



Learning Motivation and Smart Risk-Taking Behavior of Students for Prospective Teacher of Chemistry in Online Learning During the Covid-19 Pandemic

Sunyono¹, Annisa Meristin²

^{1,2}Chemistry Education Study Program, Faculty of Teacher Training and Education, University of Lampung,

Jl. Prof. Dr. Soemantri Brojonegoro No. 1 Bandar Lampung, Indonesia.

e-mail: sunyono.1965@fkip.unila.ac.id.

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Abstract: The purpose of this study was to determine the motivation for learning chemistry and smart risk-taking behavior in dealing with online learning during the covid-19 pandemic. Descriptive qualitative research design is used to obtain research data to obtain conclusions. The research subjects included students of the Chemistry Education Study Program, FKIP University of Lampung, semester 1 (class of 2021), semester 3 (class of 2020), and semester 5 (class of 2019) with a total of 158 people. The research data were collected using a motivational questionnaire and the IRT-S scale which were distributed via google form and observation in vclass.unila.ac.id mode to obtain data on the learning process. The results showed that ((1) students still do not have high motivation to take online lectures. (2) During online learning, students lack the courage to take risks smartly (low SRTB) in learning, only a relatively high preference for chemistry (more than 50%) students state that they dare to do new things, while others such as belief themselves in taking risks smartly in learning is relatively low. (3) Students who have high motivation and are more interested in science, then these students will also have the courage to take risks intelligently when studying. The results of this study indicate that students' low online learning motivation causes students' lack of courage in taking risks to learn smartly. With the results obtained from this study, it is necessary to follow up that in online learning, there should be more nuances of chemistry learning that can support smart risk-taking behavior for students.

Keywords: motivation, risk-taking behavior, prospective chemistry teacher, pandemic covid-19

Abstrak: Tujuan dari penelitian ini adalah untuk mengetahui motivasi belajar kimia dan smart risk taking behavior dalam menghadapi pembelajaran online di masa pandemi covid-19. Desain penelitian deskriptif kualitatif digunakan untuk memperoleh data penelitian untuk memperoleh kesimpulan. Subyek penelitian meliputi mahasiswa Program Studi Pendidikan Kimia FKIP Universitas Lampung semester 1 (angkatan 2021), semester 3 (angkatan 2020), dan semester 5 (angkatan 2019) yang berjumlah 158 orang. Pengumpulan data penelitian menggunakan angket motivasi dan skala IRT-S yang disebarakan melalui google form dan observasi dalam mode vclass.unila.ac.id untuk mendapatkan data proses pembelajaran. Hasil penelitian menunjukkan bahwa ((1) mahasiswa masih belum memiliki motivasi yang tinggi untuk mengikuti perkuliahan online.(2) Selama pembelajaran online mahasiswa kurang berani mengambil resiko secara cerdas (SRTB rendah) dalam pembelajaran, hanya preferensi yang relatif tinggi pada kimia (lebih dari 50%) siswa menyatakan berani melakukan hal-hal baru, sedangkan yang lain seperti percaya diri dalam mengambil resiko secara cerdas dalam belajar relatif rendah.(3) Siswa yang memiliki motivasi tinggi dan lebih tertarik pada sains, maka siswa tersebut akan juga memiliki keberanian mengambil resiko secara cerdas ketika belajar.Hasil penelitian ini menunjukkan bahwa rendahnya motivasi belajar online siswa menyebabkan siswa

kurang berani mengambil resiko untuk belajar secara cerdas. Oleh karena itu dalam pembelajaran online, harus ada lebih banyak nuansa pembelajaran kimia yang dapat mendukung perilaku cerdas mengambil risiko bagi siswa.

