

## **Microbiology Learning : Based life Skills Education of Student In TADRIS Biology PRODI FATIK IAIN Kendari Through the Contextual Teaching and Learning Approach**

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Doi : 10.31332/ijtk.v2i2.15

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### **Article Info**

### **Abstract**

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#### *Keywords:*

Life Skills, ,  
Microbiology  
Materials,  
Contextual Teaching  
and Learning  
Approach

This study aims to (1) examine the life skills of students of Tadris Biology PRODI, FATIK IAIN Kendari through Microbiology learning based on Life Skills Education using the CTL Approach, (2) examining the attitudes of Tadris Biology PRODI, FATIK IAIN Kendari after learning Microbiology Based on Life Skills Education with the CTL approach. The research sample was all students of the Tadris Biology PRODI FATIK IAIN Kendari in the fifth semester of the 2018/2019 academic year totaling 32 students. The results showed that the life skills of students of the Tadris Biology PRODI at FATIK IAIN Kendari in the fifth semester of the 2018/2019 academic year through learning Microbiology with the CTL approach, all students achieved life skills competence with an average score of 8.93. Based on the results of the questionnaire, students' attitudes showed a positive attitude, meaning that students in general (85.91%) agreed to microbiology learning based on life skills education with the Cotextual Teaching and Learning Approach. .

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## **1. INTRODUCTION**

Education statistics from year to year show that only about 11.6% of students can continue their education up to university level. This means that most students (88.4%) do not continue their education for various reasons (Arislan, 2011). Strategic data from the Central Statistics Agency (BPS) in 2011 stated that the unemployment rate in Indonesia in 2011

reached 8.1 million people. The translation of unemployment data based on education level is included in the Official Gazette of Statistics from the Central Statistics Agency in August 2011 which is 3.56% elementary school education (SD) and below, 8.37% junior high school (SMP), 10.66% middle school Senior High School (SMA), 10.43% Vocational High School (SMK), 7.16% Diploma I/II/III, and 8.02% University. Therefore, it is necessary to have a broad-based education policy (Broad Based Education), namely the concept of education that is oriented towards life skills.

Broad-Based Education (Broad Based Education) is a policy of providing education that is fully intended for the community. The rationale for implementing community-based education is the real need of the community, namely that education should focus on mastering life skills. Technically, philosophically, the orientation of education based on the wider community is the ability to live or work, not merely oriented to the academic path. For this reason, schools are required to be able to create clear links with the world of work. The school to work paradigm must underlie all educational activities. With an emphasis on education on life skills, it is hoped that education can really improve the standard of living and dignity of the community.

Since September 2001, the aim of the learning process has been to move towards mastering basic competencies which lead to the mastery of life skills needed in social life. Life skills-oriented education provides an opportunity for every student to acquire skills or expertise that can be used as a source of livelihood. Life skills-oriented education does not dictate educational institutions and local governments, but only offers various possibilities or menus that can be selected according to the real conditions of the school, both in terms of the existence of its students and the lives of the surrounding community (Anwar, 2004).

Life skills as the core of competence and educational outcomes are skills possessed by a person to dare to face the problems of life and life fairly without feeling pressured, then proactively and creatively seek and find solutions so that they are finally able to overcome them (Depdiknas, 2006).

These life skills are in accordance with the four pillars of education proclaimed by Unesco. The four pillars of education launched by Unesco if implemented properly in schools will be able to equip students for life in the community. The four pillars of education are learning to know (learning to know), learning to do or work (learning to do), learning to be identity (learning to be) and learning to live in society (learning to live together). The four pillars of education are principles that need to be used as the basis and guidelines in the implementation of learning in schools, which are aimed at producing future generations of the nation in accordance with the expectations of the Indonesian people and nation.

