Research Article

The Implementation of Cooperative Learning to Developed Management of Language Learning System

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Abstract

The cooperative learning model is part of a learning structure that has a broad scope. Inside there are approaches, strategies, methods and techniques. One important aspect of a learning model is syntax, which is the standard steps that must be taken in implementing the model. The purpose of this study is to develop management learning system on teaching materials based on active learning in cooperative learning. The collected-data can be in the forms of poll result, stuffing and field notes on the instrument activity sheet on the state of implementation of lectures and learning. Data were analyzed using statistical methods. Hypotheses were tested using t-tests to see the impact of cooperative learning models. The results of this research are: (1) teaching materials based on active learning and (2) article related to active-cooperative learning. The results of the expert validation of learning, teaching materials to be eligible, for subsequent use in learning. In relation to the advantages of using the cooperative learning model which is proved can make a positive interdependence; recognition in responding to individual differences; students are involved in class planning and management; a relaxed and pleasant class atmosphere; establishing a warm and friendly relationship between students and teachers; and having many opportunities to express pleasant emotional experiences.

Keywords

tools of learning, cooperative learning, management of language learning system

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Introduction

Basically, all models, methods, teaching and learning strategies are good, and it all depends on how the teacher is able to manage the implementation process. And each one also chooses its strengths and weaknesses, but it all depends very much on the teacher's understanding and skills in its implementation(Roseth, Johnson, & Johnson, 2008).

Speaking of teaching and learning cooperative learning models, I think there are advantages and disadvantages. (1) Strengths of the Cooperative Learning Model. When compared with conventional learning, cooperative learning has several advantages(Habibi et al., 2019). The advantages of cooperative learning seen from the aspect of students, is to provide opportunities for students to express and discuss a view, experience, which is obtained by students learning collaboratively in formulating a group's view(Karafkan, 2015).

By implementing cooperative learning model learning. enable students to achieve success in learning, in addition it can also train students to have skills, both thinking skills and social skills such as skills for expressing opinions, accepting suggestions and input from others, working together, feeling loyal friends, and reduce the occurrence of deviant behavior in class life(Kasayanond, Umam, & Jermsittiparsert, 2019). This learning model allows students to develop knowledge, abilities, and skills in full in an open and democratic learning atmosphere. Students are no longer as objects of learning but can also act as tutors for their peers(Gull & Shehzad, 2015).
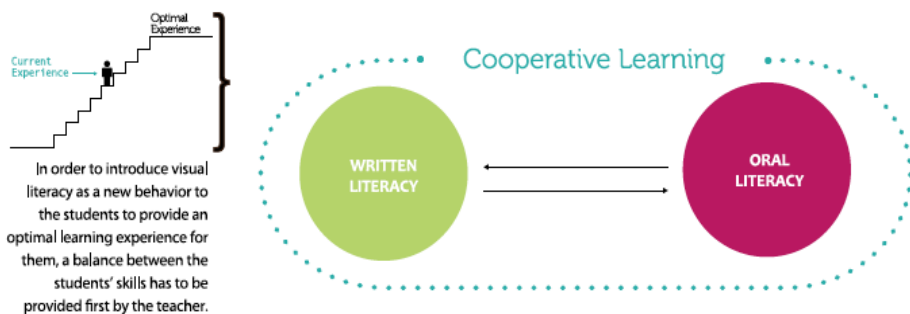
Figure 1.
The Concept of Cooperative Learning Process(https://nadajaffal.info, 2020)

Lecturer as a developer of lesson plan (RPP) need to have an adequate understanding of the learning models so that its implementation in appropriate learning and learning objectives can be achieved effectively. But in reality there are lecturers who only use conventional learning models by using the lecture method that causes a passive student who does not comply with the current educational paradigm that is student centered, based on active learning(Sharma, 2018).

