**IMS Global Learning Impact Award: Echo360 and University of Kentucky 2016 Submission**

*Problem*
Under increasing pressure to improve retention and completion rates, colleges and universities are making unprecedented investments in big data and predictive analytics. However, most data strategies rely on historic data like GPA, admissions scores, or last semester's retention rates—keeping universities in the dark until it's often too late. Missing is access to classroom-level data that provides real-time insight into which students are at-risk *now*, and why.

This data gap raises an increasing area of concern for institutional leaders. Research shows student engagement in the classroom is the key predictor of retention, which drives student outcomes and overall institutional success. But, until recently, understanding student behaviors and engagement while in class has been difficult.

*Solution*
To address this data gap, the University of Kentucky has partnered with Echo360 to develop a model for collecting and analyzing student engagement data, and integrating the data with the University's more traditional data sources like their Learning Management System, data analytics platform, and CRM. This partnership, spearheaded by Vince Kellen, senior vice provost of analytics and technologies at the University of Kentucky, will allow faculty to gauge individual student understanding of classroom concepts, and intervene when needed.

When faculty upload course materials into the Echo360 active learning platform, they are able to gather insights on aspects of student engagement, including student confusion on specific topics, note taking, class participation and even peer-to-peer collaboration.  The platform provides a student engagement score, based on how students interact with learning resources and discussions before, during and after class. Faculty and institutional leaders can use these analytics to inform their teaching practice, to ensure that each student has the support and tools they need to be successful in the classroom and on track to completing their degree.

This solution provides broader access to and optimization of approaches across departments, classrooms, instructors, students, and learning lifetimes through its online ability to deliver quality experiences anywhere and at any time to anyone.  Because it is in the cloud, this solution can reach out across the globe to teachers and learners that were difficult to reach before, when they were available.  No longer do geographic, economic, social, or other barriers prevent teachers and learners from getting access to the best active learning tools and practices.

Improved teaching and learning effectiveness and efficiency is core to this implementation.  By harnessing behavioral data from each instructional moment, the University of Kentucky is able to determine what content, tools, and techniques are most effective.  Over time, that allows every

instructional moment to be more potent and every teacher's preparation and every learner's experience to be more efficient as we build to greater achievement of learning objectives.

Echo360 and the University of Kentucky are both firmly committed to open standards. This solution leverages LTI integration and pioneered with IMS early work on a standard referred to as CaliperRAM – now a part of the core Caliper standard for analytic data interchange. Our use of open standards allows seamless sharing of student and teacher data as well as grades with the LMS and broader analytics data sharing with university data mines, predictive analytics systems, and other university applications. Our joint work on CaliperRAM has driven much practical feedback into the Caliper standards processes which has improved the future standard.

*Outcomes*

Although the inclusion of student engagement and behavioral data is still in pilot stage at University of Kentucky, there is promising precedent for this kind of data to have a tangible impact on student success. University of Kentucky is building the infrastructure to ensure that faculty have the insights and tools to respond to student needs.

Take for example, University of Michigan professor Perry Samson. After feeling powerless realizing that incoming GPA was the biggest predictor of success for his students, he began measuring student engagement to better understand what was happening day-to-day, and how he could use engagement as a lever for improving student outcomes. By creating a safe environment for students to participate through Echo360, he saw the number of student questions increase to an average of 3 per course. He also now sees participation rates consistently in the 80% range for students attending class remotely. Or, undergraduate science instructor Colin Monpetit at University of Ottawa who has used his data on student engagement to adjust his teaching, individualize instruction for students, and create more meaningful classroom experiences. Over the last three years, failure rates have decreased from 5% to 1%, and he's observed a 10% average increase in final exam scores over three years.

*Return on Investment*

At a time where college enrollments are on the decline, student retention is not only critical to the university's academic mission, but plays a critical role in the overall health of the university. University of Kentucky measures the ROI of its investment with Echo360 on metrics including increased student engagement in class and improved semester-to-semester retention. The teaching and learning behaviors collected and analyzed by this solution are ideal for understanding program and institutional performance and enabling comparisons across them. The Echo360 solution also facilitates active learning, which has been shown to improve learning outcomes over more traditional forms of instruction and integrated assessment of understanding. The way the University of Kentucky is able to capture and analyze behavioral data from each teaching and learning moment empowers a cycle of continual improvement that continues to raise the bar over time as we clarify learning objectives, improve mastery of subject matter, increase assessment scores, and enhance pedagogy and student engagement.