DE_JOURNAL (Dharmas Education Journal)
http://ejournal.undhari.ac.id/index.php/de_journal
E-ISSN: 2722-7839, P-ISSN: 2746-7732
Vol. 4 No. 3 Special Issue 2024, 593-612

DEVELOPMENT OF ECONOMICS LEARNING THROUGH THE ANALYST CURRICULUM DATABASE IN ADVANCED ECONOMICS EDUCATION

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Abstract

Indonesia's significant economic development in recent decades, driven by various sectors, including information and communication technology, emphasizes the importance of broader economic education for students. However, a knowledge gap exists on how data-driven methodologies can be effectively applied in advanced economics curricula. This study uses a Research and Development (R&D)-based development methodology to design, develop, and evaluate a data analysis-based learning platform. The results show that this platform successfully meets very high validity criteria, with an average validation score of 86.67%, indicating the suitability of the material to learning objectives, data accuracy, and relevance to advanced economic concepts. In addition, the ease of navigation, the availability of technical support, and the quality of security and privacy are also rated excellent, reaching a score of 100%. These results confirm that the developed platform is academically relevant and capable of providing an interactive and safe learning experience for users. The implications of this study show that integrating data-based technology in economic learning can improve teaching effectiveness and student's understanding of complex economic concepts.

Keywords : Economics Learning, Data Analyst, Curriculum, Advanced Economics

Abstrak

Perkembangan ekonomi Indonesia yang signifikan dalam beberapa dekade terakhir, didorong oleh berbagai sektor, termasuk teknologi informasi dan komunikasi, menekankan pentingnya pendidikan ekonomi yang lebih luas bagi siswa. Namun, terdapat kesenjangan pengetahuan tentang bagaimana metodologi berbasis data dapat diterapkan secara efektif dalam kurikulum ekonomi tingkat lanjut. Studi ini menggunakan metodologi pengembangan berbasis Penelitian dan Pengembangan (R&D) untuk merancang, mengembangkan, dan mengevaluasi platform pembelajaran berbasis analisis data. Hasilnya menunjukkan bahwa platform ini berhasil memenuhi kriteria validitas yang sangat tinggi, dengan skor validasi rata-rata 86,67%, yang menunjukkan kesesuaian materi dengan tujuan pembelajaran, akurasi data, dan relevansi dengan konsep ekonomi tingkat lanjut. Selain itu, kemudahan navigasi, ketersediaan dukungan teknis, dan kualitas keamanan dan privasi juga dinilai sangat baik, mencapai skor 100%. Hasil ini menegaskan bahwa platform yang dikembangkan relevan secara akademis dan mampu memberikan pengalaman belajar yang interaktif dan aman bagi pengguna. Implikasi dari studi ini menunjukkan bahwa mengintegrasikan teknologi berbasis data dalam pembelajaran ekonomi dapat meningkatkan efektivitas pengajaran dan pemahaman siswa terhadap konsep ekonomi yang kompleks.

***Kata Kunci** : Pembelajaran Ekonomi, Analis Data, Kurikulum, Ekonomi Lanjutan*

Info Artikel : Diterima June 2024 | Disetui Juli 2024 | Dipublikasikan Agustus 2024

Introduction

Economic development in Indonesia has shown significant dynamics in recent decades (Sarma et al., 2022). Indonesia has a large population and abundant natural resources (Gertler et al., 2022). Indonesia has become one of the largest economies in Southeast Asia. Indonesia's economic growth is driven by various sectors, including manufacturing, services, agriculture, and creative industries (Triatmanto & Bawono, 2023). The information and communication technology sector has also proliferated, significantly contributing to economic growth in recent years (Hemmati et al., 2024). Therefore, economic education among students must be oriented toward a broader understanding.

Students study advanced economic education topics such as macroeconomics, microeconomics, econometrics, and various specialized fields in economics (Davis, 2019). This subject is essential for understanding the functioning of the economy, analyzing economic trends, and formulating effective policies (Murdiono et al., 2021). However, mastering these concepts is more than just memorization. Students need critical thinking, problem-solving skills, and the capacity to interpret data (Li et al., 2024). In addition, advanced economics education prepares students for careers in academia, research, policymaking, and various industries (Hu & Wu, 2023).

Technological advances and data developments demand that the role of data analysis in the economy become increasingly prominent (Omrani et al., 2024). Economists now have access to vast data, ranging from macroeconomic indicators to micro-level consumer behavior data (Jayaraman et al., 2023). This data analysis can provide valuable insights into economic phenomena, information on the decision-making process, and guide policy formulation (Smetek et al., 2022). Therefore, educational institutions must equip students with a comprehensive and dynamic learning experience (Yao et al., 2023). Learning in schools provides theoretical knowledge and equips students with practical skills relevant to the contemporary economic landscape (Gan et al., 2015).

