



Contents lists available at [Journal IICET](https://journal.iicet.org)
JPPi (Jurnal Penelitian Pendidikan Indonesia)
ISSN: 2502-8103 (Print) ISSN: 2477-8524 (Electronic)
Journal homepage: <https://journal.iicet.org/index.php/jppi>



Development of Instagram reels-based teaching materials for zero-waste pattern-cutting in fashion design training centers

Prihatin Prihatin^{*)}, Achmad Noor Fatirul, Harwanto Harwanto
Universitas PGRI Adi Buana, Indonesia

Article Info

Article history:

Received Des 05th, 2023
Revised Feb 01st, 2024
Accepted Jul 15th, 2024

Keyword:

Fashion design,
Instagram reels,
Training centers,
zero-waste pattern-cutting

ABSTRACT

As an effort to align learning at fashion design training centers with industry needs and the huge potential of Instagram reels as an innovative learning medium in the digital era, this research aims to evaluate the effectiveness of Instagram Reels as a learning medium for making fashion patterns using zero-waste pattern-cutting techniques at fashion design training centers. Using the Dick and Carey model of research and development (R&D) approach, this research lasted for four months involving three expert validators (material, media, design), three peers, six fashion design training centers, and 49 students at different learning levels. The research results show that teaching materials based on Instagram Reels meet the validity criteria and have a positive response of 88.35% from expert validators and peers. The percentage of product suitability assessments from user/student respondents was 75.9%, indicating that this teaching material is suitable for widespread application in learning. The contribution of this research is to provide an innovative learning approach that increases students' interest, understanding, practical skills, and creativity in mastering the concept of zero-waste pattern-cutting design and provide solutions to challenges in learning fashion design and reducing waste in the fashion industry.



© 2024 The Authors. Published by IICET.
This is an open access article under the CC BY-NC-SA license
(<https://creativecommons.org/licenses/by-nc-sa/4.0>)

Corresponding Author:

Prihatin Prihatin,
Universitas PGRI Adi Buana
Email: pytha.tyasprihatin@gmail.com

Introduction

In today's digital era, the sustainability of the fashion industry relies heavily on providing practitioners with relevant and effective skills. However, data shows that the current level of skills in the fashion industry is still far from adequate, so a transformation in learning approaches is needed (Akram et al., 2022; Alvendri et al., 2023). According to (Fashion Business Data, n.d.; Menon, 2022) most graduates of fashion educational institutions experience difficulties in applying the skills learned in the workplace. This reflects a significant gap between learning in the curriculum of fashion design training centers and the needs of the fashion industry which continues to develop rapidly (Ademtsu & Pathak, 2023). Therefore, innovative approaches in presenting material and effective learning methods are very important to overcome these challenges and prepare future generations to face the increasingly complex dynamics of the fashion industry.

One of the important materials in fashion design is the concept of pattern making using the zero-waste pattern-cutting technique (Gam & Banning, 2020; Hamid et al., 2020; B. Kim & Lee, 2022) however, the application of this technique is still limited due to the lack of references and There is no comprehensive curriculum integration in course and training institutions. Apart from that, conventional learning methods are

still dominated by educators, so they do not provide opportunities for students to develop creativity (Altun, 2023). Therefore, an innovative learning approach is needed that is appropriate to the needs of students and can increase interest, understanding, and skills in mastering pattern-making material, especially the zero-waste pattern-cutting concept which contributes greatly to reducing waste in the fashion industry (ElShishtawy et al., 2022; S. Kim & Kim, 2023).

This research aims to create innovative teaching materials that are relevant to technological developments and students' learning needs so that they can improve the quality of fashion learning, facilitate understanding of the concept of zero waste pattern cutting, and stimulate students' creativity in creating unique, environmentally friendly fashion designs (Eka & Sukmawaty, 2020). This step is expected to overcome challenges in presenting existing learning materials and methods so that it produces a positive impact on an effective and relevant learning process and the output of the learning can reduce waste in the fashion industry (Setiawati & Shofwan, 2023). The significance of this research is that it can overcome the problem of learning fashion design, namely by utilizing popular social media such as Instagram in the learning process to make it more interesting and relevant to the interests of students who tend to use technology in everyday life (Bakri et al., 2021; Thahir & Wahyuni, 2023).

In addition, by using online learning methods that can be accessed independently without being limited by geographical distance or time (Khurshid et al., 2023; Regina et al., 2023; Siregar et al., 2023), the teaching materials developed can increase creativity creating new fashion designs that are unique and environmentally friendly. This research not only contributes to improving the quality of fashion learning but also has a positive impact on developing a more sustainable fashion industry and preparing students to face the demands of the times (Andhini et al., 2023). Several previous studies that have direct relevance to the problems faced by fashion design training centers in integrating interesting and effective learning with pattern-making material include research by (Wulandari et al., 2022) which proves that using Instagram Reels as a learning medium can give good results with an overall aspect validation score that was included in the very valid category. Likewise, research by (Kartika & Sulistyning Cipta, 2022) found that the use of Instagram Reels in mathematics learning was able to increase student creativity. These findings show that Instagram Reels has great potential as an effective and engaging learning tool.

Other research that underlines the importance of using technology in learning to increase students' interest and understanding of certain material, namely (Adam et al., 2022) emphasizes that the use of social media Instagram can be an effective tool in learning because of its high popularity and ease of access. Furthermore, research by (H. Kim & Na, 2023; Simões & Almendra, 2018) provides insight into the importance of the zero-waste pattern-cutting concept in reducing waste in the fashion industry. Understanding and applying the concepts of zero-waste pattern-cutting is very important in supporting efforts to reduce waste in the fashion industry so that students in fashion design training centers as upstream innovators in this field must contribute significantly to realizing this sustainability.

The development of Instagram Reels-based teaching materials for zero-waste pattern-cutting material is not only based on relevant learning theories but also takes into account the contribution of technology in increasing learning effectiveness (Agustian & Salsabila, 2021; Firmansyah, 2019; Jamun, 2018) and the importance of the Zero concept Waste Pattern Cutting in the context of the sustainable fashion industry (Wilujeng et al., 2023). The integration of technology in learning can increase student interest and involvement (Fricticarani et al., 2023) while understanding and applying the zero-waste pattern-cutting concept can support more sustainable fashion manufacturing practices. Therefore, this research aims to combine both aspects to create an interesting, relevant, and impactful learning experience in the context of fashion design.

