







Crafting IT English Teaching Materials based on Outcome-Based Education with a Character-Enriched Flipped Classroom Method

Gusti Nyoman Ayu Sukerti¹,
Luh Nyoman Chandra Handayani²,
I Putu Yoga Laksana³, and Putu Tika Virginiya⁴

¹Information Technology Department, Politeknik Negeri Bali, Badung Indonesia

²Accounting Department, Politeknik Negeri Bali, Badung Indonesia

³Business Administration Department, Politeknik Negeri Bali, Badung Indonesia

⁴Tourism Department, Politeknik Negeri Bali, Badung, Indonesia

ayusukerti@pnb.ac.id

Abstract. This paper is intended to examine how Outcome-Based Education (OBE) can be applied to the creation of English teaching materials tailored for students in information technology. The main goal is not only to impart English language skills through instruction but also other IT-related and measurable qualifications useful for the professional workplace settings. This study is valuable because it combines OBE, which requires defined outcomes, with a humanistic, progressive, character-enriched approach. This combination not only improves students' academic skills but also fosters their character, developing both professional and social competence at the same time. The R&D process was implemented based on the ADDIE model involving 116 participants including the Information Technology Department staff, alumni, and industry in the needs analysis stage. This served as the foundation for the conclusions reached when designing educational materials. The findings show that when the character-enriched progressive method is paired with OBE, it has a strong twofold effect on learning experience, making students more passionate about their studies while also educating them with key abilities for the IT business. Such an integrated approach provides a balanced learning experience, enhancing both technical capability and character development. This finding is significant as it underlines the possibility of producing contextualized educational resources that are effective in enabling students' overall success in other contexts as well. Since this research investigates educational practices that best suit the needs of specific professionals and holistic student development.

Keywords: Character-Enriched Learning, English for Specific Purposes, Flipped Classroom, Information Technology, Outcome-Based Education

1 Introduction

Developing reliable English language teaching materials for information technology (IT) students has gradually become a vital task nowadays. The interconnected global

© The Author(s) 2024

A. A. N. G. Sapteka et al. (eds.), *Proceedings of the International Conference on Sustainable Green Tourism Applied Science - Social Applied Science 2024 (ICoSTAS-SAS 2024)*,

Advances in Economics, Business and Management Research 308,

https://doi.org/10.2991/978-94-6463-622-2_11

economy now requires IT professionals who frequently work with competitive international teams to master good English. This study aims to explore the application of Outcome-Based Education (OBE) in developing English teaching materials specifically and scientifically adapted for IT students. The primary aspiration is to ensure that English instruction educates students not only in language ability but also equips them with measurable skills, that is essential to success in the IT world (Putra et al., 2023; Kim, 2020).

The significance of this research lies in that it uses characters with progressive meanings for character-building combined and integrating Outcome-Based Education (OBE) to develop the learning material in English for Specific Purposes (ESP) to enrich students' learning experience. This collaborated approach aims to enhance students' academic competence on the one hand and stimulate their character growth at the same time, fostering both professional and social competencies (Cahapay, 2021; Shyamalapasanna et al., 2021). In fact, existing research and practice both highlight the increasing importance of using information technology to promote the teaching and learning of English. One particularly popular teaching mode that is both student-centered and active learning, 'flipped' learning has been widely praised both for its pedagogical value and pronounced effects on students' learning (Wang & Yu, 2022).

Flipped learning offers many active learning opportunities which in turn lead to more interest and increased understanding. Both research and practice in flipped learning were explored (Alonso et al., 2023; Arslan, 2020; Birova et al., 2023; Wang & Yu, 2022). They found that models of this type foster increased student learning through a program that promotes an overhaul in attitude about education as well as direct applications. Moreover, (Birova et al., 2023) further argue that flipped learning now also allows learners expanded freedom and a quicker passage through materials or courses. Thus, educational experiences have likely become more personal and powerful.

In addition, when elements of character building are included in the learning process, research has shown that an individual who benefits from this approach will be rounded and capable of not just surviving academically but also fitting into other sectors of character education, by concentrating on such personal qualities as integrity, responsibility, and empathy. This ensures that students will have not only the technical skills to survive, but also the soft skills required for both personal and professional success (Prasetyo et al., 2020; Rosidah et al., 2022). This comprehensive mixed approach works in line with the aims of OBE which emphasizes specific measurable achievement and prioritizes personal outcomes for professional workplace settings (Isa et al., 2017).