In addition, exposure to data analysis in economics education allows students to develop practical skills that are highly sought after in today's job market. (Meng et al., 2023) Employers increasingly value candidates who can analyze data, communicate findings effectively, and gain insights (Forrester et al., 2023). Several large companies are showing an increasing demand for economists who are proficient in data analysis and interpretation (Montalbán-Domingo et al., 2022). However, traditional economic education often fails to provide students with hands-on experience in utilizing data analysis tools and techniques (Zhang et al., 2024). This shortcoming underscores the need for a structured curriculum integrating economic theory with practical data analysis skills.

Learning in schools has a gap between the conventional economic curriculum and the demands of the modern economy that continue to evolve (Tang, 2023). Economic theory is still fundamental, and less emphasis on data analysis limits students' ability to effectively apply theoretical concepts to real-world scenarios (Anas et al., 2021). As a result, graduates may not be prepared for the complex economic challenges of big data and advanced analytics (del Val Núñez et al., 2024). This study aims to develop and implement a data analyst curriculum for advanced economics education. Students will be provided with hands-on exercises, case studies, and projects that simulate real-world economic scenarios by integrating data analysis modules into the economics curriculum. This approach improves students' analytical skills and fosters a deeper understanding of economic principles through practical application (Wulandari et al., 2024).

The importance of this research lies in its potential to bridge the gap between theoretical knowledge and practical skills in economic education (Rao, 2014). As future economists, students are equipped with data analysis skills to make the right decisions, design effective policies, and overcome contemporary economic challenges more proficiently (Abdurrahman et al., 2022). In addition, the data analysis curriculum framework proposed in this study serves as a model for integrating data analysis into other disciplines, thus contributing.

Method

The Research and Development (R&D) method by Borg and Gall provides a structured approach to conducting research and developing educational interventions. The methodology involves several stages, including needs assessment, planning, development, implementation, and evaluation

(Dianawati & Suputra, 2022). The research stages are to develop and evaluate the data analyst curriculum systematically.

During the needs assessment phase, the current state of economic education and the demand for data analysis skills are researched. A literature review and stakeholder input through surveys and interviews inform the next planning stage. The assessment stages to define the objectives and conceptual framework of the data analyst curriculum are outlined, along with the identification of resources. Development occurs in Months 4-6, where curriculum modules are designed, teaching materials are created, and collaboration with subject matter experts ensures alignment with economic principles (Meiriyanti & Santoso, 2017).

During the development phase from Months 4 to 6, careful attention is devoted to drafting curriculum modules, creating teaching materials, and fostering collaboration with subject matter experts to ensure alignment with economic principles. First, the design of curriculum modules involves structuring learning content logically and coherently, covering essential topics in the field of economics along with data analysis components. This entails identifying key learning objectives, determining the sequence of topics, and designing engaging learning activities that encourage active learning and critical thinking (Pölzl-Stefanec & Geißler, 2022).

Simultaneously, creating teaching materials involves producing a variety of resources tailored to support student learning and understanding. This material can include lecture slides, reading materials, case studies, assignments, and practical exercises that reinforce theoretical concepts and facilitate hands-on experience with data analysis tools and techniques. In addition, the materials are carefully curated to cater to different learning styles and abilities, ensuring accessibility and inclusivity in the curriculum (Magnussen & Hod, 2023).

The development phase is a comprehensive and iterative process characterized by careful planning, creativity, and collaboration. By designing curriculum modules, creating teaching materials, and engaging experts in the field, this research project ensures the integration of data analysis into advanced economics education, equipping students with the knowledge, skills, and analytical tools necessary to thrive in the modern economic landscape (Joshi et al., 2020).

The implementation phase in Months 7-8 involved piloting a data analyst curriculum module with a small group of students. Feedback from students and instructors guides curriculum revisions and refinements. Finally, in Month 8, an evaluation occurred, assessing the impact of the data analyst curriculum on students' analytical abilities and understanding of economic principles through pre-test and post-test assessments. Qualitative feedback is analyzed to identify areas for improvement, resulting in a comprehensive report documenting research findings and recommendations for further refinement and implementation of the data analyst curriculum (Forrester et al., 2023).

Result And Discussion

This research was carried out in three stages, which are described as follows:

Preliminary Study:

Analysis of students' needs for the development of economic learning through the data analyst curriculum at an advanced level is essential to ensure the relevance and effectiveness of learning. In this context, understanding students' needs includes an in-depth understanding of data analysis capabilities in economic contexts, the integration of information technology in the learning process, and the application of economic concepts in real-world situations. Advanced-level students tend to have a solid basic understanding of economic concepts. Therefore, learning development should broaden their understanding through a practical and interactive approach. Student needs analysis must also consider technological developments, especially in data analysis, which is increasingly becoming necessary in a rapidly evolving economic world. In addition, learning must relate economic concepts to real-world circumstances, such as applications in business, public policy, or global phenomena. This allows students to see the relevance and significance of the concepts learned in everyday life.