Furthermore, according to Sharan (1990), students who learn by using cooperative learning methods will have high motivation because they are

encouraged and supported by peers. Cooperative learning also results in increasing academic ability, increasing critical thinking skills, forming friendly relationships, obtaining various information, learning to use courtesy(Lestari et al., 2019), increasing student motivation to improve attitudes towards school and learning to reduce bad behavior, and help students to appreciate the subject matter others(Agus Slamet Susanto, Haninda Bharata, 2018). Through cooperative learning models students can gain knowledge, skills as considerations for thinking and determining and doing and participating socially. Furthermore, Zaltman et.al (1972) suggested that students who work together in groups will create close friendships, which are formed among students. it is very influential on the behavior or activities of each individual(Pahrudin, Irwandani, Triyana, Oktarisa, & Anwar, 2019). Cooperation between students in learning activities according to Santos (1983) can provide a variety of experiences (Sari & Swistoro, 2018). Active learning model provides the opportunity and courage to the students to actively participate in the learning process(Muhsin & Ahmad, 2019). High-level learning guide students not only mastered the knowledge and understanding of the course material, but also able to achieve the highest levels of learning, namely creations(Huda, 2015).

Active learning consists of two main components, namely components of experience and dialogue component. Experiential component consists of experience doing (doing) and the experience of observing (observing)(El Islami et al., 2019), while the dialogue component consists of a dialogue with oneself (dialogue with the self) and dialogue with others (dialogue with other(Munifah et al., 2019).

Models of Active-Cooperative Learning

There are five models of active-cooperative learning which are Figure 2. Student Team Achievement Division (STAD), Cooperative Learning Group Investigation (CI), Model Team Game Tournament (TGT), Model Numbered-Head-Together (NHT), and Model Jigsaw.
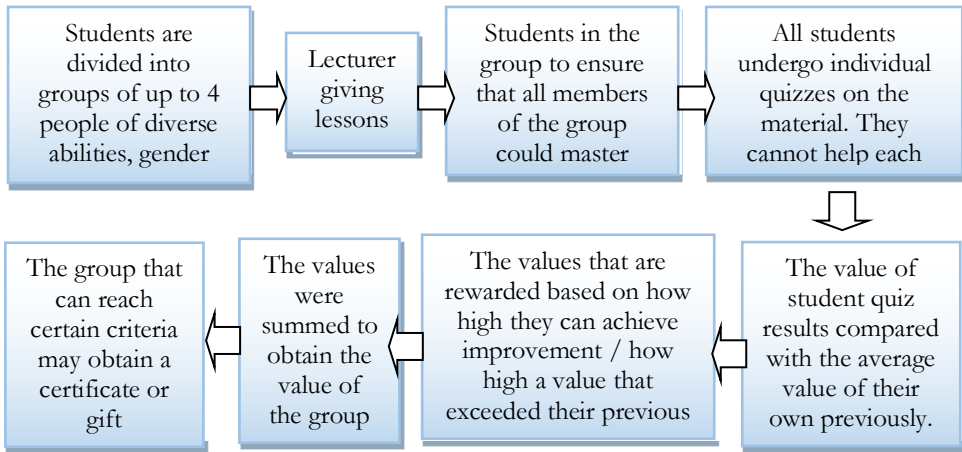
Figure 2.

Student Team Achievement Division (STAD) Models (Rahayu, Syafril, Wati, & Yuberti, 2017)
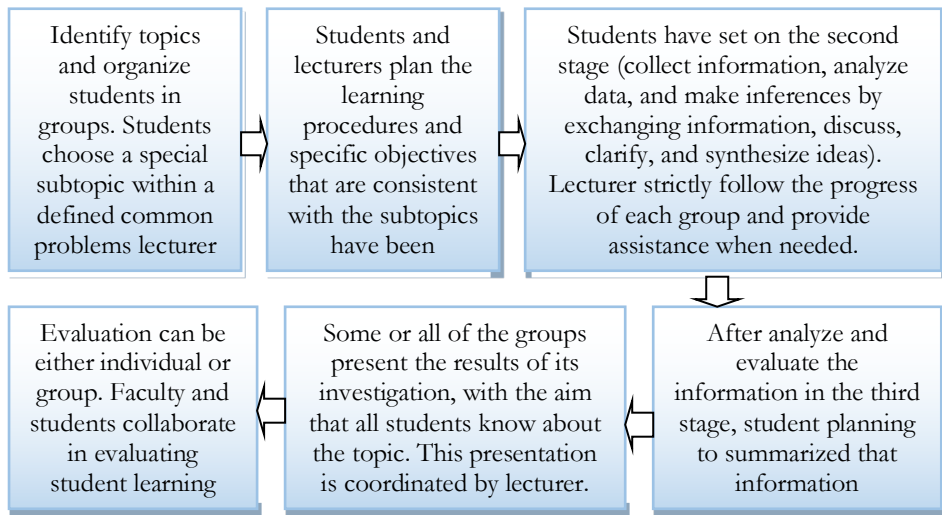
Figure 3.