The combination of these pedagogical strategies—OBE, the flipped classroom model, and character education—creates a comprehensive framework for developing English teaching materials that are not only situationally relevant but contextually appropriate as well. There is a progressive aspect to this system whose outcomes range from driving maps of outcomes to task chains and according with the level of language skill and cognitive skills, ensures that students continuously build upon their skills and knowledge, leading to a more comprehensive and engaging learning experience (Du & Wang, 2019; Yan & Shuyue, 2021). Other findings suggest that the integration of a

character-enriched flip classroom with Outcome-Based Education effectively improves students' participation and gives them skills that align with industry requirements on the IT track (Arslan, 2020; Malik & Zhu, 2023; Zhou, 2023).

This present study, guided by the ADDIE model of instructional design, aims to bridge the gap between the IT industry's demands and the English language proficiency of students involving investigations and assessments into the needs of total 116 participants including students, Information Technology Department staff, graduate alumni, and representatives from companies which employ our alumni. This research is unique in that it comprehensively integrates such pedagogical strategies to produce a customized educational resource for IT students. Thus, it suggests an educational strategy for English for Specific Purposes that harmonizes educational outcomes with the needs of industry in a mutually reinforcing way.

This approach ensures that graduates develop not only technical competencies but also necessary non-cognitive skills for successful world teamwork and team leadership. Moreover, by using the ADDIE model in curriculum development and receiving feedback from all parties to ensure it is systematically built up and constantly improved. This iterative process makes instructional materials more relevant and effective, responding to the rapidly altering requirements that today's IT workplace requires. Ultimately, this study contributes to framework on outcome-based education in higher vocational setting and its application to specialized fields. With its invaluable perspective, ideas and experiences are offered to educators and course designers striving to produce professional industry-ready graduates with adequate English competence and relevant soft skills.

2 Methodology

The research methodology in this study adheres to the ADDIE framework (Analysis, Design, Development, Implementation, and Evaluation) in developing English teaching materials for IT students designed specifically to the OBE character-based approach. During the analysis phase, based on a series of questionnaires (delivered to IT students, faculty members, alumni and industry) the data collection identified professional skills, and necessary languages used in information technology. In the design phase, the syllabus was mapped out in three modules with measurable learning objectives for Language Proficiency; Cognitive Skills, and Character Enrichment integrated in twelve units. During the development phase, multimedia instructional resources and the handout were produced for a flipped classroom approach using student-initiated content delivery and interactive class activities. The implementation (pilot test) phase tested these materials and the feedback was used to improve it. Finally, the Evaluation phase assessed the overall effectiveness of the character-enriched, OBE-based flipped classroom approach. This phase utilized a combination of project evaluations, student reflections, and feedback surveys. This methodology is the holistic way to build English teaching materials that develop both linguistic and vocational needs in creating the professional character of IT students.

3 Result and Discussion

3.1 Result

This research study seeks to identify the advantages of integrating a character-embedded flipped classroom approach with Outcome-Based Education (OBE) in teaching English materials to college students majoring in IT. Through this method, not only can students improve academically; but their individual character is also fostered, covering both career requirements and social competencies. The comprehensive needs analysis covered 116 participants including students, IT department staffs, graduates, and professionals from the industry. This was essential for understanding the language that is specific to that industry and also the indispensable professional skills required in IT so that designed material can have a meaningful impact and adhere to industry norms.