Kata kunci: motivasi, perilaku mengambil risiko, calon guru kimia, pandemi covid-19

• INTRODUCTION

Learning problems, especially chemistry learning, are getting sharper with the emergence of the Covid-19 Pandemic. Covid-19 is an infectious disease caused by a newly discovered type of corona virus. This virus was a new virus and an unknown disease prior to the outbreak in Wuhan, China, in December 2019 (Hernández and Ramzy, 2020). The corona virus is a new type of virus that previously could not be identified in humans, but later researchers confirmed that the virus can be transmitted from human to human through liquid droplets that come out when coughing or sneezing ((Hernández & Ramzy, 2020; Huang, 2020). , et al., 2020: 497; Li, et al., 2020: 1199). With the emergence of the Covid-19 Pandemic, the Indonesian government issued a policy in the form of limiting face-to-face meetings, even in some provinces on a large scale. to prevent the spread of the corona virus with an appeal from the government to stay at home, practice a healthy lifestyle, do not touch the face area, and always use a mask when forced to travel (Jamaluddin, et al., 2020).

Thus, the emergence of policies during the Covid-19 pandemic will certainly change the order of social life in society and these changes are factors that greatly affect the current learning process (Strielkowski, 2020: 1). In this case, learning which is usually done face-to-face and there is direct interaction between teachers and students as well as interaction between students, but suddenly turns into online learning, it is certain that students and teachers cannot interact directly. This very rapid change, if not accompanied by careful and adequate preparation, will result in stuttering in dealing with it. As long as students study alone at home, there are many problems related to learning chemistry, especially in practicing laboratory skills to help students solve problems, as a result this condition will have a major impact on the learning process activities (Yoo, Kim, & Young Kwon, 2014). In facing conditions like today, students are required to dare to take risks intelligently in gaining knowledge (Smart Risk-Taking Behavior) and of course to dare to take risks intelligently, students must have high motivation. Research conducted by Permadi, Noviekayati, & Meiyuntariningsi (2019) reports that there is a significant relationship between risk-taking behavior and one's motivation to do something. Furthermore, Atkinson (1957) stated that there is a close relationship between motivation and risk-taking behavior.

Based on daily observations before the pandemic, students have taken many risk-taking actions or what is known as risk-taking behavior. However, when learning online during the Covid-19 pandemic, do students still have the courage to take smart risks (Smart risk-taking behavior)? Smart Risk Taking Behavior (SRBT) in education is a behavior in a cognitive process and has several stages, namely thinking deeply about the problem, subject, or case, then drawing conclusions from the problem, presenting hypotheses, rearranging hypotheses, and discussing with group members. , to find solutions in solving these problems (Bal-Incebacak et al., 2019).

Neihart (1999) divides risk-taking behavior into categories of intellectual, social, emotional, physical, and sentimental risk-taking. However, Akdağ et al. (2017) classify risk-taking behavior into five groups, namely risk-taking behavior in traffic, sexuality,

drug use, extreme sports, and academic or intellectual. Intellectual risk-taking behavior is a specific category of risk-taking related to education. Beghetto (2009, p. 211) states that intellectual risk-taking behavior is an “additional form of risk-taking” and that behavior is influenced by interest/interest in science (Interest in Science/IS), creative self-efficacy (Creative Self-Efficacy) (CSE), and perceptions of teacher contributions. Clifford (1991) has studied intellectual risk-taking behavior in an educational context stating that the educational environment will allow students to take more risks in educational activities. Similarly, Allmond et al. (2016) stated that intellectual behavior in risk taking is becoming one of the 21st century skills and emphasizes that it is necessary to support students in adopting such behavior. Radloff et al., (2019) also observed that the benefits of risk taking include increased student participation in science learning, increase confidence in teachers about teaching science, and improve collaborative teacher relationships. Research conducted at the secondary school level suggests that there is a relatively low relationship between levels of test anxiety and intellectual risk-taking behavior (Bal-İncebacak et al., 2019).

Other research states that there is a relationship between intellectual risk taking behavior and the level of success in science where students tend to be willing to take risks when students are successful in academics (Meyer et al., 1997; Tay et al., 2009). In addition, other studies have found a relationship between intellectual risk-taking and several variables, including motivation, interest, and self-efficacy as well as academic success (Akdağ et al., 2017; Beghetto, 2009). Furthermore, Atkinson (1957) stated that there is a close relationship between motivation and risk-taking behavior. Therefore, to predict the success of prospective teacher students in learning chemistry online, it is necessary to explore how much risk-taking behavior (SRTB) intelligence and learning motivation of prospective chemistry teacher students at FKIP University of Lampung are as a result of implementing online learning during the COVID-19 pandemic. 19.

