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## Development of Sarong Based Science Learning Media (SBSLM) to Increase Science Entrepreneurship in Inorganic Chemistry Learning

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### Abstract

This study aims to find out how the characteristic steps of sarong based science learning media (SBSLM) to improve the science entrepreneurship of inorganic chemistry materials, the feasibility of learning media sarong based science learning media (SBSLM) to improve the science entrepreneurship of inorganic chemistry materials, and the effectiveness of learning media sarong based science learning media (SBSLM) to improve the science entrepreneurship of inorganic chemistry materials for science students. The type of research used is Research and Development (R&D). The model consists of (Analysis, design, development, implementation, and evaluation). The results of learning media are based science learning media (SBSLM) to improve the science entrepreneurship of inorganic chemistry materials from characteristics by 78.13% and feasibility by 92% with the categories "Feasible" and "Very Feasible". Meanwhile, the effectiveness test of student response results was 83.58%, based on the percentage of responses including the "Sangat Effective" category and could be used in learning activities.

**Keywords:** Media, SBSLM, Science entrepreneurship, Inorganic Chemistry

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## INTRODUCTION

Education is a community and government effort in preparing the nation's next generation for a better life in the future. Education is also a process of educating, fostering, controlling, supervising, influencing, and transmitting knowledge carried out by educators to students to liberate ignorance, increase knowledge, and form a better and useful personality for everyday life. (Veronica et al., 2018). So education is a broader process than the process that takes place in schools and colleges. In tertiary institutions the learning system is different from primary or secondary schools, this is an educational unit that teaches higher education, aims to improve the quality of learning, in the learning process in tertiary institutions it is divided into several departments that will deepen understanding of learning.

In the science of chemistry is a science that has an important role in people's lives because in life it cannot be separated from chemical elements which are obtained and developed based on experiments that seek answers to the questions what, why and how natural phenomena, especially those related to composition, structure and properties, transformations, dynamics and energetics of matter (Dwiningsih et al., 2021). In learning chemistry there are various materials such as organic and inorganic chemistry, in learning inorganic chemistry contains the properties, structure, synthesis and reactions of compounds from the elements in the periodic table which includes all chemical compounds except organic compounds.

One of the main factors in achieving the success of learning objectives is using practical and innovative learning media (Okra & Novera, 2019), with the aim of delivering learning material achieved well. Observations that have been made in chemistry courses are still a few lecturers who use other learning media. Because learning media are all tools and materials that can be used for educational purposes such as books, radio, television, magazines, newspapers, computers and so on. Contextually based SBSLM on the use of clothing materials (clothing) such as sarongs as learning media is still relatively new and especially in the Jambi City area.

In the SBSLM learning media, it can be seen that there are no products that use it because the design is in the form of material that

is applied to a sarong which can create opportunities for students to also study the material. By creating entrepreneurial opportunities there is no need to worry about being fired from work which is very difficult to get, for students who have creative businesses built on innovation can create jobs and be useful for others, as well as the ability to create and create something new in the form of the ability to read opportunities, and courage in controlling risks (Hanifuddin et al., 2021).

The fact of this research is that previous research has confirmed that the concept of sarong based science learning media (SBSLM) can improve science entrepreneurship. Several studies that are relevant to this research include: Research conducted by Putut Martin entitled Development of Research Result-Based Science Entrepreneurship Teaching Materials to Support Student Creativity Programs. The similarity in this research with what I am doing is the theme of science entrepreneurship, while the difference is that the research above uses science entrepreneurship as the development of teaching materials to increase creativity, while the research I do is science entrepreneurship as a medium and is used to increase entrepreneurial interest. (HB, 2012). Research conducted by Lisa Nursita entitled Impact of Entrepreneurship Courses on Student Entrepreneurial Interests. The similarity of this research with what I am doing is the theme of entrepreneurship, while the difference is that this research determines entrepreneurial interest in the subject, while the research I did was science entrepreneurship as a learning medium used and to increase interest in entrepreneurship (Nursita, 2021). Research conducted by Agus Muliadi, et al entitled Biotechnology-Based Bioentrepreneurship: Perceptions of Biology Students. The similarities in this study are the theme of entrepreneurship and entrepreneurial interest, while the difference is that this research focuses on the perception of bioentrepreneurship which is not the same as the research conducted which aims to create learning media. (Muliadi et al., 2021).