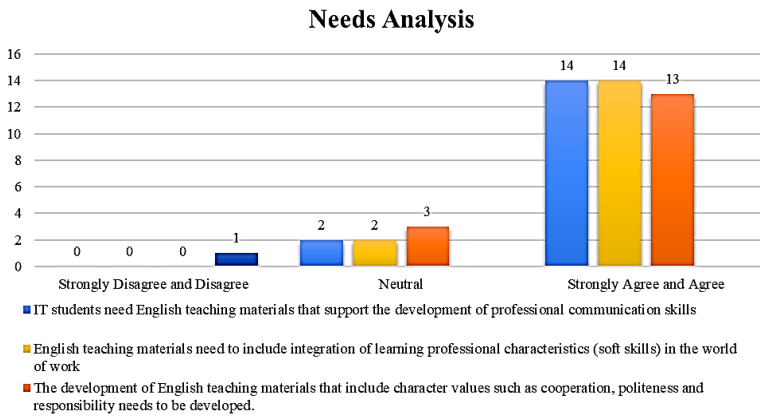


Figure 1. Alumni’s perspective on the importance of character integration

The survey data illustrated in Figure 1 showcases IT graduates’ opinions on improving English instructional materials, with an overwhelming majority of 88% agreeing or strongly agreeing that changes are necessary, while 13% remained impartial and none disagreed. Specifically, 88% believe English teaching resources should cultivate professional communication competencies and integrate learning soft skills. Moreover, 81% asserted that English materials ought to encompass character values like collaboration, courtesy, and responsibility, while 19% took a neutral position. his perspective is also supported by students majoring in IT, department staff, and industry experts, underscoring wide consensus on the need to integrate character-building and professional communication skills into the ESP materials.

The syllabus was formed based on the result of the comprehensive needs analysis resulting in three modules with twelve units in total. Module 1 focuses on IT-related employment and system management. Its aim is that students will be equipped with some basic knowledge and practical skills as future workers in the IT field. To this end, they will work on their listening, speaking ability, reading comprehension, and written

work styles, expanding the range of vocabulary for IT topics, and grammatical structures based on the practical usage. Module 2 delves into IT projects, guiding students through the processes of website design and development, mobile programming, and computer networking. This hands-on approach encourages creativity, problem-solving, and leadership, as students work on developing fully functional IT solutions, honing their ability to construct, summarize, report, and elaborate on complex IT concepts and tasks. Module 3 changes subject attention to IT solutions and marketing. The key topics addressed at this aforementioned stage are IT threats and attacks, security solutions, IT recommendations, and digital marketing. This module serves to enhance students’ analytical thinking, vigilance, and critical thinking; it also promotes creativity and adaptability. During the classes, students handle various output tasks like research projects, presentations, and role plays. Each module ends with a comprehensive milestone task in which students apply their accumulated skills and knowledge to plan a project make IT products devise marketing strategies. These final projects not only assess their technical proficiency and ability to synthesize information but also demonstrate their responsibility, attention to detail, and integrity, ensuring they are well-prepared for their future professional endeavors in the IT field.

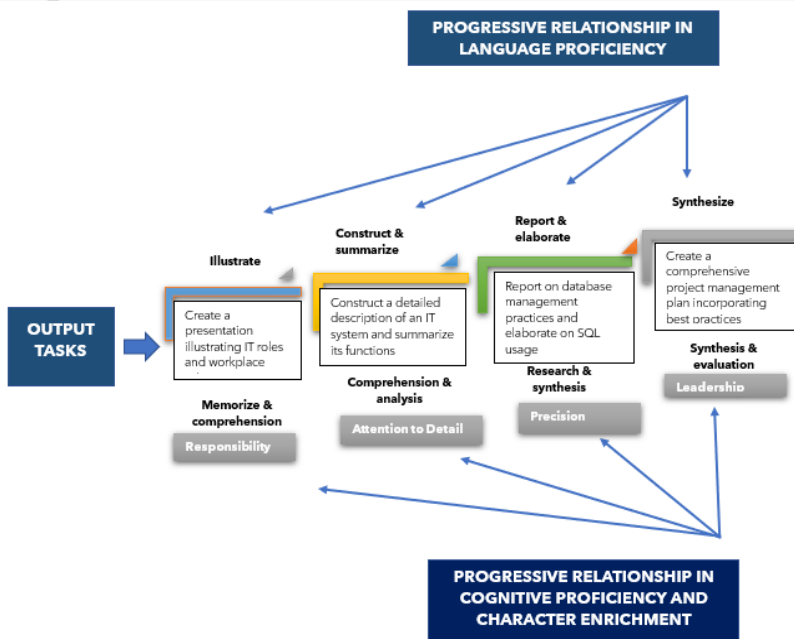


Figure 2. Outcome navigation blueprint

The outcome navigation blueprint as shown in Figure 2 was designed based on the adaptation from (Du & Wang, 2019) and the development of the previous driving map of outcome designed by the author with the integration of the digital learning platform ‘Flipgrid’ (Sukerti et al., 2021). The outcome navigation blueprint in this present study was designed to ensure that students not only learn the theoretical concepts but also

apply them practically through progressive tasks and character-building. The Blueprint of Task Sequence and Outcome Navigation describes the structure of output tasks, and the development of language proficiency progressively to allow students to make progress in character-building and broadening knowledge throughout the course. Certain output tasks are prescribed for students at different stages, based on the syllabus. They are steadily progressive and prepare students for realistic IT situations. In their technical reports, they use specially adapted grammar and vocabulary reflecting what the IT profession demands. Cognitive proficiency and character development can also be acquired through this series of exercises based on the nature of the tasks. For example, students have to master the memorization of basic IT concepts. Activities are carried out on an increasingly complex scale: students go from argument and synthesis to tasks such as writing database reports and project management plans.

