



How to Improve College Student Understanding of English for Mechanical Engineering

Lelu Dina Apristia*, Ari Dwi Nur Indriawan Musyono, Sudiyono Sudiyono

Department of Mechanical Engineering, Universitas Negeri Semarang, Indonesia

**Email: leludinaapristia@mail.unnes.ac.id*

ABSTRACT

This paper is premised on case method of teaching used to improve college student understanding of English for mechanical engineering. The approach to the case method is hermeneutic phenomenology as stated by Martin Heidegger to interpret experiences of college students in order to solve the case in the form of reliable questions about English for mechanical engineering which is less familiar than English in general to them. The application of case method of teaching English for mechanical engineering by the English lecturer engaged the students in experiencing familiarity of mechanical engineering field, experiencing objective testing, experiencing multiple attempt-to-answer procedure, and experiencing long time allocation to problem-solving. Interpretation of the experiences by using the approach affirms the effectiveness of case method of teaching to improve college student understanding of English for mechanical engineering.

Keywords: *Case Method of Teaching, Hermeneutic Phenomenology, Interpret Experiences, The Effectiveness, To Improve, College Student Understanding.*

1. INTRODUCTION

Teaching English is a dynamic practice. It is reflected from different teaching methods according to different teaching goals [1]. Teaching goals which are supposed to give meanings to human life are always grounded in the changing socio-cultural context, so there follows change of teaching goals [2]. It is in line with teaching foreign language, English in particular, to develop intercultural competence [3]. Consequently, dynamic English teaching method is applied to meet societal demands for development.

In the context of Indonesia, meeting the demands is in consideration of cultural diversity. It is understandable for Indonesia is one of big countries in the world (5,193,250 km²) which comprises 17,508 islands, about 1,300 ethnic groups [4] with over 250 million citizens [5]. Regarding religions, more than 85% of Indonesian citizens are Muslims or followers of the religion of Islam as one of six official religions in Indonesia along with Protestantism, Catholicism, Hinduism, Buddhism and Confucianism [6] [7]. Thus, Islamic culture which shows secularization associated with Western culture as liberation of man from religious tutelage [8] is integrated with Indonesian culture [9]. That said, Western culture,

especially in the form of English, is not to be taken for granted.

In Indonesia, teaching English aims at ability to communicate globally. English was included by Indonesian government in the education curriculum after Indonesia attained its independence and was chosen as an international language enabling Indonesia to communicate with world for its economic development [10] as well as for improving the quality of human resources [11]. To achieve the goal, Indonesian government issued a series of national education curricula in the years of 1947, 1952, 1968, 1975, 1984, 1994, 2004, 2006, and 2013 by conforming the teaching methods to Indonesian culture [12]. For instance, English teacher could make listening material about Indonesian folklore in English [13]. In other countries in Asia such as China and Japan, the production of teaching materials which rely heavily on local experience and local culture presents a question of how to handle Western culture for the benefit of teaching English effectively as a foreign language for global communication [14]. Thus, students are able to attain global communication through local culture in English.

In the context of Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang as one of state universities in Indonesia under

the Ministry of Education and Culture and Culture of the Republic of Indonesia, English is one of mandatory courses. English was included in *Buku Kurikulum Universitas Negeri Semarang 2020* or Curriculum Book of Universitas Negeri Semarang in 2020 arranged for the department in accordance with national curriculum in 2020 [15]. English is taught in the first semester which is included in the odd semester only with two (2) credits to attain two learning outcomes that students or graduates from the department master pedagogical theoretical concepts in accordance with the scope of work and master knowledge of communication techniques effectively not only with fellow engineering graduates, but also with the wider community, including proficiency in English [16]. The learning outcomes reflect English as an international language used by the majority of the world's population as a general linguistic tool, not as tool for understanding or teaching cultural values of US or UK [17]. So, English that students must take in the department is basically English in general.

