

Running head: ONE TO ONE LAPTOPS IN AN INTERNATIONAL SCHOOL

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Sustaining and Deepening Technology Integration in a 1:1 Laptop Program in the International
School Setting

Description of Capstone Experience and Results

The key objective of this capstone project was to understand a method that would sustain and deepen the existing technology integration endeavors of a 1:1 laptop program in an international school in Atlanta, Georgia. Atlanta International School (AIS) is a private, not-for-profit day school, delivering three of the four International Baccalaureate (IB) Programmes, K3-12. AIS is currently in year four of a five-year technology strategic plan to insure 1:1 access to laptops for all students in grades six through twelve. As this plan reaches its currently defined culmination in the 2015 – 16 school year, one of the objectives this project was to understand the current use of these devices at this point in time by teachers with students in the classroom for teaching and learning. Consideration was given to three technology integration models that would augment the teacher curriculum planning experience in the IB Middle Years Programme (MYP) to reflect on the use of the laptops to in their teaching for student learning and pinpoint any professional development needs that might be required to insure sustained delivery. Anecdotal evidence from classroom teachers' observations and collaborative professional development in the 2013 – 14 school year, resulted in a general perception that the use of the 1:1 laptops in the classroom was to date, shallow – used mostly for access to Internet and some subject specific resources provided by teachers and IB Programme coordinators. A proposed survey concerning the use of the laptops for teaching and learning was planned for October 2014 to qualitatively evaluate teacher use of the 1:1 laptops with students in the classroom. Benchmarked with data from another international school of similar size and program delivery, a small, volunteer pilot group of teachers would be formed in response to a synthesized demonstration of this data at through a short presentation at a faculty meeting. Using three established technology integration tools; Levels of Teaching Innovation (LoTI),

Technological Pedagogical Content Knowledge (TPACK), and Substitution, Augmentation, Modification and Redefinition (SAMR) in conjunction with the new MYP Unit Planner reflection phase, the volunteer pilot group of teachers would test using these tools to deepen their understanding of using laptops in their subject areas to spearhead recommendations for sustaining technology integration in the next iteration of the AIS technology strategic plan and to purposefully inform their own professional growth goals in the future.

While the AIS technology strategic plan has twelve strands for development over five years, this paper specifically focuses on one strand: “2. Develop comprehensive faculty technology expectations and incorporate technology into the school’s professional development program” (Atlanta International School, 2011), as outlined in Figure 1 below.

Strand 2: Technology Professional Development

Develop comprehensive Faculty Technology Expectations and incorporate technology into the school’s Professional Development program.

Rationale:

School faculty need adequate training and support in order to be able to best prepare students for university work, career needs, and lifelong learning. The Technology SWOT analysis has pointed out the need to develop consistent technology expectations for all faculty and professional development programming to support these expectations.

Link to the School Mission:

The AIS Mission demands that we prepare students for today’s interdependent, fast-changing world and for the emerging 21st century. A consistent set of expectations and a comprehensive professional development program are needed to ensure that faculty can best support our students in this endeavor.

Action Steps:

Technology Professional Development	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Develop faculty technology expectations that are incorporated into faculty recruitment and appraisal		X				
Incorporate technology into the faculty goals process			X			
Develop a peer-mentoring program		X	X	X		
Incorporate technology into timetabled faculty professional development	X	X	X	X	X	X

Figure 1: Strand 2: Technology Professional Development (Atlanta International School, 2011, p. 9)

Centering on the ideas of Inan & Lowther (2010) stating, “increased availability of technology

in schools does not necessarily lead to improvement in classroom teaching practices” (p. 137), it was planned that when the volunteer pilot group of teachers was established, they individually select and be coached on one of the three technology integration tools to inform their curriculum planning of an MYP Unit of Inquiry they hoped to teach in the immediate future.

Planning to Understand the 1:1 Laptop Environment

A survey was created to for AIS faculty to complete in October 2014. Questions in this survey included opportunity to comment on frequency of use, types of software most regularly deployed for teaching and learning and the depth in which the faculty utilized 1:1 laptops with students both during lessons and in homework activities. In the final stages, AIS school administration felt that there had been too many faculty surveys sent out by this point in the school year. Authorization for the faculty wide survey was not granted.

