A First Look at the Intel® Teach Getting Started Course:

Impact on Teachers' Knowledge and Skills in Five Countries.

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Table of Contents

Looking at the *Getting Started* Course Across Five Countries: A Synthesis of the Findings

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The latest Intel® Teach offering is the Intel Teach *Getting Started* Course. *Getting Started* is designed to serve as an introduction to software productivity tools and student-centered approaches to learning. *Getting Started* provides teachers with the opportunity to use technology to create products that support their teaching work. The course also provides participants with new frameworks for understanding teaching and learning, and allows them to directly experience, as learners, learner-centered instruction, inquiry learning, activities that support critical thinking, and project-based collaboration with peers. Throughout the course participants use basic software (word processing, spreadsheet, and presentation software) to create teacher tools like class lists, seating charts, or presentations. The course culminates in the development of an individual action plan detailing how each participant will apply the new skills and approaches learned in the course to enhance productivity and professional practice over time.

Initially launched in late 2006, *Getting Started* has been implemented in countries in Asia, Africa, the Middle East, and Latin America. The countries implementing the program include Argentina, Brazil, China, Costa Rica, Indonesia, Libya, Mexico, Nigeria, Pakistan, the Philippines, and Vietnam. The following reports are based on case studies conducted in five countries: Brazil, China, Costa Rica, Nigeria, and Vietnam. The research was conducted by Education Development Center, Inc., and SRI in collaboration with local evaluation groups: Centre for Evaluation and Accreditation at the Ho Chi Minh City University of Pedagogy, Vietnam; East China Normal University, Department of Education, China; Blueprint Global Services Limited, Nigeria; Centro de Investigación y Docencia en Educación at the Universidad Nacional, Costa Rica; and Learning Technologies Network-Brasil, Brazil.

The research examined how participants followed up on their learning in the course back at their schools. In each country the evaluation teams conducted case studies of at least four schools whose teachers participated in *Getting Started* during 2007. Researchers interviewed teachers, principals, and other relevant educators in each school to get an understanding of what Participant Teachers (PTs) think of *Getting Started,* whether it has enabled them to use Information and Communications Technology (ICT) more, whether it is filling a relevant need in their countries, whether PTs see the value in the new teaching methods, and how they follow up on training when they are back in their schools.

The core of *Getting Started* is 12 two-hour modules that cover basic software and key topics of 21st century learning environments. The training is expected to be at least 24 hours and is taught by a Master Teacher (MT) trained by a local implementation agency. Many countries, however, make adaptations to align the course with the specific needs of their teachers. In China and Vietnam the course is 24 contact hours, but both Brazil and Costa Rica have expanded the contact hours to 48 and 40 hours, respectively. Each country also identifies a

different MT structure; in Costa Rica, for example, the MTs are based in each region, but in China the MT is also the IT teacher in each school. Additionally, in some countries *Getting Started* is aligned with other educational programs and ministry initiatives. For example, in Brazil the MTs also introduce participants to think.com resources.

The chapters that follow report the findings and conclusions from the case studies in each country, but the following are some key conclusions from the case study reports across countries:

The PTs had very positive experiences with *Getting Started*. Participants in all five case study countries reported enjoying the learner-centered design of the course and the various learning strategies employed in *Getting Started*. The course adapted well to participants with different skills levels and different interests.

The PTs valued the chance to become comfortable with ICT and to improve their ICT skills. The PTs felt that it was important to know how to use ICT and to introduce ICT into their administrative activities but also into their work with students. The participants, regardless of their prior level of technical expertise, felt that the course helped them improve their ICT skills. For those PTs with no prior ICT experience, being able to play and experiment with the technology helped them develop a more positive view of ICT; they reported overcoming their fear of the computer and gaining the ability to see how the computer could be a useful tool for their teaching. In Vietnam, for example, PTs have learned to access the Internet on their own and to integrate with a larger world that they had heard about but never joined. A *Getting Started* MT created a Web site for PTs to share their experience and a large number of teachers now participate.

The more advanced PTs were able to learn more about the complex features of Word or Excel and develop more complicated products. For example, many of the participants in Costa Rica have created a variety of new and innovative teacher products adapted to local needs.

PTs in each of the countries had different learning needs, yet all participants took away valuable messages from the course. In general, education systems and the teachers working within them in each country were at different "starting points" along two key dimensions: prior knowledge and use of student-centered instructional strategies, and school-based access to technology and teacher familiarity with ICT. In Brazil and Costa Rica, teachers have more widespread access to technology and more awareness and use of certain student-centered practices. Although access to technology is rapidly improving in Vietnam and China, and education ministries in both countries have been communicating with their teachers about student-centered learning for a few years, teachers were still relatively unfamiliar with student-centered approaches. Nigeria is just beginning to introduce ICT into schools and to promote student-centered practices.