To achieve the four pillars of education accompanied by ownership of the much needed life skills, students should be actively involved in learning that practices interactions with the physical and social environment, so that students understand knowledge related to the surrounding environment (learning to know). The learning process aims to facilitate students in carrying out actions on the basis of the knowledge they understand to enrich the learning experience (learning to do). Students are expected to be able to build self-confidence so that they can become their own identity (learning to be), and at the same time also interact with various diverse individuals and groups, which will shape their personality, understand pluralism, and give birth to a tolerant attitude towards diversity and differences that each has. -each individual (learning to live together) in accordance with their respective rights (Anwar, 2004).

Educational innovations currently lead to the formation of life skills, meaning that education is adapted to the real needs that students want according to the cultural potential of their community. This is in line with the definition of education according to Law no. 20 of 2003, concerning the National Education System, Chapter I, article I, paragraph I which states: "Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by himself, society, nation and state. Thus it is clear that education should lead to the mastery of skills that can be utilized in the lives of students, society, nation and state.

To lead to the formation of life skills in education, appropriate learning principles, namely through a contextual learning approach. Contextual Learning (Contextual Teaching and Learning) which is often abbreviated as CTL is a learning concept that emphasizes the linkage between learning materials and the real world of students' lives, so that students are able to connect and apply the competencies of learning outcomes in everyday life. Through the process of applying competencies in everyday life, students will feel the importance of learning, and they will gain a deep meaning for what they learn. CTL allows a calm and enjoyable learning process, because learning is done naturally, so students can practice directly what they learn. Contextual learning encourages students to understand the nature, meaning, and benefits of learning, thus enabling them to be diligent and motivated to always learn, even addicted to learning (Mulyasa, 2014).

Learning with the Contextual Teaching and Learning approach is very suitable to be applied in Biology Tadris Study Program because competence is more directed at mastering skills so that students after completing their studies have the skills. Through Microbiology learning, especially on microorganism material, microorganism material is very necessary

because this material can equip students to be ready to enter the world of work. Many aspects can be developed as employment opportunities to equip students with life skills in the field of microbiology, although they are still in traditional studies, for example through the manufacture of coconut water soy sauce and fermented coconut oil.

Microbiology teaching materials so far in the form of textbooks used by students and lecturers in universities have not been able to create meaningful learning. Materials or teaching materials are directly informed conventionally to students. Students have not been invited to know and practice directly how to utilize living things (microorganisms) in making a product in Microbiology to improve their knowledge and skills as a provision to be able to live. They can live independently with the skills they have. Food production that will be provided to students utilizes the potential of local advantages so that they are easily obtained and obtained.

Efforts are made to equip students with skill content through the use of microorganisms by applying microbiology learning based on life skills education. The results of research conducted by Arislan (2011) show that through the development of a Life Skills Education Model Based on Local Needs and Potentials to Overcome Unemployment, learning outcomes can increase knowledge, skills, changes in attitudes and behavior.

Based on these problems, it is deemed necessary to conduct research related to Microbiology Learning Based on Life Skills Education for students of Tadris Biology PRODI FATIK IAIN Kendari with Contextual Teaching and Learning Approach.

## 2. METHODE

Type of research is a descriptive study aimed at describing or describing phenomena as they are. This research reveals the facts that occur in the field (at the research site).

This research was carried out on students of of Tadris Biology PRODI FATIK IAIN Kendari the fifth semester of 2018/2019 in the Baruga District, Baruga Village.

The population in this study were all 32 students of the Tadris Biology PRODI FATIK at IAIN Kendari. All populations are used as research samples, all students have the same opportunity to study Microbiology material and acquire *skills* or life skills. The determination of the sample size is in accordance with the opinion of Arikunto (2006) that if the subject is less than 100 all the population is taken as a sample.

The type of data used is quantitative data using research instruments in the form of life skills assessment sheets and qualitative data through attitude scale sheets (student responses to *teaching and learning contextual learning*).

The technique used for data collection in this research is test and non-test. Quantitative data obtained score of life skills assessment in the form of life skills assessment sheet. Qualitative data obtained from the scores of students' attitude scale assessment results.

To obtain the necessary data, this study used research instruments in the form of an assessment of life skills and an attitude scale.

