Analysis of Ruangguru as the Online Learning Media on Chemistry Learning

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Abstract

Ruangguru is one of the leading online education platforms in Indonesia that has followed a learning system based on the applicable curriculum. There is a need for analysis to find out how capable the Ruangguru application is in supporting online learning activities. Therefore, this study aimed to know the process of learning chemistry in the Ruangguru online learning media, especially on the solubility product and solubility product constant (Ksp). The type of research used was descriptive qualitative. Data collection techniques used observation and documentation. The results showed that the Ruangguru application met the criteria in supporting the online learning system of solubility and solubility product constant (Ksp) materials, which had facilities with learning materials delivered via live streaming video with the guidance of online tutors. In addition, there were facilities that could support all student activities, such as the availability of study modules, study groups, and learning evaluations. These are in order to improve students understanding abilities and have a good impact on the learning outcomes obtained, which has facilities with learning materials delivered via live streaming videos with the guidance of online tutors.

Keywords: chemistry learning;, learning media; ruangguru; solubility; Ksp

Abstrak

Ruangguru merupakan salah satu platform pendidikan online terkemuka di Indonesia yang telah mengikuti sistem pembelajaran berdasarkan kurikulum yang berlaku. Perlu adanya analisis untuk mengetahui seberapa mampu aplikasi Ruangguru dalam mendukung kegiatan pembelajaran online. Oleh karena itu, penelitian ini bertujuan untuk mengetahui proses pembelajaran kimia di media pembelajaran online Ruangguru khususnya pada hasil kali kelarutan dan tetapan hasil kali kelarutan (Ksp). Jenis penelitian yang digunakan adalah deskriptif kualitatif. Teknik pengumpulan data menggunakan observasi dan dokumentasi. Hasil penelitian menunjukkan bahwa aplikasi Ruangguru memenuhi kriteria dalam mendukung sistem pembelajaran online materi kelarutan dan konstanta hasil kali kelarutan (Ksp), yang memiliki fasilitas dengan materi pembelajaran yang disampaikan melalui video live streaming dengan bimbingan tutor online. Selain itu, terdapat fasilitas yang dapat menunjang segala aktivitas siswa seperti ketersediaan modul belajar, kelompok belajar, dan evaluasi pembelajaran, hal ini guna meningkatkan kemampuan pemahaman siswa dan berdampak baik terhadap hasil belajar yang diperoleh. yang memiliki fasilitas dengan materi pembelajaran yang disampaikan melalui video live streaming dengan bimbingan tutor online.

Kata kunci: pembelajaran kimia; media pembelajaran; ruangguru; kelarutan; Ksp

Introduction

Technology, which is growing rapidly, has a significant impact on various sectors, including education. This is in accordance with Purwangkasa, explaining that the technology currently developing affects all fields, as well as the field of education (Putrawangsa & Hasanah, 2018,)

Developing technology can facilitate every activity related to learning activities, especially in this digital era that emphasizes online learning systems. It is not surprising that education follows the times when it can create the latest innovations to improve human resources.

One of the efforts to improve human resources is by paying attention to the process of learning activities for students. It is because the teaching and learning process is very influential in developing students' skills and abilities. This condition causes various groups to develop the latest products to support learning process activities that can be accessed without considering the time and place of students. Data from the Ministry of Communication and Information shows that 30 million teenagers and young children in Indonesia use the internet. Currently, digital media is the primary choice for communicating (Kemkominfo, 2014). The data shows that the most internet use among teenagers and students is included in this category.

In addition, in learning, most students use the internet to search for knowledge information that is usually lacking or not available in textbooks. The information sought on the internet is usually related to learning materials, school assignments, and practice questions. In addition, students can also add insight beyond the learning that is being studied because of the unlimited information available on the internet that can be accessed easily (Podomi et al., 2018). Thus, implementing technology into education based on internet usage data requires new changes, such as creating the concept of using e-learning. It is in line with Irwanto (2017), which states that learning must utilize an approach to technology to

stimulate students to find critical and creative ideas. Thus, the use of technology can help improve students' achievement.

E-learning learning focuses on education that gives students the freedom to learn independently by using information and communication technology. It is expected that with e-learning, new learning methods can develop that can bring changes in the conventional education process into digital form. Various types of e-learning have been implemented in several educational institutions in Indonesia, ranging from elementary schools (SD) to universities (Karwati, 2014).

