

## **Development of Learning Media for Chemistry Playing Cards Digital (Kami Kita) On Colloidal Material System**

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### **Abstract:**

#### **Background:**

This chemistry card media provides opportunities for students to learn actively and develop creative abilities in understanding chemistry using games. The form of playing card games in chemistry learning is not much different from playing card games encountered in everyday life. The main difference lies in the cards and the rules of the game as well as in the writing and pictures in the form of questions. Its purpose is to train students' skills and memory and increase students' interest in learning. The colloids system in the delivery of teacher material tends to use the lecture method. In this learning method, the position and role of the teacher tend to be more dominant, while the activeness of students is too low. Therefore, we need a variety of teachers so that the activeness of the students can be balanced and their creative abilities can also be realized in real terms. Based on the existing problems, in this study, research has been carried out "The Development of Learning Media for Digital Chemistry Playing Cards (Kami Kita) on colloidal system material". The purpose of this study was to determine the validity (feasibility) of Kami Kita media according to the results of the expert's assessment of the practicality of Kami Kita media according to the results of teacher responses and student responses.

**Materials and Methods:** This study aims to develop a valid and practical Kami Kita learning media. The development model in this study refers to the 3D research and development model, namely define, design, and develop. The sample of this study was 23 students of class XI science at SMA Negeri 2 Linggang Bigung. The data collection techniques used were validation questionnaires, teacher response questionnaires, and student response questionnaires. The data analysis technique used in this research is the percentage.

#### **Results:**

Based on the results of the analysis carried out, the validity of the media obtained a percentage of 88% of material validators, 97% of media validators, and 90% of learning practitioners with very valid categories. Practicality was measured through a questionnaire of teacher responses and student responses with a percentage of 95% and 90% in the very practical category. Based on the validity and practicality of the Kami Kita learning media that was made, the product was declared suitable for use in the learning process on colloidal system material. Practicality was measured through a questionnaire of teacher responses and student responses with a percentage of 95% and 90% in the very practical category. Based on the validity and practicality of the Kami Kita learning media that was made, the product was declared suitable for use in the learning process on colloidal system material.

**Conclusion:** The assessment of the validity of four Kami Kita learning media is based on the results of 3 (three) validator each with a criterion value of 88% from material experts, 97% from media experts, and 90% from practitioners so that four Kami Kita learning media are on colloidal system material with the criteria "Very Valid". The assessment of the practicality of Kami Kita learning media is based on the results of 2 (two) responses each with a criterion value, namely 95% of teacher responses and 90% of student responses so that Kami Kita learning media are on colloidal system material with the "Very Practical" criteria.

**Key Word:** Digital; Kami Kita; Colloid.

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### I. Introduction

Education is a process of changing one's attitudes and behavior to mature humans through the learning process. The success of the learning process in schools is influenced by several factors including teachers, students, media, and the learning model used. Learning media is a very vital component in the learning process because learning media is one of the determining factors for the success or failure of a material conveyed to students. Choosing media and learning models is one of the most important things in the teaching and learning process to achieve optimal learning outcomes. This chemistry card media provides opportunities for students to learn actively and develop creative abilities in understanding chemistry using games. The form of playing card games in chemistry learning is not much different from playing card games encountered in everyday life. The main difference lies in the cards and the rules of the game as well as in the writing and pictures in the form of questions. Its purpose is to train students' skills and memory and increase students' interest in learning.

The material that students learn at school is about the colloid system. The reason the researcher took this colloid system material was that it relied on memory or memorization so it was very suitable to be packaged in the form of playing card media. The colloid system in the delivery of teacher material tends to use the lecture method. In this learning method, the position and role of the teacher tend to be more dominant, while the activeness of students is too low. Therefore, we need a variety of teachers so that the activeness of students can be balanced and their creative abilities can also be realized in real terms. Based on the existing problems, in this study, research has been carried out on "The Development of Learning Media for Digital Chemistry Playing Cards (Kami Kita) on colloid system material".

### II. Material And Methods

The instruments used in data collection were validation sheets, response questionnaires, and documentation. The data analysis techniques used in this study are qualitative analysis (input suggestions from the validator) and quantitative (validity and practicality). The data analysis technique used in this research is the descriptive analysis technique which is carried out using descriptive statistics. Calculations of the mean, frequency distribution, and percentage distribution are the most common forms of summarization. The following is the analysis used to describe the validity of the media based on the assessment of material expert lecturers, media expert lecturers, teacher experts as practitioners, and the practical assessment of users of digital chemistry playing card media based on the results of teacher response questionnaires and student response questionnaires.

