

# IDENTIFICATION OF EDUCATION IN INDONESIA AND LEARNING MODELS IN STUDENT LEARNING WITH LEARNING MANAGEMENT SYSTEM (LMS)

Budi Ilham Maliki<sup>1</sup>, Jaka Wijaya Kusuma<sup>2\*</sup>, Mohammad Bayi Tabrani<sup>3</sup>, Hamidah<sup>4</sup>

<sup>1,2,3,4</sup>Universitas Bina Bangsa, Indonesia  
Email: jakawijayak@gmail.com<sup>1</sup>

## Abstract

*If we identify education in Indonesia, the reality is still multiproblematic, which in essence includes the problem of equality, quality problems, efficiency problems, relevance problems, and the problem of lack of utilization of information and communication technology. This study aims to find out (1) What are the problems of education in Indonesia in general and (2) how the learning model with LMS so that can overcome educational problems, especially the problem of quality of education services. To answer the question above, the method used is the study of the library, namely. In this case, the author tries to study some available literature to explain the problem so that this paper's problems can quickly be answered. The results of the literature study stated that (1) education problems in Indonesia to date include equality issues, quality problems, efficiency problems, relevance issues, and problems of lack of ICT use; and (2) Learning models with the Learning Management System (LMS) can facilitate learners to learn more broadly, more and also vary. Through the facilities provided by the system, learners can learn anytime and anywhere (any time anywhere) without being limited by space and time. The materials they can learn are also more varied, not only in text, but also more affluent with visual, audio, and motion variations, better known as Multimedia. In conclusion, learning models with Learning Management System (LMS) can be developed to overcome educational problems in Indonesia, especially efficiency problems, quality education problems, and ICT utilization problems*

**Keywords:** Education Problem, Learning Model, Learning Management System (LMS).

## INTRODUCTION

If we identify education in Indonesia, the reality is inseparable from problems, both micro and macro. Micro-education problems arise in the components of education as a system, such as curriculum problems, learning process problems, education management problems, and problems utilizing Information and Communication Technology (ICT). On the other hand, the problem of education is macro, namely the issues that arise in education as a system with other systems that are broader in the whole human life, such as problems of lack of evenness of education, low quality of education, efficiency problems, and relevance problems.

The problem of micro-education, which is a classic and crucial problem until now, such as the problem of a curriculum that is changing without optimal success, without a thorough and contingency evaluation, and without careful preparation so that the change or change of curriculum that is ideally dynamic, effective, and productive precisely gives worsening results. (Gunawan, Irawan, and Devis 2020) Another critical problem in the implementation of education is the weak learning process and utilization of ICT. Not to mention inadequate management of education in functional aspects such as leadership and management.

Meanwhile, macro education problems are also a classic and crucial problem until now, such as the lack of even education, low quality of education, efficiency problems, and relevance. For example, the issue of quality of education, we admit that our human resources are still far away compared to other countries. Based on World Education Ranking data published by the Organisation for Economic Co-operation and Development (OECD, 2015), Indonesia ranks 69th out of 75 countries. The highest position was achieved by Singapore's second Hong Kong, third South Korea, and Japan's fourth. While Indonesia gets reading scores of 402, mathematics 371, and natural sciences 383. (Saputro

**Commented [U1]:** Please add relevant theories, expert opinions and research..

**Commented [U2]:** There are errors in writing references in paragraphs.

and Susilowati 2019) The world education ranking relates to the Programme for International Student Assessment (PISA).

In line with these educational problems, many factors determine education success, ranging from school facilities and infrastructure, parents' economic condition, the role of educators, the learning environment, the family environment, psychic factors of learners, and many other factors. Of the many factors that influence the success of education, one of the most essential and functional factors in the era of advances in information and communication technology today is the methodology of theological learning, namely the way of learning that utilizes internet technology called e-learning with one of its variations or management system called the Learning Management System, (LMS). Learning Management System (LMS) is a system that can facilitate learners to learn more broadly, more, and also varied. Through the facilities provided by the system, learners can learn anytime and anywhere (any time anywhere) without being limited by space and time. The materials they can learn are also more varied, not only in the form of text, but can be more affluent with visual, audio, and motion variations, better known as Multimedia. (Pavlenko et al. 2020)

Based on the explanation above, in this paper, the problems that will be discussed are (1) What are the problems of education in Indonesia in general and (2) how the learning model in the LMS to overcome educational problems, especially problems of efficiency, quality of education services, and utilization of ICT.

