ELF Project Didactic Concept

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1. Introduction

Use of technology in education has contributed to various new findings benefiting the education system and learners. This technological use helped the educators and learners during the recent COVID-19 pandemic which disrupted the teaching and learning patterns in many ways. The shift brought many challenges and also opportunities for the education system. With the blended and distance teaching and learning on rise, having tools that incorporate appropriate teaching methods and are beneficial for both educator and learners has become important. E-learning is gradually taking over traditional teaching as younger generation of digital natives feel more involved using the smart devices compared to chalk and board teaching. Further, having tools and educational apps that can be used outdoors and make learning fun and interactive are much to the benefit of the learners. ELF project educational app is developed keeping these main objectives in mind.

The ELF app incorporates the didactic teaching approach of which we will be learning further in this document. The document also explains about how using interactive apps for education can be advantageous/ disadvantageous and how ELF Project app plans to integrate the outdoor activities in teaching. The document concludes with final notes on same.

2. Didactic Teaching Methods

Two types of teaching methods are well known: Didactic and Pedagogy. Pedagogy is a term that refers to the method of how teachers teach, in theory and in practice. Pedagogy is formed by an educator's teaching beliefs and concerns the interplay between culture and different ways to learn. In order to help students to build on prior learning, meaningful classroom relationships must exist (Pedagogy, n.d.). While didactic teaching method refers to a method of instruction in which information is delivered directly from the teacher to the student, in which the teacher chooses the topic of instruction, controls instructional stimuli, obligates a response from the student, evaluates student responses, and provides reinforcement for correct responses and feedback for incorrect ones. Didactic approaches make use of a variety of behavioral theory concepts, such as massed trials, operant conditioning, shaping, prompting, chaining, and reinforcement (Austin, 2013). Didactics can be said to provide the descriptive foundation for pedagogy, which is more concerned with educational goal-setting and with the learner's becoming a social subject and their future role in society.

Didactic Teaching is characterized by:

• **Structured lesson plans:** Structured lesson plans are a key feature of didactic teaching. Teachers who employ the didactic teaching method keep their lessons well-organized in order to present information to students directly.

• **Specific learning objectives:** When using the didactic teaching approach, teachers usually set specific learning objectives for their students. They create lesson plans and assign coursework to assist their students in achieving these goals.

• **Periodic performance evaluations:** Teachers use the didactic teaching approach to complete periodic performance evaluations to assess their students' progress toward achieving their learning objectives. Teachers can also use performance evaluations to assess their students' comprehension of what they're learning.

• **Lectures from teacher to the student:** Didactic teaching emphasizes lectures from the teacher to the student. Taking notes and asking questions are common ways for students to learn from lectures.

• **Group discussions:** In the didactic teaching approach, group discussions are frequently held after a lecture or reading. Teachers can facilitate discussions by asking open-ended questions about the lesson and encouraging students to think critically.

• **Consistent learning schedules:** Consistent learning schedules are another important aspect of the didactic teaching approach. Classroom schedules that use the didactic teaching approach typically change little from day to day.

There are different types of didactic teaching strategies that maybe used:

• **Demonstration:** A demonstration is a teaching strategy in which a concept is demonstrated by the teacher. When combined with visual elements such as writing on a whiteboard, the demonstration method can be especially effective.

• **Explanation:** Explanation is a strategy for enhancing learning in which the teacher explains the concept. It can occur independently or in conjunction with demonstration.

• **Observation:** Observation is a method for students to learn more about topics by making observations. Students can watch a teacher demonstrate a concept to help them understand it better.

• **Problems:** Teachers can assign problems to their students to solve in order to help them learn their curriculum. Completing problems can assist students in learning how to do math and other concepts.

• **Exercises:** By assigning exercises to their students, teachers can help them learn new skills and knowledge. Exercises, like problems, can help students practice concepts and improve their understanding.