### 1. Life Skills Assessment

Assessment is used to measure students' life skills through the use of microorganisms in making conventional products from fermented coconuts and coconut water. Life skills assessment in the form of product assessment, namely making coconut water soy sauce and fermented coconut oil. Life skills were measured using a life skills assessment sheet (product assessment). The results of the proficiency assessment are tabulated using a scoring method between 0-10 for each competency/sub-competency assessment.

### 2. Attitude Scale

The Student attitude scale in this study was used to reveal student attitudes. The student's attitude is related to the student's attitude towards contextual learning, and the student's attitude towards life skills questions. This attitude scale is based on a Likert scale with five *options*. Thus according to Ahiri (2011) the scoring for each statement is 1 (STS), 2 (TS), 3 (RG), 4 (S), 5 (SS), for *favorable* statements (positive statements), and vice versa is given a score 1 (SS), 2 (S), 3 (RG), 4 (TS), 5 (STS), for *unfavorable* statements (negative statements). The attitude scale in this study consisted of 25 statement items.

The data analysis technique in this study used descriptive statistics. Descriptive analysis is used to describe research data in the form of mean, median, mode and standard deviation scores.

Meanwhile, the data from the students' attitude scale were analyzed descriptively to determine the students' attitudes towards the contextual learning that had been carried out. To analyze student responses to the attitude scale test, the analysis was carried out in three ways. First, find the average score of all students. It aims to find out the location of students' attitudes in general towards the learning that has been done. Second, find the average per statement item from all students. In this way, the tendency of students' choices per item will be revealed whether they respond positively or negatively. Third, seek approval levels for each item. These data reveal the general trend of student approval.

The average student response score per item is said to be positive if the average student response is greater than the neutral score. Vice versa. The neutral score is calculated based on the average score per item of the question. The formula for the level of agreement per statement item is calculated by the following equation (Sugiyono, 2011):

$$\% \text{ approval} = \frac{\text{Total score obtained for each item}}{\text{Total ideal score for all items}} \times 100\%$$

After the data is tabulated and analyzed, as the final stage, interpretation is carried out with the percentage category according to Suherman (2001) listed in Table 1.

Table 1 Interpretation of the Calculation of the Percentage of Attitude Scales for Students

Large Percentage of	Interpretation
0 %	None
1% - 25 %	Smallest
26 %	Almost half
50 %	Half
51 % - 75 %	Most
76 % - 99 %	In general
100%	Entirely

### 3. RESULTS AND DISCUSSION

#### Life Skills test result

The results of the descriptive analysis proficiency test student life skills are listed in Table 2.

Table 2 Results of descriptive analysis proficiency test student life skills

Life Skills	Value
Mean	8.932
Median	9.0200
Mode	9:02
Std. Deviation	.64152
Minimum	8.00
Maximum	9.50

In Life Skills-Based Microbiology Learning with a Contextual Teaching and Learning approach in this study a student is expected to be able to lead a successful, dignified life, communicate effectively, build cooperation, be responsible so that there is readiness to enter the world of work. The implementation of life skills is not packaged in the form of new courses or additional materials. Life skills are integrated into courses so that no additional time allocation is required.

Implementation of life skills-oriented education in higher education is carried out through a reorientation of learning from course orientation to life skills.

There are two ways to implement aspects of life skills in research, namely theoretically and practically. Theoretically carried out in the lecture hall, of course with meaningful learning of microbial applications in food. This means that the lecturer in this case the researcher develops learning by using media and learning approaches that prioritize student activities.

Contextual Teaching and Learning approach is one of the approaches used so that it can explore the potential of students. Students are involved in building an understanding of the material obtained from their own findings, so that the values of life skills which are actually self-potential will develop.

Life skills-oriented microbiology learning process is more realistic in the context of life and is used as a learning tool. The learning process is no longer carried out solely in the classroom but in the real world and uses more realistic and concrete things. In life skills-based microbiology learning, the lecturer only acts as a facilitator, mediator and motivator. The role of lecturers in life skills education shifts the role of lecturers from the role of providing knowledge to providing good conditions for the growth and development of students. The main role of the lecturer as the creator of a conducive learning environment for the growth and development of the community in mastering life skills.

