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The Development of Lectora Inspire Learning Media and Its Effect on Student Learning Outcomes

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Abstract

This study aimed to determine the needs of learning media in schools, the feasibility of the media created following the National Education Standards Agency (BSNP) criteria, and the effectiveness of the learning media on student learning outcomes. This research employed the ADDIE method (Analysis, Development, Design, Implementation, and Evaluation) involving 30 class X (tenth-grade) students. According to the analysis results of the Lectora Inspire media, the mean score of the content feasibility aspects was 3.88 (highly feasible), and the mean score of the presentation feasibility aspects was 3.89 (highly feasible). Furthermore, the developed media was implemented in the teaching and learning process to determine its effect on student learning outcomes. The test incorporated multiple-choice questions. In the implementation phase, the mean score of the pretest was 46.83, while the mean score of the posttest was 81.66. Afterward, the evaluation stage compared the posttest results and the school's passing grade (81.66 > 70), revealing that the developed learning media significantly affected student learning outcomes.
Keywords: ADDIE; lectora inspire; learning media development; student learning outcomes

Abstrak

Penelitian ini bertujuan untuk mengetahui kebutuhan media pembelajaran di sekolah, kelayakan media yang dibuat sesuai dengan kriteria Badan Standar Nasional Pendidikan (BSNP), dan keefektifan media pembelajaran terhadap hasil belajar siswa. Penelitian ini menggunakan metode ADDIE (*Analysis*, *Development*, *Design*, *Implementation*, *and Evaluation*) yang melibatkan 30 siswa kelas X (kelas X). Berdasarkan hasil analisis media Lectora Inspire, nilai rata-rata aspek kelayakan isi adalah 3,88 (sangat layak), dan nilai rata-rata aspek kelayakan penyajian adalah 3,89 (sangat layak). Selanjutnya media yang dikembangkan diimplementasikan dalam proses belajar mengajar untuk mengetahui pengaruhnya terhadap hasil belajar siswa. Tes tersebut memasukkan soal pilihan ganda. Pada tahap implementasi, nilai rata-rata *pretest* adalah 46,83, sedangkan nilai rata-rata posttest adalah 81,66. Selanjutnya pada tahap evaluasi membandingkan hasil *posttest* dengan nilai ketuntasan sekolah (81,66 > 70), diketahui bahwa media pembelajaran yang dikembangkan berpengaruh signifikan terhadap hasil belajar siswa.
Kata kunci: ADDIE; lectora inspire; pengembangan media pembelajaran; hasil belajar siswa

Introduction

Modern advancements in information and communication technology have developed rapidly, marked by the presence of computers/laptops and the internet. This progress has significantly contributed to various fields, including education (Meitantiwi et al., 2015). The education system in Indonesia has enabled the government to facilitate schools with the internet, introduce the latest information, and incorporate technology by using websites for primary to tertiary level (Irwandani et al., 2019). To effectively integrate technology into education, the government must provide facilities to train and inform teachers and students of the advantages of technology to develop their positive attitudes in teaching practice in schools (Copriady, 2015).

Efforts to improve teacher quality can involve learning innovations such as developing learning methods, providing teaching materials, procuring laboratory equipment, improving teacher quality, and developing learning media (Fajrina et al., 2018). Learning success is determined by teachers and students and is also influenced by teaching media and materials used during the process. These components are interrelated and inseparable (Prasetyo et al., 2014).

Educational media plays a crucial role in the learning process, determined by two complementary elements: teaching methods and learning media (Zuhri & Rizaleni, 2016). Media use at the learning orientation stage significantly promotes the effectiveness in conveying the message and lesson's contents (Usmeldi, 2017). Learning media is created to help pupils understand chemical concepts so that the materials provided by the teacher can be easily remembered and recounted (Situmorang et al., 2015). It is developed to facilitate educators to convey the material in the learning process and to help learners understand so that the teaching and learning activities become more enjoyable (Sittichailapa et al., 2015).

