# Improved Student Collaboration Skills On English Learning Using Jigsaw Models

**Wienda Gusta, Dian Christina, Zakirman**

**Abstract:** This research is backed by the low of a student collaboration in the language learning of Man-from the non-formal education institute of Pariaman. A collaboration was repented to master the students due to the liquid part of the Top Skill in 2020. To enhance a collaborative student can in the cave design the breadth of learning by integrating the Jigsaw model. The samples in this study were 82 students of PKBM package B on non-formal educational institutions in the city of Pariaman. Referring to the data analysis results that have been done using a two-way anava test can be concluded that the application of the Jigsaw model in English learning proved to improve students' skills, this is supported by the observation result Students ' collaborative skills using non-test instruments.

**Index Terms:** Collaboration skills, learning, English language, learning Model, Jigsaw

## 1. INTRODUCTION

At present the world has entered the era of the 4.0 generation industrial revolution marked by increased connectivity, interaction and development of digital systems, artificial intelligence, and virtual. With the convergence of boundaries between humans, machines and other resources, information and communication technology will also affect various sectors of life. One of them is the impact on the education system in Indonesia. Changes in this era can not be avoided by anyone so it requires the preparation of adequate human resources (HR) to be ready to adjust and be able to compete on a global scale. Improving the quality of human resources through education channels ranging from elementary and secondary education to higher education is the key to being able to follow the development of the Industrial Revolution 4.0. [1] This era was also marked by advances in computerization of data, smart-phones, internet, artificial intelligence, biotechnology, robotization, and so on. The phenomenon of the industrial revolution 4.0 makes people dependent on technology, especially the internet, hence it is known as the internet of things, where the internet can facilitate human life in long distance communication, find various information using the internet, as a means of learning to increase literacy can be obtained through internet, internet is also used as the most widely used media for business, and various other advantages [2]. It affects all aspects of human life. Included in this case is education. This era is marked by the increasingly central role of cyber technology in human life. So do not be surprised if in the world of education the term "Education 4.0" appears. Education 4.0 (Education 4.0) is a general term used by educational experts to illustrate various ways to integrate cyber technology both physically and not into learning.


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Education 4.0 is a phenomenon that responds to the need for a fourth industrial revolution where humans and machines are aligned to get solutions, solve problems and of course discover new possibilities for innovation. The era of the industrial revolution 4.0 is an era marked by the advancement of cyber technology and robots (robotics) in human life [3]. Education 4.0 is a response to the needs of the 4.0 industrial revolution where humans and technology are aligned to create new opportunities with creative and innovative. There are nine trends related to education 4.0, which are as follows: First, learning at different times and places. Students will have more opportunities to learn at different times and places. E-learning facilitates opportunities for distance and independent learning. Second, individual learning. Students will learn with learning tools that are adaptive to their abilities. This shows that students at higher levels are challenged with more difficult tasks and questions when after passing a certain degree of competence. Students who have difficulty with subjects will get the opportunity to practice more until they reach the required level. Third, students have choices in determining how they learn. Although each subject taught aims for the same goal, the way to that goal can vary for each student. Likewise with individualized learning experiences, students will be able to modify their learning process with tools they feel are necessary for them. Four, project based learning. Students must now be able to adapt to project-based learning, as well as work. This shows that they must learn how to apply their skills in the short term to various situations. Five, field experience. Technological advances enable effective learning of certain domains, thus giving more space to acquire skills that involve student knowledge and face-to-face interaction. Thus, field experience will be deepened through courses or exercises. Six, interpretation of data. The development of computer technology eventually took over the tasks of analysis performed manually (mathematically), and immediately handled each statistical analysis, describing and analyzing data and predicting future trends. Seven, varied judgments. Measuring students' abilities through conventional assessment techniques such as question and answer will no longer be relevant or not enough. Assessments must change, students' factual knowledge can be assessed during the learning process, and the application of knowledge can be tested when students work on their projects in the field. Eight, student involvement. The involvement of students in determining learning material or curriculum becomes very important.