So the purpose of this research is to find out: 1). Characteristics of sarong based learning media (SBSLM) learning media to improve science entrepreneurship on inorganic chemistry, 2). The feasibility of sarong based learning media (SBSLM) learning media to increase science entrepreneurship in inorganic chemistry material, 3). The effectiveness of sarong based learning media (SBSLM) to

increase science entrepreneurship in inorganic chemistry.

### METHODS

This research is a type of research and development (RnD) development research. The development model used is the ADDIE model initiated by Robert Maribe Brach. There are 5 development steps according to the name Analysis, Design, Development, Implementation, Evaluation (ADDIE) (Al Azka et al., 2019). The selection of this model is used to find research objectives. Respondents are science students at Universitas Jambi. Data collection techniques in the form of: 1). Initial requirement questionnaire: interviews and questionnaires/questionnaires, 2). Product validation questionnaire: material expert validation questionnaire, raise learning media expert validation, design expert validation questionnaire, 3). Science entrepreneurship based sarong effectiveness questionnaire

### RESULTS AND DISCUSSION

Preliminary data and analysis of problems that exist or occur in the field or room. The result is an understanding of interest in entrepreneurship. Questions given to students related to interest in entrepreneurship in general. There are 10 questions in the questionnaire with 5 answer points with a maximum score of 50. The questionnaire is given to class students in the form of a link accessed via Google. Students who answered consisted of 16 people. The results obtained are analyzed again so that a problem is obtained regarding the level of interest in entrepreneurship. The following results were obtained:

*Tabel 1. Questionnaire Results About Interest in Entrepreneurship*

<b>Highest Score</b>	50
<b>Lowest Score</b>	32
<b>Total score</b>	629
<b>Average</b>	78,63

The following are the results obtained from the validator as expert validation in the form of design:

#### 1). Material Expert Validation

*Tabel 2. Learning Material Results*

Validator	Total Score	Score Assessment	Criteria
Validator 1	50	100	Very eligible

(Source: Research Primary Data)

The validity of inorganic chemical materials was obtained based on the suggestions and input given by the validator, namely: for the material taken it is appropriate, but for group VII A elements such as Br, Cl there is a slight error action, valence electrons should be used 7 instead of 8.

#### 2). learning media expert validation

*Tabel 3. Learning Media Results*

Validator	Total Score	Score Assessment	Criteria
Validator 2	7	70	Eligible

(Source: Research Primary Data)

The validity of the learning media was obtained based on the suggestions and input given by the validator, namely: making other patterns of motifs, choosing elements that are easy to understand and knowing the meaning of these elements.

#### 3). Design Expert validation

*Tabel 4. Learning Media Design Results*

Validator	Total Score	Score Assessment	Criteria
Validator 1	50	100	Very eligible

(Source: Research Primary Data)

The validity of the learning media design was obtained based on the suggestions and input given by the validator, namely: the proposed design is in accordance with the material, very innovative for chemical batik themed sarong products and the planned batik design is good enough, not too dense, the portion is appropriate. From the results of the

validaor data above, all of them are added and then divided by 3, this is to find out the results and categories.

$$\frac{100+70+100}{3} = 90\%.$$

The results obtained can be concluded to be 90%. In the results of expert validation, it is included in the "Very Eligible" criteria to be printed into learning media with revisions that have been carried out by researchers.

In this stage the product was tested on students to see the effectiveness of sarong media in increasing student science entrepreneurship and the feasibility of sarong-based learning media. This data can be seen how students respond to interest in entrepreneurship and improve the learning media used. The following results were obtained:

1) *Results of Feasibility Validation of Cover Media*

Table 5. Feasibility Results for Cover Media

Validato r	Total Scor e	Score Assessmen t	Criteri a
Validator 1	94	94	Very eligible

(Source: Research Primary Data)

The results obtained are based on the validaor with suggestions and input, such as: for the typeface and size it is good enough, but maybe the motif is too rare so it's not like batik. Maybe the size of the letters can be reduced a little and the motifs are a bit tighter, but the size shouldn't be too small. In general assessment, it is categorized as "Very Eligible" and can be used with minor revisions.

