

Enhancing Group-based Undergraduate Research Project in Fostering 21st Century Skills among Undergraduates in Nigerian Universities

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Abstract

The position paper explored, proposed and underscored the benefits of group-based undergraduate research project (GBURP) in fostering the development of 21st century skills among students in the social sciences. The paper was necessitated by the institutional over-emphasis on individual research project style twisted with some irregularities and unethical approaches that undergraduates employ in the process of project implementation and completion in universities. It emphasized the strengths of collaborative project style leveraged with digital technology to mitigating these problems. The work takes its basis from the constructivist paradigms of Bruner and Vygotsky. The ASIE instructional model was proposed to guide the process of the instructional design. The cooperative learning instructional method formed the basis for the GBURP. The GBURP is projected to enhance 21st century skills like critical thinking, research skills, communication skills, problem-solving skills, global citizenship skills, civic engagement skills, global education skills and reduce ethical misconduct in undergraduate project implementation in universities.

Keywords: group-based project, undergraduates, collaborative learning, unethical, twenty first century skills.

Introduction

Undergraduate project is a second semester mandatory course for all final year students in the University of Calabar and indeed all Nigerian universities. It affords final year students the opportunity to embark on scientific research in areas of interest, having been exposed

to the rudiments and basic principles of scientific inquiry. Students carry out research in their specialties building skills on scientific investigation. In some universities, faculties ensure that students research projects are carefully organized and executed in groups where members work collaboratively to bring about implementation. While in other institutions like the University of Calabar, undergraduate research is carried out individually.

The concept of research holds that it is a scientific approach of inquiry, answering questions, solving a problem or generating new knowledge through a systematic and orderly collection, organization, and analysis of information with the ultimate goal of making the inquiry useful in decision-making (Kabir, 2016). Where the basic principles of research are employed and adhered in collaborative project research, it affords students the opportunity to explore, extract and develop docile potentials, build new ones and galvanize them into functional skills that will make them relevant in the society.

However, observable ethical misconduct associated with individual undergraduate research projects style among undergraduates in the universities calls for worry. The problem of “cutting corners” rather than honest scientific inquiry abound in many cases. In many occasions, student contract out their project to second party writers who merely sit back and write everything without their own (student’s) intellectual contribution. In other cases, students copy, submit and defend already finished project from library sources, they ‘cook up’ data for analysis without going to the field for data gathering (Obateru, 2022). Furthermore, the availability of digital tools like artificial intelligence (AI), ChatGPT have been grossly misused and abused as students lift materials directly from online sources and present them as projects (Ndayebom & Gbemisola, 2023). These are gross contradictions to the principles and ethics of scientific inquiry in pedagogy, and could inhibit learning and development of functional skills among students. The writers are of the view that the state of affairs is the result of institutional over-emphasis on individual undergraduate research project style. Hence, there is need to adopt a collaborative approach to undergraduate research as this could check these excesses and foster the development of beneficial skills for the 21st century learner. Collaboration helps students evaluate information as a group as against individual assessment. It helps individuals within the group to harness diverse ideas into the project, and fosters critical thinking, creativity, communication and problem solving, among a host of other benefits (Benson, 2025; Van & Haffejee, 2017).

The group-based undergraduate research project (GBURP), hereby proposed, integrates collaborative/cooperative learning principles - an innovative learning approach that is empirically tested and found to be effective in bringing about positive learning outcomes

(Alsubhi et al., 2023; Ozturki, 2023; Pateşan et al., 2016). Moreover, this approach becomes more effective when leveraged with technology (Sarker et. al., 2019) and could curtail significantly ethical misconduct in project implementation among undergraduates. The use of digital technology has become a daily pattern for most undergraduates and digital gadgets like the mobile phones, laptops, iPad, computer have come to stay (Pattermann et al., 2022). An instructional design that excludes this daily narrative is dysfunctional (Zubaidi & Shanmugaraj, 2024). Instructional design that leverages on technology and accounts for individual group member participation, divides component project parts among group members, provides for discussion, analysis, and synthesis of information, could be very fundamental in addressing these academic gaps (Sidig, 2022).

