



## Physics 'Office Hours' educational learning platform

WiSys: T150035US01

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**WiSys Technology Foundation is seeking a commercial partner who is interested in licensing and distributing an educational app focused on Physics, expanding the platform beyond Android applications as well as further developing additional apps directed towards other STEM disciplines.**

### Overview

Science and engineering education faces important challenges in terms of meeting US workforce needs. The US Bureau of Labor Statistics projects that total employment in science and engineering will increase at 18.7% between 2010 and 2020. Yet, ACT college entrance exam scores show that only 36% of high school graduates are ready for college-level science course work. New digital teaching tools have been developed to address this challenge. In fact, digital STEM classrooms are disrupting the \$16 billion educational publishing industry. Global digital educational publishing is projected to grow at a CAGR of more than 12% between 2016-2020, while the global education apps market will grow at a CAGR of nearly 35% between 2015-2019. Existing apps for students in STEM fields, including Physics, tend to either offer a rigid tutorial format, or to offer algebraic solutions without explaining why a problem needs to be solved a certain way. There is a growing unmet need for a research-based, educational mentoring platform that stimulates learning by addressing student questions in the moment, and help users start any homework problem through a discipline-specific way of reasoning.

### The Invention

A physics education researcher at the University of Wisconsin-Green Bay has designed a novel and interactive app-based study aid platform for students in STEM disciplines. The platform's interface is built around education research into how students conceptualize problems they do not understand. It is a novel tool to help students see why they are struggling with a particular problem, and what might help them solve it, rather than solving the problem for them. The team's first working prototype, the Physics Office Hours app, has been designed for use in introductory-level college physics. The app is designed to mimic a scenario students might face during 'office hours' with a professor: Rather than offering an answer, the instructor guides the students through problems via a series of questions. A user-friendly online interface allows app content to be easily updated and changed over time and as more problem sets become available. In addition, the app architecture can easily be adapted to problem sets in other STEM disciplines and therefore serves as a platform technology.

### Applications

Research-based educational platform technology with utility across all STEM disciplines and any field with set approaches to problem solving such as:

- Chemistry
- Biology
- Engineering
- Mathematics

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### Key Benefits

- Beta version has been developed in an Android app that can be easily updated in a user-friendly web interface (e.g. editor);



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- App and editor have been developed with ability to be expanded beyond Physics to additional academic disciplines;
- An already-developed website offers backend, supplementary support for users who need additional research;
- Comprehensive user guide available (with illustrations) showing app administrators how to use the app editor and update content’;
- Current version contains over 150 problems directed towards Physics;
- App provides student support for any problem in kinematics, dynamics, rotational dynamics, energy, momentum, DC circuits, and special relativity units;
- Does not require coordination with any particular text or problem set, and offers an innovative and useful tool that complements widely used tutorial- and feedback-based physics education products such as Webassign and Mastering Physics.

## Stage of Development

Physics Office Hours is fully functional, and content and graphic design can easily be adapted to meet the needs and requirements of the end user and/or partner.

### Tech Fields

- [Education & Training : Educational tools](#)
- [Information Technology : Computing methods, software & machine learning](#)

For current licensing status, please contact Jennifer Souter at [jennifer@wisys.org](mailto:jennifer@wisys.org) or (608) 316-4131

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