• **METHOD**

Research methods

The design of this research is a descriptive qualitative research where the results of the qualitative research will be reported in the form of a description. The data collected is the key or the answer to what is being researched. In this case, the data collected is in the form of LMS Vclass observations developed by the Chemistry Education Study Program lecturer at FKIP Unila, data on student learning motivation, and SRTB from students, and other supporting documents. This qualitative descriptive study aims to describe, explain and analyze the trends in SRTB and student motivation in online lectures for chemistry education students, FKIP University of Lampung as a result of the Covid-19 pandemic which is still ongoing today.

Data Collection and Data Analysis Techniques

Data collection in this study used a motivational questionnaire with 4 Likert scales to obtain data on student motivation in studying chemistry with statements strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS). Furthermore, to collect data about SRTB using the predictors scale in science education (IRT-S) which includes data about interest in science (chemistry) and self-confidence, each with statements very often (SS), often (S), never (P), and never (TP). Other supporting data were collected through documentation and observation through LMS Vclass. The motivation questionnaire and the IRT-S scale were distributed via google form to Chemical Education students, FKIP

University of Lampung, Class of 2019 to 2021, with the consideration that students of Class 2017 and 2018 had not taken many courses. The IRT-S questionnaire and scale distributed had 8 questions about student motivation in carrying out online learning and 6 questions about SRTB.

The research subjects taken as research data for analysis were students who had filled out a questionnaire. Based on the questionnaires and the IRT-S scale, the subjects of this study were 158 students as respondents with details: 44 students in the 2019 class, 46 students in the 2020 class, and 68 students in the 2021 class.

The analysis used in this study is descriptive analysis by describing and interpreting the meaning of the data that has been collected, so as to obtain a general and comprehensive picture of the actual situation as it is from a phenomenon. This descriptive data analysis technique was carried out through three steps, namely data reduction, data display, and conclusion drawing.

Research result

This research was conducted from July to September 2021. The development of the motivation questionnaire and the IRT-S scale was carried out during June to July 2021 and the IRT-S scale adopted from the IRT-S instrument developed by Beghetto (2009) and Küçükaydın (2021). Both instruments have been validated by relevant experts with revisions 3 times. The results of the research through observations of the LMS of several lecturers of the Chemistry Education Study Program for the odd semester (2021/2022) lectures can be described as follows.

Table 1. Lecturer interactions and student perceptions of online learning through LMS:

ASPECT	DESCRIPTION	RESULTS
IT UTILIZATION	Utilization of IT by lecturers and access to learning by students	Very accessible (71.52%) Easily accessible (22.15%) Less accessible (6.33%) Difficult to Access (0.00%)
FEEDBACK	Lecturers have provided feedback in the form of comments, input, assessing and providing answers to problems faced by students during online learning using various features in the LMS.	Discussion Forum (83.33%), H5-P interactive content (33.33%), Workshop (66.67%), and G-meet (83.33%)
STUDENT COMPLAINTS DURING ONLINE LECTURES	Student complaints against the implementation of online learning by students	Complaints caused by: Multiple Tasks (41.77%). Difficulty understanding material online (51.27%). There is no feedback from the lecturer (26.58%). Signal Interference (9.49%).

**STUDENT FEELINGS
IN ONLINE LECTURES**

students feel happy in online lectures on certain subjects that provide assignments in the form of products, especially regarding the features used by lecturers