2). Sarong Effectiveness Questionnaire Results in Increasing Interest in Entrepreneurship  
a. *The results obtained in questions related to entrepreneurship*

Table 6. Entrepreneurial Interest Results

Derived Class Name	Total Score	Score Assessment
S.22	628	82,63
Max		38
Min		29

(Source: Research Primary Data)

From the data that has been obtained is 82.63% while the results obtained previously were 78.63%. From this it shows that the interest in entrepreneurship in students has increased by 4%, and the final result is included in the "Very Effective" category..

a. Results from students in questions related to sarong media

Table 7. Product Results Sheath Media

Derived Class Name	Total Score	Score Assessment
S.22	1588	83,58
Max		97
Min		59

(Source: Research Primary Data)

The results obtained from the science entrepreneurship-based sarong media are 83.58% which are included in the "Very Effective" category for use in learning. With the revisions that have been made.

1. Characteristics of sarong learning media based on science learning media to increase science entrepreneurship in inorganic chemistry

There are many characteristics or features in learning media such as the form of LKS (Student Worksheets), modules, games, and others. From research journals that use chemistry learning media, various bases are used, such as the development of E-comics, based on Android (Herlina et al.,

n.d.), development of puztes learning media (Suryaningsih et al., 2020), dan Etnosains (Fitri Lubis et al., 2021). From this example the researcher made learning media with different characteristics, namely in the form of clothing (clothing). The clothing that has been exemplified is in the form of cloth with chemical batik motifs while in the form of sarongs there is no such thing, this makes researchers creative in making sarongs as learning media. Sarongs that are usually used during prayer or are used daily in Islamic boarding schools.

In the stages of forming characteristics, there are several stages that need to be revised again by researchers. Starting from the analysis stage which aims to determine students' interest in entrepreneurship. Next is to ask the lecturers who teach the material taken, the lecturers chosen are lecturers who teach inorganic chemistry in 2019 who are lecturers in the courses they are taking. In the questionnaire questions given were about learning media, the lecturer suggested how the initial form would be made by the researcher.

Furthermore, the design stages that need to be considered are the elements used, the shape of the elements used, the layout of the elements, additional motifs that need to be added to help accentuate, and the colors used in the elemental motifs or the color of the fabric. After completing the design stage, enter the validaoor stage. The following are the results of entrepreneurial interest obtained:

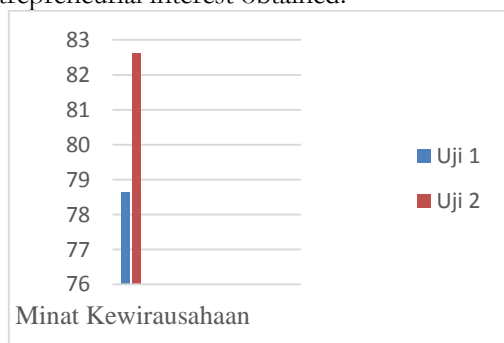


Figure 1. Entrepreneurial Interest Diagram

In test 1, there are questions given to students about interest in entrepreneurship in general, while test 2 is a question about interest in entrepreneurship by providing examples of products that have been made.

These results can be seen increased interest in entrepreneurship in students.

- The feasibility of sarong learning media based on science learning media to increase science entrepreneurship in inorganic chemistry

The feasibility of learning media is a stage after knowing the problems from the characteristics and forms of feasibility of learning media much like the results of other research journals. Based on the exploration conducted by Muhammad Al Rasyid et al, the results of research on the development of android-based e-modules were declared "Very Eligible" to use (Al Rasyid et al., 2021), research exploration conducted by Windi Dwi Saputra, et al, chemistry teacher assessment responses through practicality tests obtained a percentage of 92% with the criteria of "Very Practical" (Saputra & Kurniawati, 2021), and the research exploration conducted by Rizka Fitriani, the overall results of the atomic series e-comic learning media research are included in the "Very Good" category so that it is said to be suitable for use for learning (Chemistry et al., 2021). From the exploration above the researcher concluded that the results obtained could be used in learning media.

In the feasibility of this research conducted by researchers is the result of the validator in the form of a questionnaire. The following are the results obtained from the validator:

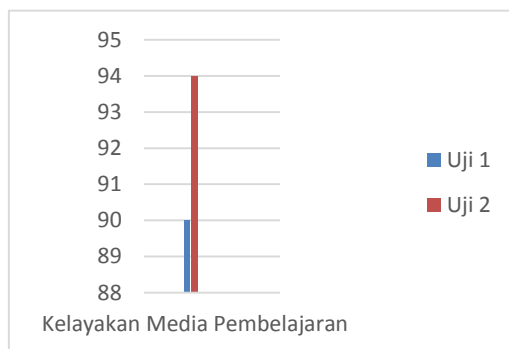


Figure 2. Learning Media Feasibility Diagram

In test 1, the results were obtained from the validaoor in several experts, such as material experts, learning media experts,

and design experts. In the first test stage, there is a need for revision prior to learning media in the form of products. This is important for researchers because this is a guideline for achieving the goals to be achieved.

