Jigsaw learning model base on cooperative instructional strategies to improve academic discussion in adult education on environment concepts

D Yatimah\textsuperscript{1}, S Solihin\textsuperscript{2,∗}, A Adman\textsuperscript{3} and R Syah\textsuperscript{4}

\textsuperscript{1}Department of Out-of-School Education, Faculty of Education, Jakarta State University, Jakarta, Indonesia
\textsuperscript{2}Biology Education, Faculty of Mathematics and Natural Sciences, Jakarta Islamic State University, Jakarta, Indonesia
\textsuperscript{3}Universitas Pendidikan Indonesia. Dr. Setia budi 229, Bandung, Indonesia
\textsuperscript{4}Asmis business and multimedia institute

*solihinone@yahoo.com

Abstract. This study investigates the contribution of the Cooperative Learning Strategy in developing academic discussions. Academic discussion is an important element of historical thought, which is considered to increase conceptual understanding and support the development of democratic citizenship by helping students interpret, understand and connect patterns of human activity across time in the environment. Adult learners as a condition of research participated in this study. Students today will learn effectively that he is directly involved in learning, his ideas, learning and teaching material, learning with his profession. This study aims to determine jigsaw learning based learning in improving adult learning on the concept of the Environment. The method used is descriptive qualitative. The study sample was around 25 people at the Jakarta State University Environment. The outcome variables discussed in this paper are adult learners who have the self-concept, experience, and self-esteem of adult students and the classroom climate. During the study period, cooperative learning did not significantly increase the self-esteem of adult students.

1. Introduction
One method of learning in learning in the Education Community is The Jigsaw learning Model. The Jigsaw learning model is a cooperative learning technique in which students do not instruct with greater responsibility in the implementation of learning \cite{2}. Instructors generally act as facilitators. The purpose of this jigsaw learning model is to develop teamwork, cooperative learning skills, and knowledge that is deeply mastered that is impossible to obtain when they try to learn all the material \cite{3}. In adults, their physical and mental development has reached the mature stage. So that they can perform the actual function of living life independently, both individually and socially. It is understandable, if the approaches, strategies and techniques of learning for adults, are different from learning for children. For adults, learning is related to how to direct yourself to ask questions and find answers \cite{4}. In the concept of adult learning or andragogy, it is stated that the characteristics of adult are (1) The concept of itself moves from a person who depends on his own personality (2) Has a lot of experience, so he becomes a developing human (3) Readiness learning is oriented towards the social role tasks that it
carries (4) The time perspective changes from delayed applications to knowledge that can immediately be applied [5]. Therefore there are certain principles in adult learning, namely (1) Students need to be motivated to change their behavior, and have a clear picture of expected behavior (2) Students have the opportunity to try new behaviors (3) Students need material learning that can help their needs (miller in 1904) environmental problems are something that cannot be debated. Human activity is the main basis for root causes. There is damage that needs attention, starting from ourselves to the government. the Indonesian disaster information agency (dibi) noted the recent years of damage to ecosystems and most of the environment was flooded, followed by landslides and winds, 2019 (dibi). Basic human behavior in the environment and environment. Because of human activities, the destruction of ecosystems has reached the objectives of forest ecosystems, rivers and river lake events, so that the impact has resulted in floods, landslides, tsunamis, forest fires and droughts. Humans are part of the ecosystem itself and ecosystems are part of the environment. Environment is the unity of space with all things, living things and their interdependent behavior (law no. 32 year 2009). The interaction of organisms with the environment forms a system of life control on earth. Environmental damage is produced in the regulation, function and balance of the ecosystem, so that it gradually impacts the creatures around it. Humans are a major factor in environmental problems, such as factors that are the number and rate of high population growth, uneven growth and low human knowledge. Knowledge factors can change general behavior with the environment). Environmental conditions can hinder environmental awareness. However, all of these factors can be minimized by increasing knowledge in maintaining the environment. Seeing this condition, can be learned from students to find information, connect topics that have been learned in everyday life, and can interact with multi-direction students and fellow students in a pleasant and friendly atmosphere. Jigsaw type of cooperative learning which means exchange of team experts [6]. The study developed previous research that examined the types of cooperative learning types of cooperative learning. This study uses a strategic structure based on the jigsaw technique where to follow up on shortcomings and suggestions.

2. Method
This research uses descriptive qualitative with action research methods and simple experimental categories simple test with one group pretest posttest. The design of this method is used to measure the results of critical learning. Respondents were members of the critical pedagogy group. The number of respondents in this study was based on 25 respondents. The topic of the problem raised is the environmental problem around the Jakarta State University [7].

3. Discussion
The Jigsaw learning Model is a cooperative learning technique where learners, not instructed with greater responsibility in the implementation of learning [8]. The purpose of this jigsaw learning model develops teamwork, cooperative learning skills, and deeply mastered knowledge that is not likely to be gained when they try to learn all the material alone. According to Anita Lie in his book "Cooperative Learning Jigsaw Techniques" that the method of cooperative learning of jigsaw techniques is simply learning the group, but there are elements of basic elements that distinguish it from the division of the group done Random [9]. Roger and David Johnson say that not all groups work can be considered a cooperative learning jigsaw technique [10].

It is a learning model using the small team of cooperative learning, consisting of four, six, and even eight people with different backgrounds [11]. And the scoring system is done against groups and each group will get an award, if the group can demonstrate its requirements [12]. Cooperative learning is one of the groups' learning models that have certain rules [13].

