



LECTORA INSPIRE-ASSISTED ANDROID APPLICATION AS AN INTEGRATED ETHNOSCIENCE JAMU LEARNING MEDIA FOR ADDITIVES

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Abstrak

Penelitian ini bertujuan untuk mengembangkan dan menguji kelayakan media pembelajaran IPA berbasis Android yang dikembangkan menggunakan perangkat lunak Lectora Inspire serta terintegrasi dengan etnosains jamu pada materi zat aditif. Media Lectora Inspire dipilih karena kemampuannya menyajikan materi secara interaktif dan menarik, sedangkan integrasi unsur etnosains jamu bertujuan untuk mengenalkan kearifan lokal kepada peserta didik. Jenis penelitian ini R&D (Research and Development) dengan menggunakan model ADDIE yang mencakup lima tahapan, yaitu Analyze, Design, Development, Implementation, dan Evaluate. Instrumen utama dalam pengumpulan data adalah angket validasi menggunakan skala Likert, yang melibatkan ahli media, ahli materi, dan guru IPA sebagai validator. Hasil validasi menunjukkan bahwa media ini memperoleh rata-rata persentase kelayakan sebesar 90,73% dengan kategori sangat layak, sedangkan reliabilitas data mencapai 92,68% yang dikategorikan sangat reliabel. Hal tersebut menunjukkan bahwa media pembelajaran lectora inspire berbasis etnosains jamu pada materi zat aditif sangat layak digunakan dalam pembelajaran. Selain itu, respon siswa juga menunjukkan bahwa media ini memberikan pengalaman belajar yang lebih menarik dan interaktif, sehingga berpengaruh pada minat belajar siswa.

Kata kunci: etnosains jamu, kelayakan, media lectora inspire

Abstract

This study aims to develop and test the feasibility of Android-based science learning media developed using Lectora Inspire software and integrated with herbal ethnoscience on additive materials. Lectora Inspire media was chosen because of its ability to present material interactively and interestingly, while the integration of herbal ethnoscience elements aims to introduce local wisdom to students. This type of research is R&D (Research and Development) using the ADDIE model, which includes five stages: Analyze, Design, Development, Implementation, and Evaluate. The main instrument in data collection is a validation questionnaire using a Likert scale, which involves media experts, material experts, and science teachers as validators. The validation results showed that this media obtained an average feasibility percentage of 90.73%, which is a very feasible category. In comparison, the reliability of the data reached 92.68%, which was categorised as very reliable. This shows that the interactive learning media lectora inspire based on herbal ethnoscience on additive substances material is very feasible to use in learning. In addition, student responses also show that this media provides a more interesting and interactive learning experience, thus affecting students' interest in learning.

Keywords: herbal ethnoscience, feasibility, media lectora inspire

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INTRODUCTION

Science learning has a crucial role in shaping students' understanding of natural phenomena. However, science learning is often faced with challenges, especially in the delivery of complex and abstract material (Syafi'ah & Setiani, 2024). One of the scientific concepts that is relevant to daily life is additives. Most students still have difficulty understanding concepts related to additives, especially in food. According to research Wiyantara et al., (2022) showed that only 21.4% of students understood the concept, while 33.7% had misunderstandings, and 44.9% did not understand the concept of additives at all. This shows the need for a better teaching strategy to increase the clarity of concepts. One of the main problems that is often found is the limited learning media available, causing the material to be less interesting and difficult to understand (Fadzuani & Zuliana, 2025).

Learning media refers to tools or materials that can deliver messages to learners, stimulating their emotions, thoughts, attention, and interest while receiving the message (Lisnawati, 2021; Supriatna et al., 2020; Ratnawati et al., 2021). In science education, learning media is essential for teachers to stimulate students' interest in learning, making them more interactive and communicative during the science learning process. Simbolon, Saragih and Situmorang (2020) states there is still a lack of science teachers who develop learning media to support the learning activities. Therefore, it is necessary to create learning media that can be utilized to ensure that the students effectively receive the delivery of learning material. One type of learning media that can be developed is technology-based learning media.