Student opinions are considered in designing and updating the curriculum. Their input helps curriculum designers produce contemporary, high-end, high-value curriculum. Finally, mentoring. Mentoring or providing guidance to students becomes very important to build student learning independence. The nine shifts in educational trends 4.0 above are the primary responsibility of teachers to students. Educators must play a role to support the transition and not consider it a threat to conventional teaching. This is a challenge that is exciting, stimulating to action, and massive. Adaptation to this educational trend guarantees individuals and society to develop a more complete set of competencies, skills and knowledge and unleash their full reactive potential. Based on the description above, the 4.0 industrial revolution marked by technology has significant implications for the education system [4].

**1. 2 Collaborative Learning**

In the context of pleasant learning conditions, it is emphasized that a learning activity does not always guarantee that students will be able to learn [5]. This shows that no matter how good a teacher is in designing and designing a learning program, it will not be able to optimally achieve the expected competency achievement if it is not supported by the selection as well as the proper use of methods. For this reason, the role of digital society in the era of the industrial revolution 4.0 is a challenge to build information technology-based education that is able to answer the challenges of the needs of the people of the industrial revolution era 4.0. [6]. There are three important study subjects in the context of 21st century skills, namely life and career skills, learning and innovation skills and information media and technology skills [7]. On the subject of learning and innovation skills or can be called learning and innovation skills are described as critical thinking skills, communication and collaboration, as well as creativity and innovation, which are taught in every context of the core fields of study and learning themes of the twenty-first century [8]. 21st Century skills are skills that need to be given to students in order to prepare graduates who are able to work to become good citizens and able to face the effects of globalization, technological advancements, international competition, changes in global markets, transnational environments and political changes, so students progress in the future . From this explanation, teachers as educators should be able to develop and implement what is called 21st century skills to realize high-HR students, and be able to compete globally. [9] Teachers need to develop 4C to students to support the new paradigm of 21st century learning, so that later students can develop more advanced. The 4Cs are Critical Thinking, Collaboration, Communication, and Creativity [10]. What is expected from the development of 4C, is to realize students who are able to think critically, able to collaborate, able to communicate multi-way, and also able to develop creativity. In developing the 4C (Critical Thinking, Collaboration, Communication, Creativity), the teacher as an educator must be able to know each student's abilities [11]. 4C capability is one of the capital in life that can produce knowledge personally and can be used in society. [12] Important skills that are also needed by human resources in the 21st century are communication and collaboration skills. Communication and collaboration simultaneously reflect the adult world. In this context, effective communication and collaboration skills can help avoid misunderstanding and miscommunication. Collaboration is an effort to demonstrate the ability to work effectively and respectfully with diverse teams to achieve shared goals with shared responsibilities [13]. Collaboration and teamwork in the twenty-first century will be developed in schools, between schools, and between experiences outside of school and outside of school. The indicators for collaboration skills include the ability of students to work together and group leadership, adapt to various roles and responsibilities, work productively with others, put empathy in their place, respect different perspective [1]. Collaborative learning is defined as a teaching method where the students conduct studies to help each other learn in small groups in line with the common goal [14]. Collaborative learning comprises “instructional methods in which teachers organize students into small groups, which then work together to help one another learn academic content” [15]. Jigsaw learning, one kind of cooperative learning method developed by Aronson, Blaney, Stepan, Sikes & Snapp which helps students break learning materials into manageable learning pieces, and then has students teach others the piece they have mastered, consequently combining these pieces into one whole [16]. Jigsaw learning is based on the perspective that each student will first become “an expert” in a small part of the whole learning material, and then teach other students in his group this part of the material.

