



EXPERIENCES AND CHALLENGES OF SCIENCE LEARNERS ON CONCEPTUAL CHANGE: BASES FOR INTERVENTION PROGRAM

AMY V. LEONARDO

Teacher III

Jalandoni Memorial National High School

villaamy45@gmail.com

ABSTRACT

This study examined the experiences, challenges, and coping strategies of Science learners in achieving conceptual change using a descriptive-qualitative research design. Findings revealed that students perceive science learning as both interesting and challenging. While they enjoy engaging activities such as experiments, demonstrations, and real-life applications of concepts, they also experience difficulties in understanding scientific vocabulary, abstract concepts, and complex ideas. Many students also struggle to change their pre-existing misconceptions and adapt to scientifically accurate explanations. Other challenges include fast-paced instruction, classroom distractions, and cognitive overload when multiple concepts are introduced simultaneously. To address these challenges, learners employ coping strategies such as seeking help from teachers and peers, reviewing notes, practicing lessons, utilizing online learning resources, breaking down complex concepts into simpler parts, and using visual and real-life connections to improve understanding. Based on these findings, an intervention program is recommended to enhance students' conceptual understanding in science.

Keywords: *Experiences, Challenges, Coping Strategies*

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



INTRODUCTION

Science education continues to be a fundamental component of high-quality basic education with the goal of developing students' scientific literacy, critical thinking, and problem-solving abilities, all essential for both individual and social growth. The K–12 curriculum in the Philippines emphasizes science as a fundamental topic that is necessary for students to understand natural events and apply scientific concepts in practical settings.

Conceptual change is a critical component of meaningful science learning. In learning science, learners bring pre-instructional ideas shaped by everyday experiences, cultural beliefs, and informal reasoning. These pre-existing conceptions may have conflict with scientifically accepted explanations, creating barriers to meaningful learning if not addressed intentionally (Heller, *Conceptual Change in Science Teaching and Learning*, 2025).

Intervention studies in science education have demonstrated that active engagement, inquiry activities, and hands-on learning opportunities promote conceptual change by allowing learners to test, revise, and reflect on their ideas (Corridor Demonstrations study, 2025).

Science classrooms that rely on traditional, teacher-centered approaches often fail to disrupt learners' misconceptions. Without deliberate instructional focus on learners' existing ideas and targeted cognitive conflict experiences, misconceptions can persist even after repeated exposures to correct information (Conceptual Change Framework of Instruction, 2022).

Under the Enhanced Basic Education Act of 2013 (RA 10533), the curriculum is designed to develop learners' higher-order thinking skills and scientific literacy, a goal that continues to be emphasized in current educational policies and reforms (Department of

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Education [DepEd], 2022; UNESCO, 2022). The Department of Education K–12 Science Curriculum Guides require the application of engaging teaching methods in inquiry, exploration, and conceptual understanding. Teachers are also bound by the Teachers’ Code of Ethics (RA 7836) to employ effective strategies that enhance learners’ cognitive development and mastery of competencies, including scientific concepts, in line with current standards emphasizing quality teaching and learner-centered instruction (Department of Education [DepEd], 2022; UNESCO, 2022).

Classroom realities often reveal gaps in implementation due to inadequate resources, overcrowded classrooms, and a lack of teacher training. Recent Philippine studies in science education illustrate both the promise and challenges of conceptual change approaches.

Also, affective factors such as learners’ motivation, confidence, and attitudes toward science play a role in conceptual change. Learners who are disengaged or frustrated may be less likely to participate actively in cognitive conflict and meaning-making processes, thereby limiting conceptual restructuring.

From direct classroom observations and pilot interactions with science learners, the researcher has noted recurring patterns of conceptual difficulty and learner frustration. Many learners exhibit initial resistance when confronted with scientific explanations that contradict their everyday beliefs. These experiences highlight the necessity of designing instructional interventions that not only address cognitive barriers but also support learners effectively—by building confidence, engagement, and a sense of ownership over their learning.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



MATERIALS AND METHODS

Research Methodology

This chapter discusses the research method and design, participants, data collection procedures, research instrument, its validity, and data analysis.

Research Method

This study utilized a qualitative research method to explore and understand the experiences and challenges experienced by Science learners in learning science concepts. A qualitative approach is appropriate because the study seeks to describe science learners' experiences, perceptions, and insights, which cannot be fully captured through numerical or statistical data. Instead, qualitative research allows for in-depth exploration of personal narratives and contextual factors that shape learners' experiences.