Technological developments will affect several components, one of which is software. Rapid technological developments have also triggered the development of software (Laato et al., 2023). Software in learning can also be used as a learning medium. The advantages of learning media can be realized both in school and outside of school because the media used is in the form of learning applications, so it can be used as a learning medium that can be used during learning. (Liliana et al., 2020). There is a need for learning media to facilitate interaction between teachers and students using the media. One learning media that can be used is the software *lectora inspire*.

Lectora inspire is a software tool that can be used for e-learning development (Musfirotun et al., 2023). The *Lectora Inspire* used is *Lectora Inspire 17* with several main menus: File, Home, Design, Insert, Test & Survey, Tools, View, and Properties. Technology-based media such as *Lectora Inspire*, which has a variety of attractive templates and features images, videos, and animations, can be applied to science learning media to attract students' attention. Research by Herdini et al. (2019) found that science lessons for seventh-grade junior high school students were still monotonous and used uninteresting learning media. After incorporating *Lectora Inspire*-based media into the classes, the teacher's trial test score and the average student score were 99.48% and 96.67%, respectively, falling into the "acceptable" and "good" categories. This indicates that using *Lectora Inspire* learning media in seventh-grade science lessons is feasible. In addition, this media is easy to create quickly and simply without complicated programming. *Lectora Inspire* can also be run using Android in one way, namely by publishing it as an HTML file and then converting it into an Android application. The SWF application needs to be installed first to facilitate its use. If not installed first, the SWF file will not appear on *Lectora Inspire* (Muttaqin et al., 2020). Moreover, many students have been using Android to assist in their learning process.

Additionally, *Lectora Inspire*, as an educational medium, can be tailored to learning needs, whether offline or online, and in both formal and informal learning settings. Students can easily use the *Lectora Inspire* learning media as an interactive tool. It includes feedback features on tests, test score displays features, and links or email buttons that can directly connect with the teacher, enabling two-way communication between students and teachers.

This study differs from the study by Herdini et al. (2019), which only listed science subjects without providing real-life examples or integrating them with ethnoscience. In contrast, this study's Lectora Inspire learning media will be integrated with ethnoscience. Ethnoscience can be defined as linking scientific knowledge with community knowledge in all fields (Novitasari et al., 2017). Learning science concepts that link to ethnoscience can encourage students to apply this knowledge to understand scientific facts in everyday life (Pertiwi & Firdausi, 2019). This makes it easier for students to understand and learn science material. This is because students directly learn real-life examples in science learning. Real-life examples in science learning can also be linked to the local culture of the surrounding community, one of which is herbal medicine. In this study, traditional herbal medicine falls under ethnoscience in health or medicine and traditional beverages. Knowledge of traditional herbal medicine is obtained from the Indigenous knowledge of previous communities (indigenous science). However, researchers can scientifically prove it, enabling traditional herbal medicine to be studied within ethnoscience by combining indigenous science with scientific knowledge that can be linked to science education content.

Jamu is a traditional Indonesian herbal medicine derived from natural and biotic ingredients, including plant, animal, and mineral based material, herbal extracts, and other mixtures (Sugarna et al., 2019; Setiyawati et al., 2021). Jamu is part of Indonesia's local culture, which has been passed down from generation to generation. Science education in schools today rarely shows the scientific process in real-life examples (Septiani & Listiyani, 2021). In ethnoscience studies, jamu can be linked to science subjects. Generally, students can find these ingredients in science curriculum materials. The physical properties, production process, and benefits of jamu can also be linked to science curriculum content. This means traditional jamu can be linked to school learning, particularly science education. The traditional jamu used in this study is Kopi Laos, which contains additives. Kopi Laos originates from Sumenep Regency and consists of coffee, galangal, ginger, and sugar (Fatmawati et al., 2018). One of the science topics that can be linked to traditional herbal medicine is additives. Additives are substances mixed into a material to improve quality, including taste, shelf life, appearance, and other characteristics (Yulistiawati et al., 2019). For example, turmeric and tamarind herbal jamu consists of turmeric rhizomes, tamarind fruit, sugar, and water, with turmeric functioning as a natural colorant and flavor enhancer (A'yunin et al., 2019; Titin, 2020). The complex nature of this material can be made easier to understand by using an engaging and interactive learning medium such as Lectora Inspire.