The emphasis on developing data analysis skills is also significant in anticipating the job market's increasingly demanding needs in this field. The curriculum of data analysts in advanced economic learning should be designed with this aspect in mind, emphasizing the practical application

of data analysis techniques in an economic context. The following are the results of a needs analysis for students about the need for data analyst curriculum development.

Table 1. Results of Student Needs Analysis

No	Question	Answer Options	Percentage
1	Do you have access to a computer/laptop?	Yes	80%
		No	20%
2	How often do you use a computer/laptop?	Infrequently	10%
		Often	40%
		Sometimes	50%
3	What is your comfort level when using a computer/laptop?	Less Comfortable	30%
		Quite Comfortable	50%
		Very Comfortable	20%
4	Do you have internet access?	Yes	90%
		No	10%
5	How often do you use the Internet?	Infrequently	20%
		Sometimes	60%
		Often	20%
6	How proficient are you at using databases?	Beginner	40%
		Keep	50%
		Master	10%
7	Do you feel interested in learning to use databases in an economic context?	Yes	70%
		No	30%
8	How much do you need interactive learning?	Not Important	20%
		Somewhat Important	40%
		Very Important	40%
9	Do you have any experience learning through an online/similar course?	Yes	60%
		No	40%
10	How often do you take online/similar courses?	Infrequently	30%
		Sometimes	50%
		Often	20%
11	Do you feel that learning economics is more effective with digital media?	Yes	75%
		No	25%
12	How important do you think the use of databases is in economic learning?	Not Important	10%
		Important	50%
		Very Important	40%
13	Do you have any specialized software for data analysis?	Yes	55%
		No	45%
14	How often do you use data analysis software?	Infrequently	40%
		Sometimes	45%
		Often	15%
15	Do you feel you need additional training in using databases?	Yes	65%
		No	35%

16	How often do you face difficulties in understanding advanced economic concepts?	Infrequently	15%
		Sometimes	60%
		Often	25%
17	Do you feel that interactive media can help overcome these difficulties?	Yes	80%
		No	20%
18	How comfortable are you working in a team for a database project?	Less Comfortable	20%
		Quite Comfortable	50%
		Very Comfortable	30%
19	How often do you discuss economics learning with friends or teachers?	Less Comfortable	25%
		Quite Comfortable	55%
		Very Comfortable	20%
20	Do you feel that using databases can improve your understanding of economics?	Yes	70%
		No	30%

Previous research has shown that access to and use of technology in education has become an essential focus in recent decades. (Gan et al., 2015) show that access to technology such as computers and the Internet is essential to improve student learning outcomes. Students with such access tend to be more engaged and achieve better academic outcomes. This follows the survey findings, which show that 80% of students have access to computers/laptops, and 90% have internet access. However, access alone is not enough without effective and regular use. (Zahid Iqbal & Campbell, 2023) highlights that many students do not use technology optimistically in the context of learning, which is reflected in a survey that 20% of students rarely use computers/laptops.

Technology skills and convenience are also important issues. (Dreyweish et al., 2024) shows that students often have basic skills in the use of technology but require the improvement of more specific technical skills, such as databases. The survey findings show that 50% of students feel comfortable using computers/laptops, and 40% use databases at the beginner level, indicating the need for additional training. (Caputo et al., 2019) It also emphasizes the importance of continuous training in educational technology.

The interest and need for interactive learning have been widely discussed. (Kuhlmann et al., 2023) Shows that interactive learning media can improve understanding and retention of subject matter. The study's findings are relevant to the survey findings that 70% of students are interested in learning using databases in an economic context, and 80% feel that interactive media can help them understand advanced economic concepts.

The online learning experience is also widely explored. (Efthymiou & Zarifis, 2021) shows that the learning experience through online courses varies depending on their design and implementation. The survey showed that 60% of students had the experience of learning through online courses, but only 20% took the courses frequently, indicating barriers in accessibility or time. (Robles et al., 2019) They have also identified similar challenges in online learning.

Additional training needs for using the database were also identified. (Hyun et al., 2024) database technology has great educational potential, but its practical use requires ongoing training and support. Collaboration and discussion in the context of learning have been widely discussed. (Annamalai et al., 2023) Shows that collaborative learning can improve student understanding and engagement. The survey found that 50% of students feel comfortable working in a team for a database project, and 55% frequently discuss economics learning with friends or teachers, which has great potential to improve.