To move forward, benchmark data from ten international schools was collected using an amended survey, targeting the Director of Technology in each of these schools. By looking at a wider sample of international schools across the world with similar program offerings and context to AIS, sufficient data was collected to present to faculty to gain buy-in and interest in piloting the three technology integration models. Coupled with six, in school, lunchtime professional development opportunities, the practices reported in eight of the international schools that responded to the survey were presented to attending faculty.

Practices Observed in Other international Schools

Appendix A refers to a Google Form survey that was deployed to the Technology Directors. The schools contacted are located in Switzerland, France, Canada, Vietnam, Singapore, Germany, and Poland. There were several observations that aligned with thinking in deploying a 1:1 laptop program across a K-12 international school that were shared in common

with practices observed at AIS:

- Six of the eight schools deployed their 1:1 laptop program with devices that the students owned. The majority of schools concede that the device should be the responsibility of the families and the individual student for their learning, and not that of the school. This is collectively thought to promote sustainability over time as the device ages with the student.
- Four of the eight schools reported instructional technologists and coaches as the main way to support the use of the laptop in the classroom for teaching and learning. While one respondent from an international school in France reported that professional development was “extra classes after school on volunteer basis.” (Personal communication, October 23, 2014); the majority of the responding schools’ reported committed professional development time that was integrated into the schedule of the school day or professional development calendar year. There was, however, one comment that did resonate with AIS in terms of focus on technology integration. A school in Singapore reported a lack of “balance between other competing initiatives taking time for professional development. Feeling that we have 'achieved enough' with technology' so let’s move on.” (Personal communication, October 17, 2014).
- Seven of the eight schools reported using the SAMR model as a method deployed to deepen technology integration into teaching and learning with their faculty.
- In terms of teacher adoption and engagement in use of 1:1 laptops, it was clear that the international schools, like AIS, had no problem in access to the technology and the sustainability of their hardware. The key was the engagement of the teacher in the

classroom to use the technology in a manner that would deepen the teaching and learning process through curriculum planning.

Therefore, some positive mirrored outcomes from this benchmark process were seen at AIS. AIS articulate a MacBook specification for rising fifth grade students that is purchased by the family. Technology integrationists are available to work with faculty in the classroom and there had been discussion around the SAMR method of technology integration in previous professional development offerings. Faculty and student accessibility to laptops and other devices is high. However, perceived threats to this mirrored the AIS experience to date also; lack of cohesive, whole faculty time devoted to specific professional development learning in 1:1 laptop integration and effective use in the classroom; high stakes examinations that do not require high technology integration for completion or success, and faculty frustration with unreliable wireless bandwidth. Bebell and O'Dwyer, (2010) suggest reasons from their study of four school 1:1 laptop programs in the United States that back up these findings. Articulating the theoretical work of Weston and Bain, they postulate that many teachers and students alike have many barriers to overcome; "laptop computers are not technological tools; rather they are cognitive tools that are holistically integrated (Senge et al., 2005) into the teaching and learning processes of their school (Bain, 2007)" (Weston & Bain, p. 10, 2010) (Bebell & O'Dwyer, 2010).

From this data, it was synthesized that there would be two core challenges to getting a group of teachers to work on testing the proposed technology integration tools:

- Time aligned to professional development – as there was no time for technology integration professional development aligned in the 2014 – 15 professional development

schedule; meetings would have to take place in teacher common planning periods, lunch-times, before or after school.

- Buy-in – how would the pilot group of teachers be hooked into pursuing this kind of professional development if the main school foci of for the year did not align to technology or supported by research conducted internally to legitimize the process?

Description of Capstone Experience

To address the first core challenge to meet the original project proposal, from the original project proposal by Stephenson 2014, the hope was to “engage faculty into a professional learning community” that would lead to their “capturing community experiences to allow possible discussions about next steps in sustainability” (p. 5), it was decided that lunchtime professional development would be planned over a period of two months to allow a group of diverse teachers from different disciplines to come together and engage in conversations concerning technology integration to form the teacher pilot group. To achieve this, another school project was leveraged to utilize the planning time and teacher participation to form the group of piloting teachers.