Even so, teaching English in general is challenging. English is not the main language in trade and education in countries where learners learn English, such as in Indonesia [18]. Unlike in Philippines where English is used as medium of instruction for all the subjects taught in schools and universities, English in Indonesian schools is a foreign language subject, because Indonesian education authorities are very sensitive to the teaching content related to Western cultures which may not suitable for the local students [19]. In the context of Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang in 2018-2019 academic year, meetings between the English lecturer and the students were considered short, so some of them had poor understanding of parts of speech and tenses contained in structure and written expression section of TOEFL [20]. Whereas, English in general has been taught since kindergarten [21]. Outside the class, it is difficult to get the opportunity to communicate using English [22]. Just like in other Indonesian schools, in the department, English is a general linguistic tool that is still learned as a course by the students. Therefore, it is important to create more opportunities for the students to communicate in English inside and outside the class.

In connection with the matter, English lecturer in Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang has applied case method of teaching English since the beginning of 2022-2023 academic year. Case method is one of teaching methods stated in Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 3 Tahun 2020 Pasal 14 Ayat 3 or Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 Article 14 Paragraph 3 [23]. Case method promotes the development of professional skills, because case provides contextual discernment as to its local applicability [24]. By applying case method in conformity to local religious, academic, and nationalistic values [25], the English lecturer connects the students

with the case which is English for mechanical engineering. However, English in general which is contained in TOEFL and must be taken by the students to get its certificate as one of graduation conditions [26] is not suitable for daily interaction in workplace environment [27]. Through teaching English for mechanical engineering, the English lecturer tries to create more opportunities for the students to meet and understand English inside the class and in their workplaces.

2. METHOD

This research is a qualitative one aimed to examine the effectiveness of case method of teaching English for mechanical engineering. As already stated, the case is English for mechanical engineering which is less familiar than English in general in the form of 25 questions. The questions were accessed and answered by 39 students who were in their first semester, particularly in odd semester of 2022-2023 academic year, and in same group in Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang on *Elena* as e-learning system familiar to them and acknowledged by the university. Phenomenology is an approach to the case associated with qualitative data [28]. Phenomenology is applied to look at "the phenomenon" as it is actually experienced and to describe it in detail [29], specifically hermeneutic phenomenology. Hermeneutic phenomenology is focused on subjective experience of individuals and attempts to unveil or to understand the world as experienced by them through interpretative process [30]. Interpreting the experiences results "the phenomenon" indicating if case method of teaching English for mechanical engineering is effective or not.

3. RESULTS AND DISCUSSION

After the English lecturer applied case method of teaching English for mechanical engineering in the form of 25 questions which were accessed and answered by the 39 students on *Elena*, average score out of 100 obtained by them was 94 or A which means very good [31]. The very good average score relates to number of attempts, time to answer and score of each student as shown in detail in the following table.

Table 1. Students' Number of Attempts, Time to Answer and Scores.

Students by Serial Number on SIKADU (Integrated Academic System of Universitas Negeri Semarang)	Number of Attempts	Time to Answer the Questions in Minutes (mins)	Scores
Student 1	1	82 mins	100
Student 2	2	95 mins	96
Student 3	2	39 mins	100
Student 4	2	63 mins	96
Student 5	1	58 mins	88
Student 6	1	49 mins	84
Student 7	3	77 mins	100
Student 8	3	74 mins	100
Student 9	3	57 mins	100
Student 10	2	69 mins	100
Student 11	1	44 mins	96
Student 12	2	76 mins	100
Student 13	2	61 mins	92
Student 14	3	85 mins	92
Student 15	2	39 mins	100
Student 16	2	45 mins	96
Student 17	2	70 mins	84
Student 18	2	51 mins	100
Student 19	2	63 mins	84
Student 20	1	42 mins	88
Student 21	2	42 mins	100
Student 22	1	61 mins	92
Student 23	1	65 mins	92
Student 24	2	90 mins	100
Student 25	2	57 mins	100
Student 26	2	54 mins	100
Student 27	2	56 mins	100
Student 28	1	66 mins	92
Student 29	3	50 mins	92
Student 30	1	52 mins	100
Student 31	1	56 mins	96
Student 32	2	83 mins	96
Student 33	2	72 mins	92
Student 34	1	57 mins	100
Student 35	2	53 mins	68
Student 36	1	71 mins	88
Student 37	1	66 mins	84
Student 38	1	53 mins	92
Student 39	3	47 mins	100
Average Score			94
The Variance of the Total Test Scores			48,6045

The variance of the total test scores or σ^2 is part of Cronbach's alpha Formula to calculate the alpha coefficient or r_α [32]. Other parts of the formula are the number of test items or k and the sum of variances of each test item or $\sum \sigma_i^2$ which can be seen in detail in the following table.