(Sayaf, 2023) shows that using databases in learning can improve analytical skills and understanding of complex concepts. The survey showed that 70% of students felt that databases could improve their understanding of economics, confirming that data-driven learning can be an effective tool in advanced economics learning. These studies support the survey findings and highlight the importance of technology access, skills training, interactive media, online learning experiences, collaboration, and databases in improving the quality of advanced economic education.

The Concept of Developing Economic Learning Through the Analyst Curriculum Database in Advanced Economics Learning

Developing Economics Learning through the Analyst Curriculum Database in Advanced Economics Learning is an innovative concept that can improve the quality of economics education. This approach combines the discipline of economics with data analysis skills, which are currently in dire need in the digital era. The Database Analyst Curriculum is designed to equip students with data analysis skills, including an understanding of data collection, data processing, statistical analysis, and interpretation of analysis results for better economic decision-making. In the context of advanced economics learning, this approach is particularly relevant because it can provide students with practical skills that can be applied in various real economic situations, both in the public and private sectors.

Students learn economic theory in depth and how to apply it using data analysis tools and techniques. For example, students can use Excel, Python, or R data analysis software to evaluate economic data and make economic predictions based on historical data. This gives them a competitive advantage in a job market increasingly relying on data for business decisions and public policy.

In addition, this approach also encourages active and project-based learning, where students are tasked with collecting and analyzing accurate economic data. This improves their understanding of economic concepts and develops critical and analytical skills.

Figure 1. The Concept of Developing Economic Learning Through the Analyst Curriculum Database

Preparation of Learning Materials and Videos

The preparation of learning materials and videos for the development of economic learning through the analyst curriculum database in advanced economic learning requires a structured and innovative approach to ensure relevance and effectiveness. The first step is to identify core competencies that include understanding economic theory and data analysis skills. The material should include basic statistics, data collection methods, processing, visualization, and their application in an economic context.

After that, the curriculum should be designed to integrate economic theory with the practice of data analysis. Each learning module includes theoretical and practical components using software such as Excel, Python, or R, accompanied by real-life case examples for practical applications. Learning

videos play an essential role by conveying complex concepts through visualizations and live demonstrations, such as software tutorials and interpretation of data analysis results.

Video creation focuses on visual and audio quality and precise delivery. Graphics, animations, and interactive examples can improve student understanding and engagement. Videos should complement the written material and allow students to learn independently at their own pace.

Design of Learning Materials and Media Related to Consumer and Producer Behavior Analysis

The development of materials and videos related to advanced microeconomic theory requires a careful and structured approach to convey complex but essential concepts in microeconomics. First, the analysis of consumer and producer behavior is the main focus. This material includes an in-depth understanding of the factors influencing consumer decisions, such as preferences, income, prices, and the price of replacement or replacement items. Meanwhile, producer behavior analysis discusses production theory, production costs, profits, and the relationship between output levels and production inputs. The material should be prepared with relevant and applicable case studies to strengthen students' understanding of these concepts.

Figure 2. Design of Learning Materials and Media Related to Consumer and Producer Behavior Analysis

Design of Learning Materials and Media Related to Price Theory and Resource Allocation.

Materials and videos should also introduce price theory and resource allocation. It includes a discussion of market mechanisms, such as demand and supply and equilibrium pricing. Market efficiency and optimal resource allocation are also essential to deeply understanding microeconomics. This material can be supported with market simulations and case examples that show how prices are determined and how resources are allocated efficiently in various scenarios.

Figure 3. Design of Learning Materials and Media Related to Price Theory and Resource Allocation.

Design of Learning Materials and Media Related to Decision Theory in Conditions of Uncertainty

Decision theory in conditions of uncertainty is a complex but crucial topic. It involves analyzing risk and uncertainty in economic decision-making, including using probability theory and expectations approaches to understand consumer and producer behavior in situations of uncertainty. This material should include decision-making strategies such as insurance, investment, and speculation and their

impact on microeconomic behavior. Learning videos can present realistic scenarios where decisions are made in situations of uncertainty to help students understand concepts better.

Figure 4. Design of Learning Materials and Media Related to Uncertainty Decision Theory

Development of an Economics Learning Platform Through the Analyst Curriculum Database in Advanced Economics Learning