The intersection of *Getting Started* with other Ministry reform programs shapes PTs' experience of the course and guides how they perceive the course. The PTs' interests and learning needs appear to be shaped by other governmental programs and policies influencing their work. The course provided different learning experiences for PTs who felt different external pressures. When *Getting Started* coincided with other pedagogical reform

efforts, as in China or Vietnam, the PTs tended to focus more on the student-centered learning experience provided by the course. Those PTs, who had little familiarity with student-centered instructional practices, reported gaining valuable experience in a student-centered learning environment that many tried to replicate in their own classrooms by, for example, having students work in groups.

When the course coincided with other ICT integration efforts, as in Indaiatuba, Brazil, the PTs focused on the ICT content of the course. The Brazilian participants felt the program helped them integrate ICT into their work with students.

Getting Started is a valuable introductory learning experience to learner-centered environments, but it is not a pedagogy course. Although *Getting Started* is useful for introducing participants to the value and effectiveness of student-centered instructional strategies, it is not, by itself, a sufficient exploration of the instructional and curricular issues of student-centered teaching to enable participants to completely transform their practice.

In most countries, PTs did not find the products created in _Getting Started_ to be useful or relevant to their practice. Although PTs reported that they enjoyed creating the products in the course, which include such tools as newsletters created in Word, lessons in PowerPoint, and grade books in Excel, few reported using these tools or creating new products for use in their professional life since the course. Costa Rica, however, was the exception. PTs in Costa Rica were using a variety of products and had also created new, alternate products that were useful in their practice.

Few PTs used the action plans they had designed during the course. Few PTs reported using their action plans once they were back in their classrooms, although they reported they liked the action planning exercise. The action planning section of the course should be a priority for curriculum improvement.

Many PTs desired more time to practice and work with each new software package before moving on to the next tool. PTs recommended two strategies to give participants more time. First, participants in countries where the course was offered over a consecutive span of days (Costa Rica and China) commented that the course was too condensed and that they did not have sufficient time to become familiar with one software program before starting the next one. Second, participants in countries with the 24-hour course requested more total course time. In Vietnam, for example, many participants wanted an extended course schedule to allow more in-class practice time. This request may be prompted in part by the Vietnamese PTs' lack of easy access to ICT outside of the course.

Intel® Teach Program *Getting Started* Course
2008 Brazil Case Study Report

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I. Executive Summary

The Intel® Teach *Getting Started* Course is being implemented in several areas in Brazil and, to date, the most extensive implementation has been conducted in the municipality of Indaiatuba. As of March 2008, more than 150 teachers in the Indaiatuba municipal school system had completed the course, and more are in the process of training. School leaders are also taking the course, as are Secretary of Education office employees.

The Indaiatuba implementation makes an interesting case study because of the unique way the Secretary of Education has chosen to conduct the course. It is offered to teachers in the afternoons, evenings, and on weekends, and teachers attend one to two times a week over a period of several months. They are led by Master Teachers (MTs) whose full- or half-time role is to implement the course and help Participant Teachers (PTs) to begin using the computer laboratories in their schools with their students. Also distinctive in the Indaiatuba implementation is that *Getting Started* is part of a package of reforms focused on Information and Communications Technology (ICT) that is occurring in Indaiatuba schools: Teachers and students are learning to use Oracle's think.com, the number of computers in each school is increasing, and other technologies are being purchased. The goal is for teachers to incorporate ICT into the curriculum such that it is a part of the regular school day rather than a separate IT course. Particularly interesting is the incorporation of think.com into *Getting Started,* since participants in Indaiatuba are conducting discussions not only in person during class time but also via think.com.

We conducted interviews with PTs and school leaders in four primary schools in Indaiatuba and also talked with Secretary of Education employees who are implementing the ICT reforms. Overall, PTs are reacting positively to the course, even those who say they were previously "resistant" to technology. Many said the course has helped them overcome fears. They were particularly appreciative that *Getting Started* is an ICT course directed at teachers— several had taken other ICT courses in the past and found them irrelevant to their needs. Though the pedagogy presented in *Getting Started* was not new for Indaiatuba's participants, they enjoyed its inclusion in the course and found it helped them to think about how to incorporate ICT into their work with students. PTs did not, however, make much use of the particular ICT products created in the course; these products are largely focused on teacher use of technology, and the PTs were more interested in getting their students to use technology.