In designing the materials, multimedia technology, and online platforms were utilized to craft a flipped classroom model. The materials included video lectures, interactive exercises, assigned readings, detailed lesson plans integrated with multimedia assets, and character-building activities. These materials were intended to facilitate independent learning before class sessions, followed by in-class activities promoting participatory discussion and hands-on application. Module 1, titled “IT Related Jobs + System Management”, follows a structured workflow and outcome roadmap to ensure a comprehensive learning experience across each unit. This organized approach aims to progressively cultivate language proficiency, cognitive skills, and principles of good character in a cohesive and impactful manner. Thoughtfully assembled, each unit in the three modules addresses specific language and reasoning benchmarks and highlights the professional traits. The sequence of exercises—from listening and reading to writing and speaking—aims to demonstrate not only theoretical aspects of IT-related topics but also practical implementation. This holistic approach strives to develop a complete overview of IT roles, infrastructures, database administration, and project leadership, equipping students with the requisite talents and insights to succeed in the IT field. The integration of career readiness and character-building components further prepares them for the duties and challenges of their future careers.

The implementation stage consisted of piloting the teaching materials with IT students consisting of four different classes. This phase included a full unit trial where students were given online activities together with directed time in the classroom, for problem-solving and discussions on practical applications. That feedback and observations were used to refine the materials before broader implementation. The Evaluation phase focused on the extent to which the character-enriched, OBE-based flipped classroom approach was effective as a whole. Observation, surveys, and interviews were used to collect expert reviews as well as feedback from the students as potential users in a classroom environment. The assessment considered student learning experience to assess the engagement and more effective learning which leads to improved technical capabilities as well as transferable soft skills, including critical thinking, problem-solving, and teamwork. Data obtained from student and teacher surveys and feedback were analyzed for engagement, satisfaction, and perceived value of the learning experience. The evaluation results were employed to improve the teaching materials and teaching methods according to the needs of the industry.

3.2 Discussion

This study significantly contributes to the increasing evidence that the flipped classroom combined with outcome-based education, a progressive pedagogical approach characterized by character development, can promote the improvement of English teaching content for IT. The flipped classroom model shifts the bulk of initial learning from the classroom to before and after classroom activities. Student independently focus on multimedia content and spend the classroom time on collaborative or interactive exercises. This can serve not merely as a form of participation, however, but also brings deeper knowledge and application (Peisachovich et al., 2016).

Furthermore, character development works together with professional skills training to ensure that students become proficient at computers (IT systems specifically), web design, database management, and other technologies while also mastering things like critical thinking and teamwork as the essential soft skills needed in the workplace setting. This two-fold emphasis has been supported by (Nor & Sihes, 2021; Muammar & Alhamad, 2023). Their research made the point that the curriculum must develop people who are sound in character as well. This present study also emphasizes the need for a curriculum adaptive to the fast-changing IT landscape, with practical exercises and real-world projects enhancing the student's technical skills meanwhile fostering the character-building integrated in the learning materials and tasks. This is in line with the finding stating that employers increasingly value these competencies, often prioritizing them over purely technical skills when making hiring decisions (Tripathy, 2020). Therefore, embedding character education into IT curricula ensures that graduates are equipped with a balanced skill set, capable of navigating complex professional environments and contributing positively to their teams and organizations (Groeneveld et al., 2020; Kappelman et al., 2016).

This approach aligns with the evolving paradigm in higher education that emphasizes the recognition of specific talents and multiple intelligences, as proposed by (Husain, 2023). Traditional teaching methods often focus primarily on cognitive skills, potentially neglecting other forms of intelligence that are crucial for personal and professional success. By incorporating character development into the curriculum, the proposed model addresses the holistic needs of IT students, preparing them for the demands of the modern workforce. This comprehensive approach ensures that graduates are not only technically proficient but also possess the personal qualities and soft skills that are highly valued in the workplace (Groeneveld et al., 2020).