## METHOD

To answer the question above, the method used is the study of the library, namely. In this case, the author tries to study some available literature to explain the problem so that the issues in this paper can quickly be answered. This is as stated by Sujarweni (2014: 57) that by using the research method of literature study, the author can quickly solve the problem to be researched.

## RESULTS AND DISCUSSION

### 1. The Main Problem of Education in Indonesia

The main problems of education that are classic, crucial, and urgent to overcome in Indonesia Sanofi today are as follows.

#### a. Education Equality Issues

Education equality is related to the education system that has not been able to prepare a massive opportunity for all people to access education as a place for the sustainability of human resources improvement in Indonesia.

According to Wayan (1992), the equality of education related to the quality of educational processes and results has not been evenly distributed in Indonesia. There are still many gaps in the implementation of education in the city and the village, especially between java and eastern Indonesia. Also, in the last ten years, our education has not succeeded in improving the quality of learning outcomes; as Idris (1992: 61) stated, many students only have moderate and lacking learning outcomes. Whereas constitutionally, every citizen has the right to teach, even quality education services.

There is also an imbalance between the number of educational institutions and their students in today's developments between public schools and vocational schools at each level of the education unit. At the same time, vocational schools should be more than public schools because development

**Commented [U3]:** Your research problem has not been well defined. The novelty of your research has also not been explained.

**Commented [U4]:** Explanation of research methods is still very minimal. Describe the literature study method that you apply. Outline the steps.

**Commented [U5]:** For this type of literature review article, the results and discussion sections are not deep enough. Please add relevant theories, expert opinions and research.

requires a cadre of intelligent and skilled cadres, which can be handled through vocational education. The imbalance is also seen in the impressive number of comparisons between elementary, junior high and high school. Elementary school institutions are much larger than the number of junior high and high school institutions. (Hikmatiar, Sulisworo, and Wahyuni 2020)

On the other hand, efforts to equalize education through education outside the classroom are growing quite rapidly. In this case, two factors trigger this. First, the development of science and technology that provides alternatives for the community, and secondly, the concept of lifelong education that does not limit learners' age and is not limited to the walls of classrooms to provide broad access for the community in enjoying learning opportunities.

There are many ways the government can address education equality, from the conventional way to the innovative way. Traditionally, the government can build school buildings and study rooms and use schools with a double sift system (students are divided into morning and afternoon classes). The innovative ways, namely by building a pamong system (education in collaboration with the community), building schools in remote areas and sending teachers to educate in the area (SM3T pattern), home approach patterns (teachers come to students' homes), Chasing Package Programs, and Distance Learning as applied to Open Universities. (Sahin and Shelley 2018)

#### **b. Quality Problem / Quality of Education**

Education quality problems related to the education system that has not been able to organize the educational process and provide the expected educational results due to the lack of various related components, such as facilities and infrastructure, educators, learning systems, management, and financing etc. support associated parties. Our education process, in general, is still weak, so that the quality of educational results is still low.

Solutions that can be taken to improve the quality of educators include (1) strict selection for the acceptance of prospective educators; (2) the development of the availability of educators through training; (3) improvement of the dynamic and relevant curriculum; (4) the development of facilities and training that can create a comfortable learning atmosphere; (5) improvement of administration and empowerment of school management so that it can be budget efficiency and effective results; (6) the support of institutions that have been authorized in ensuring quality include the Education Quality Assurance Agency, from the National Accreditation Board of Madrasah Schools (BAN-SM) and independent institutions.

#### **c. Education Efficiency Issues**

Educational efficiency is closely related to the utilization of all resources owned to achieve the vision, mission, and educational objectives that have been planned. Therefore, if the use is efficient and careful, it can be concluded that the efficiency level is high. However, if the opposite happens, then the efficiency is said to be below.

Many experts argue that Indonesia's education system is good at keeping up with the times and technology. It is just that some areas cannot be reached by central government policy. The number can see this weakness of students who experience DO. Many of the students who are supposed to work at their school help parents' needs. There is a distinction between excellent classes and regular classes, so it takes a system that makes education more efficient (Idris, 1992: 60).

