

ROLE OF MULTIMEDIA LEARNING STRATEGY ON IMPROVEMENT OF BIOLOGICAL ACHIEVEMENT AT SECONDARY SCHOOL LEVEL

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Abstract: One of the key benefits of studying biology at the secondary school level is the development of critical thinking skills. Biology is a data-rich subject, and students are often required to analyze and interpret scientific data, draw conclusions, and make predictions. This type of critical thinking is important not only in the natural sciences but also in other subjects and in everyday life. By engaging in scientific inquiry and problem-solving activities, students develop the skills necessary to make informed decisions and evaluate information critically. Multimedia learning is a teaching strategy that combines different forms of media, such as text, audio, video, and graphics, to enhance student understanding and retention of information. In the context of biological achievement, multimedia learning can be an effective tool for improvement. This article highlights the importance of multimedia learning strategy on improvement of biological achievement improvement at school education. The study suggests by supporting differentiation and individualized instruction, multimedia learning strategies can also help to ensure that all students are able to achieve at their highest potential, regardless of their background or prior knowledge.

Keywords: Multimedia, learning strategy, biological achievement, secondary, school.

1. INTRODUCTION

Multimedia learning is a teaching strategy that combines different forms of media, such as text, audio, video, and graphics, to enhance student understanding and retention of information. In the context of biological achievement, multimedia learning can be an effective tool for improvement.

Studies have shown that students who use multimedia learning materials tend to perform better on assessments and retain information longer than those who rely solely on text-based materials. This is because multimedia materials provide multiple ways for students to engage with and process information, which can help to overcome learning difficulties and cater to different learning styles. For example, visual aids, such as diagrams and animations, can help students to grasp complex biological concepts by providing a visual representation of the material. Audio components, such as recorded lectures or podcasts, can provide an alternative way for students to access information and can also be helpful for students who struggle with reading. Interactive simulations and virtual lab experiments can allow students to experiment with biological processes and concepts in a controlled environment.

Additionally, multimedia learning can be engaging and motivating for students, which can lead to increased involvement and participation in class. This can foster a positive learning environment, where students are encouraged to explore, experiment, and apply the biological concepts they are learning. Incorporating multimedia learning strategies in the teaching of biology can be a powerful tool for improvement of biological achievement. By offering multiple modes of engagement and representation, multimedia learning can make biological concepts more accessible and memorable for students, leading to enhanced understanding and retention of information.

Multimedia Learning Strategy

Multimedia learning is a teaching strategy that combines different forms of media, such as text, images, audio, video, and interactive simulations, to present information in a way that is engaging, informative, and memorable. In recent years, the use of multimedia learning has become increasingly popular in educational settings, and research has shown that it can be a highly effective tool for improving student achievement, particularly in subjects that require complex information and skills. To this effect, technology integration in education is suggested and explored. Several studies have been conducted to examine the impact of integrating multiple media modalities into the curriculum, more particularly in the areas where students have difficulties in their ability to envision and manipulate multi-dimensional information spaces (Jekinson, 2009).



One of the key benefits of multimedia learning is that it provides multiple ways for students to process information. For example, visual aids such as images, animations, and videos can help students to grasp complex concepts by providing a visual representation of the material. This can be particularly useful for students who struggle with abstract concepts or who have difficulty visualizing information. Audio components such as podcasts and recorded lectures can provide an alternative way for students to access information, which can be particularly beneficial for students who struggle with reading or who learn better through listening. Interactive simulations and virtual lab experiments can also provide students with hands-on experiences that can help to solidify their understanding of biological processes and concepts.

Multimedia learning can also be highly engaging and motivating for students. Research has shown that students are more likely to be involved and interested in the material when they are using multimedia learning materials, which can lead to increased participation and engagement in class. This, in turn, can foster a positive learning environment, where students are encouraged to explore, experiment, and apply the concepts they are learning. Additionally, multimedia learning materials can often be more captivating and memorable than traditional text-based materials, which can help students to retain information for longer periods of time.

Another benefit of multimedia learning is that it can be adapted to meet the needs of different learners. For example, multimedia materials can be designed to cater to different learning styles, such as visual, auditory, and kinesthetic learners. This can help to overcome learning difficulties and ensure that all students have the opportunity to succeed. Additionally, multimedia learning materials can be customized to meet the needs of students with disabilities, such as visual or hearing impairments, by incorporating alternative forms of representation, such as audio descriptions or captions.