Using the Atlanta K-12 Design Challenge model, as seen in Figure 2, a small design thinking project was put into place to build the working pilot group of teachers from across the faculty to replace the original proposed method of achieving volunteer faculty buy-in.

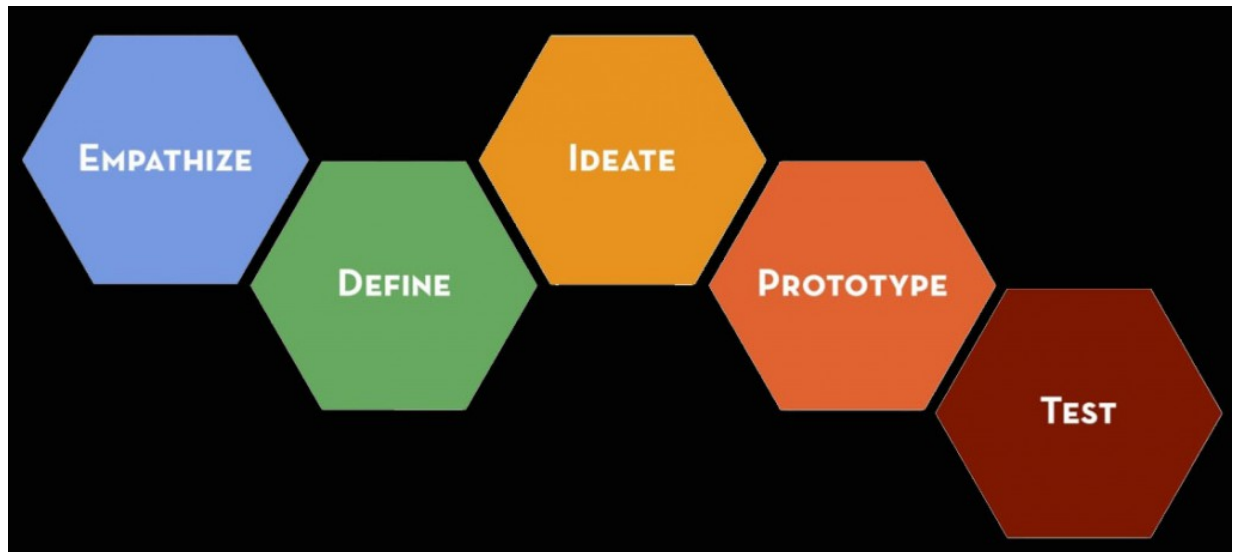


Figure 2. The D-School Design Protocol

From January to March 2015, a series of short, thirty minute, voluntary professional development workshops, with an accompanying website, <https://sites.google.com/a/aischool.org/technology-integration/> were offered to the secondary faculty at AIS. Faculty attendance was low at these professional development offerings. While reminders were sent by email, faculty bulletin and announced in faculty meetings, many teachers who did not attend anecdotally shared that their forty-minute lunch periods were fraught with conflicting meetings, duties and student activities. However, despite low turnout, three teachers did emerge as volunteers for the pilot teacher group. These teachers came from the subject areas of Digital Design, Product Design and History.

The technology integration tools of SAMR, TPACK and LoTi were presented to this group as established technology integration tools. Early discussions with the group agreed that due to the small size and nature of the pilot teacher group, one of the tools should be investigated deeply for use instead of testing all three. While data from the international schools' survey suggested that SAMR is the most conducive in this context, the group decided that LoTi would be a more preferable and interesting technology integration method to test in

the unique environment of AIS.

The original LoTI Framework, devised by Dr. Christopher M. Moersch, provides a four-steps by which teachers can reflect on use of technology in their classrooms. Moersch argues in his book, “Improving Achievement with Digital Age Best Practices” that for schools to “leverage their available digital tools and resources”, there “requires a synergistic effort to maintain a high degree of fidelity to a common set of principles over the course of a lengthy period of time” (Moersch, 2014, p. 182). He refers to these as the “Digital Age Best Practices”. The group decided to use two of the four elements of this process; the Current Instructional Practices (CIP) “Sniff Test” as part of the MYP Unit Planner for reflection prior to teaching an MYP Unit of Inquiry, and the H.E.A.T Lesson Scoring Guide (Higher Order, Engaged Learning, Authentic Connections and Technology Use) for reflection during teaching of an MYP Unit of Inquiry, in conjunction with classroom observation “walkthroughs” by the technology integrationist. By augmenting these with a “common set of principles” – the MYP Unit Planner, the team agreed that this might have the sustainable effect of deepen the use of technology integration authentically when planning strategically for teaching and learning. Appendix B reflects the augmented MYP Unit Planner designed.