The problems of educational efficiency include: (1) the gap between graduates and employers,

i.e., graduates or the labor force is higher than employment so that many are not absorbed; (2) there are still many teachers who teach outside their field of expertise and difficulty in making teachers willing to serve in border areas or with minimal access to the city, as well as lack of incentives provided; (3) the development of educators who are not quick to change the new curriculum, so that many teachers are not ready to accept/implement the new curriculum; and (4) distribution and use of learning facilities that are not balanced with the reliable ability of its users resulting in problems in the field. Then curriculum changes also led to long unused openings. All of these illustrations indicate that budget waste has occurred.

#### **d. Relevance Issues**

Relevance issues are closely related to the education and development system in general and the interests of individuals and communities in the short and long term. This issue discusses how deep the education system can create works that match a development process's continuity. If the education system can generate the output needed in all lines of development, then education has relevance to the development chaos.

In general, the relevance criteria mentioned above are pretty ideal when connected with the existing circumstances in Indonesia where: (1) the quality of educational institutions still varies; (2) our education system creates many outputs that are ready to be accepted in the world of work; and (3) does not have a policy roadmap for labor needs which can be used to prepare graduates who can be accepted in the world of work.

#### **e. Problems of Utilization of Information and Communication Technology**

Education problems in terms of the utilization of information and communication technology about how the implementation of education utilizes information and communication technology to improve the quality of educational process services so that it obtains ease, flexibility, speed, and optimization in getting learning/education results.

The implementation of education in Indonesia, in general, is still lacking in the utilization of information and communication technology due to the availability of facilities and human resource capabilities, both on the part of educators and learners. The progress of information and communication technology has been so rapid.(Kusuma, Maliki, and Fatoni 2020). However, lately, the trend of education utilizing information and communication technology has begun to spread to all levels of education, especially with the Covid-19 pandemic that forced all parties involved in education to use information and communication technology due to the policy of Learning From Home through online and offline learning as a consequence of the temporary suspension of education face-to-face in the classroom. (Firman and Rahayu 2020)

Hopefully, the great wisdom of the Covid-19 pandemic will make our education in the future accustomed and ready to utilize information and communication technology to improve the quality of educational processes and outcomes, as well as to build momentum for the implementation and habituation of our education based on information and communication technology so that education in Indonesia can catch up from other countries whose education has been first based on information and communication technology.

## **2. Student Learning Models in LMS**

### **a. Understanding Learning Management System (LMS)**

According to Amirah (2012: 1), Learning Management System (LMS) or Course Management System (CMS), also known as Virtual Learning Environment (VLE), is a software application used by educators, both universities/colleges and schools as an internet-based online learning media (e-learning). (Hasanah et al. 2020). Learning Management System (LMS) is an application or software used to manage online learning covering several aspects: materials, placement, management, and assessment (Mahnegar, 2012).

According to Riad and El-Ghareeb (2008: 2), Learning Management System (LMS) is a Learning Management System (LMS) is a software entity that is comprehensively integrated into various features for delivery and course management. LMS will automatically handle course catalog features, course delivery, grading and quiz. (Kusuma and Hamidah 2020)

Learning Management System or LMS for short, according to Ellis (2009: 1), is software or software for administrative purposes, documentation, reports of an activity, teaching and learning activities and activities online (connected to the internet), e-learning and training materials, all of which are done online. (Laho 2019) Further explained by Riyadi (2010), the Learning Management System (LMS) is software used to create web-based online lecture materials and manage learning activities and results. In the LMS, some features can meet all user needs in terms of learning.

Based on this opinion, it can be concluded that LMS contains the features needed in the learning process. For example, by using LMS, lecturers or teachers can manage classes and exchange information with students. Also, access to learning materials within a predetermined period can be done.

## **B. Features and Model Learning Management System (LMS)**

The features available in LMS for educational institutions are as follows: (1) User access management, (2) Management of courses, (3) Management of teaching materials (resources), (4) Activity management, (5) Value management, (6) Value viewer, and (7) Management of e-learning visualization, so that it can be accessed with a web browser.

Most LMS are web-based, built using various development platforms, such as Java/J2EE, Microsoft.NET, or PHP. In addition, they usually employ databases such as MySQL, Microsoft SQL Server, or Oracle as "back-end". Although most systems are commercially developed and have commercial software licenses, some systems have open-source licenses.