Cooperative Learning Group Investigation (CLGI) Models (Lestari et al., 2019)

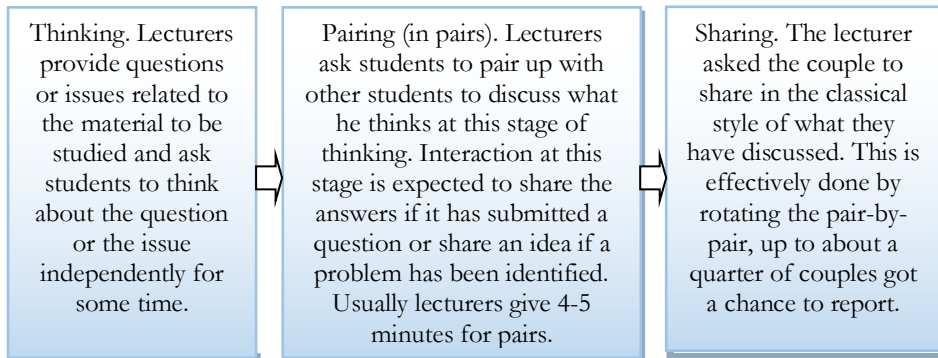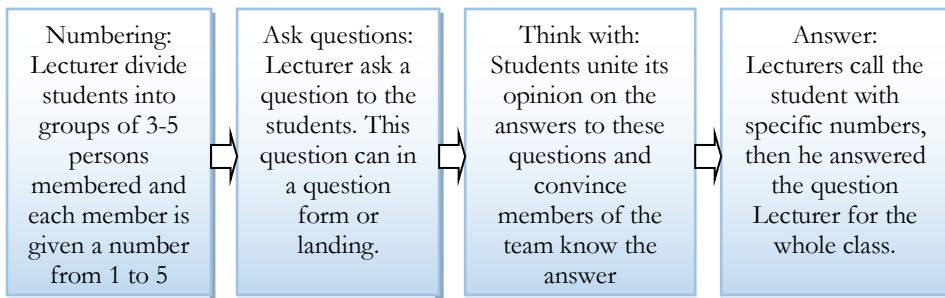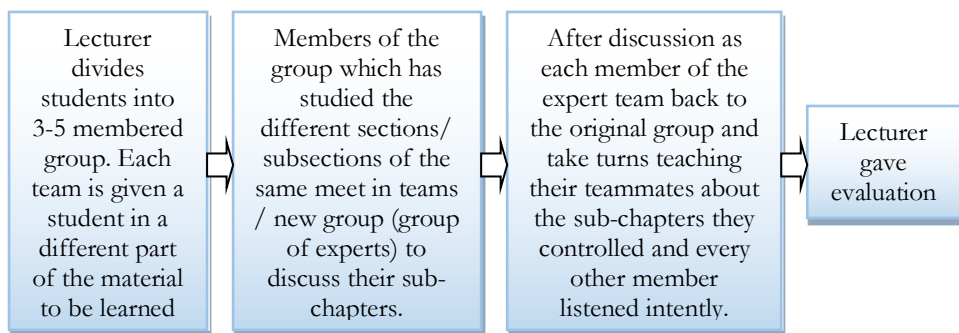| Thinking. Lecturers provide questions or issues related to the material to be studied and ask students to think about the question or the issue independently for some time. | Pairing (in pairs). Lecturers ask students to pair up with other students to discuss what he thinks at this stage of thinking. Interaction at this stage is expected to share the answers if it has submitted a question or share an idea if a problem has been identified. Usually lecturers give 4-5 minutes for pairs. | Sharing. The lecturer asked the couple to share in the classical style of what they have discussed. This is effectively done by rotating the pair-by-pair, up to about a quarter of couples got a chance to report. |

Figure 4.