Lectora inspire is one of the interactive multimedia innovations that is considered to be in accordance with science learning (Padbal et al., 2022). According to a study from Sutarna, (2020) interactive media based on lectora inspire is feasible and practical to be used in the classroom, for example in quantum physics materials that get high validation scores and positive responses from teachers and students. Previous studies using Lectora inspire have generally focused on digital interactivity without integrating ethnoscience. Integrating ethnoscience with interactive media means providing learning innovations with culturally relevant contexts and interactive environments (Jufrida et al., 2025). However, previous studies of science learning using lectora inspire have not integrated ethnoscience. Therefore, this study uniquely integrates herbal ethnoscience to contextualize additive topics, overcoming the limited relevance of culture in existing digital learning media.

Based on the above description, developing lectora inspire-based learning media based on ethnoscience can be an alternative solution to the above problems. The integration of local herbal medicine ethnoscience is hoped to facilitate students' understanding of science material on additives. Therefore, research must determine the feasibility of developing lectora inspire-based science learning media based on herbal medicine ethnoscience for material on additives.

METHOD

This study is a Research and Development (R&D) research aimed at producing an Android-based science learning media supported by Lectora Inspire, integrated with the ethnoscience of traditional herbal medicine on the topic of additives. The development design used is the ADDIE development model, which consists of five stages: analysis, design, development, implementation, and evaluation, with each stage being implemented sequentially (Branch, 2009). The ADDIE model design can be seen in Figure 1.

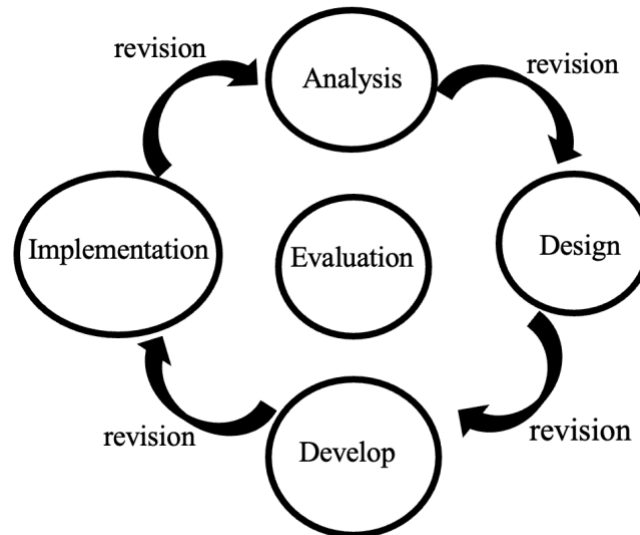


Figure 1. ADDIE Development Model

Analysis

The analysis stage involved a comprehensive literature review and systematic observations of several critical aspects, including identified learning gaps, target learners, and the required resources. The outcomes of the analysis resulted in the development of science learning media for teaching additives, which consisted of an observation sheet and a literature review matrix. The learning media, which had not previously been available, employed an Android-based application and integrated the ethnoscience perspectives of traditional herbal medicine into the instructional content on additives.

Design

At this stage, the criteria for style, design, appearance, application materials, and content were determined. The software used to design the user interface (UI) of the application as a learning medium was Lectora Inspire. The design process for developing the learning media was presented in the form of a flowchart.

Development

This stage of product development involved content creation, the development of guides for students and validators, and the implementation of testing procedures. In addition to validity testing, several other forms of testing were conducted at this stage, according to the model developed by Branch, (2009), including one-to-one trials and small group trials. These tests were conducted prior to large group trials.

Implementation

The implementation stage was conducted after the learning media had been deemed suitable for use by experts. This stage aimed to test and disseminate the developed product, thereby enabling the collection of feedback from users, both individually and in groups, as well as within the system scope

Evaluate

In this phase, the researcher evaluated the functionality and performance of the application. The educational media application being developed was tested by subject matter experts and media experts to assess its feasibility.