**1.3 Jigsaw**

The Jigsaw method of cooperative learning was employed for the first time in the mid-1970s and consists of the interdependence of the content studied by the group members, fitting together like a puzzle. It is divided into three stages.First, the students form base groups where they study and discuss a general topic. Second, students are relocated into expert groups, formed by an integral part of each group as a basis for studying a specific topic, that will assist them in understanding the general topic studied in the base group. Finally, the students return to the base groups and share their findings, to maximize their learning on the topic studied [17]. The technique of jigsaw based on cooperative learning is a kind of technique which has applications in different areas of science, language teaching, foreign language teaching, social sciences and medical science and has emerging examples of different in-class practices based on the developments in the course of time [18]. Jigsaw type cooperative learning model is learning that consists of the original group and the expert group. The origin group is a parent group consisting of students with diverse abilities and backgrounds, while the expert group is a group of students consisting of members of different origin groups who have the task and are responsible for learning and exploring certain topics and completing tasks related to the topic then to be explained to the group of origin. This is supported by the results of research which shows that the application of the Jigsaw cooperative learning model can increase learning activities and student cognitive skills [19]. Jigsaw cooperative learning groups can be very effective because students can establish a supportive, comfortable learning environment. They can be more actively engaged in the content of the course, and eventuality, they can experience greater gains in mastering the course content, which could translate into improved grades. An important part of the cooperative learning experience for most students is learning how to function successfully in a group [20].

## 2. METHODOLOGY

### 2.1 Research Question

2.1.1 Is there a significant difference in collaboration skills amng students with high, moderate and low abilities?
2.1.2 Is there a significant difference in collaboration skills between students learning to use JIGSAW and conventional models?
2.1.3 Is there an interaction between the students ' ability and the use of models in influencing student collaboration skills?

### 2.2 Participants

In this study samples were used as much as 82 students, with details: 36 students who have high abilities, 30 students who have moderate ability and 16 students who have low ability. The entire sample was registered as an active learner at the non-formal educational institution of Pariaman in the 2019/2020 school year.

### 2.3 Procedures

The collaborative skills Data in this study were gathered using the Obervasi/non test instrument by involving the Observer as a team of the assessment. This study was conducted for 4 times meeting with meeting duration of 90 minutes each. In the learning activity is a comparison of student collaboration skills between students whose learning activities use the JIGSAW model and conventionally.

## 3. RESULT

To test the research hypothesis used data analysis techniques using two-way anava. The use of a two-way Anava test has two prerequisites to be met i.e. data must be distributed normally and Homogeny.

### 3.1 Data Normality test Result analysis

#### 3.1.1 High proficiency students

The results of the test analysis of the normality of group students with the following high proficiency:

***Table 1**. One-Sample Kolmogorov-Smirnov Test*

| Variabel | | | Non Jigsaw | Jigsaw |
|---|---|---|---|---|
| N | | | 18 | 18 |
| Normal Parametersa | | Mean | 62.3889 | 82.7778 |
| | | Std. Deviation | 8.21862 | 6.51293 |
| Most Extreme Differences | | Absolute | 0.119 | 0.147 |
| | | Positive | 0.119 | 0.147 |
| | | Negative | -0.086 | -0.081 |
| Kolmogorov-Smirnov Z | | | 0.505 | 0.625 |
| Asymp. Sig. (2-tailed) | | | 0.960 | 0.830 |
| a. Test distribution is Normal. | | | | |

The test results of the high-ability group data normality showed that the data group was distributed normally. Data will be distributed normally if the value of ASYMP. Sig. (2-tailed) > α value = 0.05

#### 3.1.2 Moderate Ability Students

The results of test analysis of the normal group of students with moderate ability as follows:

***Table 2**. One-Sample Kolmogorov-Smirnov Test*

| Variabel | | Non Jigsaw | Jigsaw |
|---|---|---|---|
| N | | 15 | 15 |
| Normal Parametersa | Mean | 51.3333 | 78.5333 |
| | Std. Deviation | 7.53729 | 8.58459 |
| Most Extreme Differences | Absolute | 0.134 | 0.140 |
| | Positive | 0.113 | 0.101 |
| | Negative | -0.134 | -0.140 |
| Kolmogorov-Smirnov Z | | 0.518 | 0.543 |
| Asymp. Sig. (2-tailed) | | 0.951 | 0.929 |
| a. Test distribution is Normal. | | | |

Test normality for student data groups with moderate ability shows the result that data has been distributed normally. The value of ASYMP. Sig. (2-tailed) is greater than 0.05, so it can be concluded that the value data of collaborative skills of students who have moderate ability has been distributed normally

#### 3.1.3 Low-ability Students

The results of the test analysis of the normality group of students with low ability as follows:

***Table 3.** One-Sample Kolmogorov-Smirnov Test*

| Variabel | | Non Jigsaw | Jigsaw |
|---|---|---|---|
| N | | 8 | 8 |
| Normal Parameters a | Mean | 47.6250 | 66.8750 |
| | Std. Deviation | 8.71677 | 10.24608 |
| Most Extreme Differences | Absolute | 0.243 | 0.198 |
| | Positive | 0.243 | 0.198 |
| | Negative | -0.143 | -0.192 |
| Kolmogorov-Smirnov Z | | 0.688 | 0.559 |
| Asymp. Sig. (2-tailed) | | 0.731 | 0.914 |
| a. Test distribution is Normal. | | | |

A third normality test is performed to see the group's data, which has low proficiency. Based on data analysis results it can be concluded that the student collaboration skills assessment data that has a low ability has been distributed normally

### 3.2Analysis results of Data Homogenization Test

Test the homogeneity in this study using the Levene equation. Data will be homogeny when the value of the Sig. Obtained is greater than α value = 0.05. Data of homogeneity test results as follows:

***Table 4.*** *Analysis results Test homogenization of Students ' collaborative skills assessment Data*

| o | Variabel | Value |
|---|---|---|
| 1 | F | 0.570 |
| 2 | df1 | 5 |
| 3 | df2 | 76 |
| 4 | Sig. | 0.722 |

Based on the results of analysis of homogeneity test can be concluded that all three Homogeny data group, this is evidenced by the value of Sig. Obtained greater than the value of 0.05

### 3.3.Distribution of many samples in research for each group is presented as follows

***Table 5****. Between-Subjects Factors*

| Variable | Value Label | | N |
|---|---|---|---|
| Students' ability | 1 | High | 36 |
| | 2 | Middle | 30 |
| | 3 | Low | 16 |
| Model | 1 | Non Jigsaw | 41 |
| | 2 | Jigsaw | 41 |

Total sample Overall is 82 students, grouped into three categories that are students with a high proficiency of 36 people, low ability as much as 8 people and students with a capacity of 30 peopleFor research inquiries, analysis is conducted statistic using two-way anava. Testing using two-way Anava aims to see the contribution of students ' ability to influence the improvement of collaborative skills, the influence of the learning model in influencing collaborative skills as well as the interaction between ability Students and learning models in improving collaborative skills [25]. Summary of data analysis results using the two-way Anava test as follows:

***Table 6.*** *Tests of Between-Subjects Effects*

Dependent Variable:Collaboration Skill

| Source | Mean Square | F | Sig. |
|---|---|---|---|
| Corrected Model | 2708.054 | 41.468 | 0.000 |
| Intercept | 306882.238 | 4.699E3 | 0.000 |
| Students' ability | 1383.929 | 21.192 | 0.000 |
| Model | 9035.266 | 138.354 | 0.000 |
| Students' ability * model | 123.760 | 1.895 | 0.015 |
| Error | 65.305 | | |
| Total | | | |
| Corrected Total | | | |

a. R Squared = .732 (Adjusted R Squared = 0.714)

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#### 3.3.1 Testing Research Questions 1

To test the first research question, it is seen from the value of Sig. In table 6 third row. Based on the results of the analysis it appears that the value of GIS. (0.000) < α value = 0.05, so it can be concluded that there is a significant difference between student collaboration skills that are high, moderate and low

#### 3.3.1 Testing Research Questions 2

Test hypotheses of second research questions, judging by the value of GIS. In the fourth row 6 table. Based on the analysis results it appears that the value of GIS. (0.015) < α value = 0.05, so it can be concluded that there is a significant difference between the collaboration skills of students learning with the JIGSAW and conventional models

#### 3.3.1 Testing Research Questions

Test answered the third research question, judging by the value of GIS. In the Fifth Row 6 table. Based on the analysis results it appears that the value of GIS. (0.000) < α value = 0.05, so it can be concluded that the level of students ' ability and the use of interfacing learning models to improve student collaboration skills