The basic principle of cooperative learning is that the respondent formed a small group and interlocking each other to achieve the common goal, in this learning, are also less clever without feeling harmed [14]. Cooperative learning is also a model that prioritizes teamwork among respondents to achieve learning objectives. The learning of cooperative learning can also be interdependent between respondents, so that learning resources for not only intructures and teaching books but also fellow
respondents [15]. This Jigsaw learning model is suitable to be applied to adult students, because the key to the success of this Jigsaw learning model is interdependence, a trait possessed by adults, that is, having responsibility and cooperation in interdependence to solve problems faced. Characteristics of adult learners, namely their own self-concept, have a lot of experience, learning readiness focuses on the role of their social and time-oriented perspective of knowledge that can immediately be applied [5]. Adult learners, learning is related to how to direct themselves to ask questions and find answers [4].

In this study, 85% of the results of the distribution of the questionnaire were expressed feeling that the current task was slightly resolved because this activity collaborated with other friends who had other tasks [16]. Unlike the control the interview results between the control classes are related to the learning process and the sense of responsibility is related to the learning process and the understanding of how they feel differ between the controls. Class and the experiment class.

A percentage of the interviews and the dissemination of a significant questionnaire model that is more stimulating to learners. The treatment given by researchers is a Jigsaw learning model with basic materials of environmental studies discussion. In learning with the learning style and culture of a confident attitude, The model of JIGSAW has a positive impact on confidence, cooperation and critical understanding of the problem of crowding. It is a significant increase in the group given its treatment. The treatment class has more readiness and preparation before taking the discussion. With the treatment in learning, trainers will always think critically and encourage respondents to prepare before learning [15].

4. Conclusion

The control class and experiment class have significant differences. The control class feels their government is heavier due to interdependence, while their experimental classes feel lighter and fast-paced work. The cooperative tife jigsaw is able to make adult learners more active thinking, responsible and more quickly understand the problems that occur one of them is environmental problems, learning for adult students, is related to how to direct themselves to ask questions and find answers independent.

References

[1] Isjoni 2011 Cooperative Learning Efektivitas Pembelajaran Kelompok (Bandung: Alfabeta)
[2] Karwono, Mularsih H 2010 Belajar dan Pembelajaran Serta Pemanfaatan Sumber Belajar (Jakarta: Cerdas Jaya)
[3] Putra D S 2014 Penerapan Model Pembelajaran Kooperatif Tipe Jigsaw terhadap Hasil Belajar Chest Pass pada Permainan Bolabasket (Studi pada siswa Kelas VII SMP Negeri 5 Sidoarjo) Jurnal Pendidikan Olahraga dan Kesehatan 02 No 03 Tahun 2014. 326 - 531. http://ejournal.unesa.ac.id/article/13076/68/article.pdf
[4] Suprijanto 2007 Pendidikan Orang Dewasa: dari Teori Hingga Aplikasi (Jakarta: Bumi Aksara)
[5] Knowles M S 1986 Using learning contracts: Practical approaches to individualizing and structuring learning (Jossey-Bass)
[6] Rusman 2013 Model-Model Pembelajaran: Mengembangkan Profesionalisme Guru. Edisi ke-2. (Jakarta: PT. RajaGrafindo Persada)
[7] Komalasari K 2010 Pembelajaran Kontekstual (Bandung: Refika Aditama)
[8] Ajaja O P and Eravwoke O U 2010 Effects of cooperative learning strategies on junior secondary school learners’ achievement in integrated science Electronic Journal of Science Education 14(1) pp 24-33
[9] Anowar H I and Roh anni A T 2013 Effects of cooperative learning on learners’ achievement and attitude in secondary mathematics. 3rd World Conference learning, teaching and educational leadership Procedia-Social and Behavioural Science 93 pp 473-477
[10] Bukunola B A J and Idowu O D 2012 Effectiveness of cooperative learning strategies on Nigerian junior secondary learners’ academic achievement in Basic Science British Journal of Education, Society and Behavioural Science 2(3) pp 307-325
[11] Danjuma G S 2015 *Effects of collaborative and competitive learning strategies on upper Basic II learners’ interest and achievement in Basic Science*. Unpublished Ph.D Thesis (University of Nigeria, Nsukka)

[12] Gambari I A and Yusuf O M 2017 Relative effectiveness of computer-supported Jigsaw II, STAD and TAI cooperative learning strategies on performance, attitude and retention of secondary school learners in Physics *Journal of Peer Learning* 10 pp 76-94

[13] Gull F and Shehzad S 2015 Effects of cooperative learning on learners’ academic achievement *Journal of Education and Learning* 9(3) pp 246-255

[14] Kabutu F R, Oloyede O I and Bandele M F 2015 An investigation into the achievement of junior secondary school learners taught integrate science using the cooperative learning strategy in Nigeria *European Journal of Physics and Chemistry* 7(2) pp 63-73

[15] Samuel I R 2017 *Assessment of basic science instrucrures’ pedagogical practice and learners’ achievement in Keffi Educational Zone, Nasarawa State, Nigeria*. (Unpublished Master’s Dissertation, Nasarawa State University, Keffi. Slavin)

[16] Huda M 2015 *Cooperative lerning* (Yogjakarta: Pustaka Pelajar)