Team Game Tournament (TGT) Models

| Numbering: Lecturer divide students into groups of 3-5 persons membered and each member is given a number from 1 to 5 | Ask questions: Lecturer ask a question to the students. This question can in a question form or landing. | Think with: Students unite its opinion on the answers to these questions and convince members of the team know the answer | Answer: Lecturers call the student with specific numbers, then he answered the question Lecturer for the whole class. |

Figure 5.

Numbered-Head-Together (NHT)Models

| Lecturer divides students into 3-5 membered group. Each team is given a student in a different part of the material to be learned | Members of the group which has studied the different sections/ subsections of the same meet in teams / new group (group of experts) to discuss their sub-chapters. | After discussion as each member of the expert team back to the original group and take turns teaching their teammates about the sub-chapters they controlled and every other member listened intently. | Lecturer gave evaluation |

Figure 6.

*Jigsaw Models*(Capone, De Caterina, & Mazza, 2017)

Method

Research Design

As explained (Creswell, 2014)research and development is a process used to develop and validate a product of education. To produce researchers carry out research and analysis needs to test the effectiveness of these products in order to function in society at large, the necessary research to test the effectiveness of these products(Sagala, Umam, Thahir, Saregar, & Wardani, 2019). The products

developed and validated in the research development and learning the course material based on active learning cooperative are: (1) the teaching materials of the 'Management Learning System' subject.

Participants

Data collection techniques are done by observation, tests and questionnaires. Observations were made to collect research data on the implementation of the Implementation Plan conducted by two observers. The test was conducted to measure the understanding of the concepts of 30 students at private school, as well as the sensitivity of each item. The questionnaire was conducted to gather information about students' understanding of science concepts, Student misconceptions, data on student responses to learning activities and assessments from experts (Athiyallah, 2020). Data form of the stuffing and note validator on the instrument validation sheet quality content, presentation language(Dari, Jandra, Huda, & Maseleno, 2020), graphics course material collected by the validation techniques (expert).
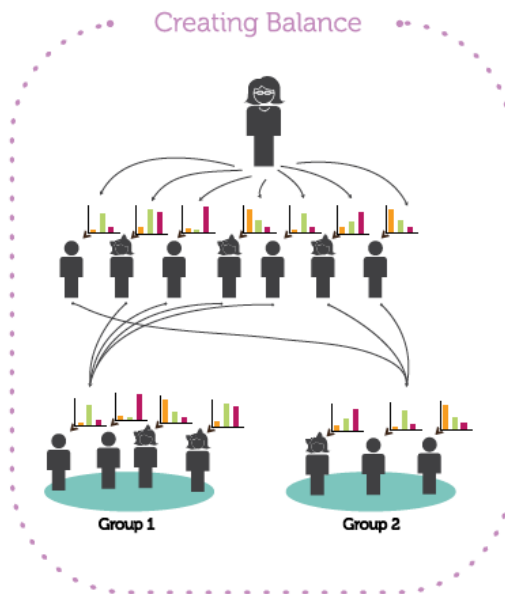
Figure 7.
The Regrouping of the Prototype Design

Data Collection Tools

Student Assessment Instruments and construct validation are given by experts. Model The development of the 4-D model was developed by (Sondergaard & Ryberg, 2018). This 4-D model consists of four stages of development namely define, design, develop, and disseminate, which in this study was carried out until the 3D stage. The following stages of the development of the 4D modification carried out to the 3D stage:

Defining Phase (define): This stage aims to establish and define learning requirements there are five main steps at this stage, namely: (a) front end analysis; (b) student analysis; (c) task analysis, concept analysis, and formulation of learning objectives.

Design Phase (design): This phase aims to design a prototype of learning devices. In this stage, (a) test preparation is carried out; (b) media selection; and (c) format selection. The results of this stage are the initial design of the device.

Development Phase (develop): This phase aims to produce a revised learning kit based on expert input which includes the stages of: (a) validation of the equipment by experts followed by revision; (b) simulation; (c) limited trials; (d) follow-up trials (unlimited).

Data Analysis

Data were analyzed using statistical methods. Hypotheses were tested using t-tests to see the impact of learning models(Lestari et al., 2019). The impact can be measured by calculating the effect size. The effect size is explained in the Cohen formulation in the following equation.

$$d = \frac{\bar{x}_1 - \bar{x}_2}{S_{gab}}$$

$$S_{gab} = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

$\bar{x}_1$ = mean of the experimental class group

$\bar{x}_2$ = average control class group

n_1 = number of sample experimental classes

n_2 = number of control class samples

S_1^2 = experimental class group variance

S_2^2 = experimental control class group variance.