Table 2. Questions and the Variances.

Questions by Serial Number on Elena	Variances
Question 1	2.9149
Question 2	0
Question 3	0.4102
Question 4	1.5114
Question 5	0.4102
Question 6	0.7989
Question 7	0
Question 8	2.1376
Question 9	0.7989
Question 10	1.1659
Question 11	0
Question 12	1.5114
Question 13	1.8353
Question 14	0.7989
Question 15	1.8353
Question 16	0.4102
Question 17	0
Question 18	0.4102
Question 19	0.4102
Question 20	0
Question 21	0.4102
Question 22	1.5114
Question 23	0
Question 24	1.1659
Question 25	0
The Sum of Variances of Each Test Item	20.4480

If the formula for Cronbach's alpha is:

$$r_\alpha = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum \sigma_i^2}{\sigma^2} \right)$$

which k is 25, $\sum \sigma_i^2$ is 20,4480, and σ^2 is 48,6045, the alpha coefficient or r_α is 0,6034. If a Cronbach's alpha value between 0,5 and 0,7 is considered credible at most common [33] which determines if an individual's score is true or objective [34], the 25 questions as sample questions are reliable to this research. Hence, the very good average score obtained by the 39 students is considered objective.

Furthermore, based on what the tables indicate, the application of case method of teaching English for mechanical engineering by the English lecturer involved the 39 students in:

3.1. Experiencing Familiarity of Mechanical Engineering Field

As college students, the 39 students must have knowledge in mechanical engineering field which has been learned by them even before entering college. One of the conditions which high school graduates fulfil to get higher education in college is that a group of knowledge they learned in high schools is linier with the one in college [35]. When finally getting into college, they experience courses which affirm familiarity of the group of knowledge representing the field they choose. So, it is

comprehensible if the 39 students had familiarity of mechanical engineering field, though they were in their first semester.

Their familiarity of mechanical engineering field involves English. More and more English words have been adopted into engineering with meanings in engineering context which are different with the ones in a normal English conversational context [36]. Accordingly, aside from English course, English terms can still be found by the 39 students in other courses in the department.

The English terms in mechanical engineering field are gateways for the 39 students to understand English for mechanical engineering. It is based on the reality of students such as their knowledge which influences the determination of the teaching goal as well as the choice of teaching method [37]. The teaching method giving contextual learning in which learning material is relevant to problem in student environment and thus easily understood by them is case method of teaching [38]. On that note, the application of the method by English lecturer who made English relevant to mechanical engineering field which the 39 students were familiar with suggested their improved understanding of English for mechanical engineering.

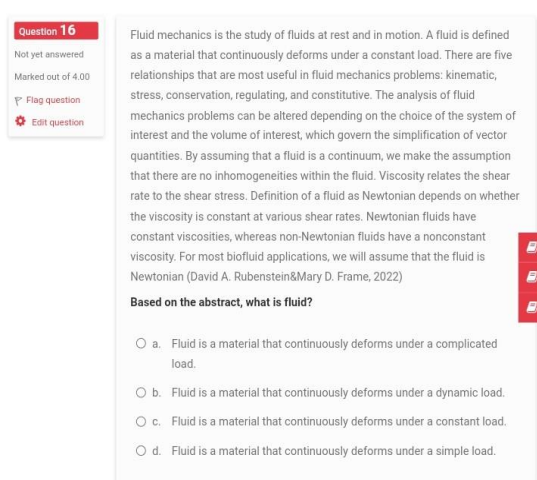


Figure 1. Example of the questions [39].