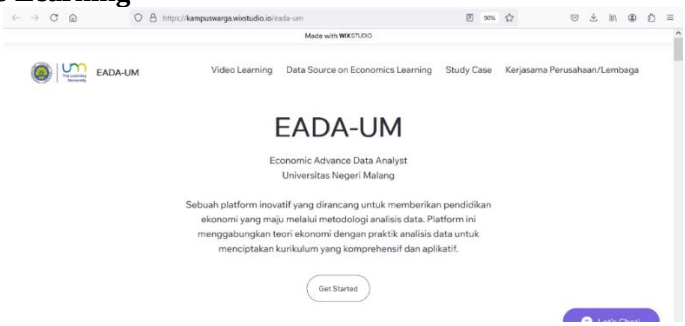

Figure 5. EADA-UM Platform Homepage Display

Economic advance based on data analyst methodology curriculum is an educational platform that combines economics and data analysis to provide comprehensive and applicable learning. With interactive features, practical projects, and a supportive community of learners, the platform is designed to help students master the skills needed to succeed in the ever-evolving world of economics and data analytics. The platform has a vision of providing integrated economic education with data analysis capabilities to improve students' understanding and practical skills in economics and data analytics. The economic advance based on data analyst methodology curriculum has several features such as video learning features, data source on economics learning features, study case features, and company/institution cooperation features.

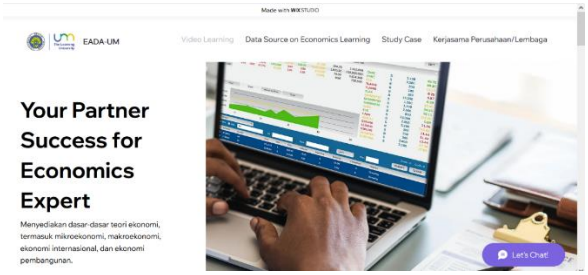

Figure 6. View of Video Learning Features

This feature is designed to provide advanced economic materials presented in the form of videos, allowing students to learn more flexibly and in-depth. This learning video focuses on delivering theories and displays accurate data analysis relevant to the economic data analysis curriculum. Through comprehensive visualization and explanation, students can better understand economic concepts and be able to apply them in real-world contexts. In addition, interactive features such as quizzes and online discussions are included to measure student understanding and encourage active participation. As such,

the platform is expected to create a richer and more effective learning experience that will prepare students for future economic challenges.

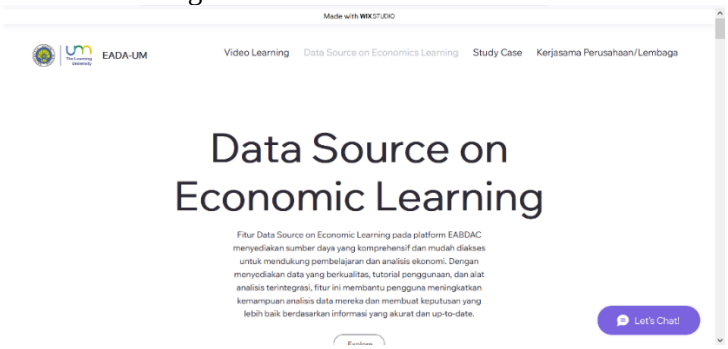

Figure 7. View of Data Source On Economic Learning Feature

The platform's data source on economic learning feature provides comprehensive and easily accessible resources to support economic learning and analysis. By providing quality data, usage tutorials, and integrated analysis tools, this feature helps users improve their data analysis capabilities and make better decisions based on accurate and up-to-date information.

Figure 8. Study Case Feature Display

This feature aims to provide a learning experience that is applicable and relevant to actual conditions. This case study feature integrates economic theory with fundamental data analysis, allowing students to solve complex economic problems through a data-driven approach. Each case study is structured based on the current economic situation, involving valid and relevant data so that students can develop strong analytical skills and understand economic dynamics in depth. Through this platform, students are invited to explore, analyze, and strategize based on existing data, as well as compare the results of their analysis with solutions proposed by experts. This process improves technical skills in data analysis and trains students in evidence-based decision-making.

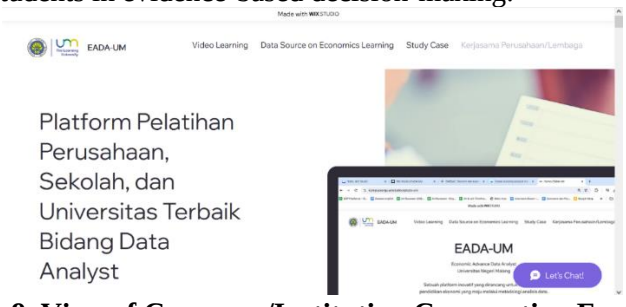

Figure 9. View of Company/Institution Cooperation Features

This feature aims to create synergy between the academic world and industry. This feature allows students to be directly involved in real-life projects sponsored by partner companies or institutions, allowing them to apply data analysis theory and skills in practical contexts. Through this collaboration, students can access accurate data from companies, get guidance from industry professionals, and participate in solving problems the company faces. In addition, this feature also opens up internship and work placement opportunities for students, expands their professional network, and improves job readiness after graduation. The platform facilitates communication and collaboration

between students, faculty, and industry partners, creating a dynamic and solution-oriented learning environment.