Several models of LMS can be utilized in the learning process, including Edmodo, Schoology, Learnboos, Moodle, and others. Amiroh (2013). Some open-source licensed LMS are as follows:

### 1) Moodle



MOODLE (short for Modular Object-Oriented Dynamic Learning Environment) is a software package produced for internet-based learning activities and websites that uses pedagogy social constructionist principles. MOODLE is one of the applications of teaching and learning concepts and mechanisms that utilize information technology, known as the concept of electronic learning or e-learning. Moodle can be used freely as an open-source product under a GNU license. Moodle can be installed on any computer and operating system that can run PHP and support SQL databases.

## 2) Claroline



Claroline is an 'open source' 'open source' LMS (Learning Management System) based on PHP and MySQL developed initially by UCL(Catholic University of Louvain) in Belgium in 2001. The LMS project financed by the Louvain Foundation was created following the experience of pedagogy and teacher needs. From 2004 to 2007, CERDECAM contributed significantly to the development of Claroline. Compared to other popular LMS such as Moodle and Dokeos, Claroline has a simple appearance and small installation file size. Therefore, its use in Indonesia is quite a lot in high schools and universities.

## 3) Dokeos



Dokeos is an eLearning tool for web-based applications. It is free software released by the GNU GPL, and its development is supported internationally. The operating system is certified, which can be used as content from the management system for education. The range includes the distribution of lesson materials, calendar, learning progress, conversations through text/audio and video, test administration, and keeping records. By 2004 doctors had been translate into 31 languages and used by more than hundreds of organizations. The primary purpose of doctors is to be a user-friendly and flexible system and easy to use. Also, it is a good tool for learning so that users are satisfied with this application. Dokeos is written in PHP language and uses a MySQL database. The most stable version is Dokeos 1.6.5. Currently, the developers are downsizing version 2.0. Komunitas to release it is very open. The official site is Dokeos.com.

## 4) Docebo



Docebo Learning Management System (LMS) is a software package for e-learning and LCMS (Learning Content Management System), created and developed by Docebo Srl. Using a multi-model diktat approach, which is one of the most widely used and preferred open source platforms at the international level, the ability to personalize the diktat model as per the client's needs makes Docebo unique and flexible. A simple platform can be configured for a wide range of conditions using various diktat models for large corporations in the financial and insurance, health, government, university, and school sectors. (Abernethy et al. 2010) With DoceboLMS, it is straightforward to construct diktat content for training, and teachers can use files they already have such as Powerpoint, Word, PDF, movie clips and more. Users can be organized by group and category and personalize the display for subgroup and user.

#### 5) A Tutor



ATutor is an Open Source Web-based Learning Management System (LMS) to develop and deliver online courses. Administrators can install or update ATutor in minutes, develop custom themes to give ATutor a new look, and easily expand functionality with feature modules. Educators can quickly assemble, package, and distribute web-based learning content, easily import packaged content, and conduct courses online. Students learn in an environment, adaptively accessible, social learning.

#### 6) Chamilo



Chamilo is a complete e-learning system. The app can be installed easily in a short time. The app can be used by teachers and trainers, and teachers in no time. Some of our users report a ratio of 1/5 of the time it takes for training compared to open source LMS, making it easy to prepare for learning in a short time until it is ready to be implemented. Coaches can work in just one day! The future of teaching is bright, and so is Chamilo. With developments in an adaptive assessment, social and mobile learning, management skills, and many other topics, Chamilo member associations and high-tech members ensure you get a free software with the latest innovations from around the world. Chamilo is one of the Learning Management systems that is Open Source, focused on building E-learning portals. Chamilo itself has the same functionality as other E-Learning applications such as Moodle, Dokeos, A Tutor, eFront etc.

#### 6) Flat



OLAT stands for Online L, which produces rain. It is a web application – called the Learning Management System that supports online learning, teaching, and tutoring with some educational limitations. OLAT is free and open-source software. Its development began in 1999 at the University of Zürich, and OLAT won the MeDiDa-Prix prize in 2000. With version 3.0, the system is completely rebuilt and is now available as a component-oriented application developed in the Java programming language. OLAT supports various E-learning standards such as IMS (IMS Content Packaging, IMS QTI) and SCORM. With version 4.0, many add-ons have been introduced to the system, making it very easy to extend the LMS functionality. With version 5.0, new features such as Wiki, Calendar, AJAX Beta Mode, and Fulltext Search have been implemented. Version 6.0 consists of a new and err layout based on usability evaluation. The next version provides full scalability, which means OLAT can run

on a group of servers. OLAT 7.0 adds many new features, course wizard plus critical standard implementations such as REST API, IMS Basic LTI and IMS QTI 2.1. In 2011 some core community contributors left the OLAT community due to strategic differences and started an alternative fork called OpenOLAT.

