation, service process, work results, service attitude, and time. The average practicum results of students after using the media show an increase. The increase in the average student learning outcomes in the psychomotor aspect is due to students' increased skills and ability to practice after gaining learning experience [22]. The achievement of learning outcomes in the psychomotor aspect is based on the learning achievements that have been defined in the 2022 independent curriculum, namely being able to provide excellent service when carrying out sales services, being able to use tools and equipment for promoted goods and services, and being able to deal with customers who make complaints and make a decision.

The average student learning outcomes in both cognitive and psychomotor aspects experienced a significant increase. The results of this study are also in line with research conducted by Fauziah & Bukhori, which revealed that the developed M-Learning learning media was very effective and could improve student learning outcomes [23]. Research from Robbi & Churiyah also showed that the average student learning outcomes increased after using the developed Mobile Learning learning media [24].

4. CONCLUSION

The validation results of the Digilearn learning media show 94.6% with the "Very Eligible" criteria, and the material validation results show a percentage of 92% with the "Very Eligible" standards. So it can be concluded that the Digilearn learning media meets the eligibility criteria to be used as an alternative learning media. Besides that, seen from students' average cognitive and psychomotor learning outcomes, it can be concluded that the post-test learning outcomes obtained an average higher than the pre-test. Classical completeness in the cognitive and psychomotor aspects also shows more than 85% of results, which means that classical wholeness has been achieved. Future research

is expected to be able to develop learning media in other formats, such as html5 or .exe, and is expected to be developed in different elements and subjects.

REFERENCES

[1]   E. Ningrum, "Pengembangan sumber daya manusia bidang pendidikan," *J. Geogr. Gea*, vol. 9, no. 1, 2016, doi: 10.17509/gea.v9i1.1681.

[2]   M. A. Hamid, R. Ramadhani, M. Juliana, M. Safitri, M. M. Jamaludin, and J. Simarmata, *Media pembelajaran*, 1st ed. yayasan kita menulis, 2020.

[3]   F. Firmadani, "Media pembelajaran berbasis teknologi sebagai inovasi pembelajaran era revolusi industri 4.0," *Pros. Konf. Pendidik. Nas.*, vol. 2, no. 1, pp. 93–97, 2020.

[4]   A. Emda, "Kedudukan motivasi belajar siswa dalam pembelajaran," *Lantanida J.*, vol. 5, no. 2, p. 172, 2018, doi: 10.22373/lj.v5i2.2838.

[5]   Badan Pusat Statistik, "Statistik telekomunikasi Indonesia 2021," *Badan pusat statistik*, p. 340, Sep. 07, 2022. [Online]. Available: https://www.bps.go.id/publication/2022/09/07/bcc820e694c537ed3ec131b9/statistik-telekomunikasi-indonesia-2021.html

[6]   A. A. Smaragdina, A. M. Nidhom, D. U. Soraya, and R. Fauzi, "Pelatihan pemanfaatan dan pengembangan bahan ajar digital berbasis multimedia interaktif untuk menghadapi era revolusi industri 4.0," *J. KARINOV*, vol. 3, no. 1, p. 53, 2020.

[7]   Ruziana, Imran, and I. Salim, "Analisis penggunaan smartphone sebagai media pembelajaran terhadap hasil belajar siswa SMAN 1 Teluk Keramat," *J. Pendidik. dan Pembelajaran Khatulistiwa*, vol. 7, no. 7, pp. 1–8, 2018.

[8]   E. A. Putra, R. Sudiana, and A. S. Pamungkas, "Pengembangan Smartphone Learning Management System (S-LMS) sebagai media pembelajaran matematika di SMA," *Kreano, J. Mat. Kreat.*, vol. 11, no. 1, pp. 36–45, 2020, doi: 10.15294/kreano.v11i1.21014.

[9]   R. Widiasih, J. Widodo, and T. Kartini, "Pengaruh penggunaan media bervariasi dan motivasi belajar terhadap hasil belajar mata pelajaran ekonomi siswa kelas Xi Ips Sma Negeri 2 Jember Tahun Pelajaran 2016/2017," *J. Pendidik. Ekon. J. Ilm. Ilmu Pendidikan, Ilmu Ekon. dan Ilmu Sos.*, vol. 11, no. 2, p. 103, 2018, doi: 10.19184/jpe.v11i2.6454.