The effect size calculation according to Cohen is divided into several criteria as in table 1

Table 1.

The Categories of Effect Size

The number of d	Categories
$0.8 \leq d \leq 2.0$	Large
$0.5 \leq d \leq 0.8$	Medium
$0.2 \leq d \leq 0.5$	Small

Based on Table 1, the criteria for effect size of the large category are at the interval $0.8 \leq d \leq 2.0$, the medium category is at the interval $0.5 \leq d \leq 0.8$ and the small category lies at the interval $0.2 \leq d \leq 0.5$. This aims to measure whether the TAI learning model has a large, medium, or small impact.

Results and Discussion

The learning textbook for the second semester of Private School have been developed in this research by integrating the results of a study of textbooks and learning activities that already exist, active cooperative learning theory, and research results which are related in the journal. Integration results stated in the syllabus, lesson plans, and draft textbook.

Table 2.

Model of Cooperative Learning

No	Chapter	Learning Model
1	Learning concepts and defender-horse	STAD
2	The conceptoftheoriesoflearning	Jigsaw and NHT
3	Principles, types and characteristicsoflearning	Group Investigation
4	Objectiveslearning and dynamic elements in teaching and learning	Jigsaw and Main Mapping
5	Factorsaffecting the achievement	TGT & Jigsaw
6	Modelsof curriculum development	TGT & STAD
7	Modelsof Active Learning in Schools	TGT

After the draft textbook structured products further validated by studying psychology expert and lecturer teaching and learning, and product validation by experts active learning which already holds a national certificate as an expert in active learning in schools and colleges(Murthy, 2020). Expert has assessed the draft textbook and provide a wide range of records to repair the draft textbook before it is used in learning. Assessment using the assessment tool of teaching materials BNSP modified(Abdurrahman, Saregar, & Umam, 2018). There are 10 aspects of the draft assessment textbooks tailored to the characteristics of teaching and learning materials.

Validation of the textbook-draft has gained good categories and very good on the ten aspects of the draft assessment instruments textbook(Mokhtar, Abdullah, Ismael, Othman, & Ali, 2019). After the draft textbook is considered feasible by experts, subsequently used in the classroom. For sixteen meetings classroom learning(Sagala et al., 2019), active learning model cooperative applied in the classroom according to the topic of the draft chapter of the textbook has been prepared as in the above table(Ramadhani, Huda, & Umam, 2019).
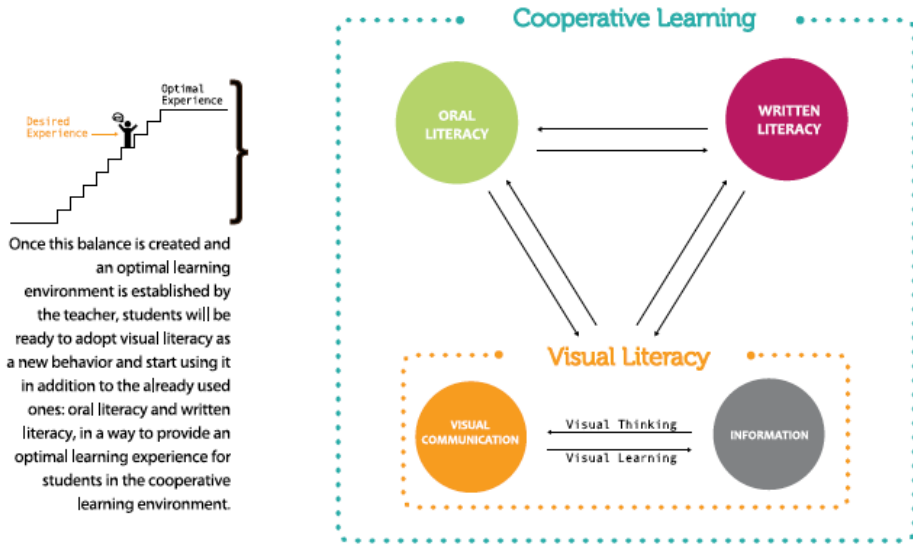
Figure 8.
The Regrouping of the Prototype Design