According to Sundari (2015), the use of electronic learning or e-learning also provides significant results on students' performance in the academic field. In addition, other studies say that the impact of using electronic learning shows that learning using electronic learning gets better results than learning using conventional methods (Nasser, 2014).

Ruangguru is an e-learning platform that emphasizes every online activity. The technology owned by Ruangguru is considered to be in line with the needs of students. The application developer can understand the users' characteristics so that the features provided in the application meet the needs of its users. The Rungguru application is in demand by students because this application provides fun and interesting learning services by presenting content in the form of videos and animations and providing some questions as exercises on each topic. Its usefulness is not in doubt because, besides providing an e-learning platform, Ruangguru also provides experienced private teachers who can be found easily through their learning services (Rahadian et al., 2019).

One of the lessons available at Ruangguru is chemistry. Chemistry is one part of the exact sciences or better known as Natural Sciences (IPA), in which the context of science is very closely related to everyday life. Chemistry is one of the most difficult subjects for most high school students (SMA) levels, especially in terms of solubility and solubility product (Ksp).

68

Based on research that has been conducted by Sudiana et al. (2019), which causes students to have difficulty in studying the material, among others, are not understanding the prerequisite material, still having difficulty in using the Ksp formula, and students' lack of understanding of writing reaction equations. The other factors are lack of interest and motivation to learn chemistry, lack of mathematical arithmetic operations ability,

However, it cannot be denied that although Ruangguru has aspects that can support online learning activities, it is necessary to conduct an analysis to see how capable Ruangguru is in meeting the criteria for a learning system that is adapted to the national curriculum that has been set by focusing on the learning videos in Ruangguru to analyze how components and aspects of learning that exist in it so that it can help students in facilitating the learning process. Therefore, based on the description above, the researcher is interested in conducting thesis research entitled "Analysis of the Learning Process in Ruangguru Online Learning Media for Chemistry Learning".

This study aims to determine the process of learning chemistry in Ruangguru's online learning media for chemistry subjects.

Method

This type of research was descriptive qualitative research. This research was based on fact finding interpreted in the form of words and pictures (Moleong, 2018). Data was collected by means of documentation and observations using structured observation instruments that two chemistry education lecturers assessed.

Data analysis was carried out by checking the validity of the data and making contingency tables for observations I and II, then calculating the coefficient of agreement (KK), which then obtaining the research findings. To calculate the value of the coefficient of agreement, it used the formula proposed by Fermandes (Arikunto, 2010).

$$KK = \frac{2S}{N_1 + N_2}$$

KK   : Coefficient of Agreement
S   : Agreed, the same amount of code for the same object
N1   : Number of codes generated by observers (expert lecturers) I
N2   : Number of codes generated by observers (expert lecturers) II

Table 1
Category Value

Deal Score Range	Category
<0.4	Bad
0.4 – 0.6	Enough
0.6 – 0.75	Satisfying
>0.75	Very good

Results and Discussion

Chemistry learning in Ruangguru as the online learning media obtained results that were categorized according to the criteria for indicators of online learning systems. The data collected from observational studies and documentation on the Ruangguru application which was focused on chemistry subjects was then carried out by data reduction and data presentation. There were five indicators that were the main focus of this research, namely learning and evaluation media, multimedia, opportunities for collaboration and interaction, online tutors and communities. The results shown were based on the level of data validity and reliability using the coefficient of agreement (KK) formula for two expert observers. The following are the results of the coefficients for each indicator can be seen in Tabel 2.

The processed results of each indicator filled out by two expert observers obtained that they were overall stated in the

very good category seen from the results of the Coefficient of Agreement for each indicator showing a value above 0.75. It means that Ruangguru, as the online learning media has a very good level of validity and reliability so it can be used in chemistry learning process activities.

Table 2
Coefficient Results for Each Indicator

Indicator	Coefficient of Deal	Category
Study Materials and Evaluation	0.83	Very good
Multimedia	1.00	Very good
Opportunity to Collaborate and Interact	1.00	Very good
Online Tutor	1.00	Very good
Community	1.00	Very good

Discussion

Ruangguru is one of the platforms that students widely use to help the learning process, including chemistry learning. Ruangguru is designed to make it easier for students to carry out learning activities that can be accessed online. The Ruangguru learning platform is a supporting media for student learning that can be accessed online. For the sake of creating an appropriate online learning media, there are several indicators that must be met, to see whether the media is appropriate and suitable for use or not.