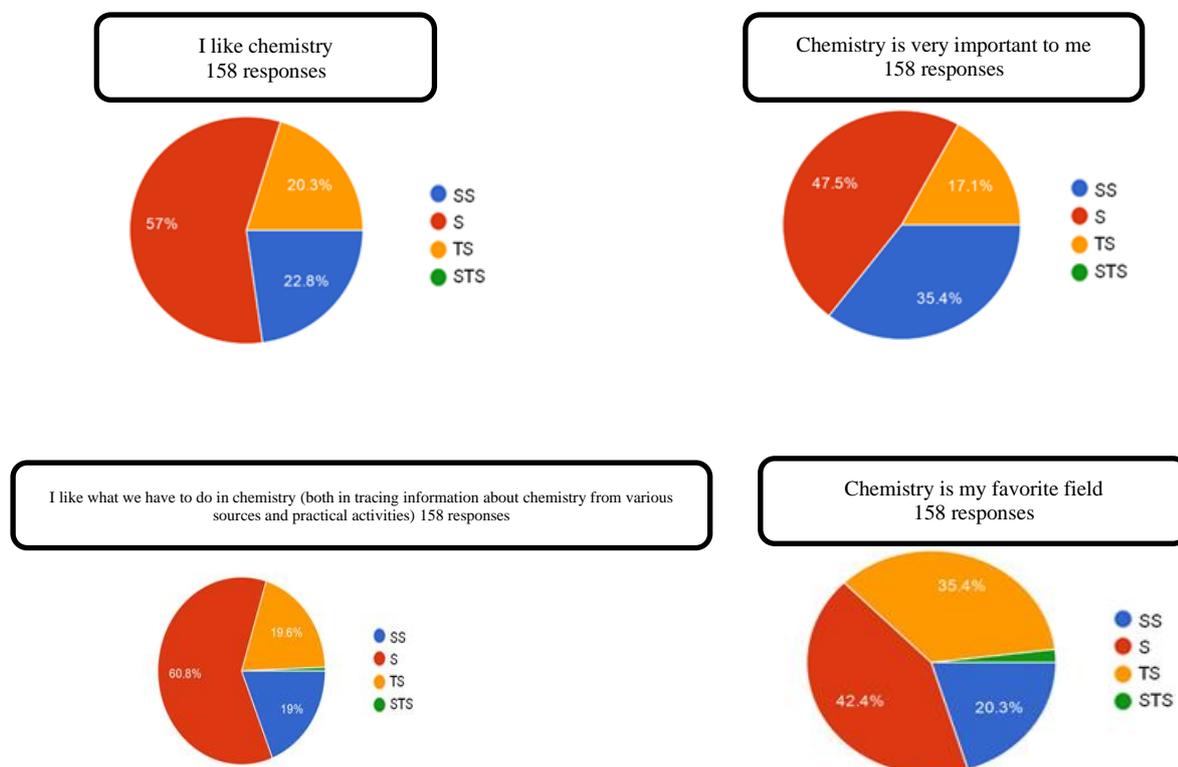
70.89% of students feel happy in online lectures with interesting features such as kahoot, prezi, mentimeter, story line, ClassPoint, and youtube.

Student motivation in learning chemistry online

Based on the reduction of the questionnaire data in the form of direct entry, the following distribution was obtained:

- The factors that cause students to be less motivated are difficult to understand the material taught online, so it is necessary to provide additional understanding in the form of PPT and videos about explaining the material systematically and not giving too many assignments.
- Students feel happy in online lectures on certain subjects that provide assignments in the form of products, especially those related to contemporary features such as kahoot, youtube, and others.
- Students feel happy in several courses, because learning is carried out in a fun and not tense learning atmosphere, even though online learning is carried out asynchronously.
- Chemistry learning that is integrated with independent practicum in certain subjects is very fun and needs to be continued, because it can help students understand the chemical material being studied.

In full, the results of data analysis on the learning motivation of prospective chemistry teacher students during the COVID-19 pandemic can be displayed as shown in the image below.