The development of teaching materials based on Instagram Reels is effective in increasing students' interest, understanding, practical skills, and creativity (Rahyadi et al., 2023) in the context of learning zero-waste pattern-cutting material at fashion design training centers. The use of social media, especially Instagram Reels, provides an innovative, interesting, and interactive learning approach that opens up potential learning opportunities that are more flexible and relevant to the interests and learning styles of modern students (Hamsia, 2022; Sichach, 2023). The application of the zero-waste pattern-cutting concept in learning fashion design not only improves students' practical skills in creating environmentally friendly fashion designs but also produces a positive contribution to efforts to reduce waste in the fashion industry. This integration can be an effective means of opening up opportunities for developing more adaptive and innovative learning approaches in the future (McQuillan, 2019; Ramkalaon & Sayem, 2021).

This research has great potential to answer the learning problems faced by fashion design training centers. However, it is necessary to pay special attention to the long-term impact of using Instagram Reels-based teaching materials on students' understanding and practice in applying the zero-waste pattern-cutting concept.

By focusing on the application of Instagram Reels as the main learning medium, this research aims to explore the extent to which this platform can be an effective learning tool in improving fashion pattern-making skills, especially with an emphasis on zero-waste pattern-cutting techniques in various design training centers. fashion.

Method

The procedure for developing teaching materials based on Instagram Reels, zero-waste pattern-cutting material at fashion design training centers carried out in this research, fully follows the research flow of the Dick and Carey model development to ensure the products developed are relevant (Sa'adu Matazu, 2023) and can be used widely in learning at fashion design training centers.

DEVELOPMENT OF INSTAGRAM REELS-BASED TEACHING MATERIALS FOR ZERO-WASTE PATTERN-CUTTING IN FASHION DESIGN TRAINING CENTERS

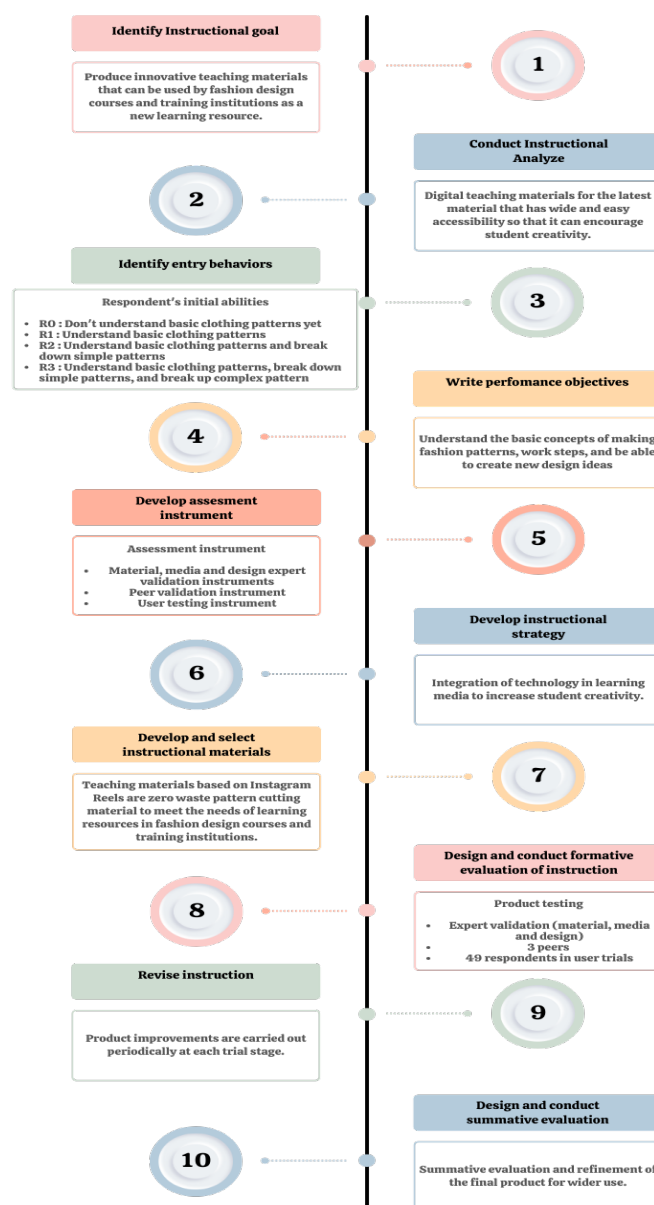


Figure 1. Syntax for developing teaching materials based on Instagram Reels

This research method is adapted to Dick and Carey's ten steps referring to Figure 1. Syntax for developing teaching materials based on Instagram Reels, namely: (1) The main objective of the research is to produce innovative teaching materials that can be used by fashion design training centers as a new learning resource to overcome the problem of unavailability of teaching materials that are in line with developing learning trends and industry changes. (2) By instructional analysis which is based on facts in the field, the resulting teaching materials must have specifications that are relevant to needs, namely digital teaching materials that have wide and easy accessibility so that they can better encourage students' creativity. (3) Based on comprehensive observations at 6 fashion design training centers in the East Java region, the characteristics of students are very diverse as shown in Table 1.

Table 1. Characteristics of Students in Fashion Design Training Centers

Age	Gender	Education	Initial abilities
15 - 70 years old	Average female	Elementary – Master	0 Don't understand basic fashion patterns yet
			1 Understand basic fashion patterns
			2 Understand basic patterns and break down simple patterns
			3 Understand basic patterns to break down complex patterns

To find out the effectiveness of the Instagram reels-based teaching materials used in learning to make zero-waste pattern-cutting patterns at fashion design training centers, learning outcome criteria that must be achieved by students are determined, namely being able to understand the basic concept of zero waste pattern cutting, understand systematic work steps appropriate to the stages, and be able to create creative ideas for unique fashion pattern designs. Apart from determining the learning output for students, it is very important to ensure that the teaching materials are designed by the curriculum standards at fashion training centers, an assessment instrument is also designed to evaluate the suitability of the teaching materials being developed. The instrument for assessing the suitability of Instagram Reels-based teaching materials includes instruments for material experts, media experts, design experts, peers, and students with the assessment criteria in Table 2.

Table 2. Product Assessment Criteria

Rating scale	Description
1	Very imprecise/very inappropriate/very unclear/very uninteresting/not very easy.
2	Inaccurate/inappropriate/less clear/less interesting/less easy.
3	Appropriate enough/appropriate enough/clear enough/interesting enough/easy enough.
4	Precise/appropriate/clear/interesting/easy.
5	Very appropriate/very appropriate/very interesting/very easy.

The instructional strategy used to realize the concept of developing teaching materials to overcome learning problems in fashion design training centers is by integrating technology as a learning medium that can be studied independently to increase students' creativity. Teaching materials were developed using Instagram reels with zero-waste pattern-cutting material. The combination of popular social media with a new concept for making fashion patterns that support the sustainability of the fashion world is a good combination to reform learning in the era of massive digital technology development. Testing of teaching material products based on Instagram reels, zero-waste pattern-cutting materials, involves several parties in Table 3.