Nevertheless, it is certainly necessary to prove the learning system offered by Ruangguru in increasing students' knowledge, especially in obtaining learning outcomes. Therefore, Karwati (2014) explains that there are five indicators that need to be carried out to analyze the appropriate online learning system, namely learning and evaluation materials, multimedia, opportunities to work together and interact, online tutors, and communities.

Study Materials and Evaluation

The results show that Ruangguru had met the criteria as an e-learning learning platform that provided online learning and evaluation media and could be accessed anywhere. Moreover, the material presented could be downloaded. Learning materials were provided based on the applicable curriculum, namely the revised 2013 curriculum. Besides that, there were
70

also material updates. Thus, it enabled students to get up-to-date learning materials. It is in accordance with the findings of other researchers who explain that e-learning learning is required to have teaching materials that can provide benefits to students and to improve learning outcomes optimally (Choirunnisa, 2012).

One of the available chemicals was the Solubility Product (Ksp). Based on Permendikbud number 37 of 2018, the solubility and solubility product are included in the Basic Competencies (KD) 3.11 and 4.11. The basic competencies in 3.11 are "Analyzing the ionic balance in a salt solution and relating its pH" and 4.11 "Reporting experiments on the acidic and basic properties of various salt solutions". It is in accordance with the material in the learning video, in which in the chapter on solubility and solubility product (Ksp), there is material for ion balance, determining the Ksp of salt, determining the pH of the solution, determining the solubility of salt in alkaline solution, and so on.

In addition, the learning evaluation displayed in the Ruangguru application waas not only exercises given by the tutor, but also some questions to practice, quizzes and tryouts for the Mid-Semester Assessment (PTS) and Final Semester Assessment (PAS) which students could accomplish in enhancing their abilities and measuring the extent of their understanding of the material presented. The exercises and quizzes were adjusted based on the material being studied. In each exercise which is in

the form of questions, there were several categories of questions, from easy questions to High Order Thinking Skills (HOTS). The form of each question was in the form of multiple-choice which had 5 answer choices. There was also a final quiz at the end of the sub-material, which consisted of 10 questions.

The evaluation of learning becomes a benchmark for diagnosing the weaknesses and strengths of students so that they can evaluate and get optimal learning outcomes (Dirman & Jurasih, 2014). The display of learning materials and evaluations in the Ruangguru can be seen in Figure 1 and Figure 2.

Figure 1
Display of Learning Video Materials

Figure 2
Quiz Display on Solubility Materials
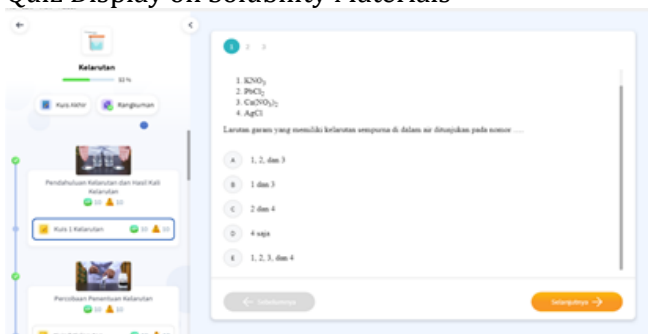
Multimedia

The observation results showed that the displays on the Ruangguru application, both on the desktop and the smartphone, had the same front view. The initial appearance of the application contained

Icons according to subjects. Besides that, there were supporting features such as class choices and question banks. The initial appearance of the Ruangguru application can be seen in Figure 3 and Figure 4.