The writers believe that the group-based undergraduate research project (GBURP), if adopted and implemented in faculties, could mitigate significantly these problems and equip students with relevant skills for the 21st century. This paper is devoted to highlight the potentials of collaborative efforts in the group-based undergraduate research project style in fostering 21st century skills and reducing unethical research project practices among undergraduates.

Collaborative learning and undergraduate project implementation

Collaborative/cooperative learning is a strong active learning method in which students work together in a group (Pengyue et al., 2020). Cooperative learning instructional strategy is important because it enhances group learning through group support and responsibility for each other's learning, employs group related skills and evaluate group progress (Ezegbe et al, 2016). Groups have a greater well of resources to tap and more information available because of the variety of backgrounds and experiences (Benson, 2025; Van & Haffejee, 2017). It favours diversity and brings about better learning outcome. Groups stimulate creativity and learners remember group discussions better. Students in group learn more and retain longer than when the same material is presented in other instructional formats (Cagatan & Quirap, 2024). Students in group problem solving are more committed to solution and are better satisfied with their participation than those who were not involved (Zedda et al., 2017). In group learning/project, there is better skill retention, improved communication, and greater self-direction, sharing of mutual experiences and reducing power differentials (Hyun et al., 2017). Assigning project tasks to cooperative students involves students taking part in the learning process with full concentration (Lewis et al., 2018). Cooperative learning brings about "deep learning" through an active and constructivist process, provides opportunities for reciprocity and cooperation, building respect for diverse talents, exploration within groups and enhances interest of learning (Hawazen et al., 2019).

Why cooperative learning is important for GBURP

1) Project objectives: It brings about positive outcome in achievement of project objectives across group members in all stages.

2) Social skills: It increases social skill such as listening, taking turns, conflict resolution skills, leadership skills, and teamwork skills. Students in group learning environment are more polite, tolerant and considerate of others.

3) Social relation: Students feel accepted, liked and cared for. Also, mutual acceptance and caring are enhanced among students.

4) Sense of responsibility: Group members in a cooperative learning are associated with internal sense of control, take more initiative and feel more responsible for the outcome. They also feel more effective because they make more choices and inputs into the project.

5) Diversity of skills and ideas: In heterogeneous cooperative group, students have to work with others who differ from themselves. Such skills are essential today because of increased diversity. Different ideas are harmonized to improve the quality of project outcome.

6) Higher level thinking: In group projects, there are more “knowledgeable others” with higher level thinking. Ideas are synthesized and distilled into desirable project quality.

7) Individual accountability: In group project, each member is given a specific task. They take turns to account for individual tasks.

8) Active participation: Group makes for active, increased and equal participation. Students are at the centre of learning and are actively involved in the learning process.

ASIE instructional model for the group based undergraduate research project (GBURP)

The group-based undergraduate research project (GBURP) fits into the Analyze, Strategize, Implement and Evaluate (ASIE) instructional model by Ismail and Balakrishnan (2017). The model explains instructional design for collaborative learning activities.

Components of the ASIE instructional Design

a) Analyze: The first basic step in this model is to analyse the instructional profile by asking: what quality of instruction in terms of the content and instructional material can bring about the realization of objectives of the project? What teaching strategies can be used for instructional delivery? What assessments methods can be employed? Learners’ profile makes the supervisor appraise the current “state of the art” of students, their level of knowledge in research, their learning strengths and weaknesses, those gifted and those

less gifted. This will help form the project groups. Media profile help in selecting appropriate media/technology for group project. All these are to be analyzed at this stage.

b) Strategize: This includes integrating selected instructional media, accommodating students' skills with the understanding that there are some group members who are gifted, applying tools, instilling values that will make for cooperative learning and formulating instructional objectives.

c) Implement: This refers to adapting instructional planning; trying to see how what has been written down can be implemented in practical terms and then applying instructional planning towards realizing of group project objectives.

d) Evaluate: This includes responding instructional planning, reviewing instructional planning, and revisiting instructional planning. This makes evaluation continuous; that is for formative and summative purposes and as inputs for further research.