Chemistry learning media is one of the factors affecting student learning outcomes at school. It can help teachers overcome material constraints (Widyasari et al., 2018). In this regard, it is perceived as a graphic, photographic, or electronic tool to capture, process, and rearrange visual or verbal information (Sutirman, 2013). However, one of the issues with media choices is that students learn in different ways. Some people learn better visually, while others prefer audio, print, or audio-visual media (Nurfajriani et al., 2021).

Based on the interview with one chemistry teacher at SMAN 1 Siantar, the educator still preferred using the PowerPoint media with a simple presentation in the classroom. The observations during the learning process revealed that the learning media in the form of PowerPoint used in schools had an insignificant effect. Moreover, there were areas for improvement, such as the inability to add games, automatic scoring, and direct feedback on student answers. Thus, some efforts could be made to facilitate the learning process by combining multimedia and learning models. In this context, a media product to utilize was Lectora Inspire.

According to Hasanah et al. (2016), Lectora Inspire is an authoring tool (multimedia compilation tool) that effectively creates learning media. It is used to develop dynamic and user-friendly digital content for teaching and test materials.

There were several previous studies on the development of Lectora Inspire learning media, one of them was conducted by Linda et al. (2016). Based on questionnaire results, the teacher and student's responses obtained mean scores of 96.67% and 97.3% for Lectora Inspire on the subject of reaction rate and 98.3% and 96.5% on salt hydrolysis, respectively. In conclusion, Lectora Inspire-based learning media's overall validation and trial on reaction rates and salt hydrolysis were valid and feasible.

Method

The present study was conducted in SMAN 1 Siantar in North Sumatra Province

from January to April 2020. All tenth-grade students were involved as the research population. Subsequently, a purposive sampling technique was used to select the samples. In this context, a class consisting of 30 students was chosen.

Researchers employed an R&D (Research and Development) paradigm involving the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) technique. There were two instruments administered in this study: non-test and test. As a non-test tool, the questionnaire was distributed to examine the feasibility of the developed learning medium based on BSNP (National Education Standards Agency).

The test consisted of a combination of electrolyte and non-electrolyte contents. The validity was performed to assess the feasibility of newly developed media. The instrument's suitability was examined by two lecturers: a material expert and a media expert, as well as a chemistry instructor who served as a validator. The data obtained were processed to determine the effectiveness of the Lectora Inspire learning media in improving student learning outcomes. In this study, the test consisted of 20 multiple-choice questions followed by five alternative answers (a, b, c, d, and e). It was created using indicators from the theory of electrolyte and non-electrolyte solutions. Before being distributed, the instrument was initially tested for its validity, reliability, difficulty level, discriminating power, and constructor.

The analysis results provided by the material and media experts were processed using a descriptive scale of 1 to 4, with 1 being the lowest score and 4 being the highest. The formula used to measure the media feasibility value was as follows:

$$\text{Media Feasibility Value} = \frac{\sum \text{scores obtained}}{\sum \text{items test}}$$

The increase in scores before and after learning was calculated using the formula (N-gain) as follows:

$$N_{gain} = \frac{S_{post} - S_{pre}}{S_{maks} - S_{pre}}$$

The normality test was a prerequisite for conducting this research. The data were declared to be normally distributed if the significance level was > 0.05, according to the Kolmogorov-Smirnov test on SPSS 22.0. Subsequently, researchers tested the hypotheses using the data analysis results. The N-gain value of the pretest and posttest scores was used in the hypothesis testing in the present study.

Results and Discussion

As an initial step, researchers assessed the learning media of PowerPoint slides. In this context, chemistry teachers in schools conducted an analysis based on modified BSNP standards to determine the feasibility based on the content suitability and presentation. The results of the content feasibility analysis can be seen in Figure 1 and the results of the presentation feasibility analysis can be seen in Figure 2.