The team worked together over the duration of their MYP Units of Inquiry, met in collaborative planning to augment the existing MYP Units of Inquiry in the written curriculum and to plan lessons for walkthrough evaluations. The process concluded with a final findings collaborative meeting where the MYP Units of Inquiry were finalized in the written curriculum documents using walkthrough observations and completing the reflection after teaching on the MYP Unit Planner. Ongoing faculty professional development needs were discussed and articulated for their professional growth model goal setting.

Results

The group first reviewed their individual MYP Unit of Inquiry reflection prior to teaching section with LoTI CIP “Sniff Test”. Using the augmented MYP Unit Planner as seen in Figure 3, the teachers reflected on their upcoming MYP Unit of Inquiry prior to teaching and scored on the one through seven descriptor scale offered on the CIP “Sniff Test” and recorded on their unit planner. Current instructional practices from the existing MYP Unit of Inquiry were considered and possible ideas for augmentation or new material were explored.

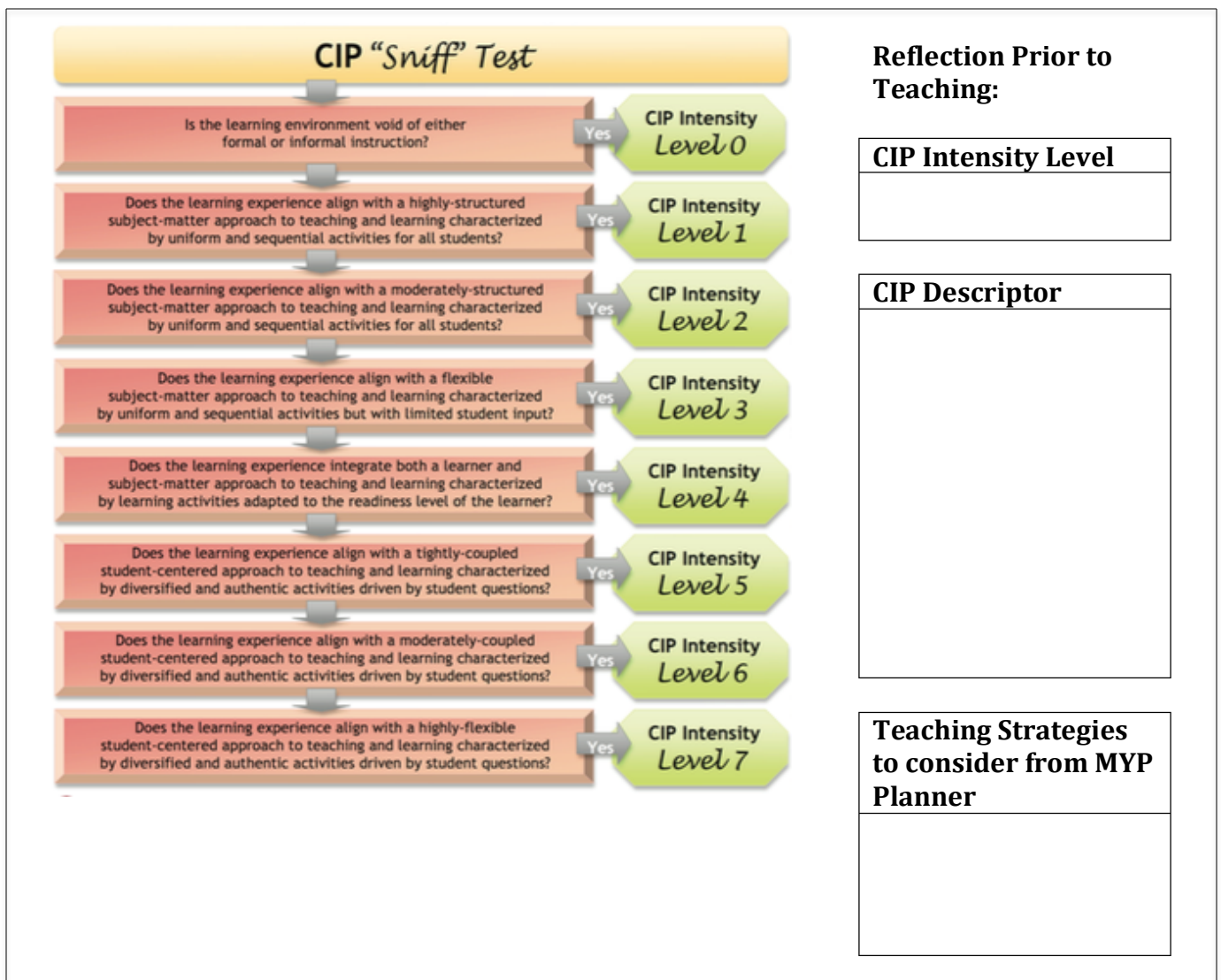


Figure 3. LoTi “Sniff Test” of Current Instructional Practices (CIP)

Two classroom walkthrough evaluations by the technology integrationist were planned and executed, with the teachers' reflection on the lesson prior to teaching recorded on the H.E.A.T rubric. (Appendix C). The observing instructional technologist used the same criteria rubric during the lesson observation. At the conclusion of each lesson walkthrough, a feedback sheet was provided, combining the teacher prior to teaching H.E.A.T. score, the observed H.E.A.T score during the walkthrough with the integrationists observation notes and some initial recommendations. After two walkthroughs, a collaborative planning face-to-face meeting was organized to integrate findings into the existing MYP Unit Planner as part of the MYP Unit of Inquiry reflection after teaching with documented steps in the written curriculum for the next academic year that this MYP Unit of Inquiry is taught which would be available to all teachers. Teachers then considered their current professional growth model goals and extended ideas to how these might be addressed in the next academic year. A survey was given obtain qualitative data concerning their experience to be used to support ongoing use of this tool in curriculum planning. The results of this survey can be seen in the Appendix D

In the final exit survey, two of the teachers articulated that they would be very likely to use this method of curriculum planning again. One teacher noted "using LoTI made me focus on how I integrate ICT into my lessons. It also helped me focus on the fact that students may have experience using other devices and software that they may be able to use, not just the technology I have introduced them to" (Personal communication, April 22, 2015). Another teacher reflected that unless there was "clear administrative direction to observe the purpose of LoTI in action, this kind of strategic and earnest work could just become a "series of check boxes for paperwork" (Personal communication, April 19, 2015). All teachers involved with the pilot reported feeling comfortable with the walkthrough process believed that LoTI was a

useful tool when thinking about 1:1 laptop use and deeper technology integration.

Discussion and Reflection

It was originally thought that all strands across the six standards of the Georgia Professional Standards Commission for Instructional Technology (PSC) would be evidenced in this capstone project. However, components of four standards were evident in the final completion of this project capstone. This has given some grounds for solid reflection concerning the role of a technology integrationist in the international school context and how to deepen and sustain technology integration in the 1:1 laptop environment.

Standard 1: Visionary Leadership

One of the objectives of this capstone was to look at the AIS technology strategic plan and to see how this how this plan had, to date led to the “development and implementation of a shared vision for the use of technology in teaching and learning” (PSC 1.1). This process really did help to hone some key reflective learning points for a technology integrationist. Unless there is a clear focus, guided by strategic planning to “facilitate the design, development, implementation, communication, and evaluation of technology-infused strategic plans” (PSC 1.2.), getting fundamental buy in from faculty will always be difficult. This is evidenced in this project by the small numbers of teachers willing to participate in the Lunch and Learns, as these were unsupported by administration and an unplanned add-on to the professional development of teachers during the school day in this school year. In a busy international school climate, as supported by secondary data, to employ maximum faculty buy-in, there must be planned, school and teacher goal focused, strategic and time sensitive professional development with clear, frontloaded scheduling to allow teachers to carefully harness and evaluate the opportunity into their own professional growth goals. The pilot teacher group, in their final evaluation supported