Through open-ended questioning and flexible interaction, this method facilitated the collection of rich, detailed accounts that reflect the real-life situations of science learners. It also provided the means to identify emerging themes, patterns, and meanings embedded in participants' stories. By focusing on the subjective experiences of science learners, the qualitative method supported a deeper understanding of both the experiences and challenges they encounter in learning science concepts.

Research Design

This study was conducted using a qualitative research design characterized by a descriptive-exploratory approach, complemented by developmental research elements for

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



designing an intervention program. The qualitative method is appropriate because the study aims to understand learners' experiences, challenges, and strategies in conceptual change, which are best captured through rich, narrative data (Creswell & Poth, 2021).

The descriptive-exploratory approach allows the researcher to document and analyze learners' experiences and difficulties in science learning while identifying patterns and relationships that inform the development of an evidence-based intervention program. The study also integrated developmental research principles (Richey & Klein, 2021) to design and propose an intervention program based on findings from learners' experiences, challenges, and strategies.

Participants of the Study

The study included 20 participants chosen purposively from the grade 7 Science learners at Jalandoni Memorial National High School for the school year 2025-2026. These learners have been enrolled in the school for at least one year, willing to participate in the study, and having experienced or have been observed with difficulty in learning science concepts.

Sampling Procedure

This study used purposive sampling, a non-probability method in which participants are intentionally chosen based on relevant characteristics or experiences. According to John W. Creswell and Cheryl N. Poth (2021), purposive sampling is appropriate when the researcher seeks to obtain rich, in-depth data from participants who have relevant knowledge and understanding of the phenomenon under investigation. Likewise, Michael Quinn Patton (2022)

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



emphasized that purposive sampling enables researchers to identify and select information-rich cases that provide valuable insights into issues central to the study's purpose. In this research, participants were identified based on the following inclusion criteria:

- (1) enrolled in school for at least one year,
- (2) have difficulty in learning science concepts, and
- (3) are willing to participate in an interview.

Research Instrument

The main data collection instrument used in this study was a semi-structured interview guide. The guide contained of open-ended questions intended to elicit detailed narratives about science learners' experiences, challenges, and strategies in learning science concepts. Semi-structured interviews allowed flexibility—the researcher could probe further based on participants' responses, ensuring in-depth exploration of emerging themes. The interview guide was reviewed by experts for content validity to ensure clarity, appropriateness, and consistent with the study's objectives.

Data Gathering Procedure

Data were gathered after obtaining permission from the school head and informed consent from the participants. Interviews were conducted face-to-face in the convenience of the participants. Each interview was audio-recorded with permission for accuracy of transcription. All data had been treated with strict confidentiality.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Data Analyses

The data gathered from the participants were analyzed using thematic analysis, following the structured process recommended by Braun and Clarke (2021). After collecting the interview responses, the researcher transcribed all narratives to ensure accuracy and authenticity of the participants' perspectives. The transcripts were then read repeatedly to achieve familiarity with the data and to identify preliminary ideas relevant to the research questions. Initial codes were generated by highlighting significant statements, recurring expressions, and meaningful patterns emerging from the responses. These codes were carefully organized and clustered to form broader categories. By means of constant comparison and iterative refinement, the categories were developed into themes representing the participants' shared experiences, insights, and challenges. The final themes were analyzed with regard to relevant literature and the objectives of the study, ensuring that the findings were systematically generated and faithfully reflected the voices of the participants.

Ethical Considerations

In conducting this study, several ethical principles were observed to make sure the protection, rights, and well-being of participants. First, informed consent was obtained from all participants (or their guardians, with respect to minors), clearly outlining the purpose, procedures, risks, benefits, and voluntary nature of participation. Participants were informed of their right to withdraw from the study at any time without penalty or negative consequences. Second, confidentiality and privacy were strictly ensured.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



All personal information and responses were anonymized, and the data were securely stored to prevent unauthorized access. The collected data were accessible only to the research team and used strictly for research purposes.

RESULTS AND DISCUSSIONS

This study explored learners' experiences and challenges in learning science concepts as bases on an intervention program.

In accordance with specified inclusion criteria, a purposeful sample of twenty grade 7 learners from Jalandoni Memorial National High School was chosen. Data were gathered using a validated interview schedule prepared by the researcher and analyzed through thematic analysis. The study identified recurring patterns and experiences to inform the development of focused intervention programs for teachers and school heads.