Theoretical basis of the GBURP

This work leans on the constructivist theoretical models of Brunner (1961) and Vygotsky (1978) which emphasize learners' active participation and instructors' passive participation for the purpose of learner's discovery and construction of knowledge. It also emphasized the social context of learning positing that learning must necessarily take place within a group.

Three level recommendations/implementation for GBURP

1. The Objectives

Group-based project objectives should be well stated and communicated to members (Sampietro, 2016). In this context, it is important that first, the supervisor makes sure that each student understands the project, knows the purpose of the project and the skills that need to be developed/acquired from the collaborative project (Syukri et al., 2021). By way of motivation, it is needful for supervisors to make students understand how they will benefit by grading and the grading criteria. Successful group work is easier if students know what they will have to benefit as individuals and not as a group, and individual group member is graded based on their individual contribution to the entire project.

2. The process

GBURP will be helpful if students' groups are formed early so as to enable members start working together on course assignments before the time for the group project. This will allow students the opportunity to work together overtime and will help to avoid group dissonance or group disruptive activities that will undermine the smooth process and success of the project. There is need to constitute 3-5 persons per group in order to reinforce group cohesion and unity (Zamecnik et al., 2024). An effective instructional package for group-based project must provide for individual participation, use of

appropriate technologies, discussion of diverse ideas, synthesis of ideas, supervisors' evaluation, description of how the package can be effectively utilized by students, among others. Project activities must be segmented and completed within the given timeframe. Each group must devise a plan of action (Benson, 2025). The plan of action involves assigning roles and responsibilities to group members. The entire project timeframe can be segmented into weeks; members decide when to meet, maybe once in one or two weeks. Number of times they are to have face-to-face meeting and/or online meeting should be clearly stated to enable them review individual task progress, discuss and harmonize differences.

Digital technology used should also be stated (Oskarita & Arasy, 2024). Online meeting can be held via zoom, google meet and WhatsApp platforms. Supervisor can help monitor a group's progress by telling them to submit weekly progress reports. These reports (or weekly meeting notes) should outline what the group discussed, who attended the meeting, and the objectives set for the next meeting. Group project work should be designed in such a way that the success of the individual relies on the success of the group (Hogan & Young, 2021). Group members need to be open to constructive criticism from others (Wulandari & Anugerahwati, 2021), members should be told on how they can harness criticisms to improve the work. Conflict is inevitable in group work, students should be taught how to manage and resolve conflicts that arise (Yean et al., 2024). When there is a "deadlock" arising from disagreements, the solution is not to change members of the group but students should learn how to communicate effectively to ensure successful goal realization and completion of group-project.

3. GBURP evaluation

Formative evaluation is necessary to appraise the process of the GBURP to know whether objectives are realized before final or summative evaluation. It is also important that group members and supervisor are involved in evaluation. Students should be given the opportunity to assess the effectiveness of the group work by listing their individual contribution and that of their group members. Grades should be assigned based on individual's contribution to the entire project. Those who devote more time and effort should earn higher grades than others who did not. Assigning a fix grade to members will not encourage healthy competition. GBURP process assessment is necessary as it will enable the supervisor to evaluate and apply the most effective methods for future projects (Mohammed, 2021).