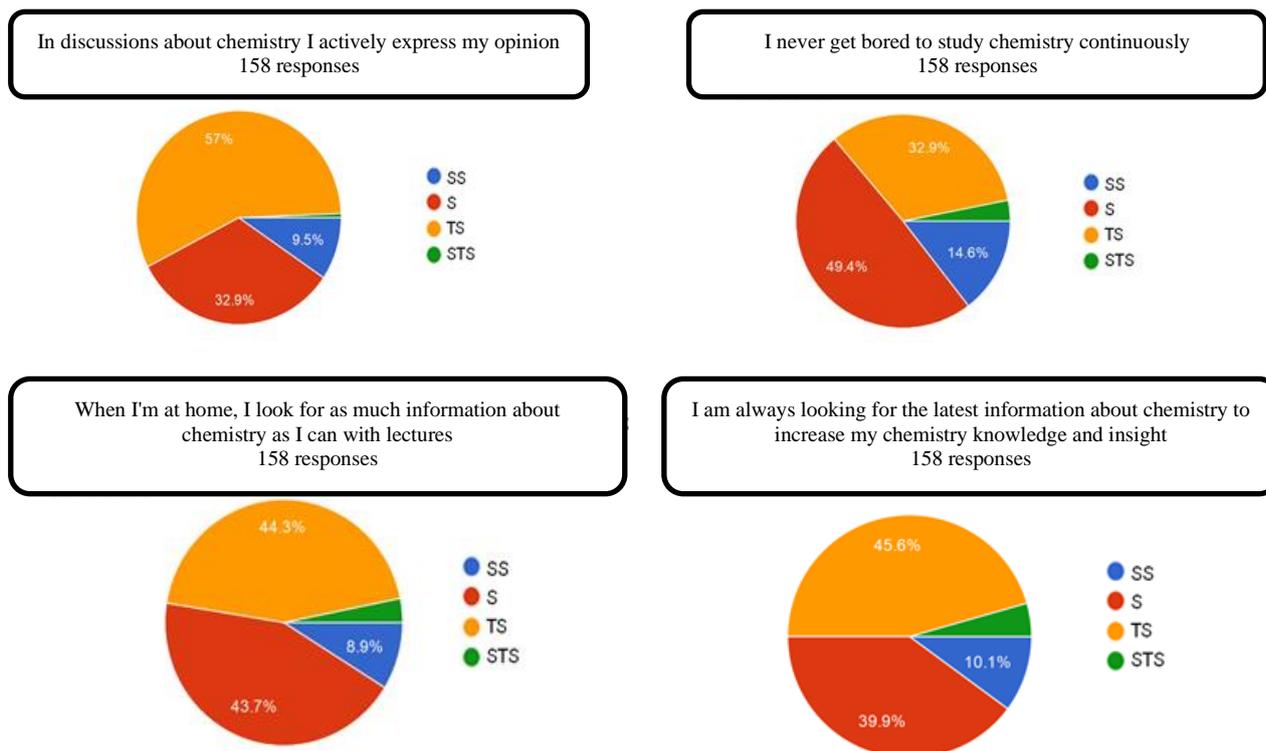
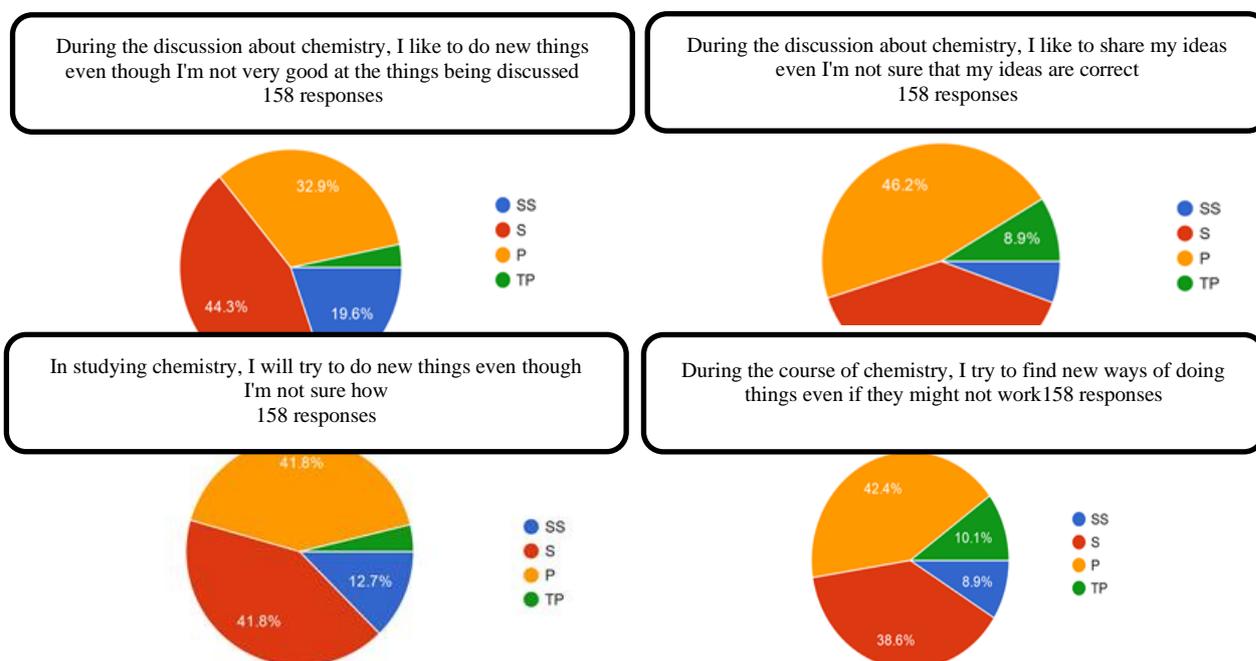