Practically the implementation of life skills is carried out in the laboratory. The application of microbes to food through the manufacture of fermented coconut oil and coconut water soy sauce is one approach used so that students can be directly involved with the real situation. However, previously, students were provided with information and materials regarding the microbiology. Here, students can innovate directly in making fermented coconut oil and making coconut water soy sauce with their respective groups.

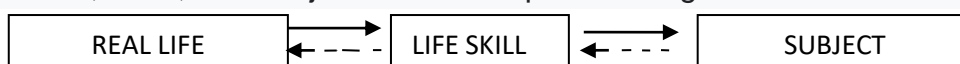
Students and their groups are assigned to observe the changes that occur during the fermentation process and record the results. So that by itself students will try to get data through observations made. However, previously the lecturer or researcher had explained in advance what competencies or abilities to be achieved through these activities, so that students would also understand the activities to be carried out.

Life Skills Microbiology Learning with approach is *Contextual Teaching and Learning* very effective, this can be seen from the data obtained by all students who take part in learning to achieve life skills competence, namely all students get scores above 8.0.

Based on the results of the student life skills assessment (Table 2.), all students who became the research sample obtained results that achieved life skills competence with an average score of 8.93. Student life skills scores range from 8.00 to 9.50. From the results obtained practically life skills education can equip students in overcoming various kinds of life and life problems. These skills involve aspects of knowledge, attitudes which include physical and mental, as well as vocational skills related to the moral development of students so that they are able to face the demands and challenges of life in life.

Wiratno (2008) states that life skills education is education that provides basic provisions and training that is carried out on an ongoing basis to students about the values of everyday life so that those concerned are able, capable, and skilled in carrying out their lives.

Learning is said to be relevant to everyday life when the learning is in accordance with real life. For example, personal life, family life, community life, and the life of the nation (Wiratno, 2008). The Ministry of National Education (2003) states the relationship between real life, skills, and subjects can be depicted in Figure 1



—————> : show direction in curriculum development

-----> : show the direction of the contribution of learning outcomes

Figure 1. Relationship between Real Life in the Community, Life Skills Education, and Subjects (Ministry of National Education, 2003)

. Based on Figure 1., the development of life skills-based learning is needed to face real life in society. After that, identification of knowledge, skills, and attitudes that support the formation of these life skills is carried out. The integration of life skills in microbiology learning requires an effective strategy, namely how to develop microbiology learning that can develop life skills. Several studies and research results reveal that life skills-based learning can facilitate the development of students' life skills.

Provision of provisions for students, in Figure 4.4 is shown by arrows firmly lined, namely what is learned in each subject is expected to form life skills that will be needed when the person concerned enters real life in society.

Some models of learning that can develop life skills by Alinawati (2009) is an integrated learning model (*integrated learning*) and contextual learning (*contextual teaching and learning*) which is a model of learning that leads to the formation of life skills.

### **Attitude Scale Results The**

The existence of an attitude scale in this study aims to determine student attitudes towards contextual learning, student attitudes towards understanding microbiology concepts, student attitudes towards life skills and student attitudes towards microbiology. The results of the distribution of answers from each statement item and the complete scoring of the calculations are presented in full in Table 3.