Figure 1.
Mean Score of Content Feasibility Aspects

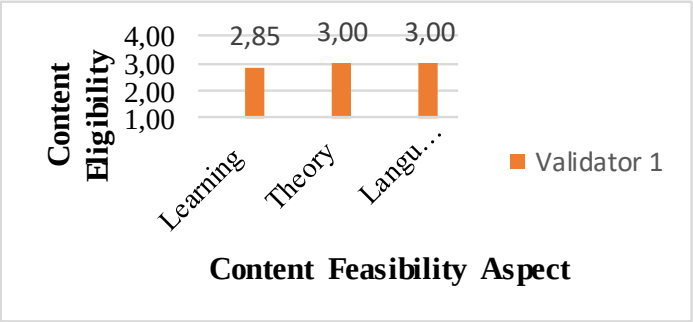
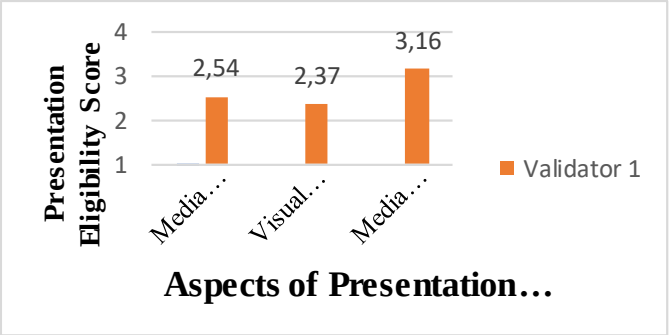


Figure 2.
Mean Score of Presentation Feasibility Aspects

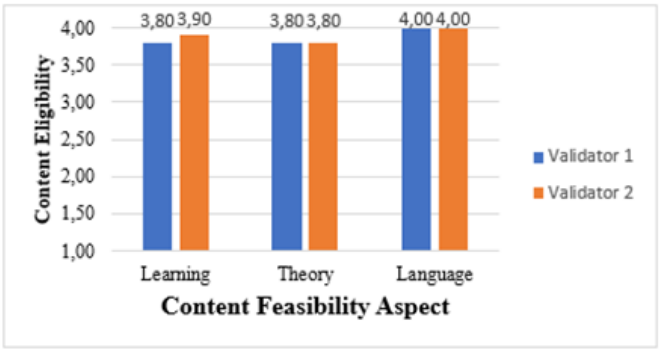


PowerPoint presentations were involved in the interpretation of learning media analysis. The mean score of 2.97 was obtained from the content feasibility questionnaire. Furthermore, the elements in learning, materials, and language were declared feasible to use—however, some other aspects required to be improved (Silalahi et al., 2018).

Based on the questionnaire responses, the mean score of presentation feasibility, including aspects of media design, visual and audio, and implementation, was 2.67, indicating an adequate result, with several aspects to be improved. Based on the explanation above, the existing learning media still needed to be revised by adding the necessary visual, audio, and video elements to PowerPoint slides. The next phase was the development stage, a product planning which engaged the material formulation to be added, as seen in the syllabus. The subsequent step was creating the product using Lectora Inspire computer software (Shalikhah, 2017). Some additions required improvements to the interface, the menu of competency, materials, games, practice questions, and summaries (Irfani et al., 2019).

Users could see all the menus contained in the Lectora Inspire learning media. To access the next page, they must press the "next" button on the screen. The feasibility level of the developed learning media was focused on content and presentation, as shown in Figure 3 and the results of the presentation feasibility analysis were displayed in Figure 4.