Functions of didactic method:

- **Cognitive function:** to understand and learn basic concepts
- **Formative-educative function:** to develop skills, behaviour, abilities, etc.
- **Instrumental function:** to achieve educational objectives
- **Normative function:** helps to achieve productive learning, attain required results, etc. (Didactic Method, 2022)

While didactic method has its advantages and disadvantages in teaching, this approach has been adopted in most technology-oriented teaching tools.

3. Using Interactive Apps for Education

Educating younger population in a manner they will learn and enjoy, rather than being disinterested and dropping out has gathered attention in recent years. This triggered integration of technological and game-based learning using online games, videos, apps, etc. While there has been debate over using technology for education, research shows that smartphone - assisted education is an innovative and powerful didactic tool that helps educators in teaching.

Various smart device educational apps have been created in recent years to assist teaching. Educational apps are basically software solutions that encourage virtual teaching. They help in remote learning of any kind. Learning apps are making learning easier for students and even making learning entertaining to the core. Educational apps are interactive and fun for everyone to use and hence transforming the education system. There are several benefits of learning app development, including knowledge enhancement, personalized learning experiences, improved interaction, accessibility to online study material, ease of communication, and most importantly, providing remote access. So yes, educational apps are ever-evolving and have been transforming today's digital learning system tremendously.
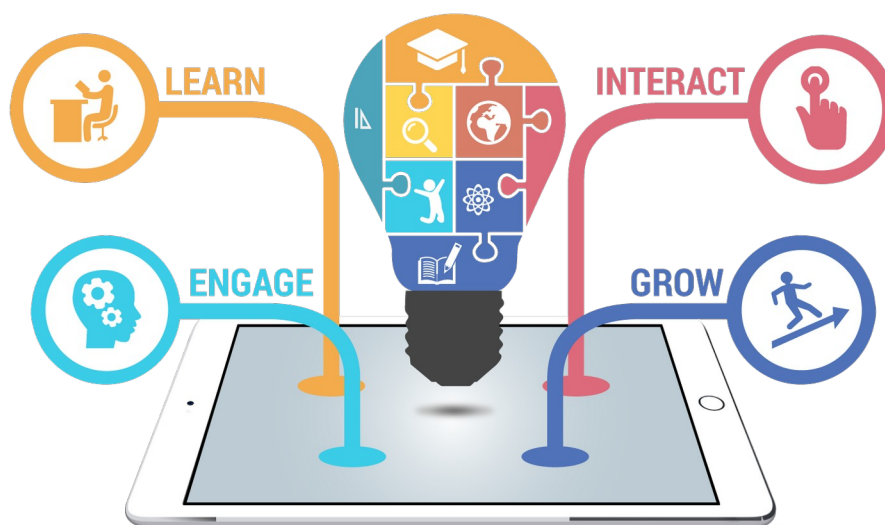
Some apps for learning languages such as Duolingo and Kahoot have been studied by researchers for its uses and applications. The results were positive and encouraging to continue improving the teaching practices using smart device apps (Guaqueta & Castro-Graces, 2018). Also, smartphone-assisted experimentation to maintain practical lessons in remote education as a didactic strategy for physiology education during covid-19 pandemic was also conducted. The conclusion derived was that the app studied - MobLeLabs was a creative and feasible solution for off-campus teaching and learning. It was also found that having such apps for teaching and learning could help in optimizing/ adjusting time to catchup on learning objectives (Lellis-Santos & Abdulkader, 2020) .

While learning and educational apps are great, everything comes with advantages and disadvantages.

Advantages of educational apps:

- **Portability and Mobility:** Mobile phones are portable. In today's fast-paced world, if learners (of all ages) can use mobile solutions to learn on the go. Portability and mobility are one of the significant benefits of educational mobile apps for students. With this, learners can carry mobile phones and start using them anywhere to learn anything they want, irrespective of place.

- **Higher Engagement:** Visuals always attract people more than plain texts. And e-learning apps are a great example of this. It becomes difficult for students to stay focused in the classrooms because classroom studies are a bit mundane. On the other hand, educational apps are stimulating and fun to use; thus, attracting many learners.

