wjpmr, 2025, 11(4), 360-363

SJIF Impact Factor: 6.842

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Research Article

ISSN 2455-3301

WJPMR

EXTENT OF ADOPTION OF VIDEO ASSISTED LEARNING IN LECTURES: A STUDY AMONG FACULTY AND STUDENTS AT A PUBLIC UNIVERSITY

Muhammad Maaz Arif[1*], Rameen[2], Hafiz Muhammad Hassan Zaman[3], Naveed Suleman[4], Ghulam Ali[5], Muhammad Asim Farooqui[6] and Shaher Bano[7]

[1]Virtual Lab Private Limited, Lahore, Pakistan.
[2]Dept. of Medical Education, University of Health Sciences, Lahore, Pakistan.
[3]Dept. of Public Health, University of Health Sciences, Lahore, Pakistan.
[4]Dept. of Pharmacology, University of Health Sciences, Lahore, Pakistan.
[5]Department of Software Engineering, University of Okara, Okara, Pakistan.
[6]IT Department, University of Health Sciences, Lahore, Pakistan.
[7]Institute of Learning Emergency Medicine, University of Health Sciences, Lahore, Pakistan.

***Corresponding Author: Muhammad Maaz Arif**
Virtual Lab Private Limited, Lahore, Pakistan.

Article Received on 15/02/2025 **Article Revised on 07/03/2025** **Article Accepted on 27/03/2025**

ABSTRACT

Drawing to learn has gained significant attention in educational research. This article discusses the various uses of drawing as an active, constructive, and interactive learning method. It emphasizes its importance across various educational settings and emphasizes that the quality and assessment of learners' drawings should align with task demands. It also emphasizes the need for teachers to support meaningful engagement with drawing, aligning it with pedagogical objectives. Visual representations are crucial in biology teaching due to their complexity and scale. Drawing aids in interpreting visual information and is used in hypothesis generation, experiment design, data visualization, and communication of results. Biology educators should teach students to interpret and create visual representations, as drawing fosters deeper thinking and communication skills. An observational study conducted at the University of Health Sciences in Lahore surveyed students and faculty to assess the effectiveness of visual aids, particularly images and videos, in enhancing learning. The sample size estimated was 103. A non-convenient sampling technique was used. Data was collected from a questionnaire online. The results revealed a strong preference for using visual aids in classrooms, with a majority agreeing that these tools make learning more engaging and long-lasting. However, respondents expressed concerns about the availability of resources and the preparedness of faculty and administration in implementing video-assisted learning effectively. The study emphasizes the importance of allocating time for visual aids in lectures to maximize their impact on learning outcomes.

KEYWORDS: Learning; Lectures; Drawings; Audiovisual Demonstration; Technology.

1. INTRODUCTION

The technique of drawing to learn has received increasing attention in recent years. In this article, we will present distinct purposes for using drawing that are based on active, constructive, and interactive forms of engagement. In doing so, we hope to show that drawing to learn should be widely used and that there is good evidence to support its use in many situations. To make the most of these distinct purposes, teachers should note that what learners draw matters and that this needs to be assessed in relation to task demands. Drawing to learn will also require learners to be supported to engage meaningfully in ways that are matched to these pedagogical purposes.[1]

It is difficult to imagine teaching, learning, or doing biology without the use of visual representations. As in physics, chemistry, and other science, technology, engineering, and math (STEM) disciplines, the spatial and temporal dimensions of biology span many orders of magnitude and involve complexity that challenges the limits of human comprehension. Visual representations are a powerful tool, because they help to make the unseen seen and the complex simple. This power of visuals has been used by scientists from the representational anatomical works of Leonardo da Vinci to the theoretical phylogenetic work of Charles Darwin. In this essay, we encourage biology instructors of students ages K–16 and beyond to explicitly train students not only to *interpret* visual information in

textbooks, journal articles, slide presentations, websites, and classroom whiteboards, but also to *create* drawings, for two reasons: one is that drawing is a powerful tool for thinking and communicating, regardless of the discipline (e.g., Roam, 2008; and second is that drawing is a process skill that is integral to the practice of science, used in the generation of hypotheses, the design of experiments, the visualization and interpretation of data, and the communication of results (e.g., Schwarz *et al.*, 2009 and Ainsworth *et al.*, 2011.[1-3]