The following were the findings of this study in an order based on the research questions:

As a result of one-on-one interview, majority of the participants' experiences in learning scientific concepts reveal that while science lessons can be engaging and interesting, they also present challenges, particularly when students encounter complex ideas, technical terminology, abstract concepts, and formulas. The findings also show that experiments, hands-on activities, demonstrations, and interactive learning strategies such as class discussions and group activities play an important role in improving students' understanding. Moreover, students find scientific concepts easier to grasp when lessons are connected to real-life situations and everyday experiences.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Participants encountered several challenges in achieving conceptual change in science.

The findings reveal that many students struggled to replace their prior beliefs or misconceptions with scientifically accurate explanations. Difficulties in understanding scientific vocabulary, technical terms, and formulas also hindered their learning. Moreover, the abstract and complex nature of many scientific concepts made them difficult for students to visualize and comprehend. Instructional pacing, environmental distractions, and the presentation of too many concepts at once were also identified as factors that made it harder for students to process information and fully understand the lessons.

Participants employ various coping strategies to overcome difficulties in understanding scientific concepts. The findings show that many students seek assistance from teachers and classmates through asking questions and engaging in discussions to clarify misunderstandings. They also strengthen their understanding by reviewing notes, repeatedly studying lessons, and practicing learned concepts. Additionally, students utilize online resources such as educational videos, simulations, and learning websites for clearer explanations. Breaking complex ideas into smaller parts, using visual aids, and relating scientific concepts to real-life situations were also identified as effective strategies in helping students better understand science lessons.

Conclusion

The discussion of insights followed the sequence of the research questions, underscoring the study's key implications.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Effective science instruction requires a balance between engaging students and providing sufficient scaffolding to help them process complex concepts. Teachers should integrate inquiry-based and experiential strategies, such as experiments, simulations, and demonstrations, while linking lessons to real-life applications to make learning meaningful. Clear instruction of scientific vocabulary, use of visual aids, breaking concepts into manageable parts, and employing tools like concept mapping can help students overcome difficulties. Additionally, collaborative learning through group activities, discussions, and peer interactions supports understanding and encourages active participation, fostering both conceptual mastery and sustained interest in science.

The study highlights that effective science teaching requires identifying students' prior conceptions and designing activities that address and challenge misconceptions through experiments, demonstrations, and guided discussions. Teachers should promote science literacy by integrating explicit vocabulary instruction, visual representations, concept maps, and contextual examples to clarify technical terms. Using visual models, simulations, diagrams, and hands-on activities helps students grasp abstract scientific phenomena. A supportive learning environment, careful management of distractions, appropriate pacing, and opportunities for clarification are essential for comprehension. Lessons should be progressively structured and scaffolded, gradually introducing concepts while reinforcing learning through examples, activities, and formative assessments.

The study underscores the importance of fostering open communication and collaborative learning, where students feel comfortable asking questions and engaging in

