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DEVELOPING STUDENTS' ECOLOGICAL COMPETENCE THROUGH INDEPENDENT LEARNING ACTIVITIES

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Annotation:
"Enhancing Students' Ecological Competence through Independent Learning Activities" emphasizes the importance of shaping students' ecological competence through independent learning activities. The article highlights the potential increase in students' ecological competence, likely fostering environmental awareness and responsibility among them. The term "ecological competence" is discussed in the context of effectively engaging with environmental issues through essential knowledge, skills, and attitudes. Various methods and strategies for developing independent learning in the context of ecological education are discussed in the article, addressing issues of practical experience, integrating environmental topics into the curriculum, and considering the challenges of incorporating environmental concerns into education. The goal is to instill in students the initiative and responsibility to preserve the environment, contributing to a sustainable and environmentally conscious future.

Keyword: competence, ecological competence, environmental sustainability, integration, excursion, online platform, virtual environment, mentoring, surroundings, educational integration.

INTRODUCTION

Currently, the significance of ecological education is steadily increasing. Developing ecological competence among students, in the face of threats posed by climate change, the decline of biodiversity, and the looming challenges of other ecological issues, is crucial for the sustainable development of our future. Independent learning activities play a vital role in shaping environmentally conscious individuals capable of actively participating in the preservation of our natural resources. Sustainable development entails aligning ecological sustainability concepts and practices with the entirety of the curriculum, offering comprehensive guidance towards achieving the sustainable development goals of students. This involves making fundamental decisions that contribute to fostering competence in sustainability, enabling students to actively contribute to achieving sustainable developmental objectives.

The article emphasizes the role of independent learning activities in enhancing students' ecological competence. Independent learning exercises contribute to developing skills such

as self-management, critical thinking, problem-solving, and decision-making. Simultaneously, these activities provide students with the opportunity to reflect on their actions and learn from their experiences.

Furthermore, the article delves into the significance of assessing students' sustainability competencies. This evaluation is not only concerned with gauging students' knowledge and understanding of ecological sustainability concepts but also entails measuring their ability to apply these concepts in real-life situations. In conjunction with this, evaluating students' attitudes and readiness to act in accordance with ecological sustainability goals is aligned with the intended purpose.

Enhancing ecological competence through Independent Learning Activities (ILA) is considered a crucial aspect of ESD (Ecological Sustainable Development). It equips students with the necessary principles and knowledge essential for their active participation in sustainable development. Moreover, assessing students' competencies is equally important to ensure effective acquisition and application of these principles, fostering their comprehensive understanding and utilization.

Research Objectives and Applied Methods

The research objective in independent learning activities on ecological topics is the ecological competence of students. Ecological competence encompasses the knowledge, skills, attitudes, and values necessary for individuals to understand, appreciate, and contribute to the sustainability of the surrounding environment. The primary focus is tailored to students, indicating that the research is designed around a specific demographic group within a broader population. Therefore, the research objective is to explore ways to enhance and develop students' ecological competence.

In scientific investigations, have been applied observation, scrutiny, questionnaire surveys, data gathering and analysis, interpretation of results, modeling, monitoring, and utilized mathematical and statistical methods.

Results and their Analysis

Comprehensive literature review is essential for understanding theoretical frameworks, models, and research related to ecological competence, independent learning activities, and their intersection. In the subsequent discussion, we elaborate on the definitions provided for these concepts, drawing on a literature analysis as an illustrative example.

What are Independent Learning Activities?

Independent learning activities involve creating opportunities for students to autonomously manage their learning, engage in self-directed learning, critical thinking, and address environmental issues independently. These activities facilitate independent exploration, allowing students to pursue solutions to challenges related to learning and the surrounding environment. Independent learning is characterized by students undertaking tasks

individually, either without direct involvement or under indirect supervision of the teacher, based on assignments provided in the course materials.[1].

The realm of information and sciences is rapidly expanding in the contemporary era, posing a challenge in delivering all information to students solely during class time. Experiences demonstrate that when students engage in independent work, meaning they work independently and deeply on a subject, they acquire profound knowledge. Initial knowledge, skills, and competencies of students are formed only through the process of independent learning, shaping their ability to undertake independent activities and fostering a keen interest in creative endeavors.

Certainly, the following aspects should be considered when determining the form and scale of independent work:

- Reading stage;
- The specific nature and complexity level of the subject for individualization;
- The student's ability and level of theoretical and practical preparedness (prior knowledge);
- The degree of availability of information sources for the subject;
- The student's proficiency in working with information sources;

To fulfill assignments for independent work, students benefit from essential literature, information communication technologies, the internet, multimedia, and other electronic tools. These resources play a practical role in helping students complete given tasks and enhance their knowledge through practical application[2].

Independent learning activities involve holding students accountable for their own learning process. These initiatives extend beyond traditional classroom teaching and encourage students to independently explore and analyze environmental issues. Research projects, field studies, participation in environmental conservation campaigns, and self-management initiatives are integral components of such activities.

The inclination of a student to independently customize learning materials, engage with specialized literature, work with scholarly sources, apply acquired knowledge in practical settings, and strive for a broader expertise in their field is of paramount importance. Working with specialized literature in the process of independent learning not only enhances the student's personal qualities but also contributes to the development of their creativity, thinking abilities, and memory. In the initial stages of education, the adaptation of educational programs in our Republic's high school education system should consider the necessity of focusing on independent learning in subjects related to learning and issues of ecological competence for a comprehensive and well-rounded education.