The process of improving Instagram reels-based teaching material products is carried out periodically based on feedback from validators. In this research, a comprehensive summative evaluation was carried out at the end of the field trials to perfect the product so that it can be widely used for learning in fashion training centers. The Dick and Carey development model can create learning products that support a systematic and clear learning process (Fauzi et al., 2023), especially zero-waste pattern-cutting material in fashion training centers. The product development flow is based on instructional objectives which are designed by taking into account other supporting aspects, namely student characteristics, media, and learning materials. With a clear basic reference base that is tailored to needs, the evaluation process can be adjusted to produce quality teaching material products that can be widely used (Dianasari et al., 2021; Rosmandi et al., 2021; Wibowo & Xie, 2022). Analysis of data on the development of Instagram Reels-based teaching materials on zero-waste pattern-cutting at the Fashion Design Course and Training Institute involves quantitative and qualitative analysis stages by changing the entire data obtained into percentage values and then calculating them based on the Likert Scale formula $P = \frac{\sum x}{\sum xi} \times 100\%$. The results of calculating percentage values are interpreted according to the value intervals specified in the following table 4.

Table 3. Research Test Subjects

Code	Validator	Quantity	Description
V1	Material expert Dr. Atiqoh, M.Pd	1	Lecturer
V2	Media expert Prof. H. Nur Kholis, M.Ed.Admin., Ph.D	1	Professor
V3	Design expert Dr. Drs., H. Ruffi'I, S.Si., ST., M.Pd.	1	Lecturer
TS 1	Peer 1 Aryani widagdo	1	Fashion knowledge/ designer/ lecturer
TS 2	Peer 2 Rayi Hendra Puspita, S.Pi., M.Pd.	1	Instructor/educator/assessor
TS 3	Peer 3 Aminah Kasih, S.I.Kom	1	Instructor/educator/assessor
R0	Students who do not yet understand basic fashion patterns	18	LKP Amor
R1	Students who already understand basic fashion patterns	12	LKP Kurniarum
R2	Students who already understand basic patterns and break down simple patterns	11	LKP Malia Rosa LKP Modes Al-Amin
R3	Students who already understand basic patterns to break down complex patterns	8	LKP Nusa Indah LKP Yuli

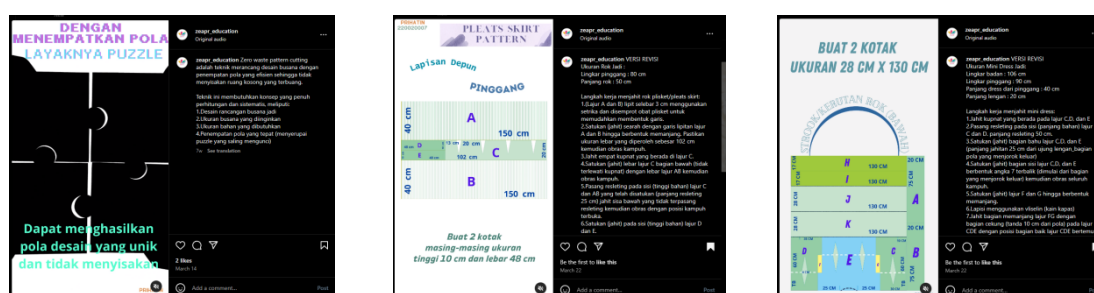
Table 4. Assessment Interpretation

No.	Value interval	Classification	Description
1	81% - 100%	Very good/decent/valid	Doesn't need repair
2	61% - 80%	Good/decent/valid	Slight improvement
3	41% - 60%	Good enough/decent/valid	Needs improvement
4	21% - 40%	Not good/decent/valid	Must be repaired
5	0% - 20%	Not good/decent/valid	Must be repaired

Interpretation of these results is very important to assess the suitability of the product based on classification guidelines. If the value obtained is below 60%, improvements need to be made to improve product quality (Priyantini et al., 2021; Ramadhani & Rahmah, 2021).

Results and Discussions

Instagram social media has shown great potential as an effective learning tool through the Reels feature (Ardjo et al., 2022; Hatta, 2019). This feature allows conveying information in a short, concise, and interesting manner through short 60-second videos (Karapetyan, 2022; Liang & Wolfe, 2022). zero-waste pattern-cutting learning material can be explained visually and interactively via Instagram Reels which can increase students' understanding.

**Figure 2.** Zero-Waste Pattern-Cutting Material Sample

The use of social media as a learning tool provides advantages such as wide accessibility, flexibility in time and place, and high interactivity (Bhoi et al., 2020; Darginavičienė & Navickienė, 2021; Reinhardt, 2020). The great potential of Reels Instagram in learning has encouraged the development of teaching materials based on Reels Instagram on zero-waste pattern-cutting in fashion design training centers. This development aims to create innovative teaching materials that can be used as a new learning resource in training centers. Apart from that, by introducing new techniques for designing fashion patterns, this product development can overcome the problem of textile waste from leftover scraps produced by designing conventional fashion patterns (Gupta & Kaur Saini, 2020). The teaching materials developed received a positive response from validators and product users which are clearly explained below.

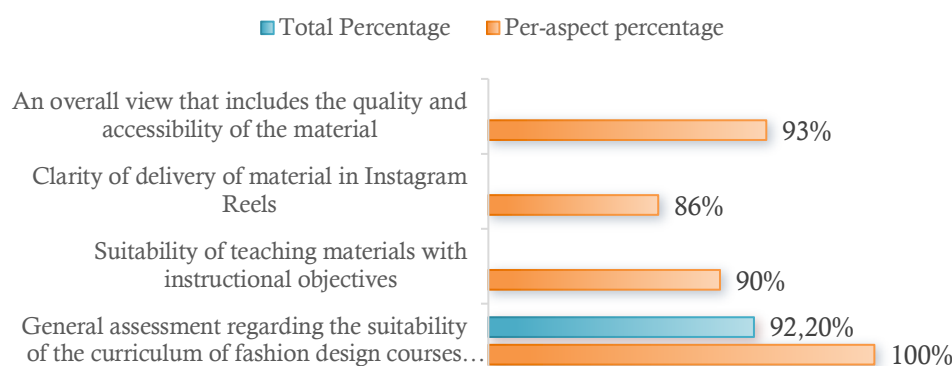


Figure 3. Results of Material Expert Assessment

The percentage of assessment obtained from material experts was 92.2%, which is in the very good category, however, several notes for improvement must be considered to perfect the teaching materials so that they are suitable for use in fashion design training centers, including the importance of adding a definition of zero-waste pattern-cutting and changing several terms. relevant to the field of fashion so that students understand the concept of appropriate (Ramadhina, 2021; Yasnidawati & Marini, 2021).

