Enhancing Learning and Character through NHT Model in Grade X Culinary Class at SMKN 4 Yogyakarta

Badraningsih Lastariwati [1, *], Titin Hera Widi Handayani[2], Miftakhul Wahniyatun[3], Duani Pangestu[4], Enggar Ristyorini[5], Fendy Tri Hatmoko[6]

[1,2,4,5,6] Universitas Negeri Yogyakarta, Indonesia
[3] SMK Negeri 4 Yogyakarta
Email: badra@uny.ac.id*
*Corresponding author

ABSTRACT

The purpose of the research is to improve learning outcomes and strengthen student character. This research is a Classroom Action Research designed with the Kemmis & McTaggart model. The subjects of the research were 36 students of class X majoring in Culinary Arts. The research instrument used multiple choice questions, student character observation sheets. Data collection techniques used observation, tests, documentation. Data analysis techniques used descriptive data for learning outcomes and qualitative descriptive statistics for observation of student character. The sequence of Numbered Head Together learning is (a) Numbering, (b) Teacher gives assignments, (c) Discussing and reporting the results of the discussion, (e) Responses from other friends, and (f) Conclusions. The learning outcomes of students in stage E of the subject of Basic Culinary Arts of class X Culinary Arts 6 showed that students who achieved the Minimum Completion Criteria in Cycle I and Cycle II were 24 students with 67% of students and 34 students with a percentage of 94%. The observation results of the Global Diversity dimension were 68% in Cycle I and 78% in Cycle II. In the Gotong Royong dimension, it was 71% in Cycle I and 80% in Cycle II. Both dimensions are in the good category. The conclusion of this study is that efforts to improve learning outcomes and strengthen students' characters by implementing NHT show positive results. Strengthening character must continue to be supported and implemented with various learning models other than NHT.

Keywords: Learning Outcomes, Numbered Head Together, Strengthening Character, Classroom action research

INTRODUCTION

Culinary Basics is a subject in Phase E of the Culinary Department in Vocational High Schools. At the end of phase E, students are expected to be able to explain the basics of the Culinary Industry, Development of the Culinary Field, Entrepreneurship and Job Profiles in the Culinary Field, implement procedures of Cleanliness, Health Safety, Environmental Sustainability (CHSE), and implement essential cooking preparation (Ministry of Education and Culture, 2023).

Based on observations in grade X Culinary 6 SMK Negeri 4 Yogyakarta in the subject of Culinary Basics (Phase E), the researcher identified a lack of students' knowledge, skills, and attitudes in learning activities. In addition, the student learning outcomes showed that only 75% of students meet the Minimum Completeness Criteria, and the learning methods applied by teachers are less varied.

A teacher can improve the quality of education by using interesting learning strategies. The quality of vocational education in vocational high schools is more oriented toward the demands of the ASEAN Economic Community (AEC) labor market and preparing graduates with solid character following competency skills (Tarjiah et al., 2023).

The implementation of Kurikulum Merdeka realizes freedom in the learning process (Arung et al., 2023). Freedom in the learning process can be realized by implementing relevant learning methods that encourage students to play active roles during the learning process (Gumartifa et al., 2020). The learning process should encourage students to be creative, innovative, and think critically to create a balanced learning process between the right and left brain (Dwiputra et al., 2023). Therefore, teachers need to apply innovative learning following the ideas of Ki Hadjar Dewantara (Ardhyantama, V. 2020).

One of the innovative learning models is the Numbered Head Together (NHT) learning model. The NHT learning model is a cooperative learning model designed to influence student interaction patterns (Noviarini P.N. et al. in Sudarwanto, 2018). Shoimin (2016) stated that the Numbered Head Together (NHT) learning model refers to group learning. Each group member has a task section (question) with a different number.

Previous research pointed out no significant interaction between the NHT learning model assisted by the HOTS worksheet and learning activities on students' learning outcomes. It is necessary to develop other media and learning models to improve learning outcomes (Sutarni, S., & Maulita, D., 2023). Therefore, the researcher implements the NHT learning model in this study by producing projects, using PowerPoint learning media, and implementing assessments using Google Forms to improve learning outcomes and strengthen students' character. This study aims to enhance the students' learning outcomes and strengthen the students' characters of grade X Culinary Department 6 at SMK Negeri 4 Yogyakarta.