Based on the analysis of students 'understanding by using the Cooperative learning model, the device can significantly improve students' understanding of concepts. This can be seen both from the results of the concept understanding test based on the results of the students 'pretest and posttest tests, it is known that an increase in students' understanding is seen from the accuracy of the item answers per item then the N-Gain score is obtained from the items showing a score of 0.65 with moderate criteria. This shows the effectiveness of learning with Cooperative Scripts models or measurements based on student confidence combined with the accuracy of the test answers referring to the CRI decision matrix table. Obtaining an N-gain value in increasing CRI scores indicates an increase in correct conceptual understanding (0.74), a remediation of misconception (-0.44), a decrease in the number of students answering incorrectly due to lack of knowledge (-0.39). In line with (Bersin, 2004) which states that this cooperative technique organizes the discussions needed to help students understand scientific concepts. 3. Statistical Tests Statistical tests are performed as an adjunct to confirm the differences in the results of the students 'understanding of concept tests after applying the Cooperative Scripts learning model and the effect of the application of the Cooperative Scripts model to the improvement of the students' concept understanding test results. Statistical test using Paired T-test using SPSS 20. Statistical test results show that data processing is done through the Saphiro-Wilk test to determine the normal distribution of concept understanding tests, obtained an average value of sig (2-tailed) $0.708 > \alpha = 0.05$ (attachment page 290) which means that the class with the application of the cooperative learning model with the application of the Cooperative Scripts learning model is normally distributed as

a condition to be tested differently with the paired-T test using SPSS 20. The variance homogeneity test is carried out using the levene's test test, shows that the application of Cooperative Scripts learning model after data analysis is obtained sig-count value = 0.445 > sig-table (α) = 0.05 (attachment page 293) which means it can be concluded that the class with the application of Cooperative Scripts learning model has variants are the same or homogeneous, so they have fulfilled the requirements for analysis by T-test. T-test results are conducted to determine whether there are differences and the effect of applying the Cooperative Script model to the results of students' pretest and posttest. T-test results showed sig-count = 0.02 <sig. α = 0.05 which means that there are significant differences in learning outcomes between classes with the application of Cooperative Scripts learning models, so it is assumed that the application of Cooperative Scripts models has a significant effect on students' Concept Understanding (Sumarni et al., 2019).

The results of this study can strengthen previous findings by experts described in Figure 8, that cooperative learning can improve student performance on academic assignments, excel in helping students understand difficult concepts, and help students foster critical thinking skills(Sriyakul, Umam, Jermsittiparsert, et al., 2019). Cooperative learning can benefit both students in that group and those who work together to complete academic assignments. In addition, cooperative learning has a significant effect on the wide play on the diversity of races, cultures and religions, social strata, abilities and disabilities(Sriyakul, Umam, & Jermsittiparsert, 2019b). Cooperative learning provides opportunities for students with different backgrounds and conditions to work interdependent on shared tasks, and begin to use cooperative reward structures, learning to respect one another(Sriyakul, Umam, & Jermsittiparsert, 2019a).

Conclusion and Suggestions

The results of this study stated that the development of the textbook-draft of the 'Management Learning System' subject with the application of active learning in the process of cooperative learning in the classroom is considered feasible by experts for use in learning. The textbook-draft developed by integrating active learning model cooperative in their effective implementation is used in the learning process, the effectiveness is derived from an increase in students' final grades.

Some suggestions of this study is that in the implementation of cooperative learning process based on active learning obstacles that need to be bridged is time-consuming in its implementation, where appropriate, and the appropriate number of students.

