



EUROPEAN SCIENTIFIC JOURNAL
by European Scientific Institute



Paper: “An Investigation into the Effect of Concept Mapping on Students’ Learning Outcomes in Photosynthesis at the Senior High School Level”

Submitted: 20 April 2026

Accepted: 25 June 2026

Published: 30 June 2026

Corresponding Author: Comfort Korkor Sam

Doi: 10.19044/esj.2026.v22n17p105

Peer review:

Reviewer 1: Víctor Maldonado Santiago
Inter American University of Puerto Rico

Reviewer 2: Anastasia Kamwitha Muthanje
Meru University, Kenya

Reviewer 3: Blinded

Reviewer 4: Blinded

Reviewer B:

Recommendation: Revisions Required

The TITLE is clear and it is adequate to the content of the article.

The title, “Concept Mapping as a Catalyst for Applied Learning and Practical Skill Development in Photosynthesis at Senior High School,” is clear, specific, and well aligned with the content of the study. It accurately reflects both the instructional strategy examined and the learning domains addressed. The wording is appropriate and does not require modification.

The ABSTRACT clearly presents objectives, methods, results, and conclusions.

The abstract is well structured and includes the key elements of the study, namely the purpose, methodology (quasi-experimental design), sample, and main findings. The reporting of statistical results (e.g., t-values and p-values) is particularly strong and enhances clarity and transparency. However, the concluding statement could be slightly refined. While the recommendation to adopt concept mapping is provided, it does not fully reflect the mixed findings (e.g., no effect on knowledge, weaker performance in application). A more balanced summary would strengthen the abstract.

There are a few grammatical errors and spelling mistakes in this article.

The manuscript is generally clear, but there are several noticeable language issues that affect readability:

- Inconsistent phrasing (e.g., “idea mapping” vs. “concept mapping”)
- Repetition and awkward sentence construction in the Results and Discussion sections
- Minor grammatical inaccuracies and punctuation inconsistencies

These issues do not obscure meaning but require careful proofreading and language editing to meet publication standards.

The study METHODS are explained clearly.

The paper follows a primarily conceptual and analytical approach, which is appropriate to its objectives. The methodology is well developed and transparent, with clear description of:

- the research design
- sample size and group allocation (43 experimental, 37 control)
- instrument (Biology Achievement Test)
- validation (pilot study, expert review) and reliability (Cronbach’s alpha = .81)
- data analysis procedures (independent samples t-test using SPSS)

The inclusion of pre-test equivalence testing strengthens the internal validity of the study.

While the study presents a clear empirical design, a key aspect that requires further attention is

the duration of the intervention. The treatment appears to have been conducted over a relatively short period (three days), which may limit the extent to which meaningful learning gains—particularly in higher-order skills—can be observed. Providing a stronger justification for this timeframe, or discussing it more explicitly as a limitation, would strengthen the methodological rigor of the study.

The results are clear and do not contain errors.

The Results section is clearly structured and aligned with the research questions. The use of statistical analysis (independent samples t-tests) and the presentation of data in tables support the transparency of the findings. The distinction between knowledge, application, and practical skills is a strong aspect. However, some interpretative elements could be moved to the Discussion section, and minor repetition between text and tables could be reduced for greater conciseness.

The CONCLUSION or summary is accurate and supported by the content.

A distinct conclusion section is currently missing. The authors are encouraged to include one to synthesize the main points and strengthen the overall coherence of the paper. The manuscript does not contain a clearly defined and separate conclusion section. While concluding ideas are embedded within the final paragraphs of the discussion, a distinct conclusion is needed.

It is recommended that the authors include a dedicated conclusion section that:

- clearly synthesizes the main findings
- reflects the mixed nature of the results
- highlights implications for teaching practice
- briefly acknowledges limitations and future research directions

The list of REFERENCES is comprehensive and appropriate.

The references are relevant and appropriate to the topic, and they include both foundational and recent sources.

However, there are several issues that need attention:

- Inconsistency in formatting (spacing, italics, punctuation)
- Duplicate entries (e.g., repeated citation of the same source)
- Minor inaccuracies (e.g., DOI formatting, incomplete entries)

A final check for consistency in formatting.