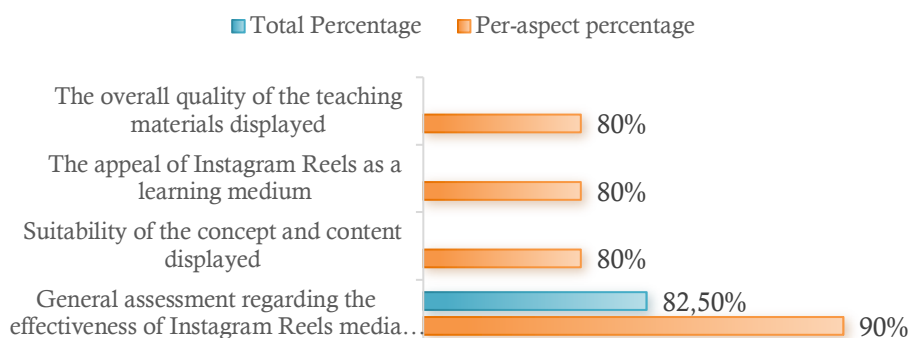


Figure 4. Results of Media Expert Assessment

The percentage of media expert validation test assessments of 82.5% is included in the very good category. Apart from good notes such as appropriate coloring, clear narration, and text that is clear and not too long, media experts also provide notes that should be paid attention to perfect the teaching material product, namely that the numbers and letters printed on the pattern should be made more contrasting. This indicates that the teaching materials developed have approached the standard level of suitability for testing.

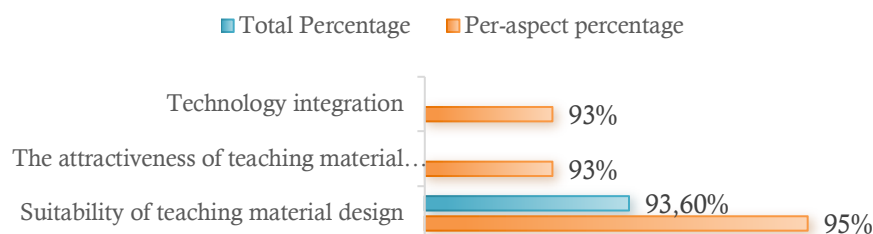


Figure 5. Results of Design Expert Assessment

The design expert's assessment of teaching materials based on Reels Instagram, zero-waste pattern-cutting material, was 93.6%. The data obtained is included in the very good category so that when viewed from a design perspective, the teaching materials meet the standard criteria for good teaching material design. Design experts highlighted that the Instagram Reels feature does not yet have a video pause button so it might be a little difficult, but this does not have a big impact on the overall design of the teaching materials because Indonesian people, in particular, are already familiar with using smartphones. The transfer of the function of social media as a learning medium is also something that is appreciated by design experts because this could be a new revolution that encourages people to use online media as a place to learn (Lee et al., 2023; Muthmainnah et al., 2022; Vaghjee, 2021). To find out more details about the feasibility and quality of the teaching materials being developed, peer validation testing is a very important step in development research. This process provides diverse perspectives and helps ensure that the teaching materials developed are relevant to the needs and characteristics of users in the field. Through the involvement of colleagues with objective assessments, the quality of teaching materials can be ensured more accurately. In this research, 3 peers from different centers were involved to provide various and objective assessments.

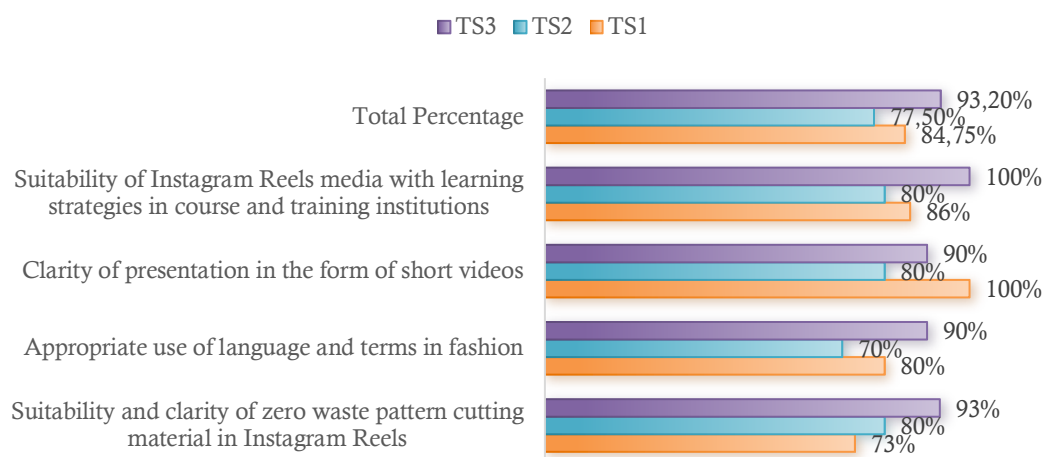


Figure 6. Results of Peers Assessment

Based on the data above, the overall percentage obtained from peer assessment is 85.1%, which is in the very good category. Even though the teaching materials developed are declared suitable for use in learning, several notes must be taken into account, namely adjustments to the details of the size list, the position of the parts described, sewing steps, the location and size of the sleeve, the terms in the fashion design used. Overall, the assessment results from expert validators and peers are in the very good category. Overall, the results of the expert and peer validator assessments are in the very good category with an average score of 88.35%.

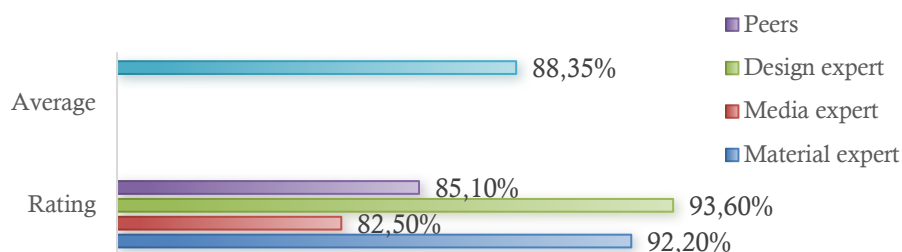


Figure 7. Classification of All Validators' Assessments

The next stage in testing the feasibility of Instagram Reels-based teaching material products is to carry out tests to determine the direct response of product users. This testing was carried out in 3 stages to analyze in detail the development and differences in responses from each trial stage. Respondents in this study were students at course and training centers with various learning levels and age ranges who were categorized into 4 levels of initial ability, namely:

R0: Don't have an understanding of basic fashion patterns.

R1: Have an understanding of basic fashion patterns.

R2: Have an understanding of basic fashion patterns and be able to design simple patterns.

R3: Have an understanding of basic fashion patterns and be able to design complex patterns.

This categorization helps in identifying the needs and responses of each group so that the development of teaching materials can be more targeted and effective.

