CONCEPTUAL REVIEW ON THE EFFECT OF MOBILE LEARNING AND COOPERATIVE LEARNING STRATEGIES ON STUDENTS' ACADEMIC ACHIEVEMENT AND INTEREST IN BIOLOGY

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Abstract
As mobile devices have become part of our daily lives, many studies are being conducted on making them more useful for students. It has been found that mobile gadgets are beneficial to pupils, although some studies have found that they are ineffective. mobile devices in education and learning is summarized in this document, which will be helpful to other educators and students. Analysis of mobile learning 'impact and environment show that students benefit from the usage of mobile technology by expanding their knowledge and skills. The primary concern was the difficulty of adopting them and the lack of appropriate control guidelines. Different frameworks have been developed for various applications in the review of mobile learning frameworks. Non-technical applications make up most of the cases. course development and the foundation for mobile learning are not connected. As a result, future course designers must address students' cultural backgrounds and how they use mobile devices to improve engagement and learning. This paper also seeks to establish a conceptual review of cooperative learning strategy on student achievement and interest. Accordingly, the Conceptual Approach employed in this study entails the incorporation of its five essential elements, namely positive independence, individual accountability, group processing, social skills, and face-to-face interaction into the context of problem solving within a cooperative learning setting.
Keywords: Conceptual, review, mobile, learning, cooperative

Introduction

Students can now access instructional resources via mobile devices, which have grown in popularity over the past decade (Hoi, 2020). Ninety-eight percent of Australians aged 18-24 and ninety-seven percent of those aged 25-34 own a smart phone, respectively (Oviedo-Trespalacios et al., 2019). Mobile devices are

becoming more and more prevalent for international students, and this survey's conclusions may be relevant. There are no limitations on when or when students can participate, making it an excellent complement to more traditional teaching techniques (Bernacki et al., 2020). Mobile devices and Internet access have become increasingly ubiquitous, as an estimated 94 percent of 15- to 34-year-old Canadians own a smart phone (Behar, 2017). The primary functions of these gadgets are communication (such as video calls, SMS, and email), online surfing, gaming, and social media sharing and participation. If this resource can be used to improve learning, it will benefit everyone involved, from educational institutions to teachers and students alike (Gómez-Garca et al., 2020).

A shift from a web-based to a mobile-friendly system could significantly impact student learning, as smart phones and mobile apps are becoming increasingly popular. When you have a weak internet connection, you can easily use mobile apps than web-based ones. Additional features include quizzes, game based, and gamification-based learning, digital evaluation tools, and podcasts for learning purposes. As a result, mobile learning in future generations of teaching and learning has immense promise (T&L). Web-based T&L strategies have made a significant change in the student experience. Students' learning experiences have greatly improved due to this change, which has freed up their time and effort from otherwise pointless activities (Avci et al., 2021). Moodle, Blackboard, Academic Management System (AMS), ZOOM, and other web-based applications make students' learning more participatory and help students better comprehend the material. Technological advancement continues unabated, and one aspect of this advancement is the move toward individualized T&L. Personalized learning is one of the benefits of mobile technology (Whalley et al., 2021). As a result of mobile technology's ability to facilitate real-time communication and feedback and learning possibilities that can be accessed from virtually anywhere at any time (Pangeni, 2021). As a result, there are both advantages and drawbacks to using mobile technology in the classroom. During the COVID-19 term, mobile learning gives added comfort and convenience.

Mobile technology makes learning easier in and out of the classroom. There have been a lot of discussions recently about the use of mobile technology in education, including studies on the effects of distractions on task performance (Hsu et al., 2021) and the provision of course and exam information (OConnor & Stricklan, 2021), as well as studies on how to engage math students in a class (Attard, 2018). (Pandey et al., 2022). Science education research, including biology education, conducted in the past few decades has focused on the integration of knowledge, skills and attitudes to develop a better understanding of scientific concepts (Zeidan and Jayosi, 2015.) In other words, the emphasis has been on how students learn,

and how they build their personal understanding of scientific concepts. Lunenburg (2019) considered that the use of student-centered teaching strategies in classrooms within an overall inquiry-based pedagogy is an effective way to enhance students' academic performance, critical thinking, and problem-solving skills. So, through inquiry, students may learn both skills and concepts and develop positive attitudes towards science.

Cooperative learning methods are among the most extensively evaluated alternatives to traditional instruction in use today. Use of cooperative learning improves students' affective outcomes. Students love to work in groups, felt more successful and appreciate subjects taught cooperatively (Slavin, 2014). They have more friends of different ethnic groups and are more acceptable of others different from themselves. Cooperative learning is an approach to group work that minimizes the occurrence of those unpleasant situations and maximizes the learning and satisfaction that result from working on a higher performance team. Students taught with cooperative learning tend to exhibit higher academic achievement, greater persistence through graduation, better high-level reasoning and critical thinking skills, deeper understanding of learned material, greater time on task and less disruptive behavior in class, lower levels of anxiety and stress, greater intrinsic motivation to learn and achieve, greater ability to view situations from others. Teaching in large groups invariably results in conventional one-way communication in which the teacher assumes a dominant role. Teachers have encouraged educators to find ways and means of designing techniques in groups that would avoid domination of one person and encourage student participation. Teachers have considered the small groups as uniquely structured models to achieve educational goals. In small groups, the teacher can give individual attention to all the members of the group according to their needs. The students get an opportunity to get more actively involved in their own learning. Further, small groups are conducive for the development of multi-faceted skills among students as there is two-way communication between (i) students and students and (ii) teachers and students. Cooperative learning encourages mutual interaction and by increasing the number of opportunities for understanding complex biological aspects and need to examine cooperative learning as an instructional approach in a conventional school context such as the one based on the assumption that it would promote active learning and meaningful interaction among learners.

Concept of Students' Interest in Biology.

Interest greatly determines student learning outcomes both academically and non-academically. Students' interest in learning decreased due to factors in learning methods that were less memorable and learning media factors that were less attractive. Interest in learning also affects student learning performance. When students are interested, they clearly pay attention and always want to learn more about Biology, so that their biology subject scores are much better than children

who do not have Biology subjects Ratnasari,(2017). Students' interest in learning is difficult to walk if the teacher does not motivate its students. According to learning motivation Hidayati et al. (2022) in learning it is very necessary so that students can grow and develop their thinking during the learning process. If students are motivated, they will feel valued and will go beyond what the teacher asks them to do. Interests play a very important role in students' lives and have a great influence on attitudes and behavior. Students who are interested in learning activities will try more than just in the form of activities; students work and experience what they learn well because it is interesting to them. Interest can be interpreted as special attention. Students who are interested in a subject, their attention will be high, and their interest will function as a strong incentive to be actively involved in teaching and learning activities Muliani & Arusman, (2022). Judging from the interest in learning, there are still students who have a fundamentally low interest in learning. This can be seen by the presence of participants who are not active in learning and do not pay attention to the teacher's explanation, and so on. This shows that students' interest in learning is still low. The above should be the concern of the teachers and encourage the search for learning methods that are considered appropriate in the teaching and learning process, so that the delivery of material can be well absorbed by students.

The teaching of biology as a subject in secondary schools is faced with many problems. The poor academic achievement of students in biology as indicated in the report of WAEC and National Teachers Institute (NTI) as well as the result of state common entrance examination has come a persisted public outcry as regards the falling standard of biology education. Science subjects are already facing a problem. This is mostly in availability of laboratories and other teaching facilities in their right number of students studying science. Biology as a very important subject; must be given more priority. It enables one to understand himself and his intermediate environment. Nevertheless, the knowledge acquired in Biology is applied in many fields such as Medicine, Biochemistry, Pharmacy, Microbiology and Agriculture among others.

Students' achievement in Biology subject in Senior Secondary Certificates Examination (SSCE) has been unsatisfactory over many years. Various reasons have been attached to this problem by scholars. Dinah (2013) concluded that availability of textbooks, laboratory apparatus and other learning resources contribute significantly to the performance of students in Biology examination. He added that students with a positive attitude towards the subject register better performance than those who had a negative attitude. Those with a positive attitude are motivated to work hard and this is reflected in the good marks scored in the examination. Suman B. (2011) conducted research on the influence of parents'

education and parental occupation on academic achievement of students. He concluded that education and occupation of parents positively influence the academic achievement of children. Femi (2012) concluded that education qualification of parents and health status of students are significant factors that affect the academic performance of students. According to Akinsanya et al. (2014) parents' education has the highest significant influence on the academic achievement of students. This is because the child from an educated family has a lot of opportunities to study hard due to his/her access to internet, newspaper, television. They can also be taught extra lessons at home. Students raised from an illiterate family have limited access to that. It has been observed that the falling academic standard and the influencing factors include the economic status of the parents. Just having a look at the present economic situation of the country, many poor parents do send their children to go and do pity household work before going to school. These children were confused on whether they could help their family through that. However, poverty of parents has elastic effects on their children's academic work as they lack enough resources and funds to sponsor their education and good school, good housing facilities, medical care and social welfare services. Femi (2012) in his study says socio-economic and education background of parents is not significant factors in students' performance. Osuafor (2013) in their research on the influence of family background on academic achievement of secondary school Biology students revealed that family structure, parents' occupation and educational level of parents did not have significant influence on students' achievement in biology. Furthermore, a practical Biology exam if high scored improves Biology grade. Teachers should be encouraging to acess learners regularly on practical skills. Perhaps, more practical lessons should be availed and documented so that teachers can plan for them and regular inspection to ensure the actual order is adhered to Wabuke,(2013). The problems of students under achievement in biology have been observed by many researchers and viewed in different angles due to its diversity. To improve students' achievement and arouse their interest, students must be taught biology with hands on and different learning materials to enable them to acquire the cognitive competence and professionals of biology that they need passing biology.