LMS allows a student or student to register from a remote place where there is internet access. They can also study without having to face-to-face in class. Some 34,628 schools and universities in Indonesia already have internet access, whether they want to implement it or not. The drawback is that LMS is challenging to implement in areas with no internet access, such as inland areas. This can create gaps between one place and another. In the end, there will be marginalized groups, namely people who are far from technology. Therefore, internet service providers and governments need to be efforts as policymakers to expand the internet's long-term area.

### **c. E-Learning Application Models in LMS**

The e-learning application model developed is scrom-based Learning Management System/ LMS with moodle open sources program, with e-learning tools, i.e. (1) Login or No Login, (2) E-mail and Mailing List, (3) Video/Conference, (4) Assessment, Quiz, Survey, Poll, (5) Whiteboarding, (6) Document Sharing, (7) Dynamic Content Engine, (8) Search Engine, (9) Learning Activity Record, (10) Judgement Response, and (11) Hyper-Multimedia Content-Based.

In running distance learning programs, tools are needed to support this program's success and sustainability in the future. The devices of the blended learning model distance learning program with this LMS system include:

- 1) Educational/learning modules.
- 2) Stand-alone-based interactive multimedia module with learning materials packaged in the form of interactive CDs.
- 3) Learning videos are learning materials that can be used through the web (streaming) and VCDs and DVDs.

### **d. LMS Success Factors**

Learning Management System (LMS) development requires careful planning and careful feasibility studies for this development to answer various problems in education, the world of work, and science. It should be ensured that the LMS created is by the principles of pedagogy. The development of LMS takes broad insights into the program to all levels, facilitating learners to learn individually or in groups, building effective communication, and creating a learning community, thus determining which learning materials need to be augmented, changed, or updated.

The development of LMS in an agency is inseparable from the following factors: (i) policy and planning, (ii) leadership, (iii) infrastructure and resources, (iv) management, (v) the ability and competence of teachers and staff, and (vi) the level of technical support.

Policy and planning identify the purpose of using information and communication technology in education and determine priorities and resources are the realms of policy and planning. Education authorities and responsibilities in implementing and monitoring LMS become the basis for properly implementing the learning process. The success of policy implementation and planning depends on the role and responsibility of the leadership. Therefore, even the leadership in the performance of LMS becomes a critical player that provides the LMS's direction and objectives.

Infrastructure and resources to support learning processes based on information and communication technology can increase the learning process's potential. (Hikmatiar et al. 2020)



Management. One area that has received the least attention from the direction in and at the center is the management of learners and digital content. Effective use of information and communication technology by learners and staff who demand they can interact with technology-based information and communication, learning materials, and learning processes to get 'educational benefits.' Issues surrounding this area include user accounts, personal file storage, communication tools such as e-mail and discussion forums, and storing and access to the necessary software, technology-based information, communication, learning, and learning materials.

The staff's confidence and competence in the use of information and communication technology is the key to effectively determining the use of information and communication technology for teaching. Many staff now use information and communication technology regularly in teaching. In some cases, they use it in ways that enrich their education, such as animation, simulation, online video, and appropriate use of internet sites. However, too many staff have a level of trust and competence that is not high enough to use information and communication technology in their teaching.(Rabiman, Nurtanto, and Kholifah 2020)

The technical quality and support level are essential in maintaining learners' and staff's trust in establishing access to equipment and software. Fast and practical support from learners and staff, do not hesitate to plan information and communication technology in the learning process. The technical support level is that users feel confident that they will have reliable access, and learners and staff make far fewer plans to use information and communication technology.

## CONCLUSION

Education problems in Indonesia include equality issues, quality issues, efficiency issues, relevance issues, and lack of ICT use. (Soller 2001) Learning models with the Learning Management System (LMS) can facilitate learners to learn more broadly and vary. Through the facilities provided by the system, learners can learn anytime and anywhere (any time anywhere) without being limited by space and time. The materials they can learn are also more varied, not only in the form of text, but also more affluent with visual, audio, and motion variations known as Multimedia. Therefore, learning models with Learning Management System (LMS) can be developed to overcome Indonesia's educational problems, especially efficiency problems, quality education problems, and ICT utilization problems.