● Ecological competence entails understanding, analyzing, and efficiently addressing environmental issues through knowledge, skills, attitudes, and values. It encompasses grasping the interconnectedness between ecological, social, and economic systems. Developing ecological competence prepares students to make informed decisions and take responsible actions in the face of environmental challenges.To assess the current level of students' ecological competencies, conducting surveys and questionnaires covering topics such as ecological science, environmental awareness, and sustainability is essential.

Questions should encompass issues related to ecological knowledge, environmental reporting, and attitudes towards sustainability.

- Engaging in discussions with experts and students on environmental topics is valuable for collecting in-depth information. This approach provides the opportunity to delve into personal experiences, insights, and perspectives related to environmental competence and independent learning activities.
- Monitoring students' engagement in independent learning activities related to the environment is crucial. This method offers practical insights into their learning approaches, particularly in terms of applying knowledge and developing skills.
- Analyzing learning materials, curricula, and resources utilized by students in the process of independent learning is beneficial. This approach helps identify the content of the environmental context, assess its effectiveness, and evaluate the enhancement of students' proficiency in the subject matter.

Researching specific instances or examples of successful development of ecological competence through independent learning activities provides in-depth, context-specific insights. Comprehensive studies offer a deep understanding of effective strategies and practical approaches.

Evaluating the effectiveness of various types of independent learning activities in shaping ecological competence is essential. This involves comparing results across different groups or settings to gain a comprehensive understanding of the outcomes achieved.

Conducting longitudinal studies is crucial to monitor the long-term development of ecological competencies in students through independent learning activities. This approach provides a more comprehensive understanding of the sustained impact of independent learning over an extended period.

Utilizing a combination of these research methods allows for a holistic analysis of the trends in developing ecological competencies among students through independent learning activities.

David Kolb emphasizes the significance of experiential learning theory, highlighting the importance of learning through experience. In the context of ecological education, Kolb's model underscores the role of independent activities such as excursions, open projects, and practical experiences. These direct experiences provide students with opportunities to enhance their understanding of environmental concepts by actively engaging with their surroundings. [3]

Gregory Smith Granvald's proposal is centered on educating students about ecological issues that have emerged locally and globally, based on the place they reside. This solution encourages an in-depth understanding of environmental challenges within the local community and society. Through independent learning activities, it aims to instill a sense of responsibility in students towards their living environment, fostering a deeper connection with their surroundings and promoting environmental stewardship.[4]

In Richard Louv's concept of "Nature Deficit Disorder," particularly, the negative consequences of disconnection from nature in youth are highlighted. Independent learning

activities that reconnect students with nature play a crucial role in addressing this deficiency and cultivating an ecological sense of responsibility among them.[5]
Developing students' ecological competencies within their classrooms through independent learning incorporates a multifaceted approach, and the outcomes of these learning experiences can be examined in the following stages:

1. Integrating Education for Sustainable Development: Embedding sustainability seamlessly into the curriculum to enhance students' understanding and skills in environmental awareness and stewardship is achieved through integrating education for sustainable development into the learning program. This integration is instrumental in attaining competencies for sustainable development within the students' education.[6].

2. Enhancing Environmental Awareness: Encouraging students to articulate their thoughts and personal opinions on environmental issues. Utilizing online platforms to create virtual environments and identify solutions or model places for ecological risks helps students gain a deeper understanding of the role of the environment and its preservation. [7].

3. Practical Learning: It is essential to engage students in practical activities, such as studying the impact of plants and species in the surrounding environment. Implementing actions like cleaning up gardens, reworking flowerbeds, and planting new vegetation fosters enthusiasm and hands-on experience in understanding ecological dynamics.[8]

4. Enhancing Physical Competence: Instilling in students the desire to act for a sustainable future. This necessitates providing opportunities for them to participate in extracurricular activities beyond the classroom that are related to sustainability, thus promoting physical competence[9].

5. Stimulating Critical Thinking: Encouraging students to participate in critical discussions about environmental issues. This aids in developing a more nuanced understanding of the delicate concepts related to the environment and its preservation, crucial for the students' engagement in environmental protection.[10].

6. Fostering Independent Learning: Providing students with opportunities for independent exploration of environmental issues. This involves supporting them in independently researching and resolving environmental challenges, fostering the development of the skills necessary for investigating and addressing environmental issues autonomously. [11].

7. Providing Mentorship: Supplying students with mentorship and subject-specific knowledge through formalized educational support systems. This assists students in acquiring the technical expertise necessary for effectively addressing ecological issues.[12].

Conclusion

As a summary, the advantages of independent learning activities for ecological competence can be outlined as follows:

1.Expanded Critical Thinking Abilities: Independent activities cultivate students' capacity for critical thinking, analyzing information about environmental issues, and articulating their own conclusions. This contributes to a deeper understanding of complex ecological systems.

2. Enhanced Self-Efficacy: Assuming responsibility for one's knowledge enhances self-efficacy and instills confidence in the ability to implement positive changes. Independent activities foster the capability to embrace positive transformations effectively, especially in addressing ecological challenges.

3.Development of Environmental Conservation Skills: Independent learning activities often incorporate real-life scenarios and applications, nurturing students' skills in managing their surroundings. This promotes responsible living and contributes to the cultivation of environmentally conscious citizenship, aligning with essential habits and traditions.

Developing Ecological Competence in Students: A Crucial Component for a Sustainable Future. Developing ecological competence in students is an integral part of building a sustainable future. Independent learning activities, supported by various educational theories and literature, offer valuable tools to achieve this goal. Integrating these initiatives into educational curricula actively engages students in shaping a sustainable and harmonious coexistence with our environment.

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