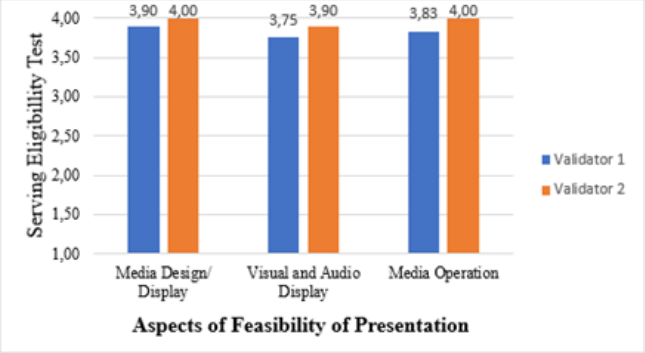
Figure 3.
Mean Score of Content Feasibility Aspects



An analysis of Lectora Inspire media on learning, theory, and language obtained a mean score of 3.88, confirming that it was highly feasible. The analysis of Lectora Inspire learning media, based on the BSNP questionnaire consisting of media, visual, audio designs, and implementation, acquired

a mean score of 3.89, indicating its high-level feasibility.

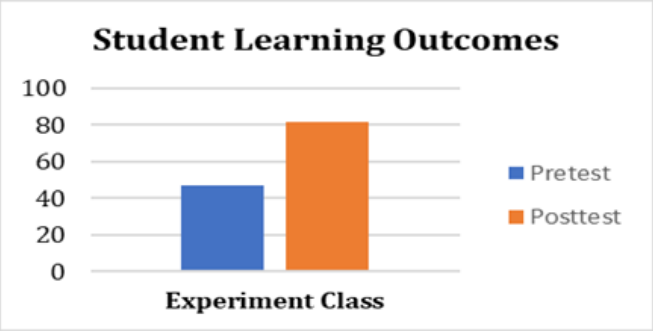
Figure 4.
Mean Score of Presentation Feasibility Aspects



After being validated (evaluated), the developed Lectora Inspire learning media was tested on learners of class X IPA. At the end of the learning process, researchers examined whether student learning outcomes were positively improved using the Lectora Inspire.

Multiple choice questions with five alternative answers (a, b, c, d, and e), which expert validators had previously validated, were employed as test instruments. The test was carried out in an experimental class that had studied using Lectora Inspire learning media. Description of research data in the form of pretest and posttest mean scores can be seen in Figure 5.

Figure 5.
Mean Score of Student Learning Outcomes



In learning about electrolyte and non-electrolyte solutions for the experimental class, engaging the use of the developed Lectora Inspire learning media, the pretest scores ranged from 20 to 70, with a mean of 46.83. Meanwhile, the mean of the posttest was 81.66, with the largest score of 100 and the lowest of 70. Thus, if the mean of the posttest score was compared with the school's passing grade, the result was 81.66 > 75, signifying that the developed learning media had a significant effect (hypothesis - 1), with an N-gain value of 0.65 (very high). Hence, the higher the value (from 0.3), the greater the N-gain produced.

Conclusion

Based on the results and discussion, researchers drew the following conclusions: 1) Lectora Inspire learning media applied to electrolyte and non-electrolyte solutions materials had met the feasibility aspects according to modified standards provided by BSNP, including the content feasibility of 3.88 and presentation feasibility of 3.89, from a maximum value of 4.00; 2) Lectora

Inspire learning media could significantly improve student learning outcomes in lesson materials of electrolyte and non-electrolyte solutions, as evidenced by the N-gain value of 0.65; 3) The Lectora Inspire learning media developed in the present study was declared reliable, innovative, and feasible to use in class.

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References

Copriady, J. 2015. Self-motivation as a Mediator for Teachers' Readiness in Applying ICT in Teaching and Learning. *Procedia-Social and Behavioral Sciences*, 176, 699-708.

Fajrina, W., Simorangkir, M. & Nurfajriani. 2018. Developing Interactive Computer Based Learning Media of Lectora Inspire to Enhance Conceptual Skills of Senior High Schools Students. *in Proceedings of the 3rd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL) (Atlantis Press, Dordrecht)*, 57–60

Hasanah, N., Rery, R. U. & Haryati, S. 2016. Pengembangan Media Pembelajaran Berbasis Lectora Inspire di Mata Pelajaran Struktur Atom dan Sistem Periodik Unsur Siswa Kelas X SMA/MA. *Jurnal Online Mahasiswa (JOM) Bidang Keguruan dan Ilmu Pendidikan*, 3(1), 1–9.