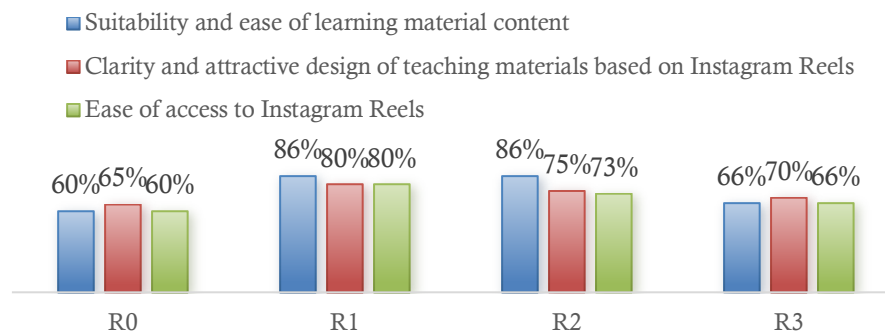


Figure 8. One-To-One Trial Assessment Results

The overall results obtained at the individual test stage were 72.2%, including in the good category. Respondents' assessments at each level of initial ability show quite significant differences which are influenced by the ability to understand the flow of material and the output produced, the age of the respondent, and the ability to operate Instagram Reels.

Table 5. Individual Trial Participant Feedback

Code	Age	Edu	Creativity	Comment
R0	18	SMA	53%	Study materials are less understandable
R1	38	S1	63%	Very interesting
R2	29	SMA	73%	It's good if there is other learning material that can be added to Instagram Reels
R3	67	SMA	67%	It's understandable

This response shows that even though the statistical assessment of the figures obtained is still less than optimal, feedback from respondents with a good understanding of fashion pattern-making and the use of Instagram as seen from the productive age range, shows enthusiasm and positive responses. This feedback becomes the basis for product improvements which are then tested again on students in groups on a small scale.

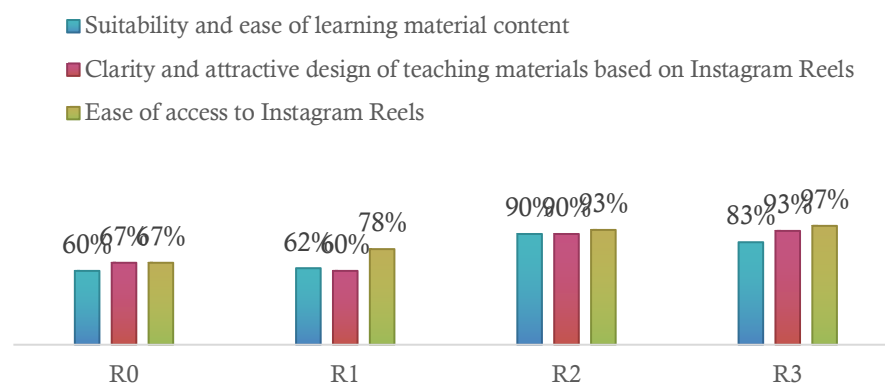


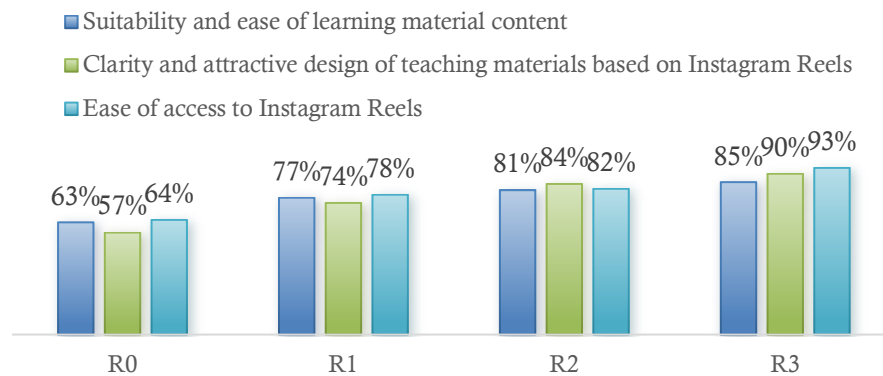
Figure 9. Small Group Trial Assessment Results

Based on small group trial data, an assessment of 78.2% was obtained, including in the good category. Differences in assessments between respondents were influenced by variations in initial levels of understanding which then led to varying perspectives and acceptance of teaching materials based on Reels Instagram, zero-waste pattern-cutting material, which was strengthened by the following feedback.

The feedback data shows students' satisfaction with using Instagram Reels-based teaching materials on zero-waste pattern-cutting in learning at fashion design training centers. Even though in percentage terms there are quite significant differences, the feedback responses given can be used as a basis for strengthening claims on the appropriateness criteria for teaching materials that are developed and then used in field trials.

Table 6. Small Group Trial Participant Feedback

Code	Number of respondents	Feedback
R0	3	Interesting videos, easy to understand and access.
R1	3	The explanation is not detailed enough because it should be attached how to sew it too.
R2	2	The explanation is very complete and easy to understand, but the duration is too short.
R3	2	A concept that is very appropriate to apply to current learning is that apart from the material being effective in minimizing waste material, the media used is very relevant.

**Figure 10.** Field Trial Participant Assessment Results

The results of the feasibility test for teaching material products based on Instagram Reels with zero-waste pattern-cutting material were 77.3% which was categorized as good criteria. Apart from being influenced by the initial level of ability, these varied responses are also supported by the level of creativity and the results of practical assessments using the developed teaching materials.

Table 7. Field Trial Participant Feedback

Code	Number of respondents	Creativity	Practice results	Feedback
R0	14	51.78%	38.64%	The material is quite interesting and easy to understand, but it would be better to include a video tutorial on how to sew it to make it clearer.
R1	8	64.25%	60.5%	The material is very good and interesting, especially because of the use of social media, but it would be even better if it used original audio from the product owner.
R2	8	68.75%	76.75%	The material is easy for beginners to follow and understand and is relevant for the current generation, but the problem is that the material cannot be accessed without an internet quota.
R3	5	78.2%	72.8%	Very interesting, easy to understand and inspiring and looking forward to the next material. Using original audio would probably be more interesting.

Respondents' assessment of the feasibility of Instagram Reels-based teaching material products with zero-waste pattern-cutting material is influenced by the basic understanding factors possessed by students (Pioke et al., 2022). Even though the response received was quite good, several things need to be considered in implementing this teaching material in course and training institutions, including the age range of students, initial ability level, and geographical conditions or internet signals available in each location. Overall user assessment results from the three trial stages are tabulated as follows.