METHOD

This study was Classroom Action Research (CAR) designed with the Kemmis & McTaggart model that consists of four stages in each cycle, namely: (1) planning, (2) action, (3) observation, and (4) reflection (Jasiah *et al.*, 2021).
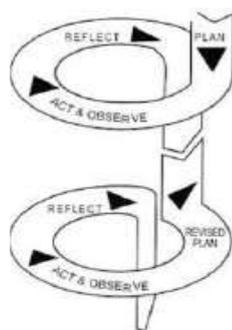

Figure 1. CAR Cycle Model according to Kemmis & Taggart

The first stage in conducting this Classroom Action Research is creating a plan outlining the necessary implementations of the NHT learning model. The second stage is to carry out actions according to the predetermined plan. The third stage is to observe the course of action in learning. The last stage is to reflect based on the observations' results. The results of reflection on the learning cycle will help me produce conclusions that can be the basis for making decisions. This decision determines the success of cycle I or improvements in the next cycle.

This study was conducted in the even semester of the 2023/2024 academic year, April – June 2024. The subjects consisted of 36 students of grade X Culinary Department 6 in phase E at SMK Negeri 4 Yogyakarta.

The research instruments comprised 15 multiple-choice questions and students' character observation sheets (Sutarni, S., and Maulita, D., in Purwanti and Ratih, 2019). The NHT learning model is a learning model that improves students' cooperation and interaction. Therefore, this study observed the dimensions of global diversity and mutual cooperation. Data collection techniques were observation, tests, and documentation (Sugiyono, 2016). Descriptive percentages were used to analyze the students' learning outcomes (Aqib, 2014). Qualitative descriptive statistics were applied to investigate the students' characters by categorizing them into very good, good, acceptable, poor, and very poor (Riduwan, 2019). The criteria for the success of the action in this study were: (a) More than 75% of the students in grade X Culinary 6 at SMKN 4 Yogyakarta achieved individual learning completion of ≥75 in the subject of Basic Culinary, (b) There was an increase in student character according to the indicators; namely all dimension indicators showed a minimum percentage of 61% or a good category during the learning process.

RESULTS AND DISCUSSION

Learning outcomes result from selecting the learning model used in the teaching and learning process (Chrisdiyanto et al., 2023). Improving learning outcomes is one of the indicators that determine student success. One way to improve student learning outcomes is through learning models that encourage students to be active, imaginative, creative, and fun during the learning process (Yaniawati, 2021).

Strengthening students' character includes harmony and balance between academic knowledge, good attitudes or behaviours and skills towards the era of the Industrial Revolution 4.0 and Society 5.0 (Muslihati, 2024). Strengthening the Pancasila student profile is a major project initiated by the government to produce the next generation with characters based on Pancasila as the ideology of the Indonesian state to emulate values following the philosophy of life of the Indonesian nation (Hastiani, Sulistiawan & Isriyah, 2023).

SMK Negeri 4 Yogyakarta implements the Merdeka curriculum. Phase E in grade X of Vocational High School has productive lessons that explain theories and practices in the students' expertise program. This aims to enable students to recognize and determine the concentration that will be chosen according to the student's interests and potential (Setyaningrum et al., 2023).

Based on the observations, the student's learning outcomes were still low, and there was a need for character education. Therefore, it is necessary to implement an effective learning model. The learning model used is Numbered Head Together (NHT). The syntax of the NHT learning model consists of (a) Students being divided into several groups, each student in each group gets a number; (b) The teacher gives assignments for each group; (c) Each group discusses the correct answers, (d) The teacher calls one of the student numbers with the number used to report the results of the discussion, (e) Responses from other friends, and (f) Making conclusions from the implementation of learning (Sariawan et al. in Lahir et al., 2017).

This classroom action research consisted of Cycle I and Cycle II. Each cycle consisted of two meetings, so the overall learning was carried out in four meetings. The assessment of students' learning outcomes used 15 multiple-choice questions. The test was carried out in cycle I, meeting 2, and cycle II, meeting 4. The interval data for students' learning outcomes in cycle I and II are presented in Table 1.