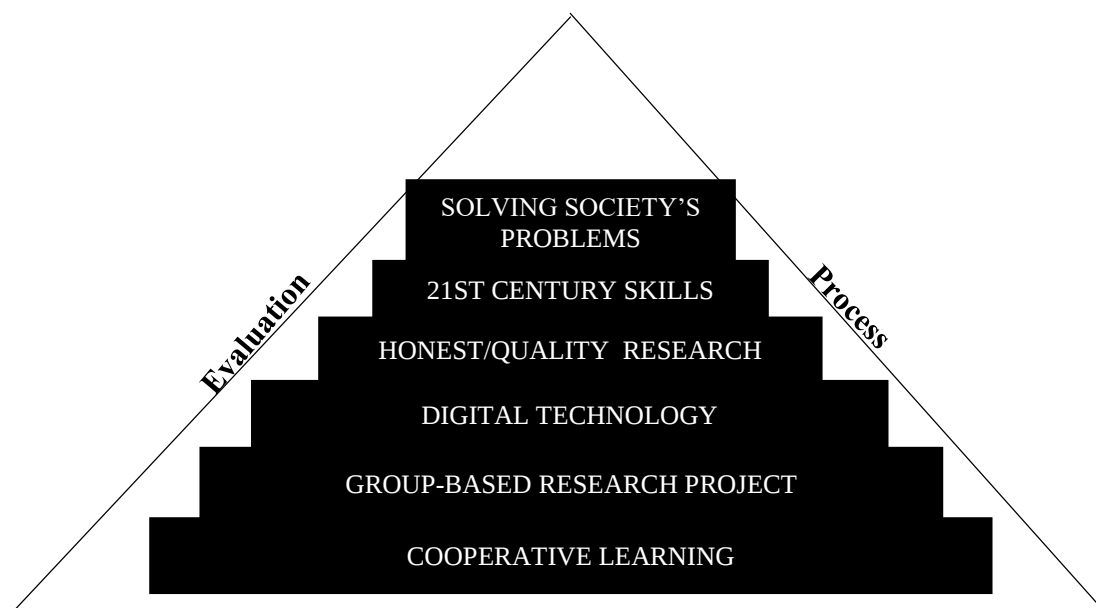


Fig. 1: Stages of GBURP

Objectives

How GBURP can foster 21st century skills

1) Critical thinking skills: Critical thinking is a functional skill important for analyzing information with the sources, evaluating evidence and identifying biases and perspectives. Critical thinking skill is very much necessary in today's world because of information explosion in the 21st century (Rusmin et al., 2024; Mihail, 2022). Media agencies – print and electronic, the internet and the social media - furnish today's learners with a lot of information which need to be critically assessed. Critical thinking skills require:

- Identification of biases: This involves knowing that certain things may have unfair prejudice. Pointing out these biases helps to remove them from contention and see things from a different perspective.
- Research: This refers to employing scientific process/principles of inquiry to find answers to problems and how these answers can be used to solve societal problems.
- Open-mindedness: Open-mindedness ensures that another person's ideas are not dismissed before they are heard. This will ensure progressing to a solution and remove animosity.
- Analysis: Analyzing makes for better understanding of information; it helps one not just to take things at the face value.
- Problem solving: This refers to the ability to find sustainable solution to issues and resolve conflicts.

Critical thinking skill will help learners to be able to verify or scrutinize information in order to have an objective view (Abdulrahman, 2019). In cooperative learning activities, group members come with diverse ideas, views and information and the need to harmonize these differences afford them the opportunity to criticize, argue, analyze and synthesize information thereby building the skills for critical thinking.

2) Research skill: Scientific investigation and inquiry is a fundamental skill in an era where there is constant need for discovery in every field of human endeavour. Cooperative learning activities required in the GBURP afford learners the opportunity to explore, hypothesize, gather facts from diverse sources, experiment and analyse data for results. These will ultimately equip students with research skills for scientific inquiry.

3) Communication skills: Evolution in science, advancement in technology and globalization has brought most of the complexities in human society today (Aldert, 2019). The need for effective communication and dialogue is for conflict resolution, sustainable peace and safe environment. As students work together through collaboration, they learn about healthy communication through group discussion, they learn constructive criticism, by these they understand effective communication and listening skills and learn how to articulate their ideas, listen to others. These skills are needed for active social engagement in the 21st century.

4) Teamwork skills: These are skills that help group members interact and cooperate effectively within the team and are essential for achieving goals and ensuring harmonious group performance. Team work skill is highly needed and prized by today's employers in work environment and corporate organizations. Team work skills include:

- Collaboration: The ability to work in the spirit of the team/group, offer help to others, and motivate positive interaction.
- Appreciating diversity: Understanding the value and importance of diversity in the team and being able to benefit from the skills and experiences of different individuals.
- Solving group problems: The ability to cooperate in solving problems and making collective decisions effectively.
- Goal orientation: Setting and identifying common team goals and ensuring that efforts are directed towards achieving them.
- Conflict management: The ability to deal with conflicts constructively and look for solutions that meet everyone's needs.
- Relying on others: Enhancing trust among team members and achieving positive communication.
- Motivating achievement: Inspiring individuals to succeed and motivating them to perform at their best.