Figure 3
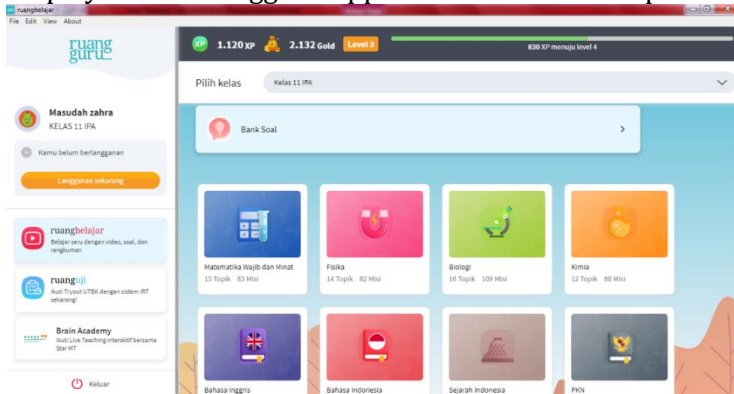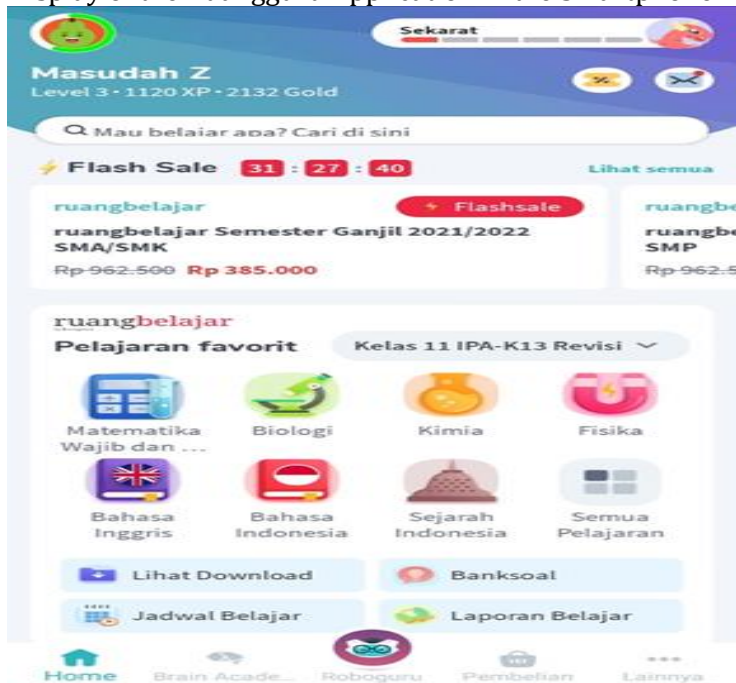Display of the Ruangguru Application in the Desktop

Figure 4
Display of the Ruangguru Application in the Smartphone

The display above shows that Ruangguru as an online learning medium had been adapted, which used a user interface display that can support learning in various technologies that are easy to understand and very friendly to use by users. Users can easily recognize the functions of the features provided in the Ruangguru application (Rahadian, 2019). It is in line with Seffah et al. (2016) explaining that online learning media must have a user friendly display to make it easier to use.

In addition to the display in supporting chemistry online learning activities, in multimedia it is necessary to pay attention to learning videos that can be accessed both online and offline. Broadly speaking, there were 2 types of learning videos: learning videos that discussed learning materials and questions. In the Ksp material, there are 25 learning videos provided by Ruangguru, which had duration of about 4-11 minutes.

Each learning video in the Ruangguru application contained opening activities, core activities and closing activities. The opening activity began with greetings or greetings from the tutor to the audience or students. The next activity was to tell the learning objectives and provide

72

trigger questions in accordance with the video that would be delivered or to review a bit of the previous material. The core learning activities were video explanations of learning objectives and material explanations; the tutor conveyed material related to solubility and solubility product (Ksp). While in the video discussion type, the tutor explained the steps in working on the problem to find the answer to the question. The types of questions described in the video discussion of questions were usually in the form of video essays in which the number of questions varies, adjusting the material discussed

The following video display presents in the Ruangguru application. It can be seen in Figure 5, Figure 6 and Figure 7.

Figure 5
Screenshot Display of Video Discussion Questions

Figure 6
Tutorial video Animation Comparison of Solubility of NaCl and CaCl$_2$ Salts

Figure 7
Compound Dissociation Animation in Water

Another thing that needs to be considered in the development of multimedia aspects is evaluation. In application development, of course, it does not escape from its shortcomings, so an evaluation is needed for better development. The most relevant evaluation for a system is to identify usability factors. The usability factor is mostly shown from the user experience in using the application (Oztekin et al., 2013). In this case, Ruangguru provided a report feature on available learning videos, where users can report or provide criticism and input if the learning video was not good in terms of learning materials, delivery and language, technical quality and appearance. In addition, there were user surveys sent via registered user emails. The survey aimed to determine user experience in using the Ruangguru learning application. Thus, application developers can improve and develop applications to be even better.

Opportunity to work and discuss together

The results show that Ruangguru had a study group to support online learning, namely the workplace group. The workplace is a service from Facebook, a new messaging and social media service that focuses on corporate and professional circles and is usually used internally by companies (Kuchler, 2016). This feature was provided by Ruangguru so that students could ask questions or discuss directly with tutors and peers. Interaction between students is needed to support learning. Besides being able to increase knowledge, it can also improve communication, social interaction and cooperation. To increase discussion between students, it is necessary to have a study group that can provide a forum for students to interact with each other.