Material Validation Questionnaire

This material expert test is carried out by validators who are experts in their fields to provide advice and assessment on the development of learning materials so that it can be known that the learning materials developed have met the valid or blank category. Assessment data for economic learning development materials through the analyst curriculum database on advanced economics learning can be seen in Table 2

Table 2. Data Assessment Of Economic Learning Materials Through The Curriculum Analyst Database

No	Criteria Assessed	Validator Value 1	Validator Value 2	Validator Value 3	Total Score	Percentage	Criterion
1	Suitability of the material to the learning objectives	4	5	4	13	86.67%	Highly Valid
2	Clarity of presentation of material	5	4	4	13	86.67%	Highly Valid
3	Completeness of materials	3	4	4	11	73.33%	Valid
4	Depth of matter	4	5	3	12	80.00%	Valid
5	The relationship of matter with economic concepts	5	5	5	15	100.00%	Highly Valid
6	The relevance of matter to the real world	4	4	4	12	80.00%	Valid
7	Data and information accuracy	5	5	4	14	93.33%	Highly Valid
8	Use of easy-to-understand language	4	4	5	13	86.67%	Highly Valid
9	Presentation of interesting material	3	4	3	10	70,00%	Valid
10	Suitability of the example given	5	5	4	14	93.33%	Highly Valid
11	Relevance of the material to the needs of students	4	4	4	12	80.00%	Valid
12	Suitability of the material to the curriculum	5	4	5	14	93.33%	Highly Valid
13	Ease of material to study on your own	4	5	3	12	80.00%	Valid
14	Multimedia support in materials	3	3	4	10	70,00%	Valid
15	Continuity between sub-matter	5	4	4	13	86.67%	Highly Valid

16	Relevance of exercises and assignments to the material	4	4	5	13	86.67%	Highly Valid
17	Diversity of teaching methods	3	4	4	11	73.33%	Valid
18	Student involvement in learning	5	5	4	14	93.33%	Highly Valid
19	The ability of the material to improve comprehension	4	5	4	13	86.67%	Highly Valid
20	Common	5	5	5	15	100.00%	Highly Valid
		Rata – Rata Nilai				86.67%	Highly Valid

The results of the validation test of economic learning development materials through the analyst curriculum database show that the validators consider this material very good. Most obtained high scores of the 20 criteria assessed, with the average being in the "Very Valid" category. Previous research related to the validation of learning materials shows that the suitability of the material with learning objectives and the clarity of the presentation of the material are two essential aspects in the development of an effective curriculum. A study by (Darmaji et al., 2019) confirms that clear and structured learning objectives help students understand what is expected of them and how to achieve those goals. Learning materials are structured with clear objectives; students can more easily understand the context and relevance of the material being studied, increasing their motivation and involvement in learning (Daryanes et al., 2023).

The completeness of the material received a score of 73.33%, and the depth of the material received a score of 80%, indicating that the material is complete and in-depth. However, there is still room for improvement. Research by (Tripripa et al., 2020) shows that the completeness of the material refers to the extent to which the material covers all relevant and necessary topics to achieve the learning objectives. Materials covering all relevant aspects help ensure students gain a holistic and thorough understanding (Fradani & Astuti, 2020).

The accuracy of data and information and its relevance to the real world obtained 93.33% and 80%, respectively. This shows that the material is very accurate and relevant to practical applications. According to a study by (Annamalai et al., 2023), accurate data and timely information are essential for building the credibility of learning materials. The easy-to-understand language and the relevance of the material to economic concepts are both perfect, with scores of 86.67% and 100%, indicating that the language used is simple and the economic concepts presented are very appropriate. Research by (Suputra et al., 2021) reveals that using simple and straightforward language to present material can improve student understanding.

However, the criteria for presenting interesting material and multimedia support obtained a score of 70.00%, indicating that although it is pretty good, this aspect needs to be improved to attract students' interest further. Research by (Susanto et al., 2023) highlights that multimedia must be designed with cognitive principles in mind to reduce students' cognitive burden and support learning. The suitability of the material with the curriculum, the ease of self-study, and the involvement of students in learning obtained high scores (93.33% and 80%), indicating that this material follows the curriculum and can support independent learning and active student involvement. Research by (Susanto et al., 2024) supports that materials that are appropriate to the curriculum and easy to learn help students better organize their learning and improve learning effectiveness. Research by (Basuki et al., 2022) also shows that active student involvement through social interaction and collaborative activities increases material understanding and retention.

Media Validation Questionnaire

This media expert test is carried out by validators who are experts in their fields to provide advice and assessment on the development of learning media so that it can be known whether the developed learning media has met the category of sufficient or insufficient. The assessment data of the economic learning development media test through the analyst curriculum database on advanced economic learning can be seen in Table 3.