Collaborative project activities in the GBURP inherently fosters team work skills among students.

5) Problem-solving skills: The need to find and provide sustainable solutions to societal problems is the fundamental purpose of the behavioural sciences (Iyagba, 2020). Students are supposed to be problem solvers through the systematic application of knowledge to real world issues, developing solutions and collaborating with others. Basic skills in problem solving include:

- Critical analysis: The ability to analyze situations and break them down into manageable elements.
- Problem identification: The ability to clearly identify the main aspects of the problem.
- Idea generation: Using creative thinking to generate a variety of ideas to solve the problem.
- Evaluating solutions: The ability to evaluate and examine proposed solutions.
- Decision-making: Making the right decision based on the analysis of available information.
- Implementation: Developing a good action plan to implement the chosen solution.
- Monitoring and evaluation: Tracking the progress of implementing the solution and checking for improvements.

Collaborative problem solving through the GBURP provides students with the capacity to apply problem-solving skills acquired to solving problems in society. This is because cooperative learning in the GBURP is inherent with basic principles of social collaboration and interaction identified above.

6) Information media and technology skills: There is the need for information media and technology skills (IMT) in the 21st century. These skills help students evaluate, use and understand media information, access, produce and manage it. IMT skills are essential for critical thinking, problem-solving and communication given the information volatility in the social media. The components of IMT are information literacy, media literacy and technology literacy. Cooperative learning activities in the GBURP integrate the social media (WhatsApp) in mobile phones and other hardware, zoom, and google meet. The collaborative use of these will build a level of IMT skills among students.

7) Global citizenship skills: Globalization has made possible cultural unification in most cultural aspects, behavioural expectation and patterns (Afyare, 2021). Globalization has also brought cultural diversity to bare. Global citizenship skill requires having an understanding of diverse cultures and perspectives, recognizing global interconnectedness and developing empathy and tolerance (Osakwe & Onyeka, 2025). Cooperative learning in GBURP where students bring diverse ideas, behavioural patterns, world views, values and ways of doing things together enable them to understand the nature of human diversity and similarity and learn the principles of peaceful coexistence such as empathy, tolerance and good neighbourliness.

8) Civic engagement skills: When students work together in a group with the aim of achieving certain goals and objectives, each group member with assigned duties tend to recognize boundaries of other group members, their rights as well as his/her own rights, duties and responsibilities, they develop cooperative attitude and behaviour which they will exhibit throughout the group project. As members of a cooperative learning effort like the GBURP, they are also involved in critical decision-making concerning the project. These are civic skills that will be required in due course.

How GBURP can curtail excesses in execution of undergraduate student project

The tasks explained in the GBURP will present a more serious outlook to project research. It will help undergraduates understand that research projects should not be handled with the looseness and levity that opens the door for ethical misconducts. Every student is obligated to actively participate in the work by contributing their own part for the overall success of the project. With strict supervision, coupled with a blend of hardworking and right-thinking group members, everyone is compelled to do things right because defaulters will be conscious of within group evaluations and mindful of their grades.

Conclusion

The group-based undergraduate research project (GBURP) integrates the principles of cooperative/collaborative learning. The benefits of leveraging this research approach with digital technology is projected to reduce the incidences of unethical research practices, and build the needed skills for the 21st century among undergraduates in Nigerian universities. There is therefore need to evaluate the potentials of GBURP against the individual research style with the aim of adopting cooperative research project style for students in Nigerian tertiary institutions.

Suggestions

1. A pilot study for both qualitative and empirical investigation should be carried out among students, lecturers and school management to ascertain institutional readiness for the group-based research project.
2. An experimental study is also recommended to underscore the comparative effectiveness of the group-based research project and the individual project style.
3. The group-based research project is hereby highly recommended by this work in all institutions of higher learning in Nigeria.