Test 2 is the result of the response given by the validator after the product is made. In this stage is the result achieved by researchers. In test 2 researchers still need to pay attention or correct errors. From the results above there is an increase from test 1 to test 2 so that the feasibility has entered the "Very Eligible" category to be applied in learning.

3. The effectiveness of sarong learning media based on science learning media to increase science entrepreneurship in inorganic chemistry

The effectiveness of learning media can be seen based on the exploration carried out by Yola Dwi Putri, et al, the learning outcomes of students using the Adobe Flash program obtained an n-gain score of 0.65 in the "High" classification (Putri et al., 2021), the exploration was carried out Ainun Mardhiah and Said Ali Akbar, the results of the study can be concluded that the average learning of students taught using crossword puzzles (TTS) is higher than the average learning outcomes of students taught using domino cards (Mardhiah & Ali Akbar, 2018), and the exploration carried out by Surya Ningsih, et al, the results of the developed puztest learning obtained the N-Gain values from the initial and main field tests were 0.75 and 0.80 criteria "High and Very High" (Suryaningsih et al., 2020).

Meanwhile, from the research results diagram, it can be seen that the number of students who answered the questionnaire on average was "Good". In the average results obtained according to the Ministry of Research and Development reference, namely 83.58%, it is included in the "Very Effective" category so that the objectives to be achieved by researchers. The form of media used is different from the researchers, but the results obtained with the learning media are good.

The effectiveness of research learning media can be known by giving questionnaires to students. The

questionnaire questions related to the material and design of the sarong media as a learning medium. The following results were obtained:

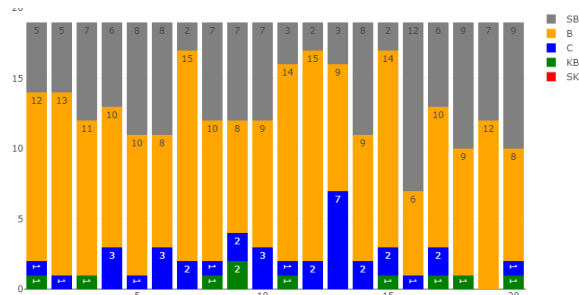


Figure 3. Diagram of Student Response Results

Before measuring the researcher asked about the elements in the learning media, this was done to find out the student's response to being shown a different learning media. Therefore this research is an encouragement for researchers for other learning media to be developed further or as a reference for innovation in learning media.

## CONCLUSION

The test results of the characteristics of the sarong based science learning media (SBSLM) learning media which were made based on the interest in entrepreneurship in students, the score in the first test was 78.63% and the score in the second test was 82.63% with inorganic chemical motif sarong products and the results obtained in the category "Highly Effective". The results of the feasibility test of the sarong based science learning media (SBSLM) learning media which were made based on the results of the validator validation, the results of the first test score were 90% from learning media experts, material experts and design experts, and the second test result score was 94% from the product existing, and the results obtained in the category "Very Eligible". The results of the effectiveness test of the sarong based science learning media (SBSLM) based on student scores on the presence of sarong products as an increase in entrepreneurship interest, namely 83.58%, the results obtained were in the "Very Effective" category in learning media..