In terms of biological achievement, multimedia learning can be particularly effective. Biology is a complex and multifaceted subject that requires students to understand a wide range of concepts, processes, and skills. The use of multimedia learning materials can help students to understand and retain information more effectively, and can also provide opportunities for students to apply their knowledge in practical ways. For example, virtual lab simulations can allow students to perform experiments and explore biological processes in a controlled environment, which can help to reinforce their understanding and develop critical thinking skills.

However, it is important to note that the use of multimedia learning is not a magic solution for improving student achievement. It is crucial for educators to carefully design and implement multimedia learning materials in a way that is aligned with their teaching goals and objectives. This means ensuring that the materials are well-structured, engaging, and effective in conveying the desired information and skills. Additionally, educators must ensure that the materials are used effectively in the classroom, for example, by incorporating activities and assessments that allow students to engage with and apply the information they have learned.

Overall, multimedia learning is a powerful tool for improving student achievement, particularly in subjects such as biology that require complex information and skills. By providing multiple ways for students to process information, engaging students in the learning process, and adapting to meet the needs of different learners, multimedia learning has the potential to enhance student understanding and retention of information. However, it is important for educators to carefully design and implement multimedia learning materials to ensure that they are effective and aligned with teaching goals and objectives.

Biology as a Subject

Biology is a fascinating and essential subject for secondary level students. It provides students with an understanding of the fundamental concepts and processes that govern life and the natural world, and it also lays the foundation for further study in the natural sciences and related fields. The study of biology has many practical applications, and it is also important for developing critical thinking skills and fostering an appreciation for the natural world.



At the secondary level, biology courses typically cover a range of topics, including cell structure and function, genetics, evolution, ecology, and anatomy and physiology. Through these topics, students gain a deeper understanding of the complexities of living systems, from the smallest cellular structures to the functioning of entire ecosystems. They learn about the mechanisms that drive biological processes, such as genetics, evolution, and adaptation, and they also gain an appreciation for the interconnectedness of living systems and the impact that human actions can have on the environment.

Biology is one of the Science subjects that occupy a unique position in schools curriculum. It is an integral part of Science and its importance in the field of science cannot be overemphasized. However, the performance of students in the subject has been appalling. In attempt solve the problem, researchers (such as Ahmed & Abimbola, 2011; Cimer, 2012; Agboghroma & Oyovwi, 2015; Etobro & Fabinu, 2017) found that many students perceive Biology topics as boring, abstract and too difficult to understand. Also, there is the problem of vercrowded classrooms, and poor teaching methods adopted by teachers (Olaleye, Ajayi, & Oyebola, 2017; Gimba, Hassan, Yaki, & Chado, 2018).

One of the key benefits of studying biology at the secondary level is that it can help students to develop critical thinking skills. Biology is a data-rich subject, and students are often required to analyze and interpret scientific data, draw conclusions, and make predictions. This type of critical thinking is important not only in the natural sciences, but also in other subjects and in everyday life. By engaging in scientific inquiry and problem-solving activities, students develop the skills necessary to make informed decisions and to evaluate information critically.

Another benefit of studying biology at the secondary level is that it provides students with a foundation for further study in the natural sciences and related fields. Many students who are interested in pursuing careers in fields such as medicine, veterinary science, or environmental science will need to have a solid understanding of biology. Additionally, many other scientific disciplines, such as chemistry and physics, have a biological component, and a strong foundation in biology can be beneficial for students who wish to pursue these subjects at a higher level.

The study of biology also has practical applications for everyday life. For example, students who study biology at the secondary level may learn about genetics, which has important implications for health and medicine. They may also learn about environmental issues and the impact of human activities on the natural world, which can help to foster a sense of environmental responsibility and inspire students to take action to protect the environment.

Biology is an important and fascinating subject for secondary level students. It provides students with a foundation for further study in the natural sciences and related fields, and it also helps to develop critical thinking skills and foster an appreciation for the natural world. Through the study of biology, students gain a deeper understanding of the complexities of living systems, and they also learn about the mechanisms that drive biological processes and the impact of human actions on the environment. Whether students are interested in pursuing careers in the natural sciences or simply want to have a greater understanding of the world around them, studying biology is an excellent place to start.