Cooperative learning is a student-centered instructor-facilitated instructional strategy in which small groups of students are responsible for their own learning and learning of all group members. It is an instructional strategy where the teachers organize students into small groups which work together and help one another to learn academic content and reach a common goal. The teacher maintains and controls the learning environment, designs learning activities and social interactions, and structure work teams. In this strategy every student participates in

the team and there is cooperation among team members as well as a collective effort which facilitates understanding of subject matter.

Mobile Learning Strategy and Student Interest

Mobile learning has demonstrated a positive influence in promoting interest and engagement in biology education. The interactive features, immersive experiences, and personalized learning opportunities offered by mobile apps have the potential to enhance students' interest, curiosity, and motivation in biology. Through virtual experiments, 3D models, gamified elements, and adaptive learning approaches, mobile apps provide students with engaging and interactive learning experiences that go beyond traditional classroom methods. Mobile apps in biology education increases students' interest and engagement levels. These apps stimulate curiosity, foster active participation, and provide opportunities for deepening understanding of biology concepts. The incorporation of mobile apps in the learning process caters to diverse learning needs by offering personalized learning experiences, adapting to individual learning styles, and accommodating different preferences and abilities.yoon et all (2014). Mobile apps have revolutionized the way students engage with biology. By providing accessibility, interactivity, gamification, personalized learning, and opportunities for real-world participation, these apps have played a crucial role in generating and sustaining students' interest in biology. As technology continues to advance, it is expected that mobile apps will continue to evolve and offer even more innovative ways to enhance students' learning experiences and foster a lifelong passion for biology.

Influence of Mobile Learning on Students Achievement and Interest

According to (Zainal & Mohd Matore, 2021), there are two types of teachers: those who are creative and those who are merely functional. In contrast to instrumental teachers who adhere to a more traditional approach to education, innovators want to move away from a teacher-centered model and toward one that is centered on students. A greater awareness of students' mobility practices encourages universities to provide more student-centered support. College students are increasingly using mobile devices to learn outside of the classroom, and this trend is projected to continue shortly (Hsu & Lin, 2022). "The use of portable technology to support classroom learning and the use of personal mobile devices for on-the-go learning" has been agreed upon. According to reviews students' test scores were significantly impacted by their use of mobile devices. An increase in the students' willingness to learn has resulted in an overall improvement in their academic abilities. "Deliberate and active use of cellphones for educational objectives" (Zainal et al., 2022) is advocated by the authors in their paper. As a result of exhibiting these characteristics, the authors contend that students will be more engaged and, as a result, achieve better academic results. Mobile learning has a place in mainstream education, according to (Sarrab et al., 2018), . Students will benefit from a new teacher role that emphasizes learning management instead of

delivery. In addition to providing a novel learning environment, mobile technology has a vital role in teaching and learning. According to (O'connor & Andrews, 2018), mobile technologies can improve the learning environment by helping to create a more collaborative classroom, which is critical when dealing with kids from diverse cultural backgrounds and languages. To foster a cooperative atmosphere, it is essential to incorporate features such as adaptable use, continuous usage, immediate feedback, punishment, and opportunities for social interaction and active participation. It is one of the drawbacks of mobile learning because students cannot work together in groups and interact in person.The use of mobile devices in teaching and learning has negatively influenced some studies (B. Guruge et al., 2021). According to the findings, on the impact of cellphone use, students' learning ability could be harmed by using smartphones. Student expectations of disruption were more significant than the actual degree of disturbance, which indicates that even good students can suffer from low performance due to interruption.

According to this paper (Chao, 2019), there is some evidence that mobile learning impacts. When students use mobile technology correctly in and beyond the classroom, their academic and personal success can be enhanced. Some concerns have been raised, but the advantages far outweigh the drawbacks. Another area of study is critical thinking and a collaborative atmosphere. According to this paper, a collaborative atmosphere, eye contact and face-to-face connection are essential, but technology does not promote this. mobile technology is separated into two categories for critical thinking: mobile phones and laptops. Laptops were found to aid students' critical thinking and involvement, while mobile phones served as sources of distraction. Mobile connectivity and e-learning are the foundations of mobile framework (Todoranova & Penchev, 2020). M-learning applications in the framework support personalized and collaborative learning. Students' responses to surveys administered in the classroom and online are used to gauge the framework's effectiveness.