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the RESULTS of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

4

Overall Recommendation!!!

Accepted, minor revision needed

Comments and Suggestions to the Author(s):

Reviewer C:

Recommendation: Revisions Required

The TITLE is clear and it is adequate to the content of the article.

The title of this study appears to be partially appropriate, as the findings do not fully support a statistically significant impact of concept mapping on students' application of knowledge related to photosynthesis. Additionally, no statistically significant differences were found between the experimental and control groups with respect to students' knowledge and understanding of photosynthesis.

Considering these findings, the following alternative title may be considered: An Examination of Concept Mapping in Photosynthesis Instruction at Senior High School.

The ABSTRACT clearly presents objectives, methods, results, and conclusions.

The abstract clearly presents the study's methods and results. While the abstract allows the reader to infer the general purpose of the study, the research objectives are not stated explicitly and could benefit from greater clarity, as their current formulation leaves some ambiguity regarding the specific focus of the investigation. Also, the conclusion focuses primarily on practical skills development in photosynthesis and does not fully address the dimension of applied learning, which is explicitly highlighted in the study's title.

There are a few grammatical errors and spelling mistakes in this article.

There are several minor grammatical and spelling errors in the article.

The study METHODS are explained clearly.

The methods of the study are clearly described and well articulated.

The results are clear and do not contain errors.

While the results are generally understandable, the section contains several numerical and typographical inconsistencies that affect clarity and accuracy. These include typographical errors in reported values (e.g., double punctuation such as “8..48”), inconsistent formatting of statistical notation (e.g., spacing and decimal presentation in t-values), and the reporting of p values as .000 instead of the standard $p < .001$. In addition, there are percentage inconsistencies in the sociodemographic table, where the reported proportions for the participant groups (53.8% for the experimental group and 46.3% for the control group) do not sum accurately to 100%. Furthermore, the inconsistent use of terminology (e.g., concept mapping versus idea mapping) may lead to confusion. These issues suggest that the results section would benefit from careful numerical and editorial revision.

The CONCLUSION or summary is accurate and supported by the content.

Overall, the conclusion is consistent with and generally supported by the results presented in the study. However, some metaphorical expressions used in the final paragraph (e.g., figurative language) are less typical of academic or scientific writing. These expressions could be revised to maintain a more formal scholarly tone aligned with disciplinary conventions.

The list of REFERENCES is comprehensive and appropriate.

The reference list is generally relevant and appropriate to the scope of the study; however, some discrepancies were noted between in text citations and the reference list. For instance, several works cited in the text (e.g., Marton & Säljö, 1976; WAEC, 2021, 2024; Cook & Campbell, 1979; Creswell & Creswell, 2018) are not included in the reference list, whereas other entries (e.g., Nguyen, 2017; Hafiz et al., 2017) do not appear to be cited in the manuscript. In addition, there is a duplicated entry (Jančaříková & Jančařík, 2022) with an inconsistent DOI, and a mismatch between cited and listed publication years (e.g., Okoronka, 2020 vs. Okoronka, 2018). The authors are therefore encouraged to carefully review and revise the reference list in accordance with the APA (7th edition) guidelines to ensure full correspondence, consistency, and accuracy.

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the RESULTS of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

3

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

2

Overall Recommendation!!!

Return for major revision and resubmission

Comments and Suggestions to the Author(s):

There are important discrepancies between in-text citations and the reference list, including missing references, uncited entries, and duplicated or inconsistent citations, which should be systematically revised in accordance with APA (7th edition) guidelines. The manuscript would benefit from closer attention to formatting consistency. Some paragraphs appear without proper indentation, and in certain sections the right margin is fully justified instead of ragged, as APA indicates. Additionally, there are minor inconsistencies in spacing between paragraphs and tables that could be revised to enhance the overall presentation and readability of the document.

Reviewer D:
Recommendation: Accept Submission

The TITLE is clear and it is adequate to the content of the article.

The title is clear and it is adequate to the content of the article.