Irfani, W., Siagian, E. S. Y., Nurfajriani & Silaban, R. 2019. Preparing an ICT Innovation with Lectora Inspire as Teaching Media for Electrolyte and Non-Electrolyte Solutions for High School Class X Advances in Social Science. *Education and Humanities Research*, 384, 329-333.

Irwandani, Umarella, S., A Rahmawati, A., Meriyati & Susilowati, N. E. 2019. Interactive Multimedia Lectora Inspire Based on Problem Based Learning: Development in The Optical Equipment. *J. Phys.: Conf. Ser.,* 1155, 012011.

Linda, R., Erviyenni, E., Noer, A. M., Oktavianti, N. & Sellyna, N. 2016. Pengembangan Lectora Inspire sebagai Multimedia Interaktif Pembelajaran Kimia SMA. *Jurnal Pendidikan Kimia*, 8(3), 188-196.

Meitantiwi , EY, Masykuri , M., & Nurhayati , ND (2015). Pengembangan multimedia pembelajaran tutorial menggunakan software macromedia flash pada periodisitas unsur untuk pembelajaran kimia kelas X MIA SMA. Jurnal Pendidikan Kimia (JPK) , 4 (1), 59-67.

Nurfajriani. 2021. Pengaruh Multimedia Articulate Storyline Berbasis Discovery Learning Terhadap Kemampuan Berpikir Kreatif pada Materi Laju Reaksi. *Prosiding Seminar Nasional Kimia*, 75-80.

Prasetyo, Y. D. , Ikhsan, J. & Sari, R. L. P. 2014. Pengembangan Media Pembelajaran Mobile Berbasis Android untuk Pembelajaran Kimia SMA Hidrolisis Asam-Basa, Penyangga, Larutan, dan Garam. *Jurnal Pendidikan MIPA* , 15(1), 17-26.

Shalikhah, N. D. 2017. Media Pembelajaran Interaktif Lectora Menginspirasi sebagai Inovasi Pembelajaran. *Warta LPM*, 20(1), 9-16.

Silalahi, A., Hutabarat, W., Tarigan, S. & Chandra, Y. 2018. Impact of Multimedia-Based Off-Line Learning on Student Motivation and Outcomes. *Asian Journal of Social Science Studies*, 3, 1-11.

Situmorang, M., Sitorus, M., Hutabarat, W. & Situmorang, Z.. 2015. The Development of Innovative Chemistry Learning Material for Billingual Senior High School Students in Indonesia. *Internationan Education Studies*, 8(10), 72-85.

Sittichailapa, T., Rattanachai, R., & Polvieng, P. 2015. The Development of Model

Learning Media of Sorting Algorithm. *Procedia-Social and Behavioral Sciences*, 197, 1064–1068.

Sutirman. 2013. *Media & Model-model Pembelajaran Inovatif*. Yogyalarta: Graha Ilmu.

Usmeldi, U. 2017. Efektivitas Penerapan Media Pembelajaran Interaktif dengan Software Autorun Untuk Meningkatkan Kompetensi Fisik Siswa SMK Negeri 1 Padang. *Jurnal Pendidikan Persis (JEP)* , 1(1), 79-85.

Widyasari, F., Indriyati, N. Y. & Mulyani, S. 2018. Pengaruh Pembelajaran Kimia dengan Model PjBL dan PBL Berbasis Representasi Tetrahedral Ditinjau dari Kreativitas Siswa. *JKPK (Jurnal Pendidikan Kimia dan Kimia)*, 3(2), 93-102.

Zuhri, M. S. & Rizaleni, E. A. 2016. Pengembangan Media Lectora Inspire dengan Pendekatan Kontekstual untuk Siswa Kelas X SMA. *PYTHAGORAS: Jurnal Program Studi Pendidikan Matematika* , 5 (2), 113-119.