Figure 1. Student Motivation towards Online Chemistry Learning

Based on these results, it shows that most students have high motivation towards chemistry, but there are still quite a lot (> 30%) whose motivation is still relatively low, starting from aspects of chemistry as a favorite field of science to efforts to find the latest information about chemistry. If you look at the input/criticism of students, it seems that students who are still low on motivation are due to the assumption that online learning is more of an assignment, so that interaction between lecturers and students as well as between students is very low.

Smart Risk-Taking Behavior (SRTB)

The results of descriptive analysis of research data on risk-taking behavior intelligently in learning are conveyed through the image below



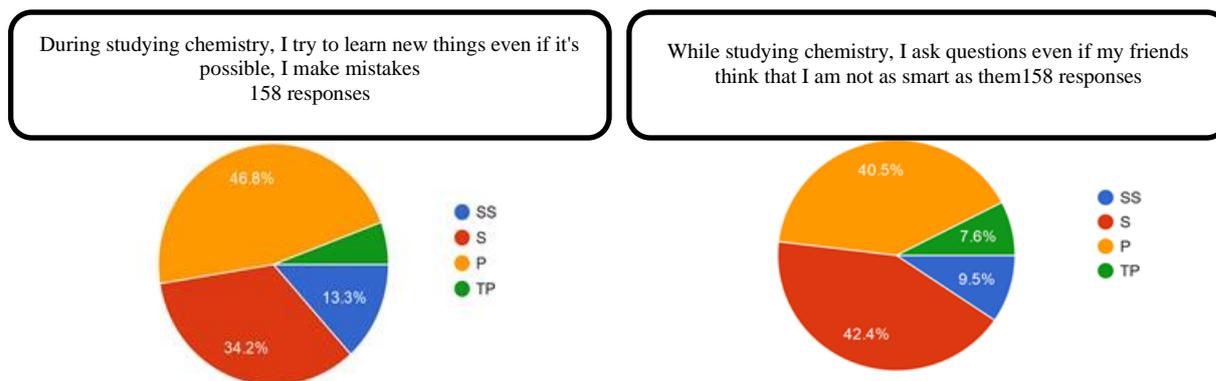


Figure 2. Smart Risk-Taking Behavior of students

Based on the research data (Figure 1 and Figure 2), it indicates that there is a close relationship in order to support the statement that motivation to science chemistry is a key factor associated with intelligent risk taking. The motivational data (Figure 1) and the data on SRTB (Figure 2) seem to have similarities, where students with high motivation (> 50%), also have the courage to take risks intelligently in studying chemistry. Furthermore, based on research data in Figure 2, it shows that for SRTB the aspect of interest in chemistry is quite high (>50%), where more than 50% of students stated that they were interested in chemistry, especially in doing new things even though they felt they were not good at it. in studying chemistry. Similarly, the aspect of belief in the ability to learn, especially related to the courage to try new things. However, for other aspects related to self-efficacy (self-confidence), more than 50% of students stated that they lacked courage. This condition indicates that in online learning that is carried out in lectures at the Chemistry Education Study Program, FKIP Unila is still not able to generate the courage to take risks intelligently in learning from students or in other words their SRTB is still low.