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza

INSTABRIGHT e-GAZETTE

ISSN: 2704-3010

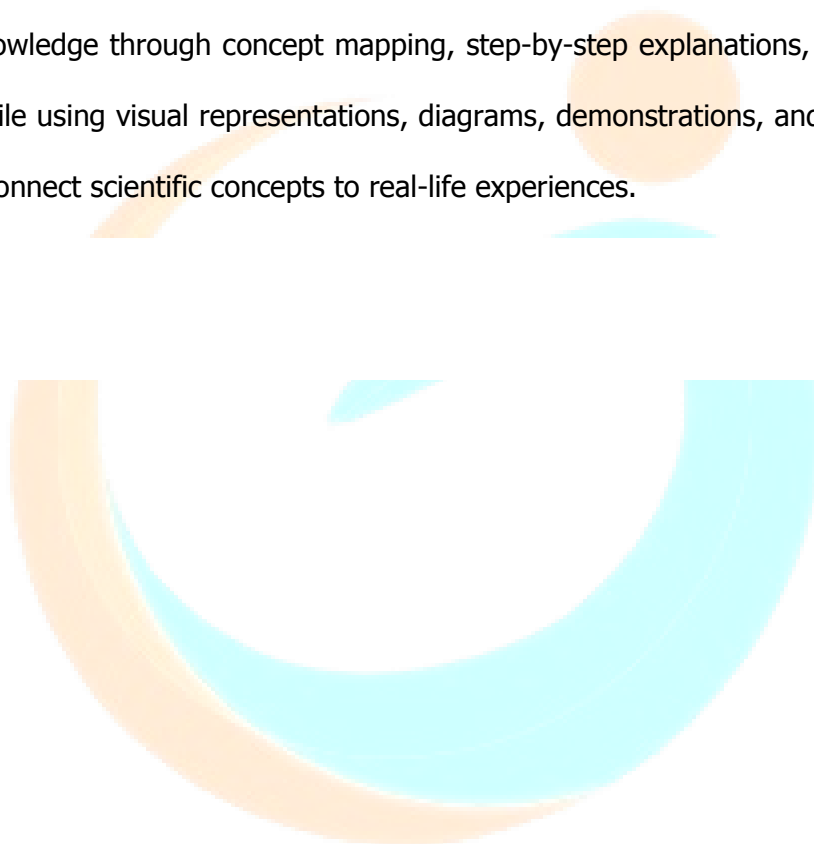
Volume VII, Issue III

February 2026

Available online at <https://www.instabrightgazette.com>



group discussions, peer tutoring, and cooperative activities to enhance conceptual understanding. Regular review, practice exercises, and formative assessments are essential to reinforce learning and help students master complex scientific ideas. Integrating technology-enhanced tools such as educational videos, simulations, and interactive digital resources can further support comprehension. Teachers should also guide students in organizing knowledge through concept mapping, step-by-step explanations, and scaffolding strategies, while using visual representations, diagrams, demonstrations, and contextualized examples to connect scientific concepts to real-life experiences.



Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



References

Addido, A., Burrows, P., & Slater, T. (2022). Structured conceptual change models in pre-service teacher education. *International Journal of Science Education*, 44(10), 1502–1518. <https://doi.org/10.1080/09500693.2022.2045617>

Adanur Sönmez, Z., Aydın Ceran, S., & Koçak, R. (2025). Context-based instruction and students' engagement in science learning. *Journal of Educational Research*, 118(2), 205–222.

Akçayır, M., & Akçayır, G. (2021). Advantages and challenges associated with augmented reality for education: A systematic review of the literature. *Educational Research Review*, 20, 1–11. <https://doi.org/10.1016/j.edurev.2021.100309>

Aleknavičiūtė, J., Pacaci, F., & Ozdemir, E. (2023). Meta-analysis of conceptual change interventions in biology education. *Journal of Biological Education*, 57(4), 452–468. <https://doi.org/10.1080/00219266.2023.2197845>

Alghamdi, A., & Alyousef, H. (2023). The effectiveness of collaborative learning in improving students' conceptual understanding in science education. *International Journal of Science Education*, 45(6), 987–1005. <https://doi.org/10.1080/09500693.2023.2178456>

Almulla, M.A. (2023). Constructivism learning theory: A paradigm for students' critical thinking, creativity, and problem solving to affect academic performance in higher education. *Cogent Education*, 10(1). <https://doi.org/10.1080/2331186X.2023.2172929>

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Chen, L. (2022). Peer-assisted learning and collaborative problem solving in science classrooms. *Journal of Science Education and Technology*, 31(4), 512–524. <https://doi.org/10.1007/s10956-022-09985-3>

Chen, Y., & Lin, H. (2023). The role of visualization and simulations in learning abstract scientific concepts. *Computers & Education*, 191, 104631. <https://doi.org/10.1016/j.compedu.2022.104631>

Chinn, C.A., & Malhotra, B.A. (2021). Epistemic cognition and conceptual change: A framework for understanding how learners revise knowledge. *Educational Psychologist*.

Creswell, J.W., & Poth, C.N. (2021). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage Publications.

Department of Education. (2022). *Guidelines on flexible and responsive teaching strategies in public schools*. <https://www.deped.gov.ph>

EduWW. (2025). *Cognitive conflict in science learning: Simulations and discrepant events*. <https://www.eduww.org/science>

Frontiers. (2024). Concept mapping in science education: Facilitating conceptual change. *Frontiers in Education*, 9, 1156. <https://doi.org/10.3389/feduc.2024.1156>

Heller, J. (2025). *Conceptual change in science teaching and learning*. Springer.