this assumption. Strategically adding LoTI into their curriculum planning and professional development process was useful and could be enhanced should planned, professional development time be allocated to its use in the next academic year as part of the mandatory collaborative planning process. They further articulated that it was these kind of collaborative experiences that build evidence to gain funding through grant proposals and guiding the shared technology vision of the school, as articulated in PSC 1.3: Policies, Procedures, Programs, and Funding. An example from this project were the recommendations were made to allow students to bring their own touch devices in Product Design to augment the laptop use to document their project life cycles using additional applications not available in the laptop environment. Should this prove to be successful the next time this MYP Unit of Inquiry is taught, it would underpin applications for potential funding for deepening the use of these devices in a 1:1 laptop school to meet a particular curriculum need, and sustaining the use of technology for teaching and learning. The deviation from the original project proposal and timeline was necessary to successfully build a pilot team of teachers to assist with meeting PSC 1.4: Diffusion of Innovations and Change. Knight, (2007) speaks to this process to in looking at Prochaska et al.'s "Stages of Change" (1994). The pilot teachers were bought into the idea of using LoTI in "initiating and sustaining technology innovations...for managing the change process in schools". (p. 42). This, at the very least, fueled their contemplation stage – where Prochaska and his colleagues argue that if enough gains are identified, "people reach a personal tipping point and decide they must change". (p. 42). This buy in process did require an expenditure of time, energy and resources, with the reflection that for the technology integrationist, it is as much about building collegial relationships built on trust as much as using technology effectively for teaching and learning. While positive feedback was received from the three participating pilot

group teachers, it would be necessary to repeat this process with a wider group of subject teachers to really be conclusive about the suitability of using LoTI as part of the MYP Unit Planner and the validity of sustaining and deepening the use of the 1:1 laptops across the school.

Standard 2: Teaching, Learning and Assessment

In completing this project, the use of LoTI; an established method recognized for “statistically significant outcomes to aid school systems in creating their own “recipe” for high performance” (LoTI, 2015), allowed experience in modeling of and facilitation of the use of research in a very unique context, which met Standard 2.2: Research Based, Learner-Centered Strategies. All participating pilot group teachers noted that they would use this technology integration tool again. This led to a recommendation that formalized professional development using the official LoTI Framework and organization might be merited in the next iteration of the AIS technology strategic plan and for professional development focused on technology integration to meet teacher individual professional growth goals. Standard 2.6: Instructional Design was clearly evidenced in the creation of an augmented MYP Unit Planner for use by teachers in the AIS school context to refine their curriculum technology integration reflective process using CIP and H.E.A.T. From these reflections, all of the participating pilot group teachers articulated in their evaluation that the walkthrough process was very useful to inform reflections of their taught lessons and sustained written curriculum in the MYP Unit Planner.

Standard 3: Digital Learning Environments

Critical to the success of this project was the selection of a technology integration tool that would make sense to the faculty to use in synthesis with the school mandatory planning framework (the MYP Unit Planner). Facilitating the pilot teacher group in the understanding of that tool by use of curated resources on a Google Site allowed for efficient “evaluation of digital

tools and resources” – in this case for “suitability, and compatibility with the school technology infrastructure”. This certainly saved time and allowed for effective communication across the collaborative team, meeting Standard 3.6: Communication and Collaboration. The website, BackChannel Tools and MYP Unit Planners have become invaluable evidences to onboard new faculty, petition for professional development funding and develop budget lines for technology that might needed to meet some of the outcomes of the walkthrough reflections and discussions for the participating group of pilot teachers.

Standard 5: Professional Learning and Program Evaluation

This served to be an important reflection for this kind of professional development in the future. In meeting Standard 5.1: Needs Assessment, there were two important points brought to the fore by the data from both the international school survey and the teachers who elected to participate in the Lunch and Learn professional development. The first is planned professional development should be informed by faculty needs up front to best inform and strategically plan the content to guide teachers in their professional growth plans and meeting goals annually. Meaningful professional development cannot be an add-on at lunchtime in a busy international school environment! Systemic growth comes from ongoing Program Evaluation (Standard 5.3), which has the outcome of “improving teacher pedagogical skills and/or increasing student learning”. With this in mind, all the pilot group teachers were keen to use the LoTI technology integration tool again and to share with colleagues.

