



REVIEWER'S REPORT

Manuscript No.: **IJAR-55074**

Title: *From Laboratory Analysis to Digital Teaching Materials: A Systematic Review*

Recommendation:

Accept as it is

√Accept after minor revision.....

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality			√	
Clarity			√	
Significance		√		

Reviewer Name: **Dr. Touseef Malik**

Reviewer's Comment for Publication:

This manuscript presents a systematic literature review examining how laboratory analysis is transformed into digital teaching materials within science education. The study is well-structured, methodologically guided by PRISMA, and supported by bibliometric and thematic analysis. The topic is timely and relevant, particularly in the era of Education 5.0 and technology-enhanced learning environments. However, the manuscript contains extensive descriptive content, certain methodological claims require refinement, and several sections need stronger analytical synthesis to align findings with research objectives. Major revision is recommended to improve clarity, rigor, and coherence.

Recommendation: Accept after minor revision

Detailed Reviewer's Report

STRENGTHS

1. The manuscript addresses a contemporary and significant topic by reviewing how laboratory analysis is converted into digital teaching materials, offering important insights for science education and instructional design.
2. The study is systematically structured using the PRISMA framework, providing a transparent approach to article identification, screening, and selection.
3. Strong use of bibliometric tools such as Publish or Perish and VOSviewer enriches the review with network, thematic, and keyword analyses, adding depth and visual clarity to research trends.
4. The paper highlights dominant instructional design models such as ADDIE and 4D, offering a useful synthesis on how digital modules and virtual laboratories are developed.
5. The manuscript articulates clear pedagogical implications, emphasizing how digital teaching materials enhance conceptual understanding, retention, and independent learning in STEM education.

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WEAKNESSES

1. The initial search output reported in millions appears unrealistic for a systematic review and may require adjustment or clarification to ensure methodological credibility.
2. Several sections, including the introduction and results, contain lengthy descriptive passages that could be condensed to maintain focus and strengthen analytical depth.
3. Although PRISMA is mentioned, the review lacks detailed justification for exclusion stages, quality thresholds, and criteria used in narrowing down the final set of studies.
4. The discussion does not fully integrate findings with the stated objectives, particularly regarding how laboratory analysis directly informs digital teaching material design.
5. The conclusion reiterates earlier points but could be strengthened by addressing limitations, research gaps, sustainability challenges, and future directions more critically.