• RESULT AND DISCUSSION

The analysis of student motivation towards online learning in this study uses the ARCS model. According to Keller (2016), the ARCS motivation model (attention, relevance, confidence, and satisfaction) has advantages, namely it can seek various strategies and methods in learning so that students have an interest in learning (attention), learning can have a relationship with the reality they are facing. students so that they can have readiness in the future (relevance), students have a sense of comfort in learning, are confident (confidence), and students will have satisfaction when they can apply knowledge without fear (satisfaction).

The results showed that students' disbelieve/distrust of online learning was quite good, but still needed to be improved because it was still in the range of 40% - 76% and there were still quite a few who were still categorized as less (> 30%). This shows that students are unprepared in taking online learning during the covid-19 pandemic. The existence of >30% of students who lack confidence in online learning by lecturers, arises because several courses in the Chemistry Education Study Program are held fully online with synchronous and asynchronous approaches and learning is more focused on giving assignments, on discussion forums and assignments that students do. lack of teacher feedback. Furthermore, the reduction of research data shows that students are not quite

satisfied in doing the tasks given during online learning. This can be caused by the number of assignments given. The results of this study will be used as a basis for evaluating the next online learning management in the Chemistry Education Study Program, FKIP Unila.

Judging from the results of the analysis of the SRTB, it seems that there is a relationship between student motivation towards chemistry and the SRTB. This relationship can be seen from the motivational data and SRTB data, where students who have low motivation have low SRTB (Bal-İncebacak, 2019). The results of this study indicate that students' learning motivation will affect students' courage in taking risks intelligently. This finding is in line with the research results of Hidi (2000), Renninger (2000), Akdağ et al. (2017), and Radloff et al. (2019), where the researchers provide arguments and descriptions that there is a relationship between motivation to learn science and the willingness to take intellectual risks in learning science. The results of this study are also in line with previous studies that have documented a similar relationship between interest and persistence in the face of frustration and failure. Overall, these findings indicate that students who are highly motivated and more interested in science, then these students will also have the courage to take intelligent risks when studying and will have high "endurance" (Hunter & Csikszentmihalyi, 2003; Keller, 2003). 2016). Furthermore, Hunter & Csikszentmihalyi (2003) also stated that students with the courage to take high risks in learning will have strategies in learning to overcome frustration and are ready to face failure in learning. On the other hand, science students who are less interested and motivated in learning may not see deep success in their understanding of science (chemistry).

The findings of this study also show that there is a relationship between motivation to learn chemistry and SRTB indicating the importance of a chemistry learning environment that can encourage and support students in developing thinking skills and self-confidence as well as arousing enthusiasm for learning better, so that their SRTB can be improved, even though the learning is carried out in an independent manner. online. Without a supportive learning environment, the development of students' self-confidence, learning motivation, and SRTB seems very unlikely. Self-confidence and high student motivation will lead to high SRTB which is strongly influenced by a positive learning environment (Bandura, 1997; Beghetto, 2006).

• CONCLUSION

Based on the results of the study, it can be concluded that (1) students still do not have high motivation to take online lectures. (2) During online learning, students lack the courage to take risks intelligently (low SRTB) in learning, only a relatively high preference for chemistry (more than 50%) students state that they dare to do new things, while others such as belief self in taking risks intelligently in learning is relatively low. (3) Students who have high motivation and are more interested in science, then these students will also have the courage to take risks intelligently when studying.

The findings of this study indicate that students' low online learning motivation causes students' lack of courage to take risks intelligently in learning. These results have implications for the implementation of online learning that should be given more nuances of chemistry learning that can support intelligent risk-taking behavior for students. Therefore, the creativity and innovation of lecturers in online chemistry learning greatly determines the courage of students in taking risks intelligently in learning. The courage

to take risks intelligently in learning will foster a high passion for learning and of course this will result in an increase in student competence.

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