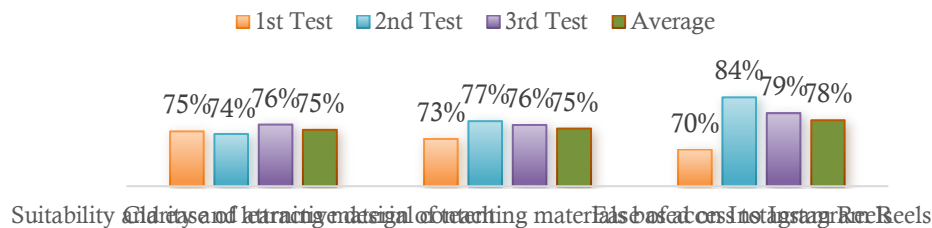


Figure 11. Overall Classification of User Responses

The teaching materials developed have met the criteria of suitability, clarity, attractiveness, and ease of access with an average score of 75.9% which is in the good category. Teaching materials based on Instagram reels, zero-waste pattern-cutting material, are worthy of being widely implemented as an alternative learning resource in fashion design training centers if they are aimed at the right users, namely the target students are under 60 years of age and/or are able and understand well the rules for using Instagram Reels. Apart from that, the use of Instagram Reels-based teaching materials for independent learning should be intended for students who already understand and can design fashion patterns according to design, while for students whose basic understanding of fashion pattern design is still lacking, it is best to use this teaching material with the assistance of an educator.

This research shows that the development of teaching materials based on Reels Instagram, zero-waste pattern-cutting material, has great potential in improving learning in fashion design training centers. Instagram Reels offers an interesting and interactive platform for conveying information on previous research findings that underline the advantages of social media in learning contexts (Ardjo et al., 2022; Hatta, 2019). This shows that innovative approaches such as using social media can be an effective solution in overcoming learning challenges, especially in an industry that is constantly changing like the world of fashion.

Understanding the potential of Instagram Reels as a learning tool by emphasizing its wide accessibility, flexibility of time and place, and high interactivity is in line with the statement (Bhoi et al., 2020; Darginavičienė & Navickienė, 2021). that the use of social media as a learning medium has received good recognition because it can reach various groups in a more interesting and relevant way. The difference between the findings in this research and previous research can be seen in that this research focuses on developing teaching materials based on Instagram Reels for zero-waste pattern-cutting materials used in learning at fashion design training centers which are still relatively new. However, these findings are in line with trends in the use of technology in education which increasingly show that technology integration can increase learning effectiveness (Reinhardt, 2020).

This research makes an important contribution to exploring the potential of social media as an innovative learning tool that is relevant to the needs of the times. By combining technology with new concepts in the fashion industry, this research encourages the creation of more sustainable solutions in education. However, this research also has several limitations, including the limited number of samples that contributed to testing teaching materials based on Instagram reels, and zero-waste pattern-cutting material directly in the field. Apart from that, the use of social media as a learning tool can also have challenges related to data privacy and security that need further attention in its implementation.

Further research can be conducted to explore more deeply the effectiveness of using Instagram Reels in other learning contexts and to explore the potential for developing other social media-based teaching materials. Additionally, research into the long-term impact of social media use in learning could also be an interesting area to explore. Overall, this research provides new insights into the use of social media in fashion learning in training centers and shows that such innovative approaches could be the key to increasing the effectiveness of learning in the future. By continuing to develop and explore the potential of social media, a learning environment that is more dynamic and relevant to current developments can be created.

Conclusions

This research shows that Instagram Reels has great potential as an effective learning tool in fashion education, especially for zero-waste pattern-cutting material in fashion training centers. The use of Instagram Reels makes it possible to deliver material briefly, concisely, and interestingly through short videos which are very suitable for the learning styles of the current generation. The development of teaching materials based on Instagram Reels for zero-waste pattern-cutting material as an innovative learning resource in fashion design training centers received a positive response from validators and users with high ratings in the aspects of curriculum suitability, clarity of material, appearance, and interactivity.

Some of the main points that can be taken from this research are: (1) Instagram Reels allow conveying information in a short, concise, and interesting manner through short 60-second videos. This makes learning more interesting and easier for students to understand. (2) Instagram Reels-based teaching materials were assessed as very good by expert validators with an average score percentage of 88.35% and received a positive response from users with an average score percentage of 75.9%. This shows that this product is effective and relevant for use in fashion learning, especially pattern-making using zero-waste pattern-cutting techniques in fashion training centers. (3) Feedback from students shows that this teaching material suits modern learning needs and styles. Although there are several suggestions for improvement, such as adding definitions and changing overall terms, this teaching material is considered feasible and effective. (4) The use of social media such as Instagram Reels as a learning tool for zero-waste pattern-cutting material that can be explained visually and interactively provides the benefits of wide accessibility, flexibility in time and place, and high interactivity which is in line with previous research findings. (5) This approach is in line with the trend in the use of technology in education which increasingly shows that technology integration can increase the effectiveness of learning. (6) Despite obstacles such as variations in students' initial understanding and technical challenges related to internet access, these teaching materials still show great potential for widespread use. Instagram Reels can be an innovative and effective learning tool in learning pattern-making at fashion design training centers. By utilizing technology and new approaches, educators can create learning resources that are more interesting, interactive, and relevant for today's students. This research encourages the use of social media as a learning platform that can increase educational accessibility, flexibility, and effectiveness.