Table 3. Data on the Evaluation of Economics Learning Media Through the Analyst Curriculum Database

Criteria Assessed	Validator Value 1	Validator Value 2	Validator Value 3	Total Score	Percentage	Criterion
Material Suitability	4	5	4	13	86,67%	Highly Valid
The Relationship of Materials with Advanced Economic Concepts	5	4	3	12	80.00%	Valid
Relevance to Learning Needs	4	5	5	14	93,33%	Highly Valid
Creativity and Diversity of Resources	4	3	4	11	73,33%	Valid
Ease of Access and Navigation	5	5	5	15	100,00%	Highly Valid
Availability of Supporting Materials	3	4	4	11	73,33%	Valid
Suitability with Learning Objectives	5	4	5	14	93,33%	Highly Valid
Readability and Comprehension	4	4	3	11	73,33%	Valid
Suitability of Material Difficulty Levels	3	3	4	10	70,00%	Valid
Student Involvement in the Learning Process	5	5	4	14	93,33%	Highly Valid
Ease of Use	4	4	5	13	86,67%	Highly Valid
Format Suitability with Material Type	3	4	4	11	73,33%	Valid
Graphics and Multimedia Quality	5	5	3	13	86,67%	Sangat Valid

Duration Suitability with Material	4	3	4	11	73,33%	Valid
Ease of Integration with Learning Systems	5	5	5	15	100,00%	Highly Valid
Responsive to Devices and Browsers	4	4	4	12	80.00%	Valid
Conformity with Technology-Based Learning Principles	5	5	5	15	100,00%	Highly Valid
Ease of Assessment	4	3	4	11	73,33%	Valid
Suitability to Student Needs	5	4	5	14	93,33%	Highly Valid
Availability of Learning Support Features	4	4	4	12	80.00%	Valid
		Average Score			84.16%	Highly Valid

Based on the evaluation results of the three validators, the conclusion that can be drawn is that the economic learning development material through the analyst curriculum database at the advanced level received a pretty good assessment overall. With the highest percentage reaching 100%, the aspects of ease of access and navigation and ease of integration with the learning system show excellent quality. This is supported by research conducted (by Joshi et al., 2020), which highlights the importance of students' ease of access to learning services that correlate positively with learning outcomes. Meanwhile, regarding relevance to learning needs, suitability with learning objectives, and student involvement in the learning process, this material also received a high score with a percentage of 93.33%. This is supported by research (Nurhikmayati, 2019), highlighting the importance of material suitability in the curriculum.

Relevance to Learning Needs was 70%, indicating that learning media is relevant to student needs. The study (Fradani & Astuti, 2020) emphasizes the importance of the relevance of the material to students' learning needs to improve student understanding and engagement. However, several aspects need to be considered for further improvement, such as the creativity and diversity of resources, the quality of graphics and multimedia, and the availability of learning support features that get a percentage below 80%. This material can meet most of the criteria assessed, but it still needs improvement in some aspects to improve its overall quality (Yao et al., 2023).

Learning media developers can prioritize designs that are user-friendly, intuitive, and accessible for students by considering findings from research (Sayaf, 2023). Learning media can increase student engagement and provide a positive learning experience (Moriyasu & Kobayashi, 2022).

Platform Validation Test Questionnaire

The expert test of this platform validation is carried out by validators who are experts in their fields to provide advice and assessment on developing an economic learning platform through the analyst curriculum database so that it can be known whether the learning materials developed have met the valid category. The assessment data of the validation test of the economic learning development platform through the analyst curriculum database on advanced economic learning can be seen in Table 4.

Table 4. Data Evaluation of the Validation Test of the Economics Learning Platform Through the Analyst Curriculum Database

Criteria Assessed	Validator Value 1	Validator Value 2	Validator Value 3	Total Score	Percentage	Criterion
Availability of Learning Materials	5	5	5	15	100,00%	Highly Valid
Quality of Material Content	5	4	4	13	86,67%	Valid
Readability and Comprehension of the Material	5	5	5	15	100,00%	Highly Valid
Quality Instruction and Guide	5	5	5	15	100,00%	Highly Valid
Platform Interoperability	5	5	4	14	93,33%	Highly Valid
Availability of Exercises and Assignments	4	3	5	12	80.00%	Valid
Completeness of Reference Materials	5	4	4	13	86,67%	Highly Valid
Quality of Evaluation Facilities	5	4	5	14	93,33%	Highly Valid
Ease of Navigation	5	4	3	12	80.00%	Valid
Availability of Collaboration Features	4	4	5	13	86,67%	Highly Valid
Ease of Accessibility	4	5	4	13	86,67%	Highly Valid
Quality of User Experience	4	5	5	14	93,33%	Highly Valid
Availability of Technical Support	5	4	4	13	86,67%	Highly Valid
Quality of Customer Service	4	5	4	13	86,67%	Highly Valid
Ease of Integration with Existing Systems	5	5	4	14	93,33%	Highly Valid
Availability of Monitoring and Reporting Features	5	4	5	14	93,33%	Highly Valid