This workplace group was used by Ruangguru to support opportunities to work together and interact between students and student-tutors. In this group, students could ask questions and discuss directly with their tutors and peers. The function of this group was almost the same as Google Classroom. Users can upload documents or learning videos and do live streaming also. This can make it easier for interactions to be carried out in real-time.

Online Tutor

The results of the observations showed that tutors who were involved in online learning activities actively participated by providing material and student guidance so that the learning process was conveyed properly. In other words, students and tutors could interact with each other by discussing, asking questions and tutors using the lecture method to deliver the material being taught. The following is the appearance of the tutor in delivering learning; see Figure 8, Figure 9 and Figure 10.

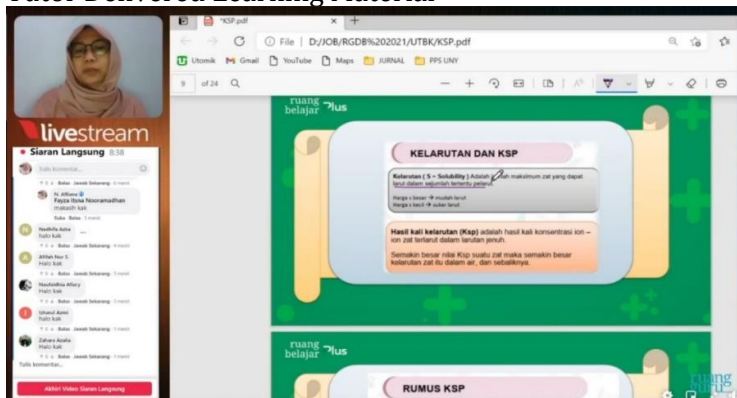**Figure 8**
Tutor Delivered Learning Material

Figure 9
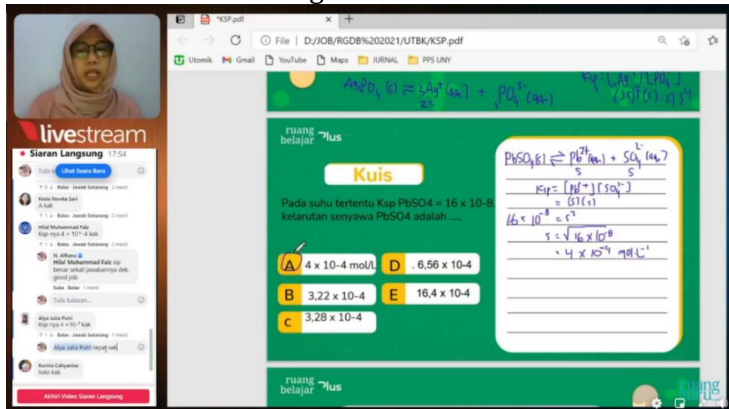Tutor Delivered Learning Material

Figure 10
Chemistry Student and Tutor Interaction

The picture above shows that tutors had to be active in groups and also provided additional online learning in live streaming sessions. For materials and subjects at the time of live streaming, it was adjusted to the schedule that had been made previously. Usually, there wiould be a reminder given by the admin in the study group a few hours before starting the lesson.

Tutors used learning media in the form of power points (PPT) which were distributed by sharing screens with the audience or students. The learning process was carried out in 3 stages, namely preliminary activities, core activities or delivery of learning materials and closing activities. The preliminary activity began with the tutor greeted and introducing himself and greeting the audience or students. After that, there was reviewing learning materials related to the material to be explained, then proceeding with reading the learning rules during live streaming, telling students the learning tasks or objectives of the material to be discussed.

Community

Based on the observations that had been made, there was an online community in the Ruangguru workplace application,

75

and there was an online community both in the academic and non-academic fields that accommodated students to discuss. The academic group consisted of groups of various subjects. For the Mathematics and Natural Sciences class, there were groups for Mathematics, Physics, Biology, Chemistry, Indonesian and English. Non-academic groups had an interest in talent clubs, such as Japanese clubs (discussing about Japan, anime, jpop) and studying new language.

Conclusion

The chemistry learning process in Ruangguru online learning media is available from materials to evaluation. It shows that Ruangguru has been adjusted to the established national curriculum in delivering its material. Based on the study results, Ruangguru is categorized as an online learning media platform following the indicators of the online learning system category. It is shown from the user-friendly interface, which various technological tools can access. The material is delivered using learning videos and can be downloaded. In addition, Ruangguru provides the opportunity to work together and interact using workplace groups, tutors who are active in learning activities and the community to accommodate students in discussions.

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