References

- Adam, D. S., Arniyanti, A., Kasim, E., & Nurbaiti, N. (2022). Efektifitas pembelajaran e-learning berbasis sosial media pada anak di masa pandemi covid-19. *Jurnal Ilmiah Universitas Batanghari Jambi*, 22(2), 974. <https://doi.org/10.33087/jiubj.v22i2.2159>
- Ademtsu, J. T., & Pathak, P. (2023). A Review on the Challenges of Fashion Students' Training Based on Curriculum Structure of Technical Universities in Ghana. *International Journal of Science and Research (IJSR)*, 12(11), 433–448. <https://doi.org/10.21275/SR231105042644>
- Agustian, N., & Salsabila, U. H. (2021). Peran Teknologi Pendidikan dalam Pembelajaran. *ISLAMIKA*, 3(1), 123–133. <https://doi.org/10.36088/islamika.v3i1.1047>
- Akram, S. V., Malik, P. K., Singh, R., Gehlot, A., Juyal, A., Ghafoor, K. Z., & Shrestha, S. (2022). Implementation of Digitalized Technologies for Fashion Industry 4.0: Opportunities and Challenges. *Scientific Programming*, 2022. <https://doi.org/10.1155/2022/7523246>
- Altun, M. (2023). The ongoing debate over teacher-centered education and student-centered education. *International Journal of Social Sciences & Educational Studies*, 10(1), 106. <https://doi.org/10.23918/ijsses.v10i1p106>
- Alvendri, D., Giatman, M., & Ernawati, E. (2023). Transformasi Pendidikan Kejuruan: Mengintegrasikan Teknologi IoT ke dalam Kurikulum Masa Depan. *Journal of Education Research*, 4(2).
- Andhini, G. K., Paramita, R. D., & Janyfer. (2023). Implementing zero waste pattern cutting for a sustainable fashion collection. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 3667–3677. <https://doi.org/10.46254/AP03.20220591>
- Ardjo, A. S., Irianto, S., & Wattimena, R. M. (2022). Development of press tool design learning media - social media, vr -360o and camtasia based for supporting learning independent - campus independent. *Prosiding Seminar Hasil Penelitian Dan Pengabdian Masyarakat*, 1421–1431.
- Bakri, F., Hanif, F., & Rustana, C. (2021). The Powtoon video in Instagram: The learning physics fun in social media. *AIP Conference Proceedings*, 2320, 020014. <https://doi.org/10.1063/5.0037611>
- Bhoi, A., Pujari, S. P., & Balabantaray, R. C. (2020). A deep learning-based social media text analysis framework for disaster resource management. *Social Network Analysis and Mining*, 10(1). <https://doi.org/10.1007/s13278-020-00692-1>
- Darginavičienė, I., & Navickienė, V. (2021). Social medias: Opportunities for learning / teaching english in higher education. *Tiltai*, 73(1). <https://doi.org/10.15181/tbb.v73i1.1276>
- Dianasari, A., Sitompul, N. C., & Sugito, Nf. (2021). Pengembangan materi layanan klasikal dalam bimbingan belajar pada pembelajaran abad 21. *Kwangsan: Jurnal Teknologi Pendidikan*, 9(1), 1. <https://doi.org/10.31800/jtp.kw.v9n1.p1-17>
- Eka, W., & Sukmawaty, P. (2020). Model Pembelajaran untuk Anak Tunarungu Pada Mata Kuliah Tata Busana. *The Indonesian Conference on Disability Studies and Inclusive Education*, 1, 111–124. <https://vicon.uin-suka.ac.id/index.php/icodie/article/view/16>

- ElShishtawy, N., Sinha, P., & Bennell, J. A. (2022). A comparative review of zero-waste fashion design thinking and operational research on cutting and packing optimisation. *International Journal of Fashion Design, Technology and Education*, 15(2), 187–199. <https://doi.org/10.1080/17543266.2021.1990416>
- Fashion Business Data. (n.d.). Retrieved May 29, 2024, from <https://fashionunited.com/i>
- Fauzi, I., Faisal, Munthe, M. Z., & Neliwati. (2023). Model Pembelajaran Dick and Carey Serta Implementasinya dalam Pembelajaran PAI. *Qalam Lil ATHFAL*, 1(1), 470–481. <http://journal.civiliza.org/index.php/gej/article/view/269>
- Firmansyah, E. (2019). Penerapan Teknologi Sebagai Inovasi Pendidikan. *Jurnal.Untirta.Ac.Id*, 2(1), 657–666. <http://jurnal.untirta.ac.id/index.php/psnp/article/view/5736>
- Fricticarani, A., Hayati, A., R, R., Hoironisa, I., & Rosdalina, G. M. (2023). Strategi pendidikan untuk sukses di era teknologi 5.0. *Jurnal Inovasi Pendidikan Dan Teknologi Informasi (JIPTI)*, 4(1), 56–68. <https://doi.org/10.52060/pti.v4i1.1173>
- Gam, H. J., & Banning, J. (2020). Teaching sustainability in fashion design courses through a zero-waste design project. *Clothing and Textiles Research Journal*, 38(3), 151–165. <https://doi.org/10.1177/0887302X20906470>
- Gupta, L., & Kaur Saini, H. (2020). Achieving Sustainability through Zero Waste Fashion-A Review. *Current World Environment*, 15(1), 154–162. <https://doi.org/10.12944/CWE.15.2.02>
- Hamid, S., Skinder, B. M., & Bhat, M. A. (2020). Zero waste: A sustainable approach for waste management. In *igi-global.com* (pp. 134–155). <https://doi.org/10.4018/978-1-7998-0031-6.ch008>
- Hamsia, W. (2022). A study on students' intrinsic motivation in online learning english using short video of instagram reels as a media. *JEELL (Journal of English Education, Linguistics and Literature) English Departement of STKIP PGRI Jombang*, 9(1). <https://doi.org/10.32682/jeell.v9i1.2500>
- Hatta, M. (2019). Media Sosial, Sumber keberagaman Alternatif Anak Milenial Fenomena Cyberreligion Siswa SMA Negeri 6 Depok Jawa Barat. *Dakwah: Jurnal Kajian Dakwah Dan Kemasyarakatan*, 22(1). <https://doi.org/10.15408/dakwah.v22i1.12044>
- Jamun, Y. M. (2018). Dampak teknologi terhadap pendidikan. *Jurnal Pendidikan Dan Kebudayaan Missio*, 10(1), 48–52. <https://doi.org/10.36928/jpkm.v10i1.54>
- Karapetyan, Y. (2022). The effectiveness of Instagram reels as a modern internet marketing tool. *Alternative*, 1(1), 100–105. <https://doi.org/10.55528/18292828-2022.3-100>
- Kartika, E. D., & Sulistyaning Cipta, D. A. (2022). Pemanfaatan reels instagram sebagai sarana joyful learning pada matakuliah desain dan strategi pembelajaran matematika. *Paradigma: Jurnal Filsafat, Sains, Teknologi, Dan Sosial Budaya*, 28(1), 100–105. <https://doi.org/10.33503/paradigma.v28i1.1949>
- Khurshid, S., Amin, F., Masoodi, N., & Khan, M. F. (2023). Factors influencing online learning on social media. *International Journal of Learning Technology*, 18(1). <https://doi.org/10.1504/ijlt.2023.131309>
- Kim, B., & Lee, Y.-A. (2022). Exploring Zero-Waste Pattern Cutting for Transformable Garment Design Process. *Innovate to Elevate*, 79. <https://doi.org/10.31274/itaa.15833>
- Kim, H., & Na, H. (2023). Pattern-cutting design for zero-waste fashion practice. *The Research Journal of the Costume Culture*, 31(1), 18–33. <https://doi.org/10.29049/rjcc.2023.31.1.18>
- Kim, S., & Kim, H. Y. (2023). Creative exploration: zero-waste fashion design practices with traditional Korean clothing. *International Journal of Fashion Design, Technology and Education*, 16(2), 198–213. <https://doi.org/10.1080/17543266.2022.2148293>
- Lee, S., Tandoc, E. C., & Lee, E. W. J. (2023). Social media may hinder learning about science; social media's role in learning about COVID-19. *Computers in Human Behavior*, 138. <https://doi.org/10.1016/j.chb.2022.107487>
- Liang, S., & Wolfe, J. (2022). Getting a feel of Instagram reels: the effects of posting format on online engagement. *Journal of Student Research*, 11(4). <https://doi.org/10.47611/jsrhs.v11i4.3600>
- McQuillan, H. (2019). Hybrid zero waste design practices. Zero waste pattern cutting for composite garment weaving and its implications. *The Design Journal*, 22(sup1), 803–819. <https://doi.org/10.1080/14606925.2019.1613098>
- Menon, D. (2022). Factors influencing Instagram Reels usage behaviours: An examination of motives, contextual age and narcissism. *Telematics and Informatics Reports*, 5(1), 100007. <https://doi.org/10.1016/j.teler.2022.100007>
- Muthmainnah, Obaid, A. J., Raghda, R. S., & Khalaf, H. A. (2022). Adoption Social Media-Movie Based Learning Project (SMMBL) To Engage Students' Online Environment. *Educational Administration: Theory and Practice*, 28(1). <https://doi.org/10.17762/kuey.v28i01.321>
- Pioke, I., Rivai, S., Pakaya, W. C., & Abdullatif, N. (2022). Hubungan Antara Kemampuan Awal Matematika Dengan Hasil Belajar Siswa Kelas 5 SDN 08 Paguyaman. *Aksara: Jurnal Ilmu Pendidikan Nonformal*, 8(2), 803. <https://doi.org/10.37905/aksara.8.2.803-808.2022>