Table 1. Score Interval of Students' Learning Outcome

Score Interval	Frequency in Cycle I	(%) Percentage	Frequency in Cycle II	(%) Percentage
90 to 100	0	0%	8	22%
80 to 89	24	67%	26	72%
70 to 79	11	30%	2	6%
60 to 69	1	3%	0	0%

Table 1 indicates that in cycle I, no students reached the score interval of 90-100. Twenty-four students reached a score interval of 80-89 with a percentage of 67%, while 11 students reached a score interval of 70-79 with a percentage of 30%. One student had a score interval of 60-69, with a percentage of 3%.

In cycle II, eight students had a score interval of 90-100 with a percentage of 22%. As many as 26 students had a score interval of 80-89 with a percentage of 72%. Two students had a score interval of 70-79 with a percentage of 6%, and no students had a score interval of 60-69. Based on the score interval above, students from cycle I to cycle II experienced improvement in learning outcomes.

The student's learning outcomes in cycles I and II are classified into students who reached and did not reach the Minimum Completeness Criteria. The data are presented in Table 2.

Table 2. Classification of Students' Learning Outcomes

Number of Students	(%) Students who reached the Minimum Completeness Criteria in Cycle I	(%) Students who did not reach the Minimum Completeness Criteria in Cycle II
36	67%	33%
36	94%	6%

Table 2 suggested that out of 36 students, the percentage of learning outcomes increased from cycle I to cycle II. The percentage of learning outcomes in cycle I was 67%, then in cycle II, it increased to 94%. The percentage of students who reached the Minimum Completeness Criteria in Cycle I was 33%, while in Cycle II, it was 6%.

The learning outcome data of students in cycles I and II consisted of the average class score, highest score, lowest score, and the number of students who reached the Minimum Completeness Criteria. The student's learning outcomes are presented in Table 3.

Table 3. Students' Learning Outcomes

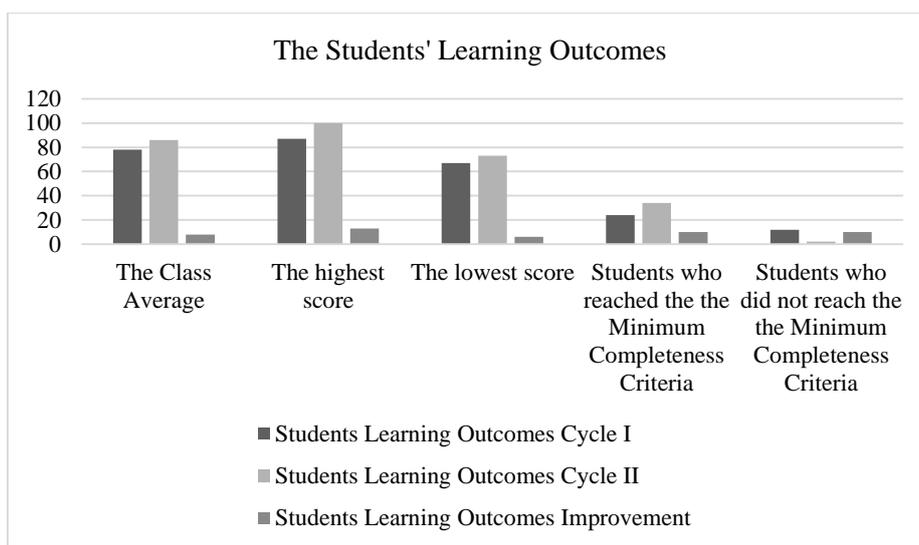| Description	(%) Cycle I	(%) Cycle II	Improvement
Class average	78	86	8
The highest score	87	100	13
The lowest score	67	73	6
The students who reached the Minimum Completeness Criteria	24	34	10
The students who did not reach the Minimum Completeness Criteria	12	2	10

Figure 2. Students learning outcomes

Based on the student learning outcomes data, the average class score in cycle I was 78 and increased 8 points to 86 in cycle II. It indicates that students' learning outcomes increased from Cycle I to Cycle II.

In cycle I, the highest score was 87, which increased to 100 in cycle II. It had an increase of 13 points. It shows that students with the best learning outcomes experienced a significant improvement from cycle I to cycle II. The lowest score in cycle I was 67 and increased to 73 in cycle II. It suggests that students with the lowest scores experienced an insignificant improvement. It has an improvement of 6 points. Students who reached the Minimum Completeness Criteria in cycle I were 24, increased to 34 in cycle II. It shows that the number of students who achieved the Minimum Completeness Criteria increased by ten. Students who did not achieve the Minimum Completeness Criteria in cycle I were 12 and decreased to 2 in cycle II. The number of students still needed to achieve the Minimum Completeness Criteria was 10. The observations of students' character in the Global Diversity dimension in cycle I are presented in Table 4.