## 4. DISCUSSION

Jigsaw type cooperative learning models have differences with other learning models. The strength of Jigsaw is effective and efficient learning. This is because in addition to better academic achievement of students, other things such as cooperation, intimacy, communication between students and teachers will be better along with the increase in student confidence. In addition, it also suggested that the Jigsaw type of cooperative learning model has advantages including: 1) Increasing students' sense of responsibility towards their own learning and also the learning of others. 2) Students not only learn the material given, but they must also be prepared to give and work on the material to other members of the group, so that their knowledge increases. 3) Students are taught how to work together in groups. 4) Apply the guidance of fellow friends. 5) A deeper understanding of the material [21]. The obstacles encountered during implementation that can be a place to chat. this happens if group members do not have discipline in learning, such as arriving late, chatting that makes time pass so that the purpose for learning becomes useless and often trivial debates occur within the group. this debate often happens so time consuming. In the learning process students will more easily understand the meaning or meaning contained in the message conveyed, if they are directly involved in the learning process. One way to overcome this situation is the selection of learning models that can enable students in learning activities to find their own knowledge through their interactions with the environment and also more directed to activities that encourage students to learn actively, physically, socially and mentally in understanding concepts. The results of the studies in the field of learning English have proved that Jigsaw method provides a higher performance than traditional methods on students' both the theoretical and experimental learning. The results of this study are in line with the literature [22]. The results of this study regarding the significant effects of Jigsaw method based on cooperative learning on increasing the students' achievements in physics stem from enhancing the cooperative learning efforts of each student by making them responsible for teaching the material to the group members. In addition, students' gathering information in an autonomously and self–adjusted way and making explanations to each other contributed to the positive results of the study. In this way, it could ensure a meaningful set of information through the pieces of information by utilizing what individuals learn from others. Oral language is mostly used in the student-student interactions of cooperative learning groups, and this issue affects the process of learning from each other in a negative way. With this learning model students are given the opportunity not just to learn but also teach one another. Students not only share in the process of gaining knowledge. Furthermore, through the togetherness process will train students to develop social skills, respect for differences, increase motivation, positive attitudes, and reduce anxiety, so that it can ultimately improve student learning outcomes. Cooperative learning is a learning model that involves more active interaction between students and students, students with teachers and students with their learning environment. Students learn together and make sure that each group member has really mastered the material being studied. The advantage that can be obtained from the application of cooperative learning is that students can achieve good learning outcomes because cooperative learning can increase student motivation which is one of the factors that influence learning outcomes. Students can also accept learning that is used because of the physical contact between students. There are many types of cooperative learning, one of which is Jigsaw. Jigsaw cooperative learning is a learning model developed to be able to build classrooms as a learning community that values all students' abilities. The role and responsibility of students in outlining the training material to friends becomes one of the points that will have an impact on increasing students' English understanding both for themselves and other students. Basically, students' understanding will be better if the student is able to repeat and explain the material he has understood to other friends. Understanding English material can also be built not only through interactions between teachers and students, but also students and students. This is supported by social constructive theory which states that the concept of learning is not only the result of one's own understanding but is the result of interaction between students and their social environment, both knowledge that is built based on understanding with students/ other friends, teachers, community environment and others . Cooperative learning by jigsaw students can individually develop their expertise in one aspect of the material being studied and explain their concepts and expertise to the group. Each group member in jigsaw cooperative learning studies different material and is responsible for learning their respective parts. Learning with cooperative jigsaw is expected to increase student motivation. In the future it is hoped that other researchers can develop English language modules based on the Jigsaw model in other educational materials or levels. In learning English, a support system such as media is also needed so that it can help the implementation of the Jigsaw model in its entirety [23]. Learning styles can also be one of the considerations in designing and designing these support systems [24].

## 5. CONCLUSION

The jigsaw Model is one part of cooperative learning that can be implemented to improve students' collaborative skills. Jigsaw learning models are proven in theory and statistic counts can improve students' collaborative skills. The use of Jigsaw models can direct students to discuss each other, communicating ideas and ideas and solving problems from the topics raised in learning. In the research that has been done, the student groups are distinguished into three categories that are groups of students with high, medium and low knowledge. There is a significant difference in collaboration skills between knowledgeable, moderate and low-level students. In the study that has been done also reveals that there are significant differences in collaboration skills between students who learn to use Jigsaw and conventional models. Learning and level of students ' ability to interact with each other and influence the improvement of collaboration skills in English language learning at non-formal education institutions Pariaman.

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