[10]   O. Suhartati, "Flipped classroom learning based on android Smart Apps Creator (SAC) in elementary cchools," *J. Phys. Conf. Ser.*, vol. 1823, no. 1, 2021

[11]   A. R. Azizah, "Penggunaan Smart Apps Creator (SAC) untuk mengajarkan global warming," *Pros. Semin. Nas. Fis. Unesa*, vol. 4, no. 2, pp. 72–80, 2020.

[12]   R. M. Branch, *Approach, Instructional Design: The ADDIE*, vol. 53, no. 9. 2009.

[13]   S. Arikunto, *Prosedur penelitian suatu pendekatan praktik*. Jakarta: Rineka Cipta, 2009.

[14]   Widodo and L. Widayanti, "Peningkatan aktivitas belajar dan hasil belajar siswa dengan metode problem based learning pada siswa kelas VIIA MTs Negeri Donomulyo Kulon Progo Tahun Pelajaran 2012/2013," *J. Fis. Indones.*, vol. 17, no. 49, pp. 32–35, 2014.

[15]   M. Juaini, "Model kooperatif tipe Teams Games Tournaments (TGT) pada pembelajaran materi trigonometri untuk meningkatkan aktifitas dan prestasi belajar siswa SMAN 3 Selong," *J. Educ.*, vol. 5, no. 2, pp. 4326–4339, 2023, doi: 10.31004/joe.v5i2.1148.

[16]   N. L. P. Ekayani, "Pentingnya penggunaan media pembelajaran untuk meningkatkan prestasi belajar siswa," *J. Fak. Ilmu Pendidik. Univ. Pendidik. Ganesha Singaraja*, vol. 2, no. 1, 2017.

[17]   N. K. Resiani, anak agung gede Agung, and I. N. Jampel, "Pengembangan multimedia pembelajaran interaktif pada mata pelajaran IPS siswa kelas VII semester genap di SMPN 7 Singaraja tahun ajaran 2014/2015," *e-journal edutech Univ. Pendidik. Ganesha*, vol. 3, no. 1, 2015.

[18]   H. S. Said, C. Khotimah, D. Ardiansyah, and H. Khadrinur, "Uji validitas dan reliabilitas : pemahaman mahasiswa akuntansi terhadap matakuliah Accounting For Business atau pengantar akuntansi (Studi pada Mahasiswa S1 Akuntansi Universitas Telkom Tahun Ajaran 2022 / 2023)," *J. Publ. ilmu Ekon. dan Akunt.*, vol. 3, no. 2, 2023.

[19]   I. Mahuda, R. Meilisa, and A. Nasrullah, "Pengembangan media pembelajaran matematika berbasis android berbantuan Smart Apps Creator dalam meningkatkan kemampuan pemecahan masalah," *AKSIOMA J. Progr. Stud. Pendidik. Mat.*, vol. 10, no. 3, p. 1745, 2021, doi: 10.24127/ajpm.v10i3.3912.

[20]   S. N. Yanti, Z. Sesmiarni, S. Zakir, and L. Efriyanti, "Perancangan media pembelajaran informatika Berbasis android menggunakan Smar Apps Creator 3 di MTSN 6 Agam," *JATI (Jurnal Mhs. Tek. Inform.*, vol. 7, no. 1, pp. 687–692, 2023.

[21]   U. Latifa, "Perkembangan pada anak Sekolah Dasar: masalah dan perkembangannya," *Acad. J. Multidiscip. Stud.*, vol. 1, no. 2, pp. 185–196,

2017.

[22]   I. Magdalena, A. Hidayah, and T. Safitri, "Analisis kemampuan peserta didik pada ranah kognitif, afektif, psikomotorik siswa kelas II B SDN Kunciran 5 Tangerang," *J. Pendidik. dan Ilmu Sos.*, vol. 3, no. 1, pp. 48–62, 2021.

[23]   L. N. Fauziah and I. Bukhori, "Pengembangan M-Learning berbantuan articulate storyline untuk meningkatkan hasil belajar peserta didik," *Econ. Educ. J.*, vol. 4, no. 2, pp. 133–147, 2022.

[24]   H. M. F. Robbi and M. Churiyah, "Meningkatkan hasil belajar peserta didik dengan menggunakan Mobile Learning berbasis Flip Pdf Pro Maker (myflip) (A useful mobile base learning media in the Covid-19 era)," *J. Ekon. Bisnis dan Pendidik.*, vol. 1, no. 6, pp. 517–525, 2021.