References

- Abdulrahman, A. (2019). Importance of Critical Thinking in Solving Society's Problems. *RAIS Conference Proceedings*. DOI:10.5281/zenodo.3549998
- Afyare, A. (2021). Globalization's Impact on Cultural Diversity and Identity. Retrieved from <https://www.researchgate.net/publication/382641593>
- Aldert, K. (2019). Science and Technology Education for 21st Century Europe. DOI:10.5281/zenodo.3582544
- Alsubhi, A., Bin, M., Adnan, M., Yusof, A., Awae, F., & Abuhassna, H. (2023). Cooperative Learning, Method, Strategy, and its Importance in Language Learning: Arabic Language as a Model. *International Journal of Academic Research in Business and Social Sciences*, 13(12), 1053-1075. DOI:10.6007/IJARBSS/v13-i12/19932
- Benson, L. (2025). Teaching Students How to Succeed in Group Assignments. *Pedagogical Inquiry and Practice*, 1. DOI: 10.31542/rm7kb006.
- Cagatan, A. & Quirap, E. (2024). Collaborative Learning and Learners' Academic Performance. *International Journal of Multidisciplinary Research and Analysis*, 7(3), 1326-1335. DOI: 10.47191/ijmra/v7-i03-57.
- Ezegbe, B. N., Mezieobi, D. I., Okonkwo, K. U. & Okeke, J. N. (2016). Effect of Cooperative Learning Instructional Strategy on Students' Achievement in Senior Secondary School Government Curriculum in Onitsha Education Zone, Anambra State. *Revista Kasmera Journal*, 44(1), 456-476.
- Hawazen, R., Bano, N. & Salwa, A. (2019). Comparing the Effects of Individual Versus Group Face-to-Face Class Activities in Flipped Classroom on students Performance. <https://www.researchgate.net/publication/333940949>
- Hogan, M., & Young, K. (2021). Designing Group Assignments to Develop Groupwork Skills. *Journal of Information Systems Education*, 32, 274-282.
- Hyun, S., Ahn, R. J. I., Preman, R. & Naomi, M. (2017). Assessing How Students Learn in Team-Based Learning: Validation of the Knowledge Re-Consolidation Inventory. <https://www.researchgate.net/publication/320445877>
- Ismail. M. Z. & Balakrishnan, M. (2017). *ASIE Instructional Design Model for the 21st Century Learning: An Integral Approach in Instructional Designing for Teachers*. Saarbrücken, Deutschland. Germany: Scholar's Press. Publication.
- Iyagba, P. W. (2020). Learning and Problem Solving: The Use of Problem-Solving Method to Achieve Learning in Pupils. *Asej-Imsubiz Journal*, 9(3), 239-250.
- Kabir, S. (2016). Introduction to Research <https://www.researchgate.net/publication/325846733>