Benefits of mobile learning on student achievement and interest

Several features differentiate mobile learning from traditional educational and training models. Here are some of its unique advantages.

1. It works remotely

The most obvious benefit of mobile learning is that you can do it remotely, which means it can take place anywhere. Universities offer M-learning programs so students can participate in distance learning, which enables them to fit studying around other commitments, like a job or family. Students can access course content, take tests, and communicate with fellow students and tutors all within the mobile app or online portal without ever setting foot in a classroom.

2. It offers flexibility

The remote nature of M-learning makes education and training very flexible. People can study according to their own schedule. In many cases, lectures are prerecorded, so students can rewatch videos or access materials as many times as they need and whenever they want.

3. It has a user-friendly learning path

Mobile learning provides an educational path that's easy for students to follow. With technology driving the programs, it's easy to track progress through notifications, updates, and micro-lessons. This offers an enjoyable user experience, and, according to SHIFT eLearning, this form of learning promotes better knowledge retention than traditional methods.

Challenges of mobile learning on student achievement and interest

While it has some advantages over classroom models, M-learning is not without its flaws.

1. It can feel disconnected

For the most part, M-learning students only interact with each other and their tutors through video and text, which means there's no direct human contact. Some students need instructors to break down concepts or explain them in a different way, perhaps with different examples or some one-on-one practice. Unfortunately, M-learning cannot always deliver this.

2. It's easy to get distracted

The average person has installed between 60 and 90 apps on their smart phone. As a result, distracting notifications come from many sources and in many forms, such as incoming texts, social media updates, or phone calls. Momentum is critical in learning, and these interruptions play havoc with attention, motivation, and performance.

3. Internet connectivity or hardware issues can create barriers

What happens if you don't have a suitable mobile device or live in a rural area with poor connectivity? Some students could fall behind their classmates if they don't have a smart phone capable of running the online portal or if their family can't afford internet access.

Cooperative learning

Cooperative learning involves putting together mixed-ability students in one group for an assignment. Most people have experienced cooperative learning at some point in their educational and academic lives.

Slavin 2014, defines cooperative learning as "teaching methods in which students work together in small groups to help each other learn academic content. cooperative learning is a peer-mediated, instructional arrangement whereby "small groups or teams of students work together to achieve team success in a manner that promotes the students' responsibility for their own learning as well as the learning

of others". Meanwhile, Johnson and Johnson 2014, define cooperative learning as "the instructional use of small groups so that students work together to maximize their own and each other's learning". by contrast, cooperative learning are"principles and techniques for helping students work together more effectively" Based on these definitions, it can be deduced that the defining characteristics of cooperative learning encompass and includes the followings: teaching method and strategy, using of small groups or teams, helping each other, working together effectively, and mastering academic content. There is a range of cooperative learning techniques which can be employed in the learning and facilitation of science to enhance students' understanding of the curriculum content. These cooperative learning techniques are generally subsumed under the umbrella of 3 major approaches, namely (1) The Conceptual Approach, (2) The Structural Approach, and (3) The Curricular Approach.

Conclusion:

Students have a positive perception of the use of mobile applications, as it has significantly improved their academic achievements and interest in biology compared to traditional learning methods. Its negative effects are because of cognitive overload and inappropriate design of learning environment; mobile learning has a favorable effect on students' educational experience. Mobile learning can be used in a wide range of educational contexts, and each application has its own unique set of requirements and adaptability.

Suggestions for the Study

Teachers should learn to ask For Feedback; your mobile learning platform might be missing a critical element that you don't even know about because you haven't asked your learners what day they would like to see. This is another common mistake that course developers make. All it takes is a simple survey sent out via email to get all the information you need to improve the features of your program. Since this feedback can be given anonymously, many learners will be more than happy to tell you exactly what they want and what will help them learn in a more efficient manner. You might find out, for instance, that your learners are bored by the narration within of your videos. Or you might find out that they prefer to have group discussions about the material. You'll never know unless you ask!

To maximize student involvement while limiting distractions, future research should concentrate on designing mobile applications and mobile learning frameworks that consider how students use their mobile devices, their cultures, and their local environments. When creating and developing courses, additional consideration should be given to mobile learning contexts and surroundings. A lack of a model or framework for mobile learning course development is evident from our investigation. The framework should cover the entire process from course development to deployment to enable mobile learning.

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