Many topics in science are notoriously difficult for students to learn. Mechanisms and processes outside student experience present particular challenges. While instruction typically involves visualizations, students usually explain in words. Because visual explanations can show parts and processes of complex systems directly, creating them should have benefits beyond creating verbal explanations. We compared learning from creating visual or verbal explanations for two STEM domains, a mechanical system (bicycle pump) and a chemical system (bonding). Both kinds of explanations were analyzed for content and learning assess by a post-test. For the mechanical system, creating a visual explanation increased understanding particularly for participants of low spatial ability. For the chemical system, creating both visual and verbal explanations improved learning without new teaching. Creating a visual explanation was superior and benefitted participants of both high and low spatial ability. Visual explanations often included crucial yet invisible features. The greater effectiveness of visual explanations appears attributable to the checks they provide for completeness and coherence as well as to their roles as platforms for inference. The benefits should generalize to other domains like the social sciences, history, and archeology where important information can be visualized. Together, the findings provide support for the use of learner-generated visual explanations as a powerful learning too.[4]

This literature review illustrates the various ways images are used in teaching and the evidence appertaining to it and advice regarding permissions and use. Four databases were searched, 23 papers were retained out of 135 abstracts found for the study. Images are frequently used to motivate an audience to listen to a lecture or to note key medical findings. Images can promote observation skills when linked with learning outcomes, but the timing and relevance of the images is important – it appears they must be congruent with the dialogue. Student reflection can be encouraged by asking students to actually draw their own impressions of a course as an integral part of course feedback. Careful structured use of images improve attention, cognition, reflection and possibly memory retention.[5]

Drawing by learners can be an effective way to develop memory and generate visual models for higher-order skills in biology, but students are often reluctant to adopt drawing as a study method. We designed a non-classroom intervention that instructed introductory biology college students in a drawing method, minute sketches in folded lists (MSFL), and allowed them to self-assess their recall and problem solving, first in a simple recall task involving non-European alphabets and later using unfamiliar biology content. In two preliminary ex situ experiments, students had greater recall on the simple learning task, non-European alphabets with associated phonetic sounds, using MSFL in comparison with a preferred method, visual review (VR). In the intervention, students studying using MSFL and VR had ~50–80% greater recall of content studied with MSFL and, in a subset of trials, better performance on problem-solving tasks on biology content. Eight months after beginning the intervention, participants had shifted self-reported use of drawing from 2% to 20% of study time. For a small subset of participants, MSFL had become a preferred study method, and 70% of participants reported continued use of MSFL. This brief, low-cost intervention resulted in enduring changes in study behavior.[6]

2. METHODOLOGY

2.1 Study Design and Setting

It was an observational cross-sectional study. The study was conducted at the University of Health Sciences, Lahore while the duration of the study was about 3 months.

2.2 Sample Size & Technique

The sample size estimated was 103. A non-convenient sampling technique was used. Data was collected from a questionnaire online.

2.3 Inclusion/Exclusion criteria

All students and faculty who participated and gave consent were included in our study. Those that did not participate, give consent, were excluded from the study.

2.4 Data Analysis

The study utilized SPSS software for data analysis, utilizing frequencies, percentages, averages, and mean deviations for qualitative variables and P-Value, t-test, and ANOVA tests for statistical significance.