The implications of this study extend beyond the immediate context of IT education. By demonstrating the efficacy of integrating character-enriched flipped classroom methods with outcome-based education, this research provides a framework that can be adapted to various educational domains. The findings suggest that such an approach can result in improved student engagement, better alignment with industry requirements, and the development of well-rounded graduates equipped with both technical skills and personal qualities. This OBE model can serve as a valuable reference for educators and policymakers aiming to enhance the quality and relevance of their instructional strategies, thereby contributing to the broader goal of educational

excellence and workforce readiness (Isa et al., 2017; Syamsudin & Maulana, 2023; Wang, 2021; Wibowo & Sujarwo, 2022). Moreover, the adaptability of this model underscores its potential for widespread application in diverse educational settings, promoting a more dynamic and responsive approach to curriculum development (Cahapay, 2021; Husain, 2023; Wang, 2021; Wibowo & Sujarwo, 2022).

4 Conclusion

The enriched flipped classroom method, incorporating Outcome-Based Education principles, introduced a forward-thinking approach to IT education. This research demonstrated that integrating character development with targeted skill improvement enhances student involvement and academic achievements. By emphasizing measurable objectives and individual traits, this dual-focused approach delivers a comprehensive education that aligns with the evolving demands of contemporary industries. The discoveries validate the study's targets, demonstrating significant improvements in students' technical competencies as well as crucial soft skills like critical thinking and team collaboration. The implications of this exploration extend past IT education, supplying a structure that can be adapted by instructors in various arenas. This holistic model aligns with contemporary educational theories and presents a pathway forward for cultivating well-balanced, capable, and adaptable professionals. Future research may explore the scalability of this approach in various disciplines and more significant, more diverse educational environments. Overall, the study furnishes important insights and a robust framework that can enhance instructional strategies worldwide, eventually contributing to the progression of capable and versatile professionals.

Acknowledgment

The authors would like to express our gratitude to the Center of Research and Community Services Politeknik Negeri Bali for granting the research grant.

References

- Alonso, R. K., Vélez, A., Martínez-Monteagudo, M. C., & Rico-González, M. (2023). Flipped learning in higher education for the development of intrinsic motivation: A systematic review. *Education Sciences, 13*(12). <https://doi.org/10.3390/educsci13121226>.
- Arslan, A. (2020). Instructional design considerations for flipped classroom. *International Journal of Progressive Education, 16*(6), 33–59. <https://doi.org/10.29329/ijpe.2020.280.3>.
- Birova, L., Ruiz-Cecilia, R., & Guijarro-Ojeda, J. R. (2023). Flipped classroom in EFL: a teaching experience with pre-service teachers. *Frontiers in Psychology, 14*. <https://doi.org/10.3389/fpsyg.2023.1269981>.