Biological Achievement:

Biological achievement at the secondary school level is a critical aspect of science education and lays the foundation for future studies and careers in the natural sciences and related fields. The study of biology provides students with a deep understanding of the complex processes and structures that govern life, and it also helps to develop critical thinking skills, a sense of environmental responsibility, and an appreciation for the natural world.

At the secondary school level, biology courses typically cover a range of topics, including cell structure and function, genetics, evolution, ecology, and anatomy and physiology. Through the study of these topics, students gain a comprehensive understanding of the fundamental concepts and processes that drive biological systems, from the smallest cellular structures to entire ecosystems. They learn about the mechanisms that govern biological processes, such as genetics, adaptation, and evolution, and they also gain an appreciation for the interconnectedness of living systems and the impact that human activities can have on the environment.

One of the key benefits of studying biology at the secondary school level is the development of critical thinking skills. Biology is a data-rich subject, and students are often required to analyze and interpret scientific data, draw conclusions, and make predictions. This type of critical thinking is important not only in the natural sciences but also in other subjects and in everyday life.

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Another key benefit of studying biology at the secondary school level is that it provides students with a foundation for further study in the natural sciences and related fields. Many students who are interested in pursuing careers in medicine, veterinary science, or environmental science, for example, will need to have a solid understanding of biology. Additionally, many other scientific disciplines, such as chemistry and physics, have a biological component, and a strong foundation in biology can be beneficial for students who wish to pursue these subjects at a higher level.

In addition to its practical applications, the study of biology also has the potential to inspire students to take action to protect the environment. By learning about the impact of human activities on the natural world, students can develop a sense of environmental responsibility and become more engaged in efforts to protect the planet and its resources. For example, students who study biology at the secondary school level may learn about the importance of biodiversity and the threats to species and ecosystems, which can inspire them to become involved in conservation efforts.

To support biological achievement at the secondary school level, it is important for teachers to create engaging and interactive learning environments that foster scientific inquiry and encourage students to explore and apply their understanding of biological concepts and processes. This can include hands-on laboratory activities, fieldwork, and real-world problem-solving exercises, as well as opportunities for students to engage in independent research projects.

Biological Achievement at the secondary school level is a critical aspect of science education, and it provides students with a foundation for further study and careers in the natural sciences and related fields. The study of biology helps to develop critical thinking skills, a sense of environmental responsibility, and an appreciation for the natural world. By engaging students in hands-on and interactive learning experiences and fostering scientific inquiry, teachers can help to support biological achievement at the secondary school level and inspire students to pursue their interests in the natural sciences.

Multimedia Learning Strategy on Improvement of Biological Achievement

The role of multimedia learning strategies in the improvement of biological achievement at the secondary school level is significant. By using a combination of multimedia resources, such as videos, animations, simulations, and interactive activities, teachers can create engaging and interactive learning environments that support students' understanding of biological concepts and processes. These resources can be especially beneficial for students who learn best through visual or interactive experiences, and they can also help to make complex biological concepts more accessible and easier to understand.

One of the key advantages of multimedia learning strategies is that they can help to enhance students' engagement and motivation in the subject. By providing students with opportunities to interact with the content and engage in hands-on and inquiry-based activities, teachers can help to foster students' curiosity and interest in biology. This can lead to increased student motivation and improved learning outcomes.

Another advantage of multimedia learning strategies is that they can help to provide students with a more comprehensive understanding of biological concepts and processes. For example, animations and simulations can help to illustrate complex biological processes, such as cell division or the functioning of the circulatory system, in a clear and visually appealing way. This can help students to better understand the underlying concepts and retain the information over time.

Finally, the use of multimedia learning strategies can also support differentiation and individualized instruction, allowing teachers to meet the needs of a diverse student population. For example, teachers can use multimedia resources to provide students with additional support or challenge, based on their individual learning needs and styles. This can help to ensure that all students are able to achieve at their highest potential, regardless of their background or prior knowledge. The use of multimedia learning strategies can play a significant role in the improvement of biological achievement at the secondary school level. By providing students with engaging and interactive learning experiences, teachers can help to enhance students' engagement, motivation, and understanding of biological concepts and processes. By supporting differentiation and individualized instruction, multimedia learning strategies can also help to ensure that all students are able to achieve at their highest potential, regardless of their background or prior knowledge.

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