As reflected in Figure 1, 25 questions which were uploaded by the English lecturer, answered and accessed by the 39 students on *Elena* contain English for mechanical engineering and thus are seen as vivid case. In the distance teaching, most students feel bored, so the instructors can use case method of teaching in the first place, inspire student's thought through vivid case, and make the students have a further understanding of middle-long distance project, to mobilize the enthusiasm and initiative of student learning [40]. Through the aforementioned vivid case, the English lecturer linked student enthusiasm with improved understanding of English for mechanical engineering. The improved

understanding is indicated by the very good average score obtained by the 39 students in Table 1. In other words, the phenomenon is that familiarity with mechanical engineering field in which a number of English terms could be found by the 39 students had impact on their improved understanding of English for mechanical engineering.

3.2. Experiencing Objective Testing

As depicted in Figure 1, 25 questions which were uploaded by the English lecturer, answered and accessed by the 39 students on *Elena* are multiple choice questions. Using English for mechanical engineering which is less familiar than English in general, the questions are included in HOTS (Higher Order Thinking Skills) ones in which college students learn how to solve case or problem [41]. Each multiple-choice question is divided into two parts which are stem and the choices which usually consist of one answer key and three distractors [42]. Thereby, the 39 students were conditioned to think about four solutions offered by it and then decide the best solution to it.

Engaging the 39 students in the condition, the English lecturer was willing to conduct objective testing. However, multiple choice questions are included in objective testing and the achievement is reflected by numerical or letter grades which can lead to rewards [43]. This kind of testing is important when a fair assessment in case method of teaching is difficult due to so many alternative solutions to problems [44]. By conducting objective testing, the English lecturer brought fairness to the 39 students.

As already stated, the 25 questions as multiple choice ones are reliable and so the very good average score achieved by the 39 students is objective. It is what Heidegger called as the phenomenon. The objective testing does not only contribute to an objective score, but also a very good score which can be interpreted as their improved understanding of English for mechanical engineering.

3.3. Experiencing Multiple Attempt-To-Answer Procedure

If coordination between teachers and students under certain objective conditions is required in any kind of teaching method to produce benefits [45], coordination between the English lecturer and the 39 students was required in case method of teaching English for mechanical engineering. They were conditioned to use *Elena* as e-learning system acknowledged by Universitas Negeri Semarang which they were familiar with. *Elena* which stands for Electronic Learning Aid and which has been developed by the university is based on Moodle 2.0 to support academic activities [46]. The Moodle quiz has

been one of the best online exam tools on which the teacher can allow the quiz to be attempted multiple times with the questions or alternatives of a question shuffled [47]. To produce benefit in regard to understanding, the English lecturer let the 39 students experience multiple attempts to answer the 25 questions on *Elena*.

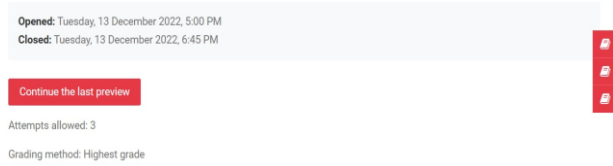


Figure 2 Attempts allowed by English lecturer [48].

As seen in Figure 2, the English lecturer let the 39 students attempt to answer each multiple-choice question three times. The procedure made the process of taking the test more of an educational activity rather than simply an assessment and the randomized alternatives of a question get the students a new version for each attempt [49] to develop insights [50]. With that said, three attempt-to-answer procedure is carried to attain developed understanding of English for mechanical engineering.

Based on the data shown in Table 1, out of 39 students who attempted to answer the 25 questions on *Elena*, there were 14 students or 36% of them who experienced one attempt, 19 students or 49% of them who experienced two attempts, and 6 students or 15% of them who experienced three attempts. Two-attempt-to-answer procedure becomes the most used procedure experienced by the students, while three-attempt-to-answer procedure becomes the least used one experienced by them. If only 15% of the students experienced three-attempt-to-answer procedure and the average score achieved by them was 94, the ability of the 39 students to understand English for mechanical engineering is better than average. So, the phenomenon is that experiencing multiple attempt-to-answer procedure got the 39 students improved understanding of English for mechanical engineering.