This research involved 4 validators, consisting of 1 media expert, 1 material expert, and 2 science teachers. Media experts and material experts come from lecturers of the Science Education Study Program, Trunojoyo Madura University (UTM) who have expertise in the development of learning media and mastery of additive material content. The science teachers selected as validators are junior high school teachers who have at least five years of teaching experience and have used technology in learning. Experts are selected through purposive sampling based on educational background, professional experience, and competencies in relevant fields. The validation test was carried out using an instrument in the form of a media feasibility sheet with a Likert scale.

In addition to the feasibility of the media, the assessment carried out is the student response carried out during the implementation of media in schools. The research subjects also included 20 eighth-grade students from MTs Muhammadiyah 1 Palang, Tuban, Jawa Timur. Data collection techniques utilized validation sheets and questionnaires. Data analysis techniques were applied to analyze the collected data, which were calculated using the following formula (Equation 1).

$$V_{-ah} = \frac{TSe}{TSh} \times 100\% \quad (1)$$

The product feasibility categories used in the product development can be seen in Table 1.

Table 1. Criteria for the validity of media and instruments

Score in percent	Interpretation
$85\% < V \leq 100\%$	Highly valid
$75\% < V \leq 85\%$	Valid
$55\% < V \leq 75\%$	Less valid
$0 < V \leq 55\%$	Invalid

The feasibility test calculations are then categorized according to the feasibility categories in Table 1. The reliability test of the instrument is conducted using the Percentage of Agreement (PA) test. The science learning media being developed can be considered reliable if the reliability score obtained for PA is greater than 75%. The formula used for the reliability test is the Borich formula, as shown in the following Equation 2.

$$PA = 100\% \left(1 - \frac{A-B}{A+B} \right) \quad (2)$$

The reliability criteria for the instrument used in product development can be seen in Table 2.

Table 2. Criteria reliable instruments

Score in percent	Interpretation
$80\% < PA \leq 100\%$	Highly reliable
$60\% < PA \leq 85\%$	Reliable
$40\% < PA \leq 75\%$	Less reliable
$0 < PA \leq 55\%$	Very unreliable

RESULT AND DISCUSSION

The development of an Android application-based learning media assisted by Lectora Inspire, integrated with ethnoscience of traditional herbal medicine, on the topic of additives, follows the ADDIE development model and shows significant results at each phase. The analysis conducted includes learning gap analysis, target student identification, and resource requirements. In terms of learning gap analysis, based on the observations carried out, it was found that the science education outcomes still rely solely on the textbook. The main limitation is the exclusive use of books, which results in a lack of interaction between the teacher and students (Masita dan Wulandari, 2018). The analysis of student targets reveals that students are already familiar with several types of traditional Indonesian herbal medicines, such as kunir asam, and have acquired knowledge on additives and addictive substances. Furthermore, the analysis of required resources indicates that students possess Android smartphones with a minimum of 2GB RAM, as well as software tools such as Canva, Camtasia, and Lectora Inspire to create their products.

The results at the design stage begin with planning, task inventory, formulating learning objectives, and designing the learning media. The media is designed to be as interactive as possible to enhance the learning process. In the subsequent development stage, the previous processes are followed up, resulting in content and products that are then validated by experts and tested (Ula dan Fadila, 2018). The generated content can be seen in Figure 2.



Figure 2. Integrated Learning Media: Ethnoscience of Traditional Herbal Medicine on Additives

The feasibility of the media was tested by media experts and science teachers. There are four assessment aspects used to evaluate the media's feasibility: navigation ease, media integration, artistic and aesthetic quality, and overall functionality. The results of the media validation can be seen in Table 3.