## REFERENCES

- Abernethy, Amy P., Lynn M. Etheredge, Patricia A. Ganz, Paul Wallace, Robert R. German, Chalopathy Neti, Peter B. Bach, and Sharon B. Murphy. 2010. "Rapid-Learning System for Cancer Care." *Journal of Clinical Oncology* 28(27):4268–74. DOI: 10.1200/JCO.2010.28.5478.
- Firman, Firman, and Sari Rahayu. 2020. "Pembelajaran Online Di Tengah Pandemi Covid-19." *Indonesian Journal of Educational Science (IJES)* 2(2):81–89. doi: 10.31605/ijes.v2i2.659.
- Gunawan, Sakroni Indra, Yuda Irawan, and Yesica Devis. 2020. "Design of Web-Based LMS ( Learning Management System ) in SMAN 1 Kampar Kiri Hilir." *Journal of Applied Engineering and Technological Science* 1(2):70–76.
- Hasanah, Fatmawati Nur, Toni Setiawan, Program Studi, Pendidikan Agama, and Iain Pekalongan. 2020. "Pembelajaran Daring Di Masa Pandemi Covid-19 Pada Perguruan Tinggi Keagamaan Islam Negeri ( Studi Di IAIN Pekalongan )." *Indonesian Journal of Educational Science (IJES)* 03(01):12–23.

Commented [U6]: Please cite many international articles.

- Hikmatiar, Hamzarudin, Dwi Sulisworo, and Mentari Eka Wahyuni. 2020. "Pemanfaatan Learning Management System Berbasis Google Classroom Dalam Pembelajaran." *Jurnal Pendidikan Fisika* 8(1):78–86. doi: 10.26618/jpf.v8i1.3019.
- Kusuma, Jaka Wijaya, and Hamidah Hamidah. 2020. "PERBANDINGAN HASIL BELAJAR MATEMATIKA DENGAN PENGGUNAAN PLATFORM WHATSAPP GROUP DAN WEBINAR ZOOM DALAM PEMBELAJARAN JARAK JAUH PADA MASA PANDEMIK COVID 19." *JIPMat* 5(1). doi: 10.26877/jipmat.v5i1.5942.
- Kusuma, Jaka Wijaya, Budi Ilham Maliki, and Malik Fatoni. 2020. "Peran Pendidikan Dalam Menyiapkan Bisnis Tradisional Memasuki Era Digital." *Edusaintek : Jurnal Pendidikan, Sains Dan Teknologi* 7(1):39–53. doi: 10.47668/edusaintek.v7i1.57.
- Laho, Nora. 2019. "Enhancing School-Home Communication through Learning Management System Adoption: Parent and Teacher Perceptions and Practices." *School Community Journal* 29(1):117–42.
- Pavlenko, Daria, Leonid Barykin, Sergey Nemeshaev, and Eugeny Bezverhny. 2020. "Individual Approach to Knowledge Control in Learning Management System." *Procedia Computer Science* 169(2019):259–63. DOI: 10.1016/j.procs.2020.02.162.
- Rabiman, Rabiman, Muhammad Nurtanto, and Nur Kholifah. 2020. "Design and Development E-Learning System by Learning Management System (LMS) in Vocational Education." *International Journal of Scientific and Technology Research* 9(1):1059–63.
- Sahin, Ismail, and Mack Shelley. 2018. *Educational Practices during the Covid-19 Viral Outbreak: International Perspectives*. Vol. 51.
- Saputro, Budiyono, and Andriani Tri Susilowati. 2019. "Effectiveness of Learning Management System (LMS) on In-Network Learning System (SPADA) Based on Scientific." *Journal for the Education of Gifted Young Scientists* 7(3):481–98. DOI: 10.17478/jegys.606029.
- Surani, D., Kusuma, J. W., & Kusumawati, N. (2020). Platform Online Dalam Perkuliahan Pada Masa Pandemi Covid-19. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 5(9).
- Soller, Amy. 2001. "Supporting Social Interaction in an Intelligent Collaborative Learning System." *International Journal of Artificial Intelligence in Education (IJAIED)* 12:40–62.