

Game On: Smartphone Technology for Science Education

What if there was an educational tool that could be strategically leveraged to intrigue young people in the biomedical sciences and that was already in the hands of 92% of the U. S. millennial population [1]? There is! With our smartphones, we now have the ability to connect with people and content anywhere at any time. Tailoring a biomedical science-focused smartphone application (app) to the wants and needs of the millennial population would put the power of easy access to biomedical knowledge in the hands of most young people, and potentially spark widespread interest in the biological sciences.

The first step of starting this spark is to understand the app market. The most popular apps among millennials are those that include games or messaging/social networking [2]. Apps incorporating both of these functions are some of the most successful such as *PokémonGo*, which has become one of the top grossing mobile games since its release in 2016 [3]. In addition, the success of *PokémonGo* may be partly attributed to augmented reality technology that allows users to interact with computer-generated material in a real-world environment. Learning from the success of *PokémonGo*, The Lasker Foundation in partnership with iBiology could sponsor the development of a biomedical science app integrating gamified content, augmented reality and social networking to educate millennials.

Imagine an app that allows you to access iBiology videos and content, chat with other app users, compete with your peers, and interact with the molecular world through augmented reality. An app user may turn on the augmented reality function to view microbes and molecular mechanisms in the world around them; selecting any of these microbes or molecular machines could link to relevant iBiology videos. By participating in short quizzes at the end of each video, app users could win points and badges for successfully answering the quizzes and in so doing, compete with other users as individuals or in teams. Each video could even include multiple quizzes and each quiz would be associated with a different level of difficulty ranging from “little biology background” to “graduate student.” As an app user chooses progressively more difficult quizzes, they have the potential to earn more points. In addition to engaging in friendly competition, app users could directly message each other and have the option to create or join public group chats dedicated to specific biomedical research topics (e. g. “Stem cells,” “Antibiotic resistance,” etc.). Through the creation of these communities, app users are more likely to engage with the content and subject more thoroughly.

Indeed, the chat groups on this app would promote collaborative learning, which has been reported to enhance student learning among adolescents and university students [4-5]. Leveraging social motivation is a feasible educational strategy that would reach the majority of millennials and be achievable through the use of a social app. By bolstering a social network, this app could become increasingly more popular. One of the top reasons millennials download an app is because of a recommendation from a friend [2].

This app could be made available to the wider public as well as be adapted for the college classroom. Developing special features on the app for biology professors to post their own material, “gamify” course content, and promote collaborative learning could potentially enhance student engagement in university biology courses. Gamification, the use of game elements in non-game scenarios, has already been well-received by students in college

classrooms [6]. The proposed app could simplify gamification for university professors by offering sample questions on specific biology topics.

In addition to social motivation, implementation of an app for college biology courses could provoke other forms of motivation to learn. For example, many psychologists postulate that a need for autonomy is a motivational driving force [7]. Giving students options for ways in which to interact with relevant subject material can help motivate students to learn. By having a multi-functional app, students would have easy access to course content in the forms of posted material by their professor, videos from iBiology, and chat groups with their classmates. With the freedom of choice, individual students can engage in the course in the ways that will best suit their individual needs for learning. Furthermore, enticing students with external rewards (such as points for correctly answered quiz questions) can potentially improve student performance [8]. With these motivational driving forces as well as app popularity in mind, the achievability of widespread interest in biomedical science through the use and implementation of a multi-functional app becomes more apparent. Leveraging smartphone technology in innovative ways is the next step for science education.

References

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