Table 3. Results of Media Aspect Validation

No.	Assessment Aspects	Validity	Category	Reliability	Category
1.	Ease of navigation	87,50%	Highly valid	94,45%	Highly reliable
2.	Media integration	90,00%	Highly valid	88,89%	Highly reliable
3.	Artistic and Aesthetic	90,00%	Highly valid	93,33%	Highly reliable
4.	Overall functionality	93,33%	Highly valid	92,59%	Highly reliable
	Average	90,21%	Highly valid	92,31%	Highly reliable

The criteria for assessing the feasibility of the media are categorized as very feasible, in line with the research by Ristiani et al. (2021), which states that the Lectora Inspire media is suitable for

use in the science learning process. The first aspect, navigation ease, is deemed highly feasible. This aligns with the fact that the operating system influences the ease of use and management of the interactive learning media. The smooth operation of the system is due to the linear navigation structure, which is arranged sequentially from one information frame to another (Achyani and Arviana, 2018). The Android-based media operation encourages students to be more active in learning, as they are required to operate the media application independently.

The second aspect, media integration, is deemed feasible and reliable. This result concludes that the interactive learning media application, Lectora Inspire, based on ethnoscience of traditional herbal medicine, has effectively integrated the cognitive, affective, and psychomotor aspects. The cognitive domain in this research is realized through ethnoscience, where students analyze the application of science in daily life. This approach is expected to enhance their scientific skills, aligning with Thorndike's Behavior Theory, which suggests that real-life examples of local culture improve learning behavior. Fitri and Idris (2019) explain that the cognitive aspect involves knowledge, the affective aspect relates to attitudes and interests, and the psychomotor aspect focuses on physical actions or skills.

The third aspect, artistic and aesthetic, concludes that the Lectora Inspire learning media, based on ethnoscience of traditional herbal medicine, features visual design, animations, audio, text, graphics, and other elements that enhance user enjoyment and comfort. This aligns with the relevant research by Tasrif (2020), which states that learning media equipped with audio and visual elements can effectively attract students' interest in learning.

The fourth aspect, overall functionality, has been deemed highly feasible. This conclusion is based on the fact that the Lectora Inspire learning media, integrated with ethnoscience of traditional herbal medicine, aligns with the capabilities of both educators and learners. This finding is consistent with the research by Ristiani, Triwoelandari, and Yono (2021), which asserts that the ease of use of Lectora Inspire learning media greatly supports both teachers and students in the delivery and comprehension of educational content.

The media's feasibility is assessed not only in terms of functionality and visuals, but also based on the content of the additive material integrated with ethnoscience of traditional herbal medicine, which is essential for determining its overall feasibility. The results of the content feasibility for each aspect are presented in Table 4.

Table 4. Results of Material Aspect Validation

No.	Assessment Aspects	Validity	Category	Reliability	Category
1.	Material	95,00%	Highly valid	94,45%	Highly reliable
2.	Serving/ Material Display	87,50%	Highly valid	91,67%	Highly reliable
	Average	91,25%	Highly valid	93,06%	Highly reliable

The feasibility of the material was tested by subject matter experts and science teachers using a questionnaire as the instrument. The content aspect has a high validity score, indicating that the Lectora Inspire learning media, based on ethnoscience of traditional herbal medicine, is easy to understand. The ease of comprehension is a key advantage of meaningful learning (Jailani and Almukarramah, 2020). This aligns with Ausubel's theory of meaningful learning, which posits that for effective learning, educators must connect new material to relevant concepts already present in students' cognitive structures. In this learning media, the content is linked to real-life examples, such as traditional herbal medicine (jamu).

The aspect of presentation or material display is categorized as feasible, which is attributed to the systematic presentation of the content in the Lectora Inspire interactive learning media. A

systematic approach to presenting material aims to ensure that learning takes place in an active, creative, inspiring, and enjoyable manner, thereby increasing student motivation (Fadhil and Rokhimawa, 2020).

In addition, the results are reviewed based on student responses. The one-to-one trial test and small group test were conducted before implementing the large group test. The results of student responses can be seen in Table 5.