- Lewis, C. E., Chen, D. C. & Relan, A. (2018). Implementation of a Flipped Classroom Approach to Promote Active Learning in the Third-year Surgery Clerkship. *The American Journal of Surgery*, 215(2), 298-303.
- Mihail, R., (2022). The Relevance of Critical Thinking from the Perspective of Professional Training. *Postmodern Openings*, 13, 499-513. DOI:10.18662/po/13.2/468.
- Mohammed, I. (2021). Evaluation in Instructional Design. *Journal of Al-Frahedis Arts*, 13(44), 375-391.
- Ndayebom, A. & Gbemisola, A. (2023). Problems Facing Research Programme in Nigerian Tertiary Institutions. *European Journal of Higher Education and Academic Advancement*, 1, 28-37. DOI: 10.61796/ejheaa.v1i2.252.
- Obateru, O. (2022). Research Projects and Dissertation Writing among Nigeria University Students: Perceived Difficulty Areas and the Way Out. Retrieved from <https://www.researchgate.net/publication/359706882>
- Osakwe, E., & Ukor, O. (2025). Global Citizenship Education and Cross-Cultural Understanding: From the Prism of Social Studies. *DELSU Journal of Educational Research and Development*, 22(2), 1–10. <https://doi.org/10.61448/djerd22201>
- Oskarita, E., & Arasy, H. (2024). The Role of Digital Tools in Enhancing Collaborative Learning in Secondary Education. *International Journal of Educational Research*, 1, 26-32. DOI:10.62951/ijer.v1i1.15.
- Ozturki, B. (2023). The Effect of Cooperative Learning Models on Learning Outcomes: A Second-Order Meta-Analysis. *Educational Policy Analysis and Strategic Research*, 18(3), 273-295. <https://files.eric.ed.gov/fulltext/EJ1408689.pdf>
- Pattermann, J., Pammer, M., Schlogl, S., Gstrein, L. (2022). Perceptions of Digital Device Use and Accompanying Digital Interruptions in Blended Learning. *Educ. Sci.*, 12, 215. <https://doi.org/10.3390/educsci12030215>
- Pateşan, M., Balagiu, A., & Zechia, D. (2016). The Benefits of Cooperative Learning. *Knowledge-Based Organization*, 22(2), 478-483. DOI:10.1515/kbo-2016-0082.
- Pengyue, G., Nadira, S., Lysanne, S., Post, W. A. (2020). A Review of Project-based Learning in Higher Education: Student Outcomes and Measures. <https://doi.org/10.1016/j.ijer.2020.101586>
- Rusmin, L., Misrahayu, Y., Pongpalilu, F., Radiansyah, R., & Dwiyanto, D. (2024). Critical Thinking and Problem-Solving Skills in the 21st Century. *Journal of Social Science*, 1, 144-162. DOI: 10.59613/svhy3576.
- Sampietro, M. (2016). Project Team Members and Project Goals and Objectives. *PM World Journal*, 5. Retrieved from <https://www.researchgate.net/publication/307558505>

- Sarker, M. N. I., Wu, M., Qian, C., Alam, G. M. & Li, D. (2019). Leveraging Digital Technology for Better Learning and Education: A Systematic Literature Review. *International Journal of Information and Education Technology*, 9, 453-461. DOI:10.18178/ijiet.2019.9.7.1246.
- Sidig, L. (2022). The Benefits of Using Collaborative Learning Strategy in Higher Education. *International Journal of English Literature and Social Sciences*, 7, 217-224. DOI:10.22161/ijels.76.31.
- Syukri, S., Maghfiroh, A., Halim, A., Atikah, D. (2021). The Benefits and Challenges of Group Discussion in Syntax Project. *International Journal of Transdisciplinary Knowledge*, 2, 42-50. DOI:10.31332/ijtk.v2i1.16.
- Van, J. W. & Haffejee, F. (2017). Benefits of Group Learning as a Collaborative Strategy in a Diverse Higher Education Context. *International Journal of Education Science*, 18(1-3), 158-163. DOI:10.31901/24566322.2017/18.1-3.16.
- Wulandari, A. P. S. & Anugerahwati, M. (2021). The power of constructive criticism and its effect on students' learning motivation. *Journal of English Educators Society*, 6(2), 301-30. doi:10.21 070/jees.v6i2.1408
- Yean, C., Sarif, S., Ahmad, N., & Chua, T. E. (2024). Exploring the Influence of Conflict in Group Work. *International Journal of Academic Research in Business and Social Sciences*, 14. DOI:10.6007/IJARBS/v14-i2/20762.
- Zamecnik, A., Kovanovic, V., Joksimovic, S., Grossmann, G., Ladjal, D. & Pardo, A. (2024). The perceptions of task cohesion in collaborative learning teams. *International Journal of Computer-Supported Collaborative Learning*, 19, 1-25. DOI: 10.1007/s11412-024-09424-5.
- Zedda, M., Bernardelli, S., Acquadro, M. D. (2017). Students' Satisfaction with the Group Work Method and its Performance Evaluation: A survey in an Italian University. *International Journal of Instruction*, 10, 1-14. DOI:10.12973/iji.2017.1031a.
- Zubaidi, A. & Shanmugaraj, V. (2024). The Necessity of Educational Technology in Teaching Methods: Why Educational Technology in Teaching is Important. DOI:10.4018/978-1-6684-7366-5.ch033.