Indaiatuba teachers appear to be benefitting from the MT model being used in Indaiatuba; PTs expressed that they were very comfortable with their MTs and could even call them up after the course was complete to ask questions. In fact, we frequently met MTs in the computer labs we visited; they were helping the teachers take those first steps toward incorporating student use of ICT into the curriculum.

Indaiatuba's implementation of *Getting Started* is in its early stages; most PTs had just completed the course when we visited. It will be valuable to follow their progress as more teachers take the course and as the first cohort begins using the computer lab with their students.

II. Description of the Program in Indaiatuba, Brazil

Getting Started began to be implemented in late 2007 in Indaiatuba's municipal school system, which includes public nursery and primary schools serving infants through fifth graders. The municipal schools are administered by the Secretary of Education's office, a part of the municipal government. The mayor of Indaiatuba has made a significant political and economic investment toward bringing educational IT into the school system.[1] Indaiatuba's MTs, or multipliers as they are called in Indaiatuba (*multiplicadores* in Portuguese), were trained in October on Version 1.0 of the curriculum, and shortly after, began offering the course to teachers. To date, 153 elementary teachers have taken the course, which is being offered to them at a variety of times (afternoons, evenings, and weekends) to fit their schedules.[2] Most of these PTs finished only shortly before our study was conducted (a few weeks or a month earlier), and the course for many was broken up by school summer vacation in December, January, and February. PTs are not paid for the time spent at the course. More PTs are currently taking the course, and there are plans to expand it such that all or most of the teachers (including those at the nursery level) will have taken the course eventually. Each course is led by an MT and has about eight PTs. Two-hour sessions are held once or twice a week over the course of several months, for a total of 48 hours of class time. Make-up sessions are available if a PT misses a session, and PTs can use computers at the *Bosque do Saber,* a municipality-run education and training center, to practice what they are learning.

Indaiatuba's implementation plans go beyond the teaching staff: In addition, school directors and pedagogic coordinators are taking the course and all Secretary-level employees (such as pedagogic supervisors, psychologists, and speech therapists, all of whom play a major role in teacher training in Indaiatuba) are taking the course. Each of these groups has its own dedicated time for taking the course; they do not take the course with teachers.

Implementation of *Getting Started* (called *Fundamentos Basicos* in Portuguese, or Basic Fundamentals) is one facet of a municipality-wide increase in use of ICT at schools in Indaiatuba. Most schools in Indaiatuba have a computer lab with 18 computers, and until recently most had an IT teacher who would take half a class to the computer lab at a time, while the classroom teacher stayed with the other half in the classroom. In an effort to integrate ICT into the curriculum rather than teach it as a separate subject, over the course of the 2008 school year, classroom teachers are expected to transition to taking their classes to the computer lab themselves, integrating ICT content with classroom content. Teachers are expected to take their classes to the computer lab about once a week.

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[1] Indaiatuba is privileged among Brazilian municipalities in terms of socioeconomic status; it is rated as one of the top 10 municipalities in the country in quality of life.

[2] Teachers in Brazil may work between one and three shifts a day: morning, afternoon, and evening. Offering the course at a variety of times is a way Indaiatuba is attempting to make the course available to all teachers.

Many of those who were previously IT teachers are now MTs for *Getting Started*, and they serve the municipality as a whole, focusing on supporting the teachers they have trained. Their role, in addition to conducting the training, is to help teachers determine how to use ICT with students and to support them in the computer lab. In total there are 16 MTs who travel to different schools. Some work full time as MTs; for others it is a half-time position and they work as classroom teachers in the other period. In addition to the MTs, teachers continue to receive support from substitute teachers and others at the schools with an ICT background. In addition, teachers have support from the Secretary-level technicians, who deal primarily with technical, rather than pedagogical, issues. The teachers we interviewed found this support system to be effective; they told us that there is always someone you can go to for help and, indeed, we saw many helpers in the computer labs we visited, often MTs. One teacher told us that her MT lives in her neighborhood and she frequently stops him on the street to ask questions. A director praised the technical support from the Secretary-level technicians; she said that they are at the school frequently to make sure all the computers are working and that their help is critical to keeping the school's work with ICT moving forward.