Table 3. Distribution of Student Attitude Scores towards Contextual Learning

No	Aspect	Indicators	No Statement of	nature of the statement	Answer					Score	Per Aspect	Average		
					SS	ST	R	TS	STS			Percentage (%) Responses	Percentage (%) Responses per Aspect	Percentage (%) Responses to all Aspects
1	Student attitudes towards CTL learning	Attitudes towards learning	1	Positive	27	5	-	-	-	4,8	4,64	91,18	85,98	85,91
			2	Positive	17	37	7	-	-	4,2		84,70		
			3	Positive	44	16	-	1	-	4,7		88,24		
			4	Positive	36	14	9	2	-	4,4		81,76		
			12	Positive	19	31	11	-	-	4,1		88,24		
		Attitude about learning methods	11	Positive	36	24	1	-	-	4,6		86,47		
			5	Negative	-	-	-	9	52	4,9		85,29		
			6	Negative	-	1	11	12	37	4,4		81,76		
			9	Negative	1	-	6	28	26	4,0		84,70		
			10	Negative	1	-	3	13	44	4,6		87,05		
Use of Practicum guides in Learning	7	Positive	51	10	-	-	-	4,8	87,05					
	8	Positive	32	27	2	-	-	4,4	85,29					
2	Students' attitudes towards studentssafe Microbiology concept	Attitudesof understanding the concept of Microbiology	15	Positive	17	15	-	-	-	4,5	4,57	85,29	85,88	85,91
			16	Positive	18	13	1	-	-	4,5		85,29		
		Attitude to problems understanding the concept of Microbiology	14	Positive	22	9	-	1	-	4,6		87,05		
			13	Negative	20	10	2	-	-	4,6		85,88		
3	Attitudes towards life skills	Attitudes about life skills	17	Positive	20	12	-	-	-	4,6	4,63	87,05	87,06	
			18	Positive	28	4	-	-	-	4,9		91,76		
			19	Positive	25	7	-	-	-	4,8		90,00		
			20	Positive	18	13	1	-	-	4,5		85,29		
			22	Positive	11	19	1	1	-	4,3		80,00		
		Attitudes towards life skills questions	21	Positive	22	10	-	-	-	4,7		88,24		
4	Student attitudes towards Microbiology	Student perception towards Microbiology learning	23	Positive	16	15	1	-	-	4,5	4,53	84,70	84,70	
			24	Positive	17	14	1	-	-	4,5		84,70		
		Student interest in Microbiology learning	25	Positive	17	14	1	-	-	4,5		84,70		

Note: SS= Strongly Agree = 5, ST= Agree = 4, R = Doubtful = 3, TS = Disagree = 2, STS = Strongly Disagree = 1

Students' attitudes towards contextual learning were analyzed through students' attitudes towards learning, attitudes about learning methods and the use of practicum guides in learning. Statements showing attitudes towards learning were analyzed through statements number 1, 2, 3, 4 and 12, student attitudes about learning methods were analyzed through statements 11, 5, 6, 9 and 10, and to analyze the use of practicum guides in learning were analyzed through statements. numbers 7 and 8. The distribution of student answers to the statements can be seen in Table 3.

The students' attitude towards contextual learning is positive. This can be seen from the results of the student attitude score of 4.64 (Table 3), meaning that the average student has a positive attitude towards contextual learning.

Based on the results of data analysis on statements number 1, 2, 3, 4 and 12, it can be said that in general students expressed a positive attitude towards the learning given. Furthermore, based on the results of data analysis from statements number 11, 5, 6, 9 and 10, it can be said that students agree to the learning approach given, where in general students agree to work in groups, given the opportunity to submit statements. From the processed data statements number 7 and 8, students in general also showed a positive attitude towards the use of practicum guides in learning. Students generally think that the practicum guide helps in understanding the subject matter, the practicum guide helps students make the necessary conclusions.

Thus, from the twelve statements, students' attitudes towards contextual learning, it can be seen that an average of 85.98%, students in general have a positive attitude towards learning that is carried out using a contextual approach. Both in terms of attitudes towards learning, attitudes towards learning methods and the use of practical guides that have been prepared based on the principles of contextual learning in the learning carried out.

Students' attitudes towards understanding the concept of microbiology were analyzed through students' attitudes about understanding the concept of microbiology and students' attitudes towards questions about understanding the concept of microbiology. Students' attitudes about understanding the concept of microbiology were explored through statements number 15 and 16 and students' attitudes towards questions of understanding microbiological concepts were analyzed through statements numbered 13 and 14. The distribution of student answers in detail to these statements is listed in Table 3. Based on Table 3, the processed data from these statements can be seen from the average student score reaching 4.57 (Table 3), meaning that the average student has a positive attitude towards understanding microbiological concepts.

