Department of Research and Evaluation
Austin Independent School District

Technology Integration & Implementation And Project Based Learning (PBL) Survey Results

In Fall 2014, Austin Independent School District (AISD) embarked on the development of a short- and long-term plan for technology integration and implementation district wide. A broad-based committee convened to develop a vision and address key components of a technology plan. The vision of the committee is as follows:

> Vision 2020: Every AISD student is a designer of the changing world. Students are producers and contributors, not just consumers; engaged, not compliant; persistent learners and doers with flexible skill sets that help them thrive in a world that is connected and in perpetual change. AISD is a community of learners connected to other communities of learners.

The AISD District Technology Planning Committee, led by the chief academic officer, reviewed extant data, such as the Texas School Technology and Readiness (STaR) chart. As new questions were formed from that review, the Core Planning Committee initiated a survey of teachers and librarians in January, 2015, to understand teachers' uses of technology during instruction and knowledge, or use of project-based learning (PBL). Teachers' and librarians' input was sought to help establish the landscape of technology in the district and inform a scalable and equitable implementation of technology integration throughout AISD. The committee requested a comprehensive sample that would adequately represent the use and skill among all teachers and librarians in the district, in prekindergarten through grade 12.

Survey instrument. A set of survey items was designed by a joint committee of members from the Office of Academics and from the Instructional Technology Department, whose specialists provide hands-on support to teachers in our schools. The window of opportunity to create, administer, interpret, and report on the survey dictated that all items were created with closed-response options. A total of 12 multipart items were created. Items sampled teachers' usage of technology (e.g., "Are students in your classes engaged in the following technology-based activities in one or more of your classes?") Response options included, among others, "Accessing or creating podcasts or vodcasts" (i.e., GarageBand, Audacity, Podomatic, and odiogo); "Content-specific self-instructional/tutorial apps or websites" (e.g., Brainpop, Atomic Learning, Khan Academy, iStation, and various software programs for reading and math skills). Additional survey items inquired about teachers' knowledge or use of PBL. A sample item of this type read "Project Based Learning (PBL) is an instructional approach in which students demonstrate knowledge and skills by working for a period of time to investigate and respond to a complex question, problem or challenge. Key components include student voice and choice, in-depth collaborative inquiry, an authentic product, and public audience. What level of familiarity do you have with Project Based Learning (PBL)?" Response options included, among others, "None, but I am interested in learning about it" and "Very strong. I have personally facilitated or co-facilitated professional development for other teachers."

Survey sample. The survey was implemented online using the Qualtrics survey program. A total population of all teachers and librarians meeting the criteria for inclusion in the sample was estimated at 7,693. In order to be a technically valid and reliable sample, a stratified random sample of 2,957 was created from the pool of all eligible staff. Stratified sampling is a method of sampling that involves the division of a population into smaller groups, known as *strata*. In stratified random sampling, the strata are formed based on members' shared attributes or characteristics. A random sample from each

stratum is taken in a number proportional to the stratum's size when compared with the size of the total population. These subsets of the strata are then pooled to form a random sample. The sample for this survey was stratified by vertical team membership, which served as a geographic proxy, and also by teacher race or ethnicity, as requested by the Office of Academics. The main advantage of stratified sampling is how it captures key population characteristics in the sample. Similar to a weighted average, this method of sampling produces characteristics in the sample that are proportional to the overall population.

The survey was available to potential respondents for 2 weeks at the end of January. A total of 1,739 teachers and librarians responded; weighted samples based on proportional strata were used to examine all results.

Types of technology-based learning. The first set of items asked respondents to indicate types of technologies students were exposed to during the respondent's instruction. Teachers were asked, "Are students currently engaged in the following technology-based learning activities in one or more of your classes?" The most common types of technology-based learning activities were (a) use of content-based programs, applications, and websites; and (b) conducting online research; and (c) presentation design. The least common were (a) blogging, (b) podcasting, and (c) video conferencing. Teachers or librarians were most interested in receiving instruction about using podcasts and video production. They were least interested in learning about video sharing. When teachers were asked what types of technology devices were being used with students, they responded that desktop computers, laptops, computers on wheels (COWs), computer labs, iPads, and teacher presentation systems were most often used during instruction, while student-owned cell phones and e-readers were used less frequently. The most common reason technology devices were not being used with students was a lack of access, regardless of the type of device (e.g., laptops, desktops, and iPads) not used.

Technology-based learning skill levels. Another set of questions asked about the respondents' present level of skill using each of the technology-based learning activities from the prior item set. This extension of information was designed to determine the level of skills teachers had in the various activities, whether or not they used them. This set of items provides a clear image of whether (a) teachers or librarians were sufficiently trained to provide peer tutoring or professional development activities in an area or (b) whether the training indicated to be of interest in the prior set of items needs to be offered at a beginning level training or a higher, more savvy level of training, or perhaps a mix of levels. With respect to teachers' skill levels, podcasts, vodcasts, blogs, and web design were the most common skill sets teachers reported knowing "nothing or little about." The activities teachers felt most comfortable with (i.e., "could teach another teacher how to use it for student learning") were conducting online research, creating presentations, and use of informational/educational websites. The activities teachers felt comfortable doing with students "with medium level of confidence" included use of content-specific instructional applications or websites (e.g., BrainPop and Atomic Learning); informational/educational websites (e.g., Discovery Learning); and creating presentations.