Table 4. Students' Characters of the Global Diversity Dimension in Cycle I

Indicator	Total Score Meeting 1	Percentage	Criteria	Total Score Meeting 2	Percentage	Criteria
Students communicate verbally fluently	99	69%	Good	104	72%	Good
Students communicate non-verbally fluently	89	62%	Good	103	72%	Good
Students have good intercultural interactions (with friends of different ethnicities and religions)	101	70%	Good	99	69%	Good
Students have good social justice (social attitudes).	85	59%	Acceptable	95	66%	Good

Table 4 explains the characteristics of students in the Global Diversity dimension in cycle I from the first meeting to the second meeting. 3 (three) Indicators have increased. In the first meeting, the indicator showing that students communicate verbally fluently has a total score of 99, with a percentage of 69% classified into good criteria. In the second meeting, this indicator had a total score of 104, with a percentage of 72% classified into good criteria. The indicator showing that the students communicate non-verbally fluently had a total score of 89 with a percentage of 62%, categorized as good criteria in the first meeting. In addition, in the second meeting, the total score was 103, with a percentage of 72% categorized as good. The indicator showing that students have good social attitudes had a total score of 85, with a percentage of 59% classified as acceptable. Moreover, the second meeting had a total score of 95, with a percentage of 66% categorized as good.

The indicator showing that the students interact across cultures (with friends of different ethnicities and religions) slightly decreased but was still included in the good criteria. In the first

meeting, it had a total score of 101 with a percentage of 70%, and in the second meeting, it had a total score of 99 with a percentage of 69%. Meanwhile, the student's character in the Diversity dimension in cycle II is presented in Table 5.

Table 5. Students' Characters of the Global Diversity Dimension in Cycle II

Indicator	Total Score Meeting 1	Percentage	Criteria	Total Score Meeting 2	Percentage	Criteria
Students communicate verbally fluently	109	76%	Good	111	77%	Good
Students communicate non-verbally fluently	112	78%	Good	115	80%	Good
Students have good intercultural interactions (with friends of different ethnicities and religions)	113	78%	Good	115	80%	Good
Students have good social justice (social attitudes).	109	76%	Good	111	77%	Good

Table 5 indicates that all indicators of the student's characteristics in the Global Diversity dimension in cycle II increased from the third to the fourth meeting. In the third meeting, the indicator showing that the students communicate verbally fluently has a total score of 109, with a percentage of 76% classified into good criteria. In the fourth meeting, it scored 111, with a percentage of 77% classified into good criteria. In the third meeting, the indicator stating that students communicate non-verbally fluently had a total score of 112, with a percentage of 78% classified into good criteria. In addition, in the fourth meeting, it had a total score of 115, with a percentage of 80% classified as good.

In the third meeting, the indicator of students having good intercultural interactions (with friends of different ethnicities or religions) had a total score of 113, with a percentage of 78% categorized as good. It had a total score of 115, with a percentage of 80%, and was categorized as good in the fourth meeting. In the third meeting, the indicator showing that students have good attitudes had a total score of 109, with a percentage of 76% categorized as good criteria. In the fourth meeting, it had a total score of 111, with a percentage of 77% categorized into good criteria.

Furthermore, the student's character in the Mutual Cooperation dimension in cycle I is presented in Table 6.

Table 6. Students' Characters of the Mutual Cooperation Dimension in Cycle I

Indicator	Total Score Meeting 1	Percentage	Criteria	Total Score Meeting 2	Percentage	Criteria
Students work together and collaborate with group friends	103	72%	Good	109	76%	Good
Students show concern for friends	102	71%	Good	101	70%	Good

Students show concern for the teacher	94	65%	Good	105	73%	Good
Students demonstrate an attitude of sharing with friends	105	73%	Good	99	69%	Good
Students demonstrate an attitude of sharing with the teacher	101	70%	Good	105	73%	Good

Table 6 describes the students' character in the Mutual Cooperation dimension in cycle I, consisting of the first and the second meetings. The indicator showing that students work together and collaborate with group members has a total score of 103 with a percentage of 72% and 109 with a percentage of 76%, which are included in good criteria in the first and second meetings. The indicator showing that students show concern for friends experienced a slight decrease, but it was still included in the good criteria, namely with a total score of 102 with a percentage of 71% in the first meeting and a total score of 101 with a percentage of 70% in the second meeting. The indicators showing that students showed concern for teachers had a total score of 94 with a percentage of 65% and 105 with a percentage of 73%, categorized as good criteria in the first and second meetings, respectively.

The indicator showed that the student's attitude toward sharing with friends slightly decreased but was still included in the good criteria. In the first meeting, the total score was 105 with a percentage of 73%, while in the second meeting, it had a total score of 99 with a percentage of 69%. The indicator showing that the students show concern for teachers had a total score of 101 with a percentage of 70% and 105 with a percentage of 73%, including good criteria in the first and second meetings, respectively. The student's character in the Mutual Cooperation dimension in cycle I is presented in Table 7.

Table 7. Students' Characters of the Dimension of Mutual Cooperation in Cycle II

Indicator	Total Score Meeting 1	Percentage	Criteria	Total Score Meeting 2	Percentage	Criteria
Students work together and collaborate with group friends	126	88%	Very good	126	88%	Very good
Students show concern for friends	116	81%	Very good	117	81%	good
Students show concern for the teacher	113	78%	good	115	80%	good
Students demonstrate an attitude of sharing with friends	108	75%	good	109	76%	good
Students demonstrate an attitude of sharing with the teacher	109	76%	good	111	77%	good

Table 7 shows the students' character dimensions of Mutual Cooperation in cycle II. The indicator showing that students work together and collaborate with friends had consistent results. In the third and fourth meetings, this indicator gained a total score of 126, with a percentage of 88% included in the very good criteria. The indicator showing that the students show concern for friends had a total score of 116 with a percentage of 81% and 117 with a percentage of 81, included in the very good criteria at the third and fourth meetings, respectively. The indicator stating that students show concern for teachers has a total score of 113 with a percentage of 78% and 115 with a percentage of 78%, categorized as good criteria in the third and fourth meetings, respectively. The indicator showing that students demonstrate an attitude of sharing had a total score of 108 with a percentage of 75% and 109 with a percentage of 76%, classified as good criteria at the third and fourth meetings, respectively. The indicator showing that the students demonstrate an attitude of sharing with teachers had a total score of 109 with a percentage of 76% and 111 with a percentage of 77%, classified as good at the third and the fourth meeting, respectively. Table 8 describes the students' character classification in cycles I and II.

Table 8. Classification of Students Characters in Cycle I and Cycle II

Dimensions	Average (%) Cycle I	Average (%) Cycle II	Final Average	Improvement
Global Diversity	68%	78%	73%	10%
Mutual cooperation	71%	80%	75%	9%

Table 8 shows that the global diversity dimension had an average percentage of 68% in Cycle I and increased by 10% to 78% in Cycle II, with a final average of 73%. This final average percentage is included in the good category. The Mutual Cooperation dimension averaged 71% in Cycle I and increased by 9% to 80% in Cycle II, with a final average of 75%. This final average percentage was included in the good category.

This Classroom Action Research is different from previous studies. Based on previous research conducted by Fahmawati et al. (2021), the Numbered Head Together (NHT) learning model positively affects elementary school Mathematics learning outcomes. Student learning outcomes are classified as high, with an average result of 10 samples totalling 60.95, compared to the previous 48.86. From these data, there is a significant improvement of 12.09. The Numbered Head Together (NHT) learning model positively affects elementary school students' mathematics learning outcomes. Meanwhile, implementing NHT increases activity and learning outcomes of the Long Jump Athletics Squat Style. The students who achieved the minimum completeness criteria improved from initial observations of 20% in cycle I to 66.7% and 100% in cycle II (Antara et al. D., 2017).

Sariawan et al. (2020) reported that using the NHT learning model and the effect size formula in elementary schools in Bali showed an overall average effect size value of 0.984. Thus,

it was categorized as having a significant effect, namely $0.984 \geq 0.8$. The average proves that learning with the NHT model as a whole has a significant influence on students' science learning outcomes.