- **Personalised and Interactive Learning:** Personalization is one of advantages of educational apps. Personalization is one of the most interactive learning ways, encouraging learners to engage with the app more and more. Educational apps are becoming the new priority choice for learners as they allow them to learn anything in their comfort, at their own pace.

- **Effortless Teaching Solution:** An educational app embraces an effortless teaching solution with maximum results. Teachers no longer have to worry about students' attention span as educational apps offer engaging environment for learners to interact with their devices. Also, learners can get the entire module on mobile phones, ensuring timely syllabus completion. Hence, improving results amongst students.

- **Online Study Material:** Online tutorials and e-books have made students' life easier and hassle-free. With the advancement of technology, learners can access a variety of books with a mere click. If students have an educational app on their mobile phones, it means they have all the books that can fit right into their pockets easily. That said, learners don't need to buy books and study material as they can easily find all the books online.

- **24/7 Availability:** Unlike schools and colleges, educational mobile apps are available 24/7. Therefore, there's no such thing as time-bound learning. Educational apps work the best regarding this issue and let learners learn new things at their convenience with round-the-clock availability. Plus, the educational app can help students clear their doubts anytime and anywhere.

Disadvantages of educational apps:

- **Lack of real interaction:** In-person interaction is a valuable part of educational experience. And we all have realized this amid pandemic. Studies have shown that continued disconnection from society and gravitating more towards technology and social media, resulting in increased mental and emotional health problems. That said, educational apps reduce real and social interaction, causing distress.

- **Distraction:** One of the most frequent and noticeable disadvantages of the educational app is it lends to distraction from other lessons. Today's learners are savvy mobile users and find ways to use their mobile phones to perform other internet activities, even after parental controls. Hence, students might end up distracted from their education.

- **Requires internet connectivity:** Educational apps can be a big problem at places where the usage of the internet is not so prevalent, or if a person is out of internet data and s/he cannot access the app. Because today, many apps require an internet connection to function. Therefore, this can be a disadvantage of educational apps.

While educational apps are like double edged sword, they have lot to offer to learners from mobility to better engagement, personalized learning, and round-the-clock availability.

4. ELF Project App for Teaching

ELF project app will be an outdoor location-based education app. The app will support activities and enhance knowledge about nature and biology through innovative approach. It is designed keeping in mind the didactic teaching methods. As per research, outdoor education apps have the ability to contribute to the personal and social development of the participants (Michalakis, Vaitis, & Klonari, 2020). The most common benefits derived from outdoor educational apps are increased self-efficacy, self-confidence, self-regulation, and problem-solving skills as well as group-related outcomes like social cohesion, communication, and team functioning while similar social, physical and educational benefits have been observed in location-based games.

As the ELF app adopts didactic approach, major app activities will be controlled by the teacher through the set-up. Teachers will be able to set point of interests, add information, create quizzes, view and filter statistics of students and student groups, add and remove students, etc. This will allow the teachers to maintain the required

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pace for teaching students with different learning abilities and allow for checking knowledge levels. Further, as teacher can control the areas for point of interests and other activities, the app can be used in different settings as well. The app will benefit educators as they will be able to see the progress in students.

Additionally, the ELF app will benefit students in many ways, such as:

- Going around the point of interests and time outdoors will add to physical fitness.
- Development of sense of orientation.
- The process of exploration will help to rise of interest in topics discussed in the app.
- The challenge and the subsequent feeling of success when a point of interest is found, will psychologically benefit the participant.
- The pleasant feeling of achieving a goal.
- When participants are separated to groups, the sense of togetherness, as a target of a group with a common purpose.
- Socialization with other participants, as routes and exercises in the app can also be completed as groupwork.
- Develops the cohesion and the collaboration of a group, along with the encouragement of communication.

5. Final Notes

Using educational apps for teaching has multiple benefits. Adopting proper teaching methods and features for teaching in order for the students to reap benefits in fun and interactive way is important. The drawbacks of the tools should be considered as opportunities to create a balance in order to derive advantages out of it. Only by creating creative solutions using available technological resources, a better and innovative education system can be achieved which will educate the students rather than make them feel burdened.

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