It is interesting to note that the top three highest skill levels and the top three for medium skill levels overlap in two areas. What this says is that most teachers rated themselves as very capable or medium capable in these two areas. Any professional development activity in the areas of websites and presentation design should use peer learning among teachers rather than investing professional development activity time and money to provide formal training, unless training is at an advanced level. Priority should be given to the top three areas teachers felt least comfortable with because they overlap

with the areas teachers indicated using least often (but were most interested in receiving training about). These three questions ("What activities are you using?" "What would you like to get training to do?" and "What are your present skill levels?") dovetailed very nicely with the participants' responses and showed strong validity and reliability.

Professional development format. Respondents were asked what format of professional development activities they would most prefer for learning technology skill and application. The number one preference was for conference-style sessions. The least popular format was a Saturday workshop. The remaining options varied, with relative equivalence between second and seventh place in order of preference. These options included 1-day workshops during the week, workshops on multiple days during the week, the Summer Institute, coaching/mentoring, professional learning communities, and online professional development activities.

Technology integration. Roughly 20% of survey respondents felt that technology integration with students' learning was not necessary for the courses they currently teach. The most common form of technology integration for students was using the Internet to access class information (e.g., assignments and calendars). This usage implies that technology was viewed as a mode for organization and planning rather than for instruction. Still, only 46% of respondents indicated their students used technology in this way, while 54% did not use technology for organizational purposes, despite the district's heavy investment in Internet applications that enable students and their parents to access information about grades, calendars, and course progress. Only 27% of respondents presently use technology to integrate collaboration opportunities (e.g., shared work spaces, such as wikis, email exchanges, Google apps); 38% use technology to create projects; and 33% use technology to allow students to convey ideas using media other than a written paper.

These findings have interesting implications for the culture of technology use in AISD. The fact that 20% of respondents did not believe technology integration was relevant to students' learning in their courses should be considered as future technology integration planning occurs. A purposeful shift in culture will be needed prior to heavy investment in hardware.

Project-based learning. The second part of the survey elicited teachers' familiarity with and use of PBL. These items were included to explore the possibility of using PBL as a vehicle to better facilitate technology integration. PBL is an instructional approach in which students demonstrate knowledge and skills by working for a period of time to investigate and respond to a complex question, problem, or challenge. Key components include student voice and choice, in-depth collaborative inquiry, an authentic product, and a public audience. For the purposes of the survey, informal familiarity was defined as "having read a book or article about it," and semi-formal familiarity was defined as "having attended the equivalent of a 1-day overview, PLC, campus-initiated professional development." The majority of respondents indicated an informal or semi-formal level of familiarity with PBL. Among those who indicated a source of training in PBL, Region 13 was the most common source.

Thirty-four percent of survey respondents reported that they had implemented PBL in the current school year. Among those who did, a follow-up question probed the most important reason they selected PBL. No predominant response was found to that item. The top three reasons were "to teach skills beyond academic content (e.g., group work, presentations, project management, 21st century skills)" (26%); to make learning more personalized, tailored to students' individual interests or needs" (27%); and "to make teaching and learning more varied, challenging, or fun" (27%). Respondents were

also asked to identify the components of PBL they employed most frequently in instruction. “Driving questions: open-ended questions leading to key understanding and focus of a project” was the most commonly used element (26%); followed by “allowing students choice in the process/product” (21%). Approximately 20% of respondents reported making multidisciplinary connections across one or more academic disciplines. Finally, 17% of respondents reported using “21st Century Competencies (the knowledge and skills needed to process multiple forms of information and accomplish tasks across contexts such as home, school work or social networks.” The components least used were entry events, group contracts, workshops, and public audiences.

The 66% of survey respondents who had not implemented PBL provided little consensus regarding their rationales. The most common response was “I don’t know anything about it,” but that only garnered 15% of the respondents. The second most common reason PBL had not been implemented was “I don’t know enough to get started using it, but I like the approach” (14%), followed by “I don’t know enough to decide if it is something I might want to try” (11%). The rest of the items all received a less than 10% response rate. All of the 19 options provided were selected by at least one respondent.

Conclusions. The results of the Technology and Project Based Learning Survey were strong and well distributed among all invited respondents. The sampling procedures allowed for generalization to the larger pool of all teachers and librarians in AISD. Results indicate a low-level of integrated technology use for student learning and a low level of teacher competence in implementing technology-based learning activities. The predominant requests for professional development activities were for learning how to use podcasts and video production for student instruction. Respondents were most comfortable with incorporating web-based instructional or educational content and with creating presentations. Most respondents rated themselves in these activities as either high skill or medium skill. The most-preferred professional development format for learning additional technology skills was conference-style sessions, while Saturday trainings were least popular. Respondents used desktops, laptops, COWs, and computer labs most commonly to integrate technology with students’ learning. iPads were the most common handheld option. Few teachers reported using student-owed cell phones or e-readers. Teachers who indicated they did not use particular forms of digital hardware most commonly reported lack of devices as the predominant reason, more so than broken or outdated equipment, lack of comfort with them, or concerns about equipment safety. For example, approximately 70% of teachers reported using a presentation system during student instruction. Among the 30% who did not use a presentation system, lack of equipment and lack of need for one were the two most common reasons provided.

Regarding PBL, most teachers were not well enough aware of PBL to use it with students. Slightly more than one-third had used PBL in the present school year. Respondents were divided about reasons they had not tried PBL, but about 30% had not used it for reasons related to a lack of information about it (e.g., “not interested,” “don’t know enough to make a decision about it,” and “don’t know enough to try to implement it even though I am interested”). The respondents seemed to have at least a vague familiarity with the instructional approach, yet were in need of depth and breadth of information regarding what it looks like and how it is implemented in the classroom. Thus, the present state of technology integration for students’ learning requires careful attention to both skill development and an enhanced culture of connected learning.