3.4. Experiencing Long Time Allocation to Problem-Solving

Problem-solving takes time. It is understandable if case method of teaching needs long time allocation in order to achieve success [51]. Therefore, the English lecturer let the 39 students experience long time allocation to solve the problems in the forms of the 25 questions.

As seen in Figure 2, time allocated to the students to answer the questions was 105 minutes. In other words, the students took 4.2 minutes to answer one multiple choice question. Meanwhile, it usually takes 1 minute to 1.5 minutes per multiple choice question [52]. If the time allocated to them to answer one multiple choice question was longer than usual, the question was potentially difficult.

Using English for mechanical engineering, the questions were less familiar than the ones containing English in general and so were potentially difficult. Example of the questions can be seen below.

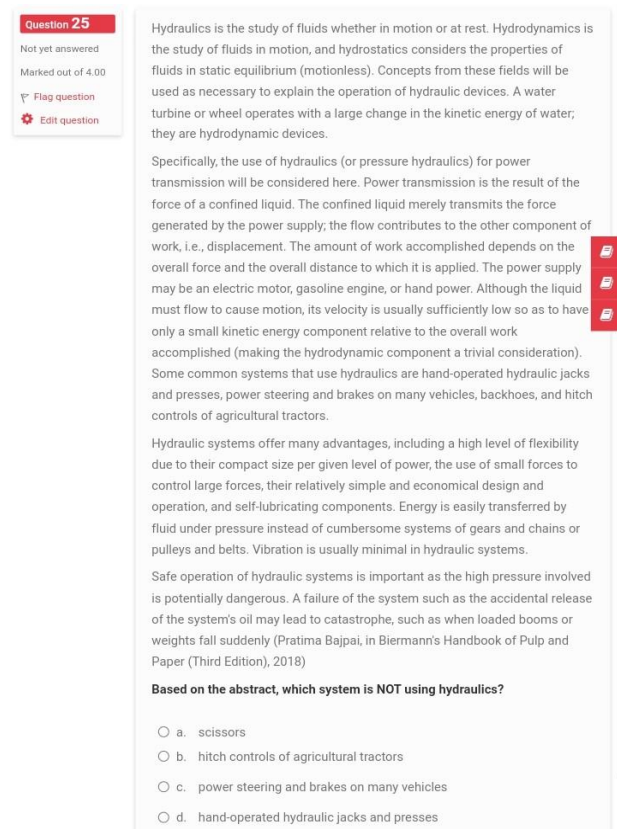


Figure 3 Another Example of the Questions [53].

Figure 3 shows a long multiple-choice question, so it is reasonable if the students took longer than usual to answer it. The question is the case which let them experience case translation to get best solution to it [54] That said, long time allocation experienced by the students was meant for unimpeded translation to decide the best of the possible answers provided by the English lecturer.

Based on the data shown in Table 1, the 39 students took average time which was 61 minutes out of 120 minutes allocated to them to answer the 25 questions. They took 2.4 minutes to decide the best possible answer for each question. In the average time which was shorter than allocated to them, they achieved the very good average score. Therefore, the phenomenon is that experiencing long time allocation for translating as a form of problem-solving made their understanding of English for mechanical engineering improved.

4. CONCLUSION

Case method of teaching English for mechanical engineering which was applied by English lecturer in Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang involved 39 students who were in their first semester and in same

group in the department in four experiences. They were experiencing familiarity of mechanical engineering field, experiencing objective testing, experiencing multiple attempt-to-answer procedure, and experiencing long time allocation to problem-solving. By involving them in the experiences, the English lecturer tried to make them understand as well as familiar with English for mechanical engineering which is suitable for communication in the department and in their future workplaces. Interpretation of the experiences by using hermeneutic phenomenology as stated by Martin Heidegger points out the phenomenon that case method of teaching is effective to improve college student understanding of English for mechanical engineering.