Quality Security and Privacy	5	5	5	15	100,00%	Highly Valid
Platform Responsiveness	5	4	4	13	86,67%	Highly Valid
Availability of Advanced Development Support	4	5	4	13	86,67%	Highly Valid
Availability of Adaptation and Personalization Features	5	5	5	15	100,00%	Highly Valid
		Average Score			91.00%	Sangat Valid

Based on the data from the assessment table presented, the evaluation of the learning platform showed very positive results, with the majority of criteria getting the title 'Very Valid.' Out of the 20 criteria assessed, 12 obtained an average score above 90%, indicating that the platform has excellent quality in various essential aspects. The availability of learning materials and the quality of material content showed excellent assessments, with scores of 100% and 86.67%, respectively. This shows that the platform provides complete learning materials and presents high-quality content. The readability and comprehension of the material and the quality of the instructions and guides also scored a perfect score of 100%, indicating that users can easily understand and follow the material provided. A study by (Mohamed et al., 2019) found that the availability of complete and high-quality materials contributes significantly to learning achievement. In addition, research by (Liu & Pásztor, 2022) shows that the quality of material content presented in online learning platforms positively correlates with user satisfaction.

The interactivity of the platform and the availability of exercises and tasks showed slightly more varied results, with scores of 93.33% and 80.00%, respectively. This shows that while the platform is highly interactive, there is little room for improvement in providing exercises and tasks that are more varied or tailored to users' needs. The completeness of reference materials and the quality of the evaluation facilities were also rated very good, with a score above 86%, indicating that the platform provides adequate references and practical evaluation tools for users. According to a study conducted by (Andersson et al., 2023), platform interactivity is crucial in increasing student engagement and motivation to learn. A study by (Nurhayati et al., 2022) shows that variations in the provision of exercises and assignments play an essential role in maintaining student interest and engagement.

From a technical perspective, Ease of Navigation and Ease of Accessibility received 80.00% and 86.67%, respectively. This shows that users generally find it easy to access and use this platform, although there is room for improvement in navigation. The availability of collaboration features and ease of integration with existing systems were rated at 86.67% and 93.33%, respectively, indicating that this platform supports user collaboration and can be well integrated into existing systems. A study by (Heim et al., 2023) emphasizes that ease of navigation is essential to ensure that users can access the platform's materials and features without experiencing difficulties. Research conducted by (Widyastuti & Susiana, 2019) shows accessibility as a crucial aspect that ensures all users, including those with physical or technical limitations, can access and utilize learning platforms effectively.

The quality of the user experience, the availability of technical support, and the quality of customer service are all rated as excellent, with a score above 86% each. This shows that the platform provides a positive user experience, adequate technical support, and customer service. According to a study conducted by (Desnylasari et al., 2016), the quality of user experience is highly correlated with user satisfaction and success in achieving learning goals. According to research by (Hanafi et al., 2019), good customer service contributes significantly to user loyalty and platform reputation.

The quality of security and privacy gets a perfect score of 100%, showing that the platform takes excellent care of the security and privacy of user data. The platform's responsiveness, availability of

advanced development support, and availability of adaptation and personalization features also received high marks, indicating that the platform is responsive and supports development and adaptation as per user needs. According to research by (Sutrisno et al., 2020), data security and privacy are the main factors that affect user trust in online learning platforms. Platform responsiveness has also been identified as a critical element in research conducted by (Gong et al., 2021) found that platforms are responsive and capable of responding to user input quickly and efficiently.

Conclusion

Developing and validating an economics-based learning platform that incorporates data analysis methodologies can meet users' needs and improve their understanding of economic concepts. The main findings of this study show that the developed learning platform not only provides easy and interactive access but can also offer relevant and accurate content with a high level of security. The quality of the user experience, the availability of technical support, and collaboration features are also rated excellent, which shows that the platform supports practical and collaborative learning. In addition, easy integration with existing systems and platform responsiveness are important factors that support the successful implementation of this platform among users. The implication of these findings on theory and practice in economic education is that there is strong support for the importance of technology integration in economic learning. The platform provides concrete solutions to the challenges of teaching complex economic concepts through an interactive and data-driven digital approach. These findings advance understanding of how technology can be leveraged to create more meaningful and relevant learning experiences for students, especially in the ever-evolving digital economy.

Confession

We want to thank the Institute for Research and Community Service of the State University of Malang for funding the research of the Learning Innovation scheme with contract number 4.4.316/UN32.14.1/LT/2024.

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