This is also reinforced by research by Reyes et al. (2023) that: (1) students' performance did not meet expectations before using the Numbered Heads Together Learning Strategy; (2) students' performance improved significantly after using the Numbered Heads Together Learning Strategy. They performed satisfactorily; (3) students' performance differed significantly before and after adopting the Numbered Heads Together Learning Strategy; and (4) there are other observed improvements among students after using the Numbered Heads Together Learning Strategy. Furthermore, using a numbered head together learning technique improves students' academic achievement in Science. This supports the recommendation to use this method of instruction to improve student performance.(Reyes,at al.,2024)

Based on the findings, efforts to improve learning outcomes and strengthen the students' characters by implementing the NHT learning model showed positive results from cycle I to cycle II in Phase E of the Culinary Basics subject. Learning outcomes showed an improvement in the average class score, the highest score, and the number of students who achieved the minimum completeness criteria from cycle I to cycle II. The average learning outcome in cycle I was 78, with a percentage of 67%. It improved in cycle II to 86 with a percentage of 94%. The Global Diversity dimension had a final average of 73%, categorized as good, while the mutual cooperation dimension had a final average of 75%, which was included in the good category.

CONCLUSION

Based on the results of implementing the NHT learning model on the learning outcomes of phase E in the Culinary Basics subject of grade X Culinary 6, 24 students achieved the Minimum Completeness Criteria in cycle I with a percentage of 67%. In cycle II, it increased to 34 students with a percentage of 94%. In cycle II, students achieved the success indicator because more than 75% achieved the minimum completeness criteria. Implementing the NHT learning model can also provide character education for the students in grade X at SMKN 4 Yogyakarta. The observation results showed that the Global Diversity dimension has an average percentage of 68% and 78% in cycles I and II, respectively, which both were classified as good. The Mutual Cooperation dimension averaged 71% in Cycle I and 80% in Cycle II, which were included in the good category. The NHT learning model can improve learning outcomes and strengthen students' character in phase E of the Culinary Basics subject at grade X Culinary 6 at SMKN 4 Yogyakarta. There are several suggestions for researchers, namely that researchers should prepare observation techniques so that activities run smoothly because the number of participants who should be

observed is quite large. Character education should be supported and implemented continuously with learning models other than Numbered Head Together (NHT).

ACKNOWLEDGMENT

REFERENCES

Ayang Kinasih.,et al(2023) The Use Of The NHT Type Cooperatife Learning Model can Improve Student' Critical Thinking Ability. International Journal Of Education And Curriculum Application. Vol 6, No 1 (2023).

Antara., I.M.D. (2017). Implementasi Kooperatif NHT Meningkatkan Aktivitas dan Hasil Belajar Senam Lantai Guling Depan dan Sikap Lilin. Jurnal Penelitian dan Pengembangan Pendidikan. Vol. 1 (1) pp. 21-31.

Arung, F., Murtadho, F., Boeriswati, E. (2023). Merdeka Belajar: the Real Learning Needs of Students, Teachers, and Institutions Related to Demands for Independent Learning Innovation. Jakarta: Universitas Negeri Jakarta.

Aqib, Z. (2014). Penelitian Tindakan Kelas untuk Guru SMP, SMA, SMK. Bandung: Yrama Widya.

Ardhyantama, V. (2020). Creativity Development Based On The Ideas Of Ki Hajar Dewantara. Pacitan: STKIP PGRI Pacitan.

Chrisdiyanto, E., Hamdi, S., Jailani, & Cahyanti, M.N. (2023). Efektivitas Problem Based Learning Dengan Model NHT Berbantuan Sempoa Untuk Meningkatkan Hasil Belajar Siswa SMP. Jurnal Program Studi Pendidikan Matematika.Volume 12, No. 1.

Dwiputra, D.F.K., Azzahra, W., & Heryanto, F.N. (2023). A Systematic Literature Review on Enhancing the Success of Independent Curriculum through Brain-Based Learning Innovation Implementation. Bandung: Universitas Pendidikan Indonesia.

Fahmawati, N., Hartatik, S., Kasiyun., S., & Nafiah. (2021). Meta Analisis Pengaruh Model Pembelajaran Numbered Head Together terhadap Hasil Belajar Matematika SD. Jurnal Matematika dan Pendidikan Matematika tika dan Pendidikan Matematika. Vol. 12, No. 1 April 2021.