Students' attitudes towards understanding the concept of microbiology, based on Table 3. the results of the processed data from these statements can be seen from the average student score reaching 4.57, meaning that the average student has a positive attitude (85.88%) towards understanding the concept of microbiology. The attitude of students in general expressed their pleasure when working on problems understanding the concept of microbiology, and at the same time feeling the benefits of studying microbiology, when they worked on these questions.

Student attitudes towards life skills were analyzed through indicators of student attitudes about life skills and student attitudes towards life skills questions. Students' attitudes

about life skills are explored through statements number 17, 18, 19, 20, and 22 and student attitudes towards life skills questions are analyzed through statements number 21. Students have a positive attitude towards life skills, this attitude is illustrated by a student attitude score of 4.63, meaning that the average student has a positive attitude towards life skills. Statements can be seen in Table 3.

From the five statements above, students generally give a positive attitude towards life skills. Students feel happy doing the practice of making fermented coconut oil and coconut water soy sauce in their learning, know more about the tools and materials used in making fermented coconut oil and coconut water soy sauce, know more about the use of coconut fruit and coconut water in producing fermented food. and students agree that the learning made makes students brave and able to face life's problems in society.

Student attitudes towards life skills, students have a positive attitude towards life skills, this attitude is illustrated by the student attitude score of 4.63, meaning that the average student has a positive attitude (87.06%) towards life skills.

Thus, indirectly from the five statements, students feel the importance and value of things related to the elements of life skills.

Students' attitudes towards microbiology in general were analyzed based on indicators of student perceptions of microbiology learning and student interest in microbiology learning. Statements that show students' perceptions of microbiology learning are statements number 23 and 24, while statements that show students' interest in microbiology learning are statements 25. Table 3 shows that the score of students' attitudes towards microbiology learning is 4.53 which means that the average student has a positive attitude towards microbiology. Student attitudes towards microbiology, the score of student attitudes towards microbiology learning is 4.53 which means that the average student has a positive attitude (84.70%) towards microbiology.

Students' attitudes towards microbiology learning, both in terms of student perceptions of microbiology learning and also student interest in microbiology learning, students generally show a positive attitude. However, this agreeing attitude is also influenced by the way of learning and teaching (learning strategies and approaches) chosen by the lecturer in providing the learning. Based on data from observations during the learning process with a contextual approach, it is known that student activities are to pay attention to the explanations of lecturers or other students, study the material, work together, discuss, practice making fermented coconut oil and making coconut water soy sauce in the learning carried out, better know the tools tools and materials used in the manufacture of fermented coconut oil and coconut water soy sauce, they know more about the use of coconuts and

coconut water in producing fermented food and beverages and students agree that the learning made makes students brave and able to face the problems of life in society. Collecting opinions orally and appearing to express their opinions in front of the class, as well as making conclusions that the material that has been studied is generally good, meaning that students are actively involved in learning, the lecturer only acts as a facilitator, mentor and motivates students to learn more actively and critically. in solving problems.

In general (85.91%) of students who were sampled in the study had a positive attitude towards learning with a contextual approach. This attitude is influenced by the way the lecturer chooses to give lessons. Students revealed that through the learning carried out students felt more direct benefits from studying microbiology for their daily lives. This learning motivation causes students to want to work hard in completing the assigned tasks.

Learning with this contextual approach can contribute more in efforts to improve students' conceptual understanding and life skills. Collecting opinions orally and appearing to express their opinions in front of the class, as well as making conclusions that the material that has been studied is generally good, meaning that students are actively involved in learning, the lecturer only acts as a facilitator, mentor and motivates students to learn more actively and critically. in solving problems.