The ABSTRACT clearly presents objectives, methods, results, and conclusions.

The abstract presents the object, methods, results, and conclusions.

There are a few grammatical errors and spelling mistakes in this article.

-

The study METHODS are explained clearly.

After reviewing the study method, I can say that it is clear.

The results are clear and do not contain errors.

The results are clear.

The CONCLUSION or summary is accurate and supported by the content.

The conclusion is accurate and supported by the content.

The list of REFERENCES is comprehensive and appropriate.

I recommend reviewing the reference list more carefully, as not all scholarly sources are presented appropriately. The DOI number is not included everywhere.

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the RESULTS of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

3

Overall Recommendation!!!

Accepted, minor revision needed

Comments and Suggestions to the Author(s):

ESJ Manuscript Evaluation Form 2026

This form is designed to summarize the manuscript peer review that you have completed and to ensure that you have considered all appropriate criteria in your review. Your review should provide a clear statement to the authors and editors of the modifications necessary before the paper can be published, or the specific reasons for rejection.

Please respond within the appointed time so that we can give the authors timely responses and feedback.

NOTE: ESJ promotes a peer review procedure based on scientific validity and technical quality of the paper (not perceived impact). You are also not required to do proofreading of the paper. It could be recommended as part of the revision.

The copyrights of the report are with the publisher, and the data can be used for research purposes.

ESJ editorial office would like to express its special gratitude for your time and efforts. Our editorial team is a substantial reason that stands ESJ out from the crowd!

Date Manuscript Received: 30 th APRIL 2026	Date Review Report Submitted:
Manuscript Title: Concept Mapping as a catalyst for Applied Learning and Practical Skill Development in photosynthesis at Senior School	
ESJ Manuscript Number: ...01...09... (1) (1)	
You agree that your name is revealed to the author of the paper: No	
You approve, your name as a reviewer of this paper is available in the “review history” of the paper: Yes	
You approve, this review report is available in the “review history” of the paper: Yes	

Evaluation Criteria:

Please give each evaluation item a numeric rating on a 5-point scale, along with a thorough explanation for each point rating.

<i>Questions</i>	<i>Rating Result</i> [Poor] 1-5 [Excellent]
1. The title is clear, and it is adequate for the content of the article.	3

(The title is slightly long and could be made more concise without losing the meaning)	
2. The abstract presents objectives, methods, and results.	4
(It needs to be refined in academic writing style, coherent and conciseness)	
3. There are a few grammatical errors and spelling mistakes in this article.	4
(There is a lot of repetition which need to be minimized, fix interpretation of wordings)	
4. The study methods are explained clearly.	4
(-Over-theoretical introduction (too heavy for methods-need to be shortened) -There is sampling inconsistency -Should state that there is no random assignment of individuals, hence only intact classes assigned to conditions -Intervention description is too brief)	
5. The results are clear and do not contain errors.	4
(There is incorrect p=value reporting -Statistics are mostly correct but inconsistent -Interpretations require correction)	
6. The conclusions or summary are accurate and supported by the content.	3
(Overexplaining and repetition -Some incorrect and exaggerated claims -Unsupported or overstated conclusions -Weak linkage between results and explanation -Conclusion is too informal)	
7. The references are comprehensive and appropriate.	3
(Duplication to be avoided, APA style to be used, fix broken DOI format, avoid references not used in the manuscript, include ORCID where necessary)	

Overall Recommendation (mark an X with your recommendation) :

Accepted, no revision needed	
Accepted, minor revision needed	X
Return for major revision and resubmission	
Reject	

Comments and Suggestions to the Author(s): Proper format of journal writing to be followed such as

- 1) Title
Authors' names, affiliation and emails
- 2) Abstract
- 3) Keywords
- 4) Introduction
- 5) Review of related literature on the title
- 6) Methodology
- 7) Results & Discussions
- 8) recommendations
- 9) Acknowledgements
- 10) References (APA 7th Edition Style)

The author to be creative to avoid lifting these parts directly from Thesis except for number 7

Comments and Suggestions to the Editors Only: