

1.Name of the DIET: Kurukkathi Nagapattinam

2.Name and designation of the researcher:M.Rani Lecturer

3.Title: Enhancing 9th standard students understanding of the concept, ‘Photosynthesis’ through ICT

4.Introduction: Learning about biological concepts and processes in the Photosynthesis can be challenging since many biological processes are not tangible or visible to the naked eye. Therefore, biology education often includes models to help students visualize micro-processes. The adage ‘a picture is worth a thousand words’ refers to the powerful impact that static visualizations have in conveying complex phenomena. However, research has shown that these representations are not always perceived as intended. Representations have various meaning potentials, such that students themselves need to interpret and make sense of each given representation. When a static visualization presents an invisible dynamic process (e.g. related to molecular genetics), the task of interpreting and making sense of there presentation is even more demanding because students must imagine the dynamic aspect of the process.

5.Need and Significance:

In science education, animations and static visualizations are developed to display complex or abstract scientific concepts and processes. They are designed by experts in the field and come with clear meaning potentials.

Photosynthesis are crucial to life: no Photosynthesis – no life. At first glance, this connection seems both simple and straightforward, yet it is anything but.

Due to the importance of understanding mechanisms of leaf, Photosynthesis is globally regarded as a cornerstone of botany and education in the field biology.

6.Objectives:

- To find out the level of understanding the concept of ‘Photosynthesis’ among ninth standard students.
- To prepare videos to enhance the understanding the concept of Photosynthesis among ninth standard students .
- To find out the impact of videos in the understanding the concept of ‘Photosynthesis’ among ninth standard students.

7.Hypothesis

1. There is a significant difference between pre-test and post-test achievement score in understanding the concept of photosynthesis among the 9th standard students.

2. There is a significant difference between pre-test and post-test achievement score in understanding the concept of photosynthesis among the 9th standard boys students.

3. There is a significant difference between pre-test and post-test achievement score in understanding the concept of photosynthesis among the 9th standard girls students.

8. Methodology

1. Method ;Single group Experimental Method was adopted for this study.

2. Sample: Fifty students of class IX students of GHSS Girls (25) and Boys (25) Kuthalam the sample for this study.

3. Intervention: The following intervention strategies are planned to implement to find out the impact of the same on the understanding of the concept Photosynthesis by ninth standard students.

- PPT
- Videos
- Animation videos
- Static Visualization for Photosynthesis

4. Tool: Achievement Test on the concept of Photosynthesis will be prepared for 25 marks (MCQs) maximum to test the level of understanding of the concept and achievement in the same.

5. Data analysis: The data collected and processed by using the mean, SD, Effect size and t-test

TOTAL STUDENTS (BOYS AND GIRLS) IN PRE-TEST AND POST-TEST PERCENTAGE-Table-1

S.NO	TEST	PERCENTAGE
1.	PRE TEST	33.44
2	POST TEST	84.48

TOTAL STUDENTS (BOYS AND GIRLS) 't' VALUE-Table-2

S.NO	TEST	N	MEAN VALUE	STANDARD DEVIATION	't' VALUE
1	PRE TEST	50	8.36	1.438	45.409
2	POST TEST	50	21.12	1.394	

TOTAL STUDENTS (BOYS AND GIRLS) IN EFFECT SIZE -Table-3

S, NO	TEST	N	MEAN VALUE	STANDARD DEVIATION	EFFECT SIZE
1	PRE TEST	50	8.36	1.438	9.153
2	POST TEST	50	21.12	1.394	

9. Major finding;

- The average achievement mark in pre test is 33.44 for total number of students and in post test is 84.48 so there is a significance between pre test score and post test scores. so the above table reveals that the post test scores(84.48) is higher than the pre test scores(33.44)

The above table 1 reveals that the percentage score the post test mark obtained by the total number of students in the achievement test on the concept of photosynthesis is

higher than the percentage of the pre test mark obtained by the total number students in the achievement test on the concept of photosynthesis. It is therefore reveals that there is significant impact of videos and that the visuals in the understanding photosynthesis among ninth standard students.

- The above table2 to reveals that the total students post test mean scores 21.12 is greater than total students pre test mean scores 8.36. The calculate 't' value 45.409 is greater than the table value 1.699 at 5% of significance. There is a significant difference between pre test and post marks among ninth standard students in understanding concept of photosynthesis hence the hypothesis is accepted.
- The above table3 to reveals that the mean value in pre test is 8.36 and standard deviation is 1.488 and mean value in post testis 21.12 and standard deviation 1.394 hence the effect size is 9.153

10. Conclusion; The study findings suggest that using educational videos can be a more effective approach to teaching the concept of photosynthesis to 9th standard students compared to traditional lecture-based methods. The visual and interactive nature of videos appears to help students better comprehend this complex biological process.

11. Educational Implications;

- The findings of this study suggest that incorporating well-designed video-based lessons can be a valuable pedagogical approach for teaching complex science concepts, such as photosynthesis, to 9th grade students. The researchers recommend:
- Integrating video-based instruction as a complement to traditional teaching methods, rather than as a complete replacement.
- The findings suggest incorporating well-designed educational videos can be a valuable supplement or alternative to traditional lecturing when teaching complex science topics like photosynthesis.
- Videos may be particularly helpful for visually demonstrating processes that are difficult to fully convey through static diagrams or verbal explanations alone.

