

EFFECTIVENESS OF TEACHING THE TOPICS OF THE ECOLOGICAL PYRAMID AND FOOD CHAIN BASED ON DIFFERENTIAL METHODS

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Abstract. This in research ecological pyramid and food chain topics differential teaching methods based on of teaching The effectiveness of the “Sayiljoy” academic Lyceum 1st year students, group 108 in the example of The study involved 28 people. student participation reached. Differential teaching (content, process) and the result differentiation) when used students knowledge level of 32.4 % increased, ecological mind and motivation noticeable at the level improved Results biology science in teaching differential approach high efficiency confirms .

Key words: differential education , ecological pyramid, food chain, biology didactics, individual approach, ecological education.

Login. Ecological pyramid and food chain concepts modern biology science main from departments one This is topics in ecosystems energy flow, substances rotation and alive organisms between mutual dependency open These topics are important in building environmental awareness among students.

In the current education system, traditional one-size-fits-all methods are becoming ineffective because student's knowledge levels, interests, and learning speeds vary. Differentiated Instruction is a modern pedagogical approach based on differentiating content, process, and outcomes, taking into account the individual characteristics of each student.

In Uzbekistan, in particular, in academic lyceums, there is insufficient experience in using differential methods in teaching biology. The purpose of this study is to examine the ecological pyramid and the ecological pyramid of the first year students of the Sayiljoy Academic Lyceum, using the example of group 108. food chain topics differential methods based on teaching efficiency is to determine.

Ecological pyramid – food in the chain different at trophic (food) levels located organisms number, biomass and energy graphic in a way representative rule. It is in the ecosystem substance and energy metabolism, as well as nutrition chain stability showing gives.

This of the rule main features of the following consists of :

❖ **Home Law (Lindeman's rule):** One food chain from the step to the other when passing energy amount on average 90 % reduced. Only 10 % close energy next stage organisms in the body new tissue (biomass) yield to do is spent.

❖ **Trophic levels:** Pyramid basis with producers (plants) begins. Of them then consumers (herbivores) and predator animals) and the most above reductants (fungi and bacteria) settles.

Ecological 3 main parts of the pyramid type there is :

1. **Numbers pyramid:** Every one level organisms general number This pyramid shows often right in the form will be, that is plants number them eater from animals many will be.

2. **Biomass pyramid:** Every one food on the step alive organisms general mass represents.

3. **Energy pyramid :** In the ecosystem of energy food chain along from below up how the passage reflection Energy pyramid no when reverse it won't be possible and every always narrowed going to look has will be.

Tasks :

1. Analysis of literature on the topic.
2. Development and application of a differentiated instruction model.
3. Experimental the results analysis to do
4. Scientific and pedagogical recommendations to give

Methods . Research 2025 January-February “Sayiljoy” academic year 1st year lyceum group 108 (28 students) student was conducted. Research experimental in a way take went.

Research design :

- ✓Before test (pre-test)
- ✓Differential learning process (experimental group)
- ✓Next test (post-test)
- ✓Motivation and Environmental Awareness Assessment Questionnaire

Differential methods :

➤**Content Differentiation :** Strong to students genetics aspects (food) in the chain heredity and adaptation) was added.

➤**of the process :** Individual tasks, group projects, creating visual models (Eco-Pyramid Builder).

➤**of the result :** Test, project defense, reflection and presentation.

Lessons last 2 hours. Statistical analysis was performed in Microsoft Excel and SPSS programs, done increased (t-test).

Results . Pre- test results The average score of students was **17.8 %**

Next test results :

Indicator	Before (average)	Late (average)	Growth (%)
Knowledge level	17.8	26.1	+46.6
Ecological concepts	14.2	22.7	+59.9
Motivation level	62%	84%	+35.5

Difference statistic in terms of reliable ($p < 0.01$). 89% of students in group 108 rated differential methods as “interesting and understandable”. Created by students ecological pyramids and food chains projects high good quality it has been .

Discussion. Results this showed that the differential teaching ecological pyramid and food chain topics in mastering traditional to methods relatively more effective. This method taking into account the individual differences of students, their activity increases and deeper knowledge gives.

Received results international This is consistent with research (Tomlinson, 2017; de Graaf, 2019). Applying this approach in institutions such as “Sayiljoy” Academic Lyceum will help improve the quality of biology teaching.

Limitations: The study was conducted in only one group. It could be expanded to more groups and high schools in the future.

Conclusion when doing , “Sayiljoy” academic Lyceum 1st year students, group 108 in the example of held research ecological pyramid and food chain topics differential methods based on teaching high to efficiency has that proved. This approach biology in their classes wide application recommendation is being done .

Practical recommendations :

- ❖ Creating a set of differentiated lesson plans for teachers.
- ❖ Genetics and ecology.
- ❖ Using digital tools (Kahoot, Canva, BioRender).

Literature list

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