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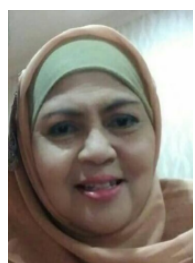
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References

Abdurrahman, Saregar, A., & Umam, R. (2018). Assessment Toward The Quantum Physics Concept Mastery Of The Prospective Physics Teachers. *Jurnal Pendidikan IPA Indonesia*, *7*(1), 34–40. https://doi.org/10.15294/jpii.v6i2.7239

Agus Slamet Susanto, Haninda Bharata, S. D. (2018). The effect of Cooperative Learning Model Think-Talk-Write (TTW) Type on Mathematical Problem-Solving Abilities In Terms of Learning Habits. *Al-Jabar : Jurnal Pendidikan Matematika*, *9*(1), 33–40. https://doi.org/https://doi.org/10.24042/ajpm.v9i1.2235

Athiyallah, A. (2020). Self-acceptance, Coping Strategies and Depression on Street Children. *International Journal of Psychosocial Rehabilitation*, *24*(1), 1398–1406. https://doi.org/10.37200/IJPR/V24I1/PR200238

Bersin, J. (2004). *The Blended Learning Book: Best Practices, Proven Methodologies, and Lessons Learned*. New York: Wiley.

Capone, R., De Caterina, P., & Mazza, G. (2017). Blended Learning, Flipped Classroom, and Virtual Environment: Challenges and Opportunities for The 21st Century Students. *Proceedings of EDULEARN17 Conference*, 10478–10482. Barcelona, Spain.

Creswell. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). In *Scientific Research*. CA: Sage: Thousand Oaks.

Dari, S., Jandra, M., Huda, M., & Maseleno, A. (2020). Inequalities in Access of Learning in Primary School: Voices from Children with Special Needs. *International Journal of Psychosocial Rehabilitation*, *24*(1), 356–365. https://doi.org/10.37200/IJPR/V24I1/PR200138

El Islami, R. A. Z., Sari, I. J., Sjaifuddin, S., Nurtanto, M., Ramli, M., & Siregar, A. (2019). An Assessment of Pre-service Biology Teachers on Student Worksheets Based on Scientific Literacy. *Journal of Physics: Conference Series*, *1155*(1). https://doi.org/10.1088/1742-6596/1155/1/012068

Gull, F., & Shehzad, S. (2015). Effects of Cooperative Learning on Students' Academic Achievement. *Journal of Education and Learning (EduLearn)*, *9*(3), 246. https://doi.org/10.11591/edulearn.v9i3.2071

Habibi, B., Hartinah, S., Umam, R., Syazali, M., Lestari, F., Abdurrahman, A., & Jauhariyah, D. (2019). Factor Determinants of Teacher Professionalism as Development of Student Learning Education at School of SMK PGRI in Tegal City, Indonesia. *Journal of Gifted Education and Creativity*, *6*(2), 125–134.

Huda, M. (2015). *Cooperative Learning (Metode, Teknik, Struktur dan Model Peneraoan)*.

Yogyakarta: Pustaka Pelajar.

Karafkan, M. A. (2015). Investigating the Effects of Group Investigation (GI) and Cooperative Integrated Reading and Comprehension (CIRC) as the Cooperative Learning Techniques on Learner ' s Reading Comprehension. *Interntional Journal of Applied Linguistics & English Literature*, *4*(6).

Kasayanond, A., Umam, R., & Jermsittiparsert, K. (2019). Environmental Sustainability and its Growth in Malaysia by Elaborating the Green Economy and Environmental Efficiency. *International Journal of Energy Economics and Policy*, *9*(5), 465–473. https://doi.org/https://doi.org/10.32479/ijeep.8310

Lestari, F., Saryantono, B., Syazali, M., Saregar, A., Jauhariyah, D., & Umam, R. (2019). Cooperative Learning Application with the Method of Network Tree Concept Map : Based on Japanese Learning System Approach. *Journal for the Education of Gifted Young Scientists*, *7*(1), 15–32. https://doi.org/10.17478/jegys.471466

Mokhtar, I. S., Abdullah, N. H., Ismael, D. A., Othman, B., & Ali, R. (2019). The Development of Training Participation Conceptual Framework among Academic Staff: A Qualitative Study based on Training Officers Perception at Malaysian Public Universities. *International Journal of Psychosocial Rehabilitation*, *23*(3), 544–572. https://doi.org/10.37200/IJPR/V23I3/PR190346

Muhsin, M. A. Al, & Ahmad, N. (2019). The Emergence of Education 4.0 Trends in Teaching Arabic Islamic Finance Curriculum Design: A Case Study. *International Journal of Psychosocial Rehabilitation*, *23*(4), 1019–1029. https://doi.org/10.37200/IJPR/V23I4/PR190430