**REFERENCES**

- Al Azka, H. H., Setyawati, R. D., & Albab, I. U. (2019). Pengembangan Modul Pembelajaran. *Imajiner: Jurnal Matematika dan Pendidikan Matematika*, 1(5), 224–236. <https://doi.org/10.26877/imajiner.v1i5.4473>
- Al Rasyid, M., Partana, C. P., Al, M., Pendidikan, R., Universitas, K., Yogyakarta, N., ... Yogyakarta, I. (2021). Pengembangan E-Modul Berbasis Android pada Materi Kesetimbangan Kimia untuk Peserta Didik SMA. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 6, 670–680. Diambil dari <http://journal.um.ac.id/index.php/jptpp/>
- Dwiningsih, K., Bintang, D., & Mangengke, B. (2021). Pembelajaran Kimia Berbasis Kooperatif Think Pair Share (Tps) Dengan Berbantuan Virtual Laboratorium Untuk Meningkatkan Hasil Belajar Siswa. *Jurnal Inovasi Pendidikan Kimia*, 15(1), 2706–2716. Diambil dari <https://journal.unnes.ac.id/nju/index.php/JIPK/article/view/21595>
- Fitri Lubis, M., Sunarto, A., & Walid, A. (2021). Pengembangan Modul Pembelajaran IPA Berbasis Etnosains Materi Pemanasan Global Untuk Melatih Kemampuan Literasi Sains Siswa SMP. *Paedagogia : Jurnal Kajian, Penelitian, dan Pengembangan*, 12(2), 206–214. Diambil dari <http://journal.ummat.ac.id/index.php/paedagogia>
- Haniffuddin, I. Z. A., Syariah, J. E., Ekonomi, F., & Bisnis, D. A. N. (2021). Upaya Santri Dalam Pengembangan Wirausaha.
- HB, F. P. M. (2012). Pengembangan Bahan Ajar Science Untuk Mendukung Program Kreativitas Mahasiswa. *Jurnal Penelitian Pendidikan*, 29(2), 101–108.
- Herlina, L., Anggita, M. D., Utami, S. M., & Walid, A. (n.d.). Analysis of Using Online Learning Media Via Whatsapp During The Covid-19 Pandemic At Smp Negeri 8 City of Jambi.
- Mardhiah, A., & Ali Akbar, S. (2018). Efektivitas Media Pembelajaran Terhadap Hasil Belajar Kimia Siswa Sma Negeri 16 Banda Aceh. *Lantanida Journal*, 6(1), 49. <https://doi.org/10.22373/lj.v6i1.3173>
- Marfhadella, P. (2021). Pengembangan Assessment Untuk Mengukur Kemampuan Berpikir Kritis Materi Interaksi Makhluk Hidup Dengan Lingkungan DI SMP Se-Kota Jambi, 4(1), 6.
- Muliadi, A., Imran, A., & Sabrun, S. (2021). Bioteknologi Berbasis Bioentrepreneurship: Persepsi Mahasiswa Biologi. *Jurnal Ilmiah Mandala Education*, 7(4), 321–327. <https://doi.org/10.36312/jime.v7i4.2461>
- Nursita, L. (2021). Dampak Mata Kuliah Kewirausahaan terhadap Minat Berwirausaha Mahasiswa. *Ideas: Jurnal Pendidikan, Sosial, dan Budaya*, 7(3), 83. <https://doi.org/10.32884/ideas.v7i3.401>
- Okra, R., & Novera, Y. (2019). Pengembangan Media Pembelajaran Digital IPA Di SMP N 3 Kecamatan Pangkalan. *Journal Educative : Journal of Educational Studies*, 4(2), 121. <https://doi.org/10.30983/educative.v4i2.2340>
- Putri, Y. D., Elvia, R., & Amir, H. (2021). Pengembangan Media Pembelajaran Kimia Berbasis Android Untuk Meningkatkan Motivasi Belajar Peserta Didik, 5(2), 168–174.
- Saputra, W. D., & Kurniawati, Y. (2021). Desain Media Pembelajaran Berbasis Android pada Materi Praktikum Pengenalan Alat Laboratorium Kimia Sekolah Menengah Atas. *Journal of Natural Science and Integration*, 4(2), 268. <https://doi.org/10.24014/jnsi.v4i2.12068>
- Septiawan, F. (2020). the Effectiveness of the Use of Google Form in Linear Learning in Motorcycle Maintenance Lessons in Smkn 1 Koba. *Jurnal Pendidikan Teknik Mesin*, 7(2), 129–135.
- Suryaningsih, S., Kurniasih, D., & Kurniati, T. (2020). Pengembangan Media Pembelajaran Puztes (Puzzle Dan Teka-

Teki Silang) Pada Sub Materi Konfigurasi Elektron Dan Hubungannya Dengan tabel Periodik Unsur Di Sma Muhammadiyah 1 Pontianak. *AR-RAZI Jurnal Ilmiah*, 8(1), 24–33. <https://doi.org/10.29406/ar-r.v8i1.2031>

Veronica, I., Whyu Pusari, R., & Setiawardana, M. Y. (2018). Pengembangan Media Scrapbook Pada Pembelajaran Ipa. *Jurnal Imiah Pendidikan dan Pembelajaran*, 2(3), 258. <https://doi.org/10.23887/jipp.v2i3.16222>