REFERENCES

- [1] N. Zhang, The selection and combination of physical education teaching methods, in: Q. Luo (Ed.), *Sports Technology and Engineering*, CRC Press, Boca Raton, London, New York, Leiden, 2015, p. 15.
- [2] K. Duraj-Nowakowa, Education in a higher education institution: requirements and possibilities of creative solutions to problems, in: I. Surina (Ed.), *Dilemmas of the Modern Educational Discourse*, LIT, Zürich, Berlin, 2014, p. 22.
- [3] R. Adachi, The Challenges in Achieving Globalization through English Language Learning in Japan: A Focus on Elementary Schools, in: C. Gitsaki, T. Alexiou (Eds.), *Current Issues in Second/Foreign Language Teaching and Teacher Development: Research and Practice*, Cambridge Scholars Publishing, Cambridge, 2015, p. 341.
- [4] B. Satya, *A Brave Step: A Success Story in Oil Spill Business*, Translated from Indonesian into English by A. Endah, PT. Gramedia Pustaka Utama, Jakarta, 2017, pp. 40-41.
- [5] S. Chen, T.T. Le, *The TESOL Research Training Journey: Voices from International PhD Students*, Routledge, Oxon, New York, 2021, p. 6.
- [6] N. Bubandt, *Demokrasi, Korupsi, dan Makhhluk Halus dalam Politik Indonesia Kontemporer*, Translated into Indonesian by A.F. Saifuddin, Yayasan Pustaka Obor Indonesia, Jakarta, 2016, p. 16.
- [7] T. Jones, *Kebudayaan dan Kekuasaan di Indonesia Kebijakan Budaya Selama Abad ke-20 hingga Era Reformasi*, Translated into Indonesian by E.R. Terre, Yayasan Pustaka Obor Indonesia, Jakarta, 2015, p. 211.
- [8] F. Ismail, *Islam Dinamika Dialogis Keilmuan, Kebudayaan dan Kemanusiaan*, IRCiSoD, Yogyakarta, 2021, pp. 311-312.
- [9] M. Hasbullah, *Islam dan Transformasi Masyarakat Nusantara: Kajian Sosiologis Sejarah Indonesia*, Kencana, Depok, 2017, p. 13.
- [10] S. Chen, the discrepancy of meaning of citizenship between the state and society in China: Implications for citizenship education and policymaking. *Education, Citizenship and Social Justice*, 8(3), 2013, 263-275.
- [11] N.M. Ratminingsih, *Metode dan Strategi Pembelajaran Bahasa Inggris*, PT. Raja Grafindo Persada, Depok, 2017, p. 1.
- [12] S. Chen, Educating for social justice in contemporary China: the politics of justice and injustice. *Discourse: Studies in the Cultural Politics of Education*, 43(4), 2022, pp. 617-631.
- [13] D.P. Ratri, Iswahyuni, N. Lailiyah, *Mengajar Bahasa Inggris untuk Anak Usia Dini*, UB Press, Malang, 2018, p. 40.
- [14] K. Tam, *The Englishized Subject: Postcolonial Writings in Hong Kong, Singapore and Malaysia*, Springer Nature Singapore, Singapore, 2019, p. 59.
- [15] Tim Penyusun, *Buku Kurikulum Universitas Negeri Semarang 2020*, Fakultas Teknik Universitas Negeri Semarang, Semarang, 2020, p. 31.
- [16] S. Wahyundari, *Developing English Materials for The Odd Semester of Grade Xi of Avionics Maintenance and Repair Study Program at SMK Penerbangan AAG Adisutjipto*, 2016, pp. 18-19.
- [17] A. I. A. W. Prilia, N. M. Ratminingsih and I. P. N. W. Myartawan, The Efficacy of ICT-based Interactive Games in Fostering Learning Outcome of EFL Young Learners. *Jurnal Pendidikan Bahasa Inggris Undiksha*, 5(2), 2017.
- [18] M. S. Diarsini, L. P. Artini, N. N. Padmadewi, N. M. Ratminingsih, I. G. A. L. P. Utami and N. P. E. Marsakawati, Challenges and Opportunities of Online Assessment Implementation During Covid-19 Pandemic in Indonesia Based on Recent Studies. *European Journal of Education and Pedagogy*, 3(6), 2022, pp. 82-88.
- [19] S. J. Husnaini and S. Chen, Effects of guided inquiry virtual and physical laboratories on conceptual understanding, inquiry performance, scientific inquiry self-efficacy, and enjoyment.