Munifah, M., Romadhona, A. N., Ridhona, I., Ramadhani, R., Umam, R., & Tortop, H. S. (2019). How to Manage Numerical Abilities in Algebra Material? *Al-Jabar : Jurnal Pendidikan Matematika*, *10*(2), 223–232. https://doi.org/10.1017/CBO9781107415324.004

Murthy, U. (2020). The Participation of Ageing Academicians in Private Universities in Malaysia. *International Journal of Psychosocial Rehabilitation*, *24*(1), 851–860. https://doi.org/10.37200/IJPR/V24I1/PR200191

Pahrudin, A., Irwandani, Triyana, E., Oktarisa, Y., & Anwar, C. (2019). The analysis of pre-service physics teachers in scientific literacy: Focus on the competence and knowledge aspects. *Jurnal Pendidikan IPA Indonesia*, *8*(1), 52–62. https://doi.org/10.15294/jpii.v8i1.15728

Rahayu, T., Syafril, S., Wati, W., & Yuberti. (2017). The Application of Stad- Cooperative Learning in Developing Integrated Science on Students' Worksheet. *Jurnal Ilmiah Pendidikan FisikaAl-BiRuNi*, *06*(2), 247–254. https://doi.org/10.24042/jipfalbiruni.v6i2.1933

Ramadhani, R., Huda, S., & Umam, R. (2019). Problem-Based Learning , Its Usability and Critical View as Educational Learning Tools. *Journal of Gifted Education and Creativity*, *6*(3), 219–231.

Roseth, C. J., Johnson, D. W., & Johnson, R. T. (2008). *Promoting Early Adolescents ' Achievement and Peer Relationships : The Effects of Cooperative , Competitive , and Individualistic Goal Structures. 134*(2), 223–246. https://doi.org/10.1037/0033-2909.134.2.223

Sagala, R., Umam, R., Thahir, A., Saregar, A., & Wardani, I. (2019). The Effectiveness of STEM-Based on GenderDifferences: The Impact of PhysicsConcept Understanding. *European Journal of Educational Research*, *8*(3), 753–763. https://doi.org/http://doi.org/10.12973/eu-jer.8.3.753

Sari, V. J., & Swistoro, E. (2018). Upaya Peningkatan Kemampuan Pemecahan Masalah dan Hasil Belajar Peserta Didik melalui Penerapan Metode Cooperative Problem Solving. *Jurnal Kumparan Fisika*, *1*(1), 70–77.

Sharma, D. R. (2018). Action Research on Improving Students' Speaking Proficiency in Using Cooperative Storytelling Strategy. *Journal of NELTA Surkhet*, *5*, 97–105. https://doi.org/10.3126/jns.v5i0.19495

Sondergaard, B. D., & Ryberg, T. (2018). Ninth Issue of The Journal of Problem Based Learing in Higher Education. *Journal of Problem Basec Learning in Higher Education*, *6*(2).

Sriyakul, T., Umam, R., & Jermsittiparsert, K. (2019a). Supplier Relationship Management , TQM Implementation , Leadership and Environmental Performance : Does Institutional Pressure Matter. *International Journal of Innovation, Creativity and Change*, *5*(2), 211–227.

Sriyakul, T., Umam, R., & Jermsittiparsert, K. (2019b). Total Quality Management and Logistic Performance : Moderating Role of Reserve Supply Chain in Pharmaceutical Industry of Indonesia. *International Journal of Innovation, Creativity and Change*, *5*(2), 228–248.

Sriyakul, T., Umam, R., Jermsittiparsert, K., Development, T., Chi, H., City, M., … City, M. (2019). Internal Supply Chain Integration And Operational Performance Of Indonesian Fashion Industry Firms : A Supplier to Buyer Approach. *Humanities & Social Sciences Reviews*, *7*(2), 479–486. https://doi.org/10.18510/hssr.2019.7256

Sumarni, S., Pertiwi, S. T. Y., Rukiyah, Andika, W. D., Astika, R. T., Abdurrahman, & Umam, R. (2019). Behavior in Early Childhood (2-3) Years : A Case Study on the Use of Gadgets in Social Environments. *International Journal of Innovation Creativity and Change*, *8*(8), 384–404.

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