- Cahapay, M. B. (2021). The sources of outcomes in outcomes based education curriculum development: A closer look. *Pupil: International Journal of Teaching, Education and Learning*, 4(3), 62–76. <https://doi.org/10.20319/pijtel.2021.43.6276>.
- Du, W., & Wang, Y. (2019). Developing an outcome-based ESP course with Blended-Learning Method for Chinese Undergraduates. *Creative Education*, 10(08), 1834–1849. <https://doi.org/10.4236/ce.2019.108132>.
- Groeneveld, W., Becker, B. A., & Vennekens, J. (2020). *Soft Skills: What do Computing Program Syllabi Reveal About Non-Technical Expectations of Undergraduate Students?* <https://people.cs.kuleuven.be/~wouter.groeneveld/courses/>.
- Husain, F. N. (2023). Impact of multiple intelligences and 21st century skills on future work force. *International Education Studies*, 16(3), 16. <https://doi.org/10.5539/ies.v16n3p16>.
- Isa, C. M. M., Saman, H. M., Tahir, W., Jani, J., & Mukri, M. (2017). Understanding of outcome-based education (OBE) implementation by civil engineering students in Malaysia. *Proceedings of the 2017 IEEE 9th International Conference on Engineering Education, IEEE ICEED 2017, 2018-January*, 96–100. <https://doi.org/10.1109/ICEED.2017.8251172>.
- Putra, J. K., Halilurrahman, L. M., & Jaelani, S. R. (2023). Enhancing English Language proficiency: Strategies for improving student skills. *Journal of Scientific (JSRET)*, 2(3).
- Kappelman, L., Jones, M. C., Johnson, V., McLean, E. R., & Boonme, K. (2016). Skills for success at different stages of an IT professional's career. *Communications of the ACM*, 59(8), 64–70. <https://doi.org/10.1145/2888391>.
- Kim, D. (2020). Learning language, learning culture: Teaching language to the whole student. *ECNU Review of Education*, 3(3), 519–541. <https://doi.org/10.1177/2096531120936693>.
- Malik, K. M., & Zhu, M. (2023). Do project-based learning, hands-on activities, and flipped teaching enhance student's learning of introductory theoretical computing classes? *Education and Information Technologies*, 28(3), 3581–3604. <https://doi.org/10.1007/s10639-022-11350-8>.
- Nor, H. M., & Sihes, A. J. (2021). Critical thinking skills in education: A systematic literature review. *International Journal of Academic Research in Business and Social Sciences*, 11(11). <https://doi.org/10.6007/ijarbss/v11-i11/11529>.
- Muammar, O. M., & Alhamad, K. A. (2023). Soft skills of students in University: How do higher education institutes respond to 21st century skills demands? *Journal of Educational and Social Research*, 13(2), 174–186. <https://doi.org/10.36941/jesr-2023-0041>.
- Peisachovich, E. H., Murtha, S., Phillips, A., & Messinger, G. (2016). Flipping the classroom: A pedagogical approach to applying clinical judgment by engaging, interacting, and collaborating with nursing students. *International Journal of Higher Education*, 5(4). <https://doi.org/10.5430/ijhe.v5n4p114>.
- Prasetyo, G., Sebelas Maret, U., & Akhyar, M. (2020). The needs analysis of multimedia learning as a solution to strengthen character Education Furqon Hidayatullah. *Advances in Social Science, Education and Humanities Research*, 422.
- Rosidah, R., Sasmita, N., Wisataone, V., & Hanafi, M. (2022). Character development strategies through the soft skills training to students for job readiness. *Journal of Social Studies (JSS)*, 2, 207–216. <https://doi.org/10.21831/jss.v18i2>.
- Shyamalapasanna, A., Velnath, R., Pousia, S., & Kumar, M. G. V. (2021). Survey of an effective outcome based teaching learning taxonomy in professional undergraduate courses. *IOP*

- Conference Series: Materials Science and Engineering*, 1084(1), 012098. <https://doi.org/10.1088/1757-899x/1084/1/012098>.
- Sukerti, G. N. A., Laksana, I. P. Y., & Handayani, L. N. C. (2021). The integration of digital platform for online speaking practice “Flipgrid” based on task-chains practice and driving maps of outcomes. *The International Seminar on Language, Education and Culture. Universitas Negeri Malang*, 51-62.
- Syamsudin, M. S., & Maulana, I. (2023). Outcome-based education identifying determining factors in improving students learning achievement in higher education systems. *Cendikia: Media Jurnal Ilmiah Pendidikan*, 13(6).
- Tripathy, M. (2020). Significance of soft skills in career development. *Career Development and Job Satisfaction*. <https://doi.org/10.5772/intechopen.89935>.
- Wang, L. (2021). Construction of college English blended teaching model: An outcome-based education approach. *OALib*, 08(09), 1–16. <https://doi.org/10.4236/oalib.1107652>.
- Wang, M., & Yu, Z. (2022). Visualizing the ICT-Assisted Flipped Pedagogical approach in EFL education. *Journal of Information Technology Research*, 15(1), 1–14. <https://doi.org/10.4018/jitr.298328>.
- Wibowo, S. E., & Sujarwo, S. (2022). The development of teaching materials based outcome-based education curriculum to encourage teacher skill. *Jurnal Pendidikan Dan Pemberdayaan Masyarakat (JPPM)*, 9(2), 131–143. <https://doi.org/10.21831/jppm.v9i2.53785>.
- Yan, M., & Shuyue, Z. (2021). Outcome-Based Education for English teaching reform in the era of the “Post-Method.” *European Journal of Literature, Language and Linguistics Studies*, 5(3). <https://doi.org/10.46827/ejll.v5i3.304>.
- Zhou, X. (2023). A conceptual review of the effectiveness of flipped learning in vocational learners’ cognitive skills and emotional states. *Frontiers in Psychology*, (13). Frontiers Media S.A. <https://doi.org/10.3389/fpsyg.2022.1039025>.

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.