3. RESULTS

The survey results reveal a strong preference for incorporating images and videos into classroom learning, with a majority of respondents agreeing that they are significant for effective learning. 52.4% strongly agree that images/diagrams enhance learning, and 61.2% strongly agree that these visual aids make learning more lasting. However, there is a clear gap when it comes to resources and readiness in Pakistan, with most respondents remaining neutral about the availability of resources and the preparedness of faculty and administration for video-assisted learning. Regarding the time allocation for images and videos in lectures, most participants (53.9%) suggested that 40-60% of the lecture time should be dedicated to visual aids.

Table 1: Range for scoring final outcomes.

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
4.2 – 5.0	3.4 – 4.2	2.6 – 3.4	1.8 – 2.6	1 – 1.8

Table 2: Results obtained from study.

Questions	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Out of 5	Final Outcome
Showing images/diagrams in class is a significant factor in learning? (103 answered)	54 (52.4%)	24 (23.3%)	14 (13.6%)	3 (2.3%)	8 (7.8%)	4.1	Agree
Showing videos in class is a significant factor in learning? (103 answered)	49 (47.6%)	22 (21.4%)	15 (14.6%)	7 (6.8%)	10 (9.7%)	3.9	Agree
Showing images and Videos makes learning long lasting? (103 answered)	63 (61.2%)	19 (18.4%)	13 (12.6%)	2 (1.9%)	6 (5.8%)	4.3	Strongly Agree
Are there sufficient resources in Pakistan for video-assisted learning? (102 answered)	7 (6.9%)	16 (15.7%)	40 (39.2%)	23 (22.5%)	16 (15.7%)	2.8	Neutral
Do you believe that the faculty in Pakistan is trained and ready for video-assisted learning? (103 answered)	8 (7.8%)	16 (15.5%)	41 (39.8%)	21 (20.4%)	17 (16.5%)	2.8	Neutral
Do you believe that the Administration of the Academic institutions in Pakistan is trained and ready for video-assisted learning? (103 answered)	5 (4.9%)	11 (10.7%)	42 (40.8%)	27 (26.2%)	18 (17.5%)	2.59	Disagree
Do you believe that the Administration of the Academic institutions in Pakistan will provide sufficient resources (if needed) to the faculty for video-assisted learning? (102 answered)	11 (10.8%)	17 (16.7%)	40 (39.2%)	22 (21.6%)	12 (11.8%)	2.9	Neutral
Question	**80-100%**	**60-80%**	**40-60%**	**20-40%**	**0-20%**		
How much of the lecture's time should be allotted to showing images and videos? (102 answered)	3 (2.9%)	11 (10.8%)	55 (53.9%)	23 (22.3%)	11 (10.8%)	2.75	40-60%

N = 103 per each question
Response Rate = 99.6% (821/824)

4. DISCUSSION

While audio-visual-based learning media is a medium for learning that may be heard (sound) and seen (pictures) to aid in the transmission of knowledge, attitudes, and ideas in learning materials (Sudarsana et al., 2020; Pranata et al., 2021). This audio-visual-based media features an interactive animated image that moves and a sound display relevant to the topic matter. Students will be more motivated to participate in the learning process if this is done.[7, 8]

Schools should always implement and improve model innovations and learning media in the teaching and learning process in order to reach a learning goal, according to suggestions. According to the findings of the study, learning using audio-visual learning media can boost student interest in engaging in the learning process. As a result, schools and teachers can create media that can be used in the classroom.[9]

The Effect of Audio-Visual learning process in the classroom, namely teachers, students, and learning media. The roles of these three components enable effective learning in the classroom. In addition, the use of appropriate learning media will also attract students' learning interest and make the learning process effective. Learning Media is anything that can distribute information effectively and efficiently in a learning activity. In addition, learning media has the ability to provide the same stimulation, equal experiences, and produce the same perceptions. The purpose of learning media is to increase interaction between students and the learning environment in learning science. In addition, learning media also has a function, namely as a teaching aid, assisting teachers in using appropriate teaching methods. Selection of appropriate learning media can achieve learning objectives.[10, 11]

Based on research that has been conducted at MI Muhammadiyah Surabaya, it can be seen that the audio-visual-assisted problem-based learning model influences students' critical thinking skills because through this learning model, their critical thinking skills greatly increase before and after learning. The conclusion of this study is that learning using problem-based learning models based on audio-visual can improve elementary students' critical thinking skills{Rofiqoh, 2023 #13}.