#### Media Validity Assessment Analysis

There are three expert validation assessment instruments, namely material experts, media experts, and practitioners. Then the results of the assessment instrument were analyzed using a Likert scale with a score of 1 = strongly disagree; 2 = disagree; 3 = disagree; 4 = agree; 5 = strongly agree (Sugiyono, 2013). The results of the validation sheet are then analyzed by using the following formula:

$$x = \frac{\text{Total Score}}{\text{Criteria Score}} \times 100\%$$

**Table no 1: Criteria of Media Validity**

Interval	Criteria
$80\% < X \leq 100\%$	Very Valid
$60\% < X \leq 80\%$	Valid
$40\% < X \leq 60\%$	Quite Valid
$20\% < X \leq 40\%$	Invalid
$X \leq 20\%$	Very Invalid

#### Analysis of Media Practicality Assessment

Analysis of the assessment of teacher response questionnaire sheets and student response questionnaires when using digital chemistry playing card learning media with a Likert scale with a score of 1 = strongly disagree; 2 = disagree; 3 = disagree; 4 = agree; 5 = strongly agree (Sugiyono, 2013). The results of the

teacher response questionnaire and student response questionnaires were then analyzed using the following formula:

$$Practicality\ Value = \frac{\text{Total Score Earned}}{\text{Total Score Maximum}} \times 100\%$$

**Table no 2: Criteria of Media Practicality**

Score	Criteria
80% < X ≤ 100%	VeryPractical
60% < X ≤ 80%	Practical
40% < X ≤ 60%	QuitePractical
20% < X ≤ 40%	Impractical
X ≤ 20%	VeryImpractical

### III. Result

The Kami Kita media research process was carried out starting from making a research design, feasibility test, and testing the practicality of Kami Kita media. All stages were then validated by the media by experts and made improvements, then sampling was carried out by filling in the teacher response questionnaire and student response questionnaires. Our media results are as follows:

#### Recapitulation of Results of the Experts and Practitioners Validation

**Table no 3: Results of Expert Team Validation**

Validator	Percentage	Criteria
Expert of Material	88	Very Valid
Expert of Media	97	Very Valid
Practitioners	90	Very Valid

#### Results of Teacher Response

**Table no 4: Results of Teacher Response**

No.	Evaluation	Percentage	Criteria
1.	The Aspect of Material/Content	93	VeryPractical
2.	The Aspect of Interest	97	VeryPractical
<b>Average Score</b>		<b>95</b>	<b>VeryPractical</b>

#### Results of Student Responses

**Table no 5: Results of Student Responses**

Students	Percentage	Category
SMAN 2 LinggangBigung	90	VeryPractical

### IV. Discussion

The validity of the Kami Kita media, overall the results of the validity assessment by material experts got a total score of 88 with a criterion value of 88% including the "Very Valid" criteria. As for suggestions for improvement from material expert validators, namely teaching materials that are made suitable to be used as teaching materials for the implementation of the student's research concerned without revision, because the teaching materials are quite complete. Overall, the results of the validity assessment by media experts got a total score of 102 with a criterion value of 97 % is included in the "Very Valid" criteria. As for suggestions for improvement from media expert validators, which are very creative and the model is very fun for students and students and can be used as an example for other chemistry materials. Overall, based on the results of the practitioner assessment described above, they got a total score of 90 with a criterion value of 90% including the "Very Valid" criteria.

The practicality of the Kami Kita media. Overall, based on the results of the teacher's responses described above, they got a total score of 66, 73, and 74, respectively, with an average total score of 71 with the

respective criteria values of 88%, 97%, and 99%. So the results of the assessment of these criteria if on average then the results are 95% including practicality. Overall, based on the results of the student responses described above, they got a total score of 80 and 82, respectively, with a total average score of 81 with a criterion value of 80% and 91%, respectively. So the results of the assessment of these criteria if on average then the results are 90% included in the "Very Practical" criteria. The result of the development product in this case is the final product of digital chemical playing card media in a finished form that has been revised and field trials have been carried out so that the Kami Kita media is declared complete.