Table 5. Student Response Result

Testing	Result	Category
One-to-One Trial Test	85,42%	Very Good
Small Group Test	84,86%	Very Good
Large Group Test	82,10%	Very Good

The aspects of student response assessment in the one-to-one trial, small group trial, and large group trial tests include three common aspects: content and objective quality, learning quality, and technical quality. The testing is conducted in stages, with each test proceeding only after the previous one receives positive feedback. The tests conducted from beginning to end are the one-to-one, small, and large group trials.

Based on the results, it is stated that the Lectora Inspire-based interactive learning media on the topic of additive and addictive substances received very positive feedback from students. This aligns with relevant research by Setyorini & Carolina, (2022) which stated that Lectora Inspire-assisted learning media received very positive responses from students, as well as research by Ristiani, Triwoelandari, and Yono (2021), which stated that Lectora Inspire media in science education received highly valid feedback from students. Below is an explanation of the student response questionnaire results, which were reviewed from each aspect.

The overall results show that the use of the lectora inspire-assisted android application integrated with ethnosience is effective in improving the understanding of additive concepts in students. This effectiveness is not only due to the digital presentation of the material, but also to the integration of the local cultural context that is meaningful to the students (Pusparani & Selamat, 2023). Jamu as a cultural product that is close to the daily lives of students, which provides an authentic context to understand the functions, types, and impacts of natural additives (Septajati & Widowati, 2024). This contextualization supports the theory of meaningful learning, where new knowledge is easier to understand when it is associated with the knowledge scheme that students already have. So that the improvement in understanding of concepts only comes from mastering the definition of additives, but from the ability of students to explain their application in local practice (Dhoka et al., 2024).

The existence of an increase in conceptual understanding means that it shows an influence on students' cognition. In addition to ethnosience in science learning additive materials, the learning media used also plays a role in students' cognitive involvement (Abshor et al., 2025). Android-based interactive learning media developed with lectora inspire allows multimodal presentation of material through text, images, videos, animations, and interactive quizzes (Liliana et al., 2020). These features encourage students' cognitive engagement at a higher level, such as analyzing, associating, and evaluating information (Bali et al., 2025). Media interactivity provides students with the opportunity to learn independently and actively, not just passively receive information.

The results of this study confirm the findings of previous research which stated that developing and validating lectora inspire-based learning media as an interactive media using the ADDIE model obtained results that are suitable for science learning (Lukman et al., 2022). Study by Widarti et al., (2025) also states that ethnosience-based learning often combines local wisdom and traditional practices, so that the learning process becomes easier to understand and interesting for students. Furthermore, the digital media developed by Bella et al., (2025) not only valid and interesting, but

can also be an effective alternative in the development of ethnoscience-based science teaching materials that are interactive and contextual. So that the development of android learning media assisted by Lectora Inspire in science learning based on herbal ethnoscience is an interactive learning media innovation that can be implemented in the classroom. This is supported by the feasibility of the media and the good response from the students.

CONCLUSION

Based on the results of this study, the Android-based science learning media developed using Lectora Inspire software and integrated with ethnoscience jamu on additive substances is proven to be very suitable for use in the learning process. The validation results from media and content experts indicate that this media achieved an average suitability percentage of 90.73%, which is classified as highly suitable, with a reliability level of 92.68%, which is also categorized as highly reliable. Additionally, student responses showed that this media provides a more interactive and engaging learning experience. This study concludes that this educational media can be used as a practical learning innovation to enhance classroom interactivity. It is suitable for use in science education at junior high schools.

Practically, the results of this study provide the implication that science teachers can utilize ethnoscience-based android media as an alternative learning strategy to increase student engagement and understanding. This research contributes to the development of ethnoscience-based interactive learning media studies by strengthening the argument that the integration of local culture in science learning can be an effective pedagogical foundation. These findings support the theory of contextual learning, where knowledge is built through students' experiences and socio-cultural contexts. However, this study still has limitations in empirically testing the effectiveness of media on improving learning outcomes and cognitive, affective, and skill abilities. Therefore, further research is recommended to conduct experimental tests to measure the effectiveness of the product compared to conventional media, as well as to expand the scope of different materials, levels, and cultural contexts.

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