5. CONCLUSION

Drawing is a valuable learning technique, especially in STEM subjects like biology, as it aids in understanding complex concepts through visual representation. It is a cognitive process that supports deeper learning, critical thinking, and problem-solving skills. Learner-generated

visual explanations provide a platform for coherence, completeness, and inference formulation, enhancing a comprehensive understanding of complex topics. A study at the University of Health Sciences in Lahore highlights the value of visual aids in enhancing student engagement and knowledge retention. However, challenges like resource availability and faculty preparedness remain, especially in regions like Pakistan. The findings emphasize the need for increased investment in visual learning resources and training for educators to effectively incorporate these tools into teaching practices. Incorporating drawing and visual aids into learning not only benefits students in grasping abstract concepts but also fosters an interactive and engaging educational environment. Educators should strategically implement these tools and align them with learning objectives to enhance students' understanding, retention, and knowledge application, preparing them for success in both academic and real-world contexts.

REFERENCES

1. Ainsworth SE, Scheiter K. Learning by drawing visual representations: Potential, purposes, and practical implications. Current Directions in Psychological Science, 2021; 30(1): 61-7.
2. Roam D. The Table Stakes of Visual Thinking. Marketing Research, 2008; 20(1).
3. Schwarz CV, Reiser BJ, Davis EA, Kenyon L, Achér A, Fortus D, et al. Developing a learning progression for scientific modeling: Making scientific modeling accessible and meaningful for learners. Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching, 2009; 46(6): 632-54.
4. Bobek E, Tversky B. Creating visual explanations improves learning. Cognitive research: principles and implications, 2016; 1: 1-14.
5. Norris EM. The constructive use of images in medical teaching: a literature review. JRSM Short Reports, 2012; 3(5): 1-8.
6. Heideman PD, Flores KA, Sevier LM, Trouton KE. Effectiveness and adoption of a drawing-to-learn study tool for recall and problem solving: Minute sketches with folded lists. CBE—Life Sciences Education, 2017; 16(2): ar28.
7. Sudarsana IK, Anam F, Triyana I, Dharmawan IM, Wikansari R, GS A, et al., editors. Education In Community Views In The Globalization Era. ICASI 2020: Proceedings of the 3rd International Conference on Advance & Scientific Innovation, ICASI 2020, 20 June 2020, Medan, Indonesia; 2020: European Alliance for Innovation.
8. Pranata IMA, Jayanta INL. Improving Students' Comprehension About Energy Sources Through Sparkol Videoscribe-Based Learning Media. Jurnal Ilmiah Sekolah Dasar, 2021; 5(2): 212-21.
9. Aprianto WN, Amir A. PRACTICE OF AUDIO-VISUAL LEARNING MEDIA TO GROW THE MOTIVATION OF MI KENONGOMULYO STUDENTS'LEARNING. ETDC Indonesian Journal of Research and Educational Review, 2022; 1(2): 137-44.
10. SHINTAWATI Y. The Preferences of Selecting the Effective and Efficient Learning Media in Students. International Journal of Multi Science, 2020; 1(05): 58-69.
11. Abdulrahaman MD, Faruk N, Oloyede AA, Surajudeen-Bakinde NT, Olawoyin LA, Mejabi OV, et al. Multimedia tools in the teaching and learning processes: A systematic review. Heliyon, 2020; 6(11).
12. Rofiqoh ARA, Faradita MN, Afiani KDA. THE EFFECT OF AUDIO VISUAL BASED PROBLEM BASED LEARNING ON CRITICAL THINKING ABILITY OF ELEMENTARY STUDENTS. jcp [Internet]. 2023 Jul. 31 [cited 2025 Mar. 31]; 9(3): 522-31.