## V. Conclusion

Based on the results of the research on the learning media of digital chemistry playing cards (Kami Kita) on the colloid system material that has been carried out, conclusions can be drawn, namely: the assessment of the validity of the Kami Kita learning media based on the results of 3 (three) validators each with a criterion value of 88% from material experts, 97% of media experts, and 90% of practitioners so that the Kami Kita learning media on colloidal system material with the "Very Valid" criteria. While the assessment of the practicality of Kami Kita learning media is based on the results of 2 responses each with a criterion value, 95% of teacher responses and 90% of student responses so that Kami Kita learning media is on colloid system material with the criteria "Very Practical".

## References

- [1]. Idris, Z. *Pengembangan Media Pembelajaran Kartu Remi Koloid Melalui Model Pembelajaran Discovery Learning Pada Materi Sistem Koloid*. Indonesia: Universitas Mulawarman. 2018
- [2]. Sukarsih, A.N.K, Wardhani, Kusuma R.R.A.A. *Pengembangan Kartu Remi Kimia Menggunkan Model Pembelajaran TGT (Teams Games Tournament) Terhadap Hasil Belajar Siswa Pada Materi Pokok Sistem Koloid Kelas XI SMAN Korpri Banjarmasin*. Banjarmasin. Jurnal Pendidikan Kimia dan Ilmu Kimia. 2018 Vol. 1 No. 1.
- [3]. Akbar, M. *Pengembangan Media Pembelajaran Multimedia Interaktif Pada Materi Sistem Koloid*. Banjarmasin: Quantum, Jurnal Inovasi Pendidikan Sains. 2015. Vol.6, No.1, April 2015, hlm. 65-77.
- [4]. Arsyad, A. *Media Pembelajaran*. Jakarta: Raja Grafindo Persada. 2015.
- [5]. Sari, N.A. *Modul Pembelajaran Kimia Sistem Koloid Kimia Kelas XI*. Jakarta: Direktorat SMA, Direktorat Jenderal PAUD, DIKDAS dan DIKMEN.
- [6]. Mardhiah, A, dan Akbar A.L. 2018. *Efektifitas Media Pembelajaran Terhadap Hasil Belajar Kimia Siswa SMAN Negeri 16 Banda Aceh*. Banda Aceh. Lantanida. 2020. Jurnal Vol.6 No.1.
- [7]. Purba, M. *Kimia Untuk SMA Kelas XI*. Jakarta: Erlangga. 2007.
- [8]. Rachmawati. *Kimia SMA Kelas XI*. Jakarta. Esis Erlangga. 2004.
- [9]. Zulfajri, M dan Amelia, R. *Pengaruh Model Discovery Learning Dengan Media Teka-Teki Silang Terhadap Peningkatan Hasil Belajar Siswa Pada Materi Sistem Koloid*. Banda Aceh: Jurnal Edukasi Kimi. 2014. E-ISSN: 2548-7825p-ISSN: 2548-4303.
- [10]. Yani, P. *Pengaruh Permainan Kareki Terhadap Hasil Belajar Siswa Pada Materi Ikatan Ion Di SMA Islam Raudhatul Jannah Payakumbuh*. Published Online 2016. doi.org/10.155575/jta.vli2.1237
- [11]. Carnevale, D. *The Virtual Lab Experiment. The Chronicle of Higher Education*. 2003;1(1):1-5.
- [12]. Sugiyono. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R & D*. Bandung: Alfabeta. 2013
- [13]. Rauf, R. A.A., Rasul, Mansor, Othman & Lyndon. *Inculcation of Science Process Skill in a Science Classroom. Asian Social Science*. 2013; Vol. 9, No.8:47-57.
- [14]. Susanti, D. *Penggunaan Laboratorium Virtual Optik dalam Kegiatan Praktikum Inkuiri untuk Meningkatkan Penguasaan Konsep dan Keterampilan Proses Sains Mahasiswa Calon Guru*. Tesis: UPI Bandung. 2009
- [15]. Tatli, Z., & Ayas, A. *Effect Or A Virtual Chemistry Laboratory On Student' Achievement. Educational Technology & Society*. 2013; Vol. 16, No. 1.
- [16]. Trianto. *Mendesain Model Pembelajaran Inovatif Progresif*. Jakarta: Kencana Prenada Media Group. 2010
- [17]. Collins, A., & Halverson, R. *Rethinking Education In the Age of Technology: The Digital Revolution and the Schools*. New York: Teachers College Press. 2009
- [18]. Stone, D.E, and Koskinen, Canstance L. *Planning and Design for High Tech Web-Based Training*, Boston: Artech House. 2002

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