Hernández, M., & Soto, R. (2021). Conceptual change strategies in science education: Addressing misconceptions through inquiry-based instruction. *Journal of Research in Science Teaching*, 58(9), 1450–1472. <https://doi.org/10.1002/tea.21765>

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez, Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas, Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Huang, Y., & Tsai, C. (2021). Scaffolding students' scientific reasoning through guided inquiry learning. *International Journal of Science and Mathematics Education, 19*(4), 671–689.
<https://doi.org/10.1007/s10763-020-10118-7>

Karpicke, J.D., & Blunt, J.R. (2021). Retrieval practice improves learning and retention in science education. *Educational Psychology Review, 33*(2), 345–367.
<https://doi.org/10.1007/s10648-020-09572-6>

Kumar, R., & Rao, P. (2023). Classroom environment and its influence on students' academic engagement in science. *Educational Studies, 49*(3), 456–472.

Legaspi, R., & Cajurao, M. (2025). Contextualized science instruction and conceptual understanding among learners. *Philippine Journal of Science Education, 12*(1), 25–38.

Lopez, A., & Chua, M. (2022). Scientific vocabulary challenges in secondary science classrooms. *Asian Journal of Science Education, 10*(2), 87–102.

McGill University. (2026). *Inquiry-based and problem-based learning for conceptual change*.
<https://www.mcgill.ca/education/inquiry>

McLure, K., Johnson, T., & Lee, P. (2021). Collaborative argumentation and conceptual change in science learning. *Journal of Science Teacher Education, 32*(7), 755–773.
<https://doi.org/10.1080/1046560X.2021.1883625>

Mediana Jr., F., Funa, C., & Dio, J. (2025). Experiential and contextualized approaches in science education. *Philippine Science Education Journal, 18*(3), 45–63.

National Center for Science Education. (2024). *Diagnostic assessment for conceptual change: Tools and strategies*. <https://ncse.org/diagnostic-tools>

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza



Nguyen, T. (2023). Addressing scientific vocabulary in secondary science classrooms. *Science*

Education International, 34(1), 12–26. <https://doi.org/10.33828/sei.34.1>

Pacaci, F., Ustun, S., & Ozdemir, E. (2024). Conceptual change in science education: Meta-analytic evidence. *Studies in Science Education*, 60(1), 101–123.

<https://doi.org/10.1080/03057267.2023.2178942>

Park, J., & Kim, H. (2024). Cognitive conflict and conceptual change in physics learning.

International Journal of Physics Education, 62(2), 88–102.

Putri, R., Permanasari, A., & Winarno, A. (2021). Experiential learning and science conceptual understanding. *Journal of Education and Learning*.

Rapi, L., Santos, M., & Cruz, P. (2025). Interactive simulations and hands-on experiments in science learning. *Philippine Journal of Science Education*, 13(2), 77–92.

Rea-Ramirez, M., Lee, S., & Gonzalez, P. (2023). Conceptual change pedagogy and learners' attitudes in controversial science topics. *Research in Science Education*, 53(5), 2123–2145. <https://doi.org/10.1007/s11165-021-10045-2>

Richey, R.C., & Klein, J.D. (2021). *Design and development research: Methods, strategies, and issues* (3rd ed.).

Schneider, J., & Sodian, B. (2024). Refutational texts and long-term reduction of misconceptions in science. *Educational Psychology Review*, 36(1), 45–68.

<https://doi.org/10.1007/s10648-023-09789-1>

Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza

INSTABRIGHT e-GAZETTE

ISSN: 2704-3010

Volume VII, Issue III

February 2026

Available online at <https://www.instabrightgazette.com>



Siew, N.M., Chong, C.L., & Lee, B.N. (2022). The role of simulations in improving students' understanding of abstract scientific concepts. *Journal of Science Education and Technology*, 31(5), 620–632. <https://doi.org/10.1007/s10956-022-09992-4>

UNESCO. (2022). *Global education monitoring report: Barriers to learning in low-resource contexts*. <https://www.unesco.org>



Editorial Team

Editor-in-Chief: Alvin B. Punongbayan

Associate Editor: Andro M. Bautista

Managing Editor: Raymart O. Basco

Web Editor: Nikko C. Panotes

Manuscript Editors / Reviewers:

Chin Wen Cong, Christopher DC. Francisco, Camille P. Alicaway, Pinky Jane A. Perez,
Mary Jane B. Custodio, Irene H. Andino, Mark-Jhon R. Prestoza, Ma. Rhoda E. Panganiban, Rjay C. Calaguas,
Mario A. Cudiamat, Jesson L. Hero, Albert Bulawat, Cris T. Zita, Allan M. Manaloto, Jerico N. Mendoza