In general (85.91%) of students who were sampled in the study had a positive attitude towards learning with a contextual approach. This attitude is influenced by the way the lecturer chooses to give lessons. The results obtained from students' answers from students' attitudes towards contextual learning, conceptual understanding and life skills can be seen that in the developed learning students are seen to be more motivated in learning. Students revealed that through the learning carried out students felt more direct benefits from studying microbiology for their daily lives.

This learning motivation causes students to want to work hard in completing the assigned tasks. This can be seen from the answers of students who stated that they prefer learning with a contextual approach and learning with this contextual approach helps students to get used to expressing their thoughts through discussions they do, argue, ask questions, and discover new knowledge that previously had not been thought of. Students feel happy doing the practice of making fermented coconut oil and coconut water soy sauce in their learning, know more about the tools and materials used in making fermented coconut oil and coconut water soy sauce, know more about the use of coconut fruit and water coconut in producing fermented food and students agree that the learning carried out makes students brave and able to face the problems of life in society. And from the students' answers, it is known that this learning makes students happy to work together.

#### 4. CONCLUSION

Based on the results of the analysis and discussion, the following conclusions are obtained as follows: Life Skills Students for Tadris Biology PRODI, FATIK IAIN Kendari, semester V. 2018/2019 academic year through learning with a CTL approach. All students achieved life skills competence with an average score of 8.93. Attitudes of students of the Tadris Biology PRODI FATIK IAIN Kendari semester V of the 2018/2019 academic year gave a positive response to learning Microbiology Based on Life Skills Education with the CTL Approach, with an approval rate of 85.91 %.

#### 5. SUGGESTIONS

The suggestions from this research are as follows:

1. Learning with the CTL approach can be used as an alternative used in the implementation of classroom learning. Through CTL learning, most students think that they can feel the direct benefits of microbiology to solve problems in their daily lives. Therefore, students feel more motivated to study harder and enjoy microbiology.
2. There needs to be a change in orientation in the world of education from an orientation towards material and academic skills to a *life skill oriented one* because life skills are currently needed in order to prepare students to live in the world outside campus or in the world. world of work

#### 6. ACKNOWLEDGMENTS

There are no words that the researcher can say other than the highest gratitude to Allah SWT who with His mercy and Taufik has given strength, fortitude, patience and health so that the author can complete the research entitled " Microbiology Learning Based on Life Skills Education for Students of Tadris Biology PRODI Iain Kendari With Contextual Teaching and Learning Approach "even in a very limited atmosphere and circumstanc.

The researcher would like to thank all parties who were directly or indirectly involved in:

1. Prof. Dr. Faizah binti Awad, M.Pd. as Chancellor of IAIN Sultan Qaimuddin Kendari.
2. Dr. La Ode Sumarlin, M.Si. dan Dr. Sitti Nurfaidah as a reviewer who has guided, criticized, provided suggestions and input to researchers for the perfection of this research.
3. Dr. Abdul Kadir, M.Pd.. As Chairman of LPPM
4. Dr. Masdin, M.Pd., Dean FATIK
5. Rosmini, S.Si, M.Pd as the Head of Biology Study Program who has allowed the author to use the Biology Laboratory during the research.
6. Badrianti, as a researcher companion who has accompanied the author during the research.
7. Especially to my beloved husband Dr. Muhammad Alifuddin, M.Ag, Anak tersayang Dear child Muhammad Gesit Faruqi, Mumtaza Giat Furqani dan Muhlisa Gemilang Fitrianti who always accompany and provide support to the author.

8. Dear daddy H. Otto Rachman Kulle (Alm) and mother Hj Nahariah (Alm), may Allah widen his grave, father-in-law H. La Ode Nur and mother-in-law Hj. Wa Ode Basirah, seven of my brothers and sisters who have given encouragement, encouragement, and prayers.

Researchers are not able to repay the kindness they have given, other than asking the presence of the Almighty, hopefully they will be given a commensurate practice for their kindness to researchers, Amen. Finally, the researcher hopes that this research can be useful and add references and scientific treasury for the academic community of IAIN Kendari.

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