- Physical Review Physics Education Research, 15(1), 2019, 010119.
- [20] L.D. Apristia, S. Asri, D.D. Saputro, W.D. Rahardjo, S.D. Saputra, A.T. Noviyanto, Application of Systemic Functional Grammar for Sixth-Semester Students in Department of Mechanical Engineering, Faculty of Engineering, UNNES, *Advances in Social Science, Education and Humanities Research*, Volume 379, 1st Vocational Education International Conference (VEIC 2019), 2019, pp. 65-66.
- [21] A. Siregar, *Metode Pengajaran Bahasa Inggris Anak Usia Dini*, Lembaga Penelitian dan Penulisan Ilmiah Aqli, Medan, 2018, p. 6.
- [22] N. M. Ratminingsih, M. Suardana and A. A. N. Y. Martin, English for Tour Guide: A need Analysis of a contextual-based language teaching. In *SHS Web of Conferences*, EDP Sciences, vol. 42, 2018, p. 00012.
- [23] Peraturan Menteri Pendidikan dan Kebudayaan Nomor 3 Tahun 2020 tentang Standar Nasional PendidikanTinggi.
- [24] P. Rule and V. M. John, A Necessary Dialogue: Theory in Case Study Research, in: *The Author(s), International Journal of Qualitative Methods*, 2015, p. 4. DOI: 10.1177/1609406915611575
- [25] Anonymous, *Curriculum of Mechanical Engineering*, UNNES, 2023.
- [26] T. Yuwono, *Tips Sukses Kuliah S1, S2 dengan Biaya Sendiri dan Bisa Nikah Sebelum Nyusun Skripsi: Kalau Mau Pasti Bisa*, Penerbit Lakeisha, Klaten, 2020, p. 76.
- [27] G. Ginanjar and M.W. Rizkyanfi, The suitability of TOEFL-ITP as a tourism industry employment requirement for Indonesian university graduates, in: A.H.G. Kusumah, C.U. Abdullah, D. Turgarini, M. Ruhimat, O. Ridwanudin, Y.Yuniawati (Eds.), *Promoting Creative Tourism: Current Issues in Tourism Research*, CRC Press, Boca Raton, London, New York, Leiden, 2021, p. 416.
- [28] D.L. Morgan, *Integrating Qualitative and Quantitative Methods: A Pragmatic Approach*, SAGE, Los Angeles, London, New Delhi, Singapore, Washington DC, 2014, p. 173.
- [29] A. D'Argembeau and M. Van-der-Linden, Individual differences in the phenomenology of mental time travel: The effect of vivid visual imagery and emotion regulation strategies. *Consciousness and cognition*, 15(2), 2006, pp. 342-350.
- [30] C.M. Ghetti, Phenomenological Research in Music Therapy, in: J. Edwards (Ed.), *The Oxford Handbook of Music Therapy*, Oxford University Press, Oxford, 2016, p. 775.
- [31] J. Feldman, *Grading for Equity*, Corwin, California, 2019, p. 95.
- [32] T. English, J. W. Keeley, Internal Consistency Approach to Test Construction, in: R.L. Cautin, S.O. Lilienfeld (Eds.), *The Encyclopedia of Clinical Psychology*, Vol. II: Cli-E, WILEY Blackwell, New Jersey, 2015, p. 1511.
- [33] X. Wang, C. Chen, Case Report: Quantitative recognition of virtual human technology acceptance based on efficient deep neural network algorithm, in: W. Li (Ed.), *Front, Neurorobot*, 2022, p. 33. DOI: 10.3389/fnbot.2022.1009093
- [34] E. Depoy, *Introduction to Research: Understanding and Applying Multiple Strategies*, Elsevier Inc., Missouri, 2016, p. 235.
- [35] A. Soleh, *Aksesibilitas Penyandang Disabilitas terhadap Perguruan Tinggi*, LKiS, Yogyakarta, 2016, p. 98.
- [36] J. Traveyan, *The Making of An Expert Engineering*, CRC Press, Boca Raton, London, New York, Leiden, 2014, p. 217.
- [37] L. Jiang, N. Zang, N. Zhou and H. Cao, English teachers' intention to use flipped teaching: Interrelationships with needs satisfaction, motivation, self-efficacy, belief, and support. *Computer Assisted Language Learning*, 35(8), 2022, pp. 1890-1919.
- [38] E. Andayani, R. I. Mustikowati, S. W. Setiyowati, R. M. Firdaus, Case Method: Mengoptimalkan Critical Thinking, Creativity Communication Skills dan Collaboratively Mahasiswa sesuai MBKM di Era Abad 21, *Jurnal Penelitian dan Pendidikan IPS (JPPI)* 16 (1), 2022, p. 56.
- [39] Anonymous, *ELENA*, Universitas Negeri Semarang, 2021.
- [40] X. Zang and X. Liu, Design of vocal music mobile learning platform based on digital information technology. In *2021 4th International Conference on Information Systems and Computer Aided Education*, 2021, pp. 754-758.
- [41] W. Oktiningrum, D.A.P Wardhani, *Kumpulan Soal HOTS dengan Konteks Warisan Alam dan Budaya*