Standard 6: Candidate Professional Growth and Development

Meeting Standard 6.2 in this project provided rich food for thought. There were three key learning outcomes for any technology integrationist working with deepening laptop use and technology integration in any school environment, but with specific context to the international

school climate.

- Clarity and consistency in communication is key. This cannot just be by electronic means; personal face-to-face interaction by collaborative meeting, visiting the classroom or follow-up conversations forge meaningful relationships based on what the students are learning to forge collegial, trusting, professional network relationships that will collaborate on a meaningful level when working on change process.
- While an unavoidable, the international school is a myriad of complex systems that do not always work harmoniously. It is often the case that due to schedule conflicts and teacher turnover in international schools, the same teacher does not teach the same grade level in subsequent teaching years. Therefore, the existences of a clear articulation of the MYP Units of Inquiry are not always uniform. To insure sustainability, it is important that the written curriculum reflect a concise reflection process to articulate the technology to be integrated into the teaching and learning so that new or onboarding teachers have opportunity to frontload any potential professional development they might need to insure consistent quality and equality in annual delivery of curriculum.
- Rendering all the possible permutations of how a proposed project will go may yield a robust plan – but there needs to be a salient recognition that even the best laid plans may not operate definitively given the dynamic and fast-paced environments of international schools. Flexibility of the technology integrationist in both disposition and ability to rethink plans creatively are key.

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Appendix A

Copy of Survey sent to International Schools

Survey of International Schools with 1:1 Laptop Programmes

A short survey to ring fence benchmark data about the implementation and sustainability of a 1:1 laptop programme in an International School Setting. This data is for a final thesis capstone project for a Masters in Instructional Technology at Kennesaw State. Names of school will be redacted in final paper and all data and information supplied is confidential.

* Required

Name *

School Name and Country *

Programmes delivered in the school *

Ascertain the breakdown of academic programmes delivered (Click all that apply)

- International Baccalaureate Primary Years Programme (PYP)
- International Baccalaureate Middle Years Programme (MYP)
- International Baccalaureate Diploma Programme (DP)
- International Baccalaureate Career Programme (IBCP)
- International General Certificate of Education (IGCSE)
- Local examinations pertinent to country / location
- Other:

What digital platform is in use by your school by faculty? *

- PC / Android laptop computers using a network log in (e.g. Citrix)
- Standalone PC / Androids
- Mac iOS laptops
- Mac iOS laptop and touch device mix
- Other:

What digital platforms do students use? *

- Students bring their own devices - there is no prescribed minimum
- Students purchase a prescribed laptop device from school or privately (Mac iOS) - they own the computer
- Students purchase a prescribed laptop device from school or privately (PC/Android) - they own the computer
- School purchases devices and these are on loan to the students to be returned at the end of the school year
- Other:

What 1:1 devices are used across the school environment? *

Breaking down the device uses by grade level (for example K-5 - laptop and iPad cart, 6-12 BYOD)

How often do faculty engage in professional development training with objectives to laptops for teaching and learning *

- Weekly meetings as part of ongoing professional development plan
- Monthly meetings as part of ongoing professional development plan
- Integrated professional development across teacher workdays across the year
- Coaching and support as needed from Instructional Technologists / Coaches
- Other:

Have the faculty in this school been trained in the use of any of the following evaluation methods for technology integration into their curriculum planning *

Select one below. If other, please elaborate as to what tool is being used

- Tpack (<http://www.tpack.org>)
- LoTi HEAT (<http://loticonnection.com>)
- SAMR (<https://sites.google.com/a/msad60.org/technology-is-learning/samr-model>)
- Other:

What would you say is the key strength of the 1:1 laptop programme in your school? *

What would you say may be a key weakness of the 1:1 laptop programme in your school *

Given the opportunity, what do you see as the next opportune steps for your schools' 1:1 laptop programme? *

What threats do you see to your schools' 1:1 laptop programme? *

Submit

Never submit passwords through Google Forms.