Gumartifa, A., et al (2020). Perception of Teachers Regarding Problem-Based Learning and Traditional Method in the Classroom Learning Innovation Process. Palembang: Universitas Muhammadiyah Palembang.

Hastiani, H., Sulistiawan, H., & Isriyah, M. (2023). Sosialisasi Pentingnya Kolaborasi Orang Tua Dalam Mendukung Penerapan Projek Penguatan Profil Pelajar Pancasila (P5). Jurnal Pengabdian Multidisiplin, 3(1), 31–35. https://Doi.Org/10.51214/Japamul.V3i1.592.

Jasiah et al. (2021). Mahir Menguasai PTK (Penelitian Tindakan Kelas) Dalam 20 Hari. Indramayu: Adab.

Kemendikbud. (2023). CP dan ATP Fase E Dasar-Dasar Kuliner. Retrieved from guru.kemendikbud.go.id:https://guru.kemdikbud.go.id/kurikulum/referensi-penerapan/capaian-pembelajaran/smk/dasar-dasar-kuliner/fase-e/.

Mayong Maman, Andi Aryani Rajab(2016) The implementation of Cooperative learning model 'number heads together (NHT)' in Improving the students' Ability in Reading Comprehension. International Journal Of Evaluation And Research In Education. Vol 5, No 2 > 2016

Muhammad Rais Baziat,at al.,(2024) Improving Student Learning outcomes through the Numbered Head Together learning model on always saving energy material grade iv elementary school. International Journal Of Multicultural And Multireligious Understanding. Vol 11, No 1 (2024)

Muslihati, M. (2024). Muslihati, M. (2024). Peran Bimbingan dan Konseling dalam Penguatan Pendidikan Karakter di Sekolah Menengah Kejuruan. Malang : Universitas Negeri Malang. Malang: Universitas Negeri Malang.

Noviarini, N.P., Ardana, I.K., Wiyasa, I.K.N. (2020). Model Pembelajaran Numbered Head Together Berbantuan Media Peta Konsep terhadap Kompetensi Pengetahuan IPA. Jurnal Penelitian dan Pengembangan Pendidikan. Vol. 4 (2) pp. 193-203.

Reyes, Mariefhel S., at al (2024) Enhancing Students' Academic Performance in Science Through the Use of Numbered Heads Together (NHT) Learning Strategy. United International Journal for Research & Technology. Volume 05, Issue 11.

Riduwan. (2019). Belajar Mudah Penelitian untuk Guru, Karyawan dan Penelitian Pemula. Bandung: Alfabeta.

Sariawan, M.K.N, Yudiana, K., Bayu, G.W. (2020). Penggunaan Model Pembelajaran Numbered Heads Together dalam Meningkatkan Hasil Belajar IPA. Jurnal Penelitian dan Pengembangan Pendidikan. Vol. 4 (2) pp. 325-333.

Setyaningrum, A., et al. (2023). Penerapan Model Pembelajaran Problem Based Learning pada Elemen Dasar Pola Fase E di SMK Negeri 2 Lumajang. Surabaya: Universitas Negeri Surabaya.

Shoimin, A. (2016). 68 Model Pembelajaran Inovatif dalam Kurikulum 2013. Yogyakarta: Ar-Ruzz Media.

Sugiyono. (2016). Metode Penelitian Kuantitatif, Kualitatif, dan RnD. Bandung: Alfabeta.

Sutarni, S., 7 Maulita, D. (2023). Pengaruh Model Pembelajaran NHT Berbantu LKPD Berbasis HOTS Terhadap Hasil Belajar Ditinjau Dari Aktivitas Belajar. Jurnal Program Studi Pendidikan Matematika. Vol. 12, No. 1, 2023, 708-716.

Tarjiah, I., et al. (2023). Thematic Learning Models with the Role-Playing Method in the Merdeka Curriculum in Inclusive Schools. Jakarta: Universitas Negeri Jakarta.

Yaniawati, P. M. (2021). Mathematics Mobile Blended Learning Development: Student-Oriented High Order Thinking Skill Learning. European Journal of Educational Research, 69– 81. https://doi.org/10.12973/EU-JE.