- Indonesia, Penerbit Numerasia, Sidoarjo, 2021, p. 19.
- [42] N. A. Oktaningrum, E. Hedayani and S. F. Selegi, Efektivitas Model CIRC Berbantu Mind Mapping Terhadap Hasil Belajar IPS Kelas V SDN 91 Palembang. *Innovative: Journal Of Social Science Research*, 2(1), 2022, pp. 44-52.
- [43] P.M. Nugent, B.A. Vitale, *Test Success: Test-Taking techniques for Beginning Nursing Students*, F.A. Davis Company, Philadelphia, 2020, p. 53.
- [44] S. Andayani, The Improvement Technique in Assessing Teaching Skills using Fuzzy Weighted Grading Method. In *Journal of Physics: Conference Series*, IOP Publishing, vol. 1320, No. 1, 2019, p. 012033).
- [45] Y. Pan and L. Zhang, Roles of artificial intelligence in construction engineering and management: A critical review and future trends. *Automation in Construction*, 122, 2021, 103517.
- [46] Anonymous, *Panduan Elena untuk Mahasiswa: Mengakses Online Course Melakukan Pengiriman Tugas (Assignment) Mengakses Forum Diskusi Mengisi Angket*, Universitas Negeri Semarang, Semarang, 2016, p. 5.
- [47] J. Singh, *How to Use Moodle 4.1: Teacher's Manual for the World's Most Popular LMS*, 2022, p. 88.
- [48] Anonymous, *UNNES System: apps.unnes.ac.id.*, 2023.
- [49] J. Singh, *How to Use Moodle 2.7: Teacher's Manual for the World's Most Popular LMS*, 2014, p. 112.
- [50] M. Weisser, *Practical Corpus Linguistics: An Introduction to Corpus-Based Language Analysis*, John Wiley&Sons Ltd, West Sussex, 2016, p. 9.
- [51] A. Febryani, T. Andayani, W. Simbolon, P. Puspitawati, T. Rosalina and A. Fatmarini, The Development of Indonesian Ethnography Courses Based on Case Methods and Team-Based Projects. In *Proceedings of the 4th International Conference on Innovation in Education, Science and Culture, ICIESC 2022*.
- [52] Anonymous, *Test Integrity in WT Class*, 2022.
- [53] Anonymous, *Applications of UNNES*, 2023.
- [54] K. Ardalan, *Case Method and Pluralist Economics: Philosophy, Methodology and Practice*, Springer, New York, 2018, p. 51.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