The municipality is offering *Getting Started* to support teachers as they integrate ICT into their classrooms. Additionally, it is investing in physical resources: increasing the number of computers in each school to 36 (which is the approximate class size) so that students do not have to share; purchasing an interactive whiteboard for each school; and purchasing Classmate PCs for students and laptops for teachers at the four schools that do not already have computer labs.

Finally, Indaiatuba has adapted the *Getting Started* curriculum to include a technology platform they had previously introduced at their schools: Oracle's think.com, which is a protected Internet environment designed for schools. Last year, Indaiatuba teachers received professional development on and access to think.com, and it is currently being used as part of the ICT initiatives at the Secretary of Education. For example, as a part of the *Ler Faz Bem* (loosely translated, "Reading Is Good for You") initiative students in Indaiatuba schools produce virtual books. Use of think.com is being integrated into the various stages of this project. Think.com is being used both to add a Web 2.0 element to *Getting Started* and to increase teachers' comfort with and use of the portal. In addition to having discussions in class based on the discussion questions in the curriculum, teachers post their thoughts on think.com and are able to respond to one another's ideas.

III. Evaluation Methods and Approach
Evaluation Design
To study *Getting Started*'s impact in Brazil, we conducted interviews in four schools in Indaiatuba, a city in the state of São Paulo. Indaiatuba, located about an hour and a half northwest of the city of São Paulo, was selected as the case study site because staff there had trained approximately 150 teachers in 2007–2008, are planning to implement the course throughout municipal schools, and are unique in the manner in which they are implementing the course (described above). Within Indaiatuba, we visited four primary schools (grades 1–5), which were chosen to represent a variety of school sizes and length of time the school

has had ICT and/or an ICT program for students (some had recently gotten computer labs; others had had them for a longer time and had developed their own ICT programs around use of the lab). Within each school, we were frequently able to interview all or almost all the PTs who had taken *Getting Started.* All these PTs had volunteered to take the course in very early rounds of its implementation in Indaiatuba, however, so they were a self-selected population and likely represent individuals who are most willing to adopt ICT. The PTs interviewed had either finished the course recently (a few weeks or a month prior to the case study) or were close to completing the course (on Module 10 or 11, out of 12).

At each school, we interviewed between two and five PTs, depending on how many teachers at the school had taken the course and what their schedules were during our visit. In total, we interviewed 14 PTs. In addition, we interviewed the school directors at each of the four schools and the pedagogic coordinators at two of the schools. We also interviewed two MTs, a school director and a pedagogic coordinator from schools we did not visit, a technician at the Secretary of Education who works closely with schools on technical support, two Secretary-level pedagogic supervisors, and one Secretary-level speech therapist. All the interviewees had taken or were in the process of taking *Getting Started:* The school directors and pedagogic coordinators were taking the course with other directors and coordinators; the pedagogic supervisors and speech therapist were taking the course with other Secretary-level staff members; the MTs had taken the course with a senior trainer from the Bradesco Foundation, which is the Regional Administrative Agency for Intel in Brazil; and the technician had taken the course alongside the MTs (and in fact had acted as an MT for half of *Getting Started*). The current study is based on a total of 28 structured interviews. Additionally, we informally interviewed Tania Castanho, the director of technology at the Secretary of Education, and Jane Shirley Escodro Ferretti, the Secretary of Education, about the implementation of the *Getting Started* in Indaiatuba. Torie Gorges from SRI International (SRI) and Ann Berger Valente from LTNet co-led all interviews. Interviews were conducted in Portuguese; Ann provided translation for Torie.

At each of the four schools, we were able to briefly see ICT in action: We visited the computer lab and saw students engaged in a variety of activities led by teachers and other adult helpers. In total, we saw seven classes using the laboratory. Visits were short; we did not usually stay more than five minutes. However, we were able to get a sense of the types of activities teachers are implementing with students in the computer lab.

Evaluation Instruments
Education Development Center, Inc., and SRI developed four interview instruments: an MT interview, PT training and follow-up interviews, and a school leader interview. The MT interview instrument asks interviewees about their training experience, any PT training they have conducted, and how the training has affected their classroom practices. The PT training interview instrument asks interviewees about their training experience, the accessibility of computer technology in their schools, and their views on how *Getting Started* might change their classroom practices. The PT follow-up interview instrument builds on the training interview, asking PTs specific questions about any changes in their classroom practice resulting from the course, in addition to more basic questions regarding their training experiences and school contexts. The school leader interview instrument asks about interviewees' plans for implementing *Getting Started* in their schools, their views of the course's effect on teachers, and their goals for reform and plans for their school. In Brazil,

we used a combination of the PT training and PT follow-up interviews, depending on whether the PT had finished the course or was in the process of taking the course. We used the MT interview protocol with the MTs and the technician, and the school leader protocol with the directors and coordinators, adding some questions from the PT protocols because the interviewees had taken the course themselves. We created a new protocol for use with the pedagogic supervisors and speech therapist, asking questions about their background, their participation in the course, and its utility for their work.