- Priyantini, N. L., Suranata, K., & Jayanta, I. N. L. (2021). Video Animasi dalam Pembelajaran IPA Materi Perubahan Suhu dan Wujud Benda. *Jurnal Pedagogi Dan Pembelajaran*, 4(2), 281. <https://doi.org/10.23887/jp2.v4i2.37248>
- Rahyadi, I., Drupadi, A. C. V., Pramesti, B. I., Karimah, D. L., & Kinari, K. (2023). Instagram Reels as a New Platform for Social Criticism Among Millennial. *2023 International Conference On Cyber Management And Engineering (CyMaEn)*, 505–512. <https://doi.org/10.1109/CyMaEn57228.2023.10051032>
- Ramadhani, S. R., & Rahmah, A. (2021). Analisis Strategi Pembelajaran Soft Skill berbasis Media Sosial: Studi Kasus Perguruan Tinggi. *Jurnal Informatika Terpadu*, 7(1), 39–46. <https://doi.org/10.54914/jit.v7i1.344>
- Ramadhina. (2021). Keterampilan digital abad 21: persiapan kerja siswa tata busana di era industri 5.0. *Ejournal.Unesa.Ac.Id*, 10, 149–162. <https://doi.org/https://doi.org/10.26740/jotb.v10n01.p149-162>
- Ramkalaon, S., & Sayem, A. S. M. (2021). Zero-Waste Pattern Cutting (ZWPC) to tackle over sixty billion square metres of fabric wastage during mass production of apparel. *The Journal of The Textile Institute*, 112(5), 809–819. <https://doi.org/10.1080/00405000.2020.1779636>
- Regina, Sudarsono, Sada, C., Yuliana, Y. G. S., Ikhsanudin, Riyanti, D., & Samodra, Y. T. J. (2023). Use of Social Media as an Online Learning Media. *GANDRUNG: Jurnal Pengabdian Kepada Masyarakat*, 4(2). <https://doi.org/10.36526/gandrung.v4i2.2903>
- Reinhardt, J. (2020). Metaphors for social media-enhanced foreign language teaching and learning. *Foreign Language Annals*, 53(2). <https://doi.org/10.1111/flan.12462>
- Rosmandi, A., Mahdum, M., & Indrawati, H. (2021). Development of E-learning-based Social Studies Learning Media for Class VII Semester II Junior High Schools. *Journal of Educational Sciences*, 5(1). <https://doi.org/10.31258/jes.5.1.p.53-65>
- Sa'adu Matazu, S. (2023). Influence of Dick and Carey instructional model on secondary school biology students' performance in Katsina State, Nigeria. *Mediterranean Journal of Social & Behavioral Research*, 7(3). <https://doi.org/10.30935/mjosbr/13301>
- Setiawati, R. I., & Shofwan, I. (2023). Implementasi Prinsip Pendidikan Orang Dewasa pada Pelatihan Tata Busana di Satuan Pendidikan Non Formal SKB Ungaran. *Lifelong Education Journal*, 3(1), 39–59. <https://doi.org/10.59935/lej.v3i1.180>
- Sichach, M. (2023). Designing Effective Short-Vertical Videos on Tik Tok and Reels for Civic Education on Misinformation, Disinformation, and Misinformation (MDM) on Social Media Platforms in the age of Artificial Intelligence. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4468598>
- Simões, A., & Almendra, R. (2018). Pilot study to convert an existing model into a zero waste pattern and cutting system. In *Textiles, Identity and Innovation: Design the Future* (Vol. 112, Issue 6, pp. 29–34). CRC Press. <https://doi.org/10.1201/9781315100210-7>
- Siregar, E., Aswan, D., & Kustandi, C. (2023). Online Learning Design Digital Guide of Social Media for Teachers. *Journal of Nonformal Education*, 9(1), 69–76. <https://doi.org/10.15294/jne.v9i1.42092>
- Thahir, A., & Wahyuni, S. (2023). Pelatihan Penggunaan Reels Instagram sebagai Media Pembelajaran Digital. 4(4), 3578–3582. <https://doi.org/10.31949/JB.V4I4.6975>
- Vaghjee, G. (2021). Social media-enhanced learning in a small island developing states (SIDS) setting. *Convergence*, 27(1). <https://doi.org/10.1177/1354856520923968>
- Wibowo, T., & Xie, F. (2022). An RPG Game Design for English Learning using ADDIE Methods. *Science Tech: Jurnal Ilmu Pengetahuan Dan Teknologi*, 8(1). <https://doi.org/10.30738/st.vol8.no1.a11990>
- Wilujeng, D. I., Rizkiya, A. L., Jhundy, B. A., Indarti, & Wahyuningsih, U. (2023). Sustainable fashion: Zero waste design practices. *AIP Conference Proceedings*, 2685, 040035. <https://doi.org/10.1063/5.0112955>
- Wulandari, D., Arcana, I. N., & Kuncoro, K. S. (2022). Pengembangan instagram reels pembelajaran pokok bahasan persamaan garis lurus untuk SMP. *UNION: Jurnal Ilmiah Pendidikan Matematika*, 10(1), 1–14. <https://doi.org/10.30738/union.v10i1.12138>
- Yasnidawati, & Marini, I. (2021). Pengembangan modul busana kerja sebagai sumber belajar mahasiswa tata busana. *NUSANTARA: Jurnal Ilmu Pengetahuan Sosial*, 8(3), 461–469. <https://doi.org/10.31604/JIPS.V8I3.2021.461-469>