IV. Findings

PTs' Experiences with *Getting Started*

PTs interviewed were teaching veterans but varied in their prior exposure to ICT. The 14 PTs whose experiences are the focus of this case study tended to be veteran teachers: On average, they had 15 years of teaching experience. Almost all had higher education degrees, most in pedagogy. Their experience with ICT prior to the course varied: A few used the Internet regularly or had done work with computers at university, a few did not know how to use a mouse prior to the course, and most were somewhere in between.

PTs reacted positively, overall, to Getting Started. PTs' reaction to *Getting Started* was overwhelmingly positive. They repeatedly told us how important it was for them to learn ICT skills, because technology was "inevitable" and here to stay. Many reported that they "had a certain amount of resistance about computers" but the course had helped them overcome their fears about technology, and we noted that the details of what they learned in the course seemed to be less important to the PTs than was the experience of getting over their fears. They reported that although many had been nervous upon starting the course, they soon found that their MTs were friendly, they could have discussions with their colleagues in the course, and the course was accessible to them. That they took the course in small groups—approximately eight PTs and one MT—may have played a role in how comfortable participants felt. PTs also felt they experienced success in the course—despite initial beliefs to the contrary, they found that they *could* use a computer.

> **Stories of Impact:**
> **Speaking the Students' Language**
> One PT told us about one of the challenges of moving from use of ICT on her own to use of ICT with her students, a frightening prospect because some of the students know so much more about technology than she does. "They have their own language," she said, a language that she doesn't yet speak. Once, she found a student had typed something on the computer that she couldn't even decipher, though he insisted that "everyone" could read it. Despite these ongoing challenges, she has found that as she's used the computer lab more and more with the students, she's becoming more comfortable.

PTs liked that Getting Started is an ICT course for teachers. PTs emphasized to us the importance of having an ICT course that had been specifically designed for teachers. They enjoyed the inclusion of pedagogical content and reported that the course provided them with guidance on how they could use ICT with their students, a major goal for all the PTs we interviewed, and indeed, a goal being imposed by the Secretary of Education. The course

provided them with models of how to use ICT in the classroom as well as opportunities to discuss teaching uses with their colleagues and the MT. Quite a few of the PTs had taken a previous ICT course but said they found the other courses boring and had forgotten most of what they learned because it had no connection with their daily lives. They reported that *Getting Started* was different because of its focus on teaching. Additionally, several said their previous ICT courses had not followed a step-by-step format and had been difficult for them, as computer novices, to follow. They liked the Do It (*Faça* in Portuguese) step in *Getting Started* and most reported following the instructions very carefully (a few said the steps were too detailed and slowed them down, a finding more in keeping with the student reactions from the implementation of the Intel Learn Program in Brazil, in which reports that the Do It step was tedious were common). Although it is too soon right now to report whether the material learned in *Getting Started* has more staying power for the PTs than traditional courses that only focus on ICT skills, these reports are positive signs that the course is providing what teachers want and has the potential for continued impact.

PTs' Learning from *Getting Started*
Most PTs focused more on the ICT aspects of the course than the pedagogy. When asked what the "main thing" they learned from the course was, most PTs talked first about technology—getting over their fears about computers and learning some basic skills in, primarily, word processing and multimedia (spreadsheets were less frequently mentioned). Particularly poignant were stories from two veteran teachers, one of whom had retired already and then decided to return to the classroom, and another who returned to the classroom after her husband passed away. Both these women had volunteered for *Getting Started* despite their fears; one said, "I always had a little bit of fear of this little critter," referring to the computer. Both saw technology use as a challenge they needed to face to continue to serve their students well and to continue to "fight in the militia" for their school.

PTs' views on what they learned from the course varied somewhat by school—at some schools, the pedagogy aspects of the course were more salient, which may be a result of the differences between the schools selected. There was a tendency for PTs at the schools that had had an ICT program for longer than others in the city to talk more about the pedagogy included in the course, which suggests that those teachers with more exposure to ICT at school are moving deeper in their thinking about the use of ICT for learning—they are ready to go beyond basic computer skills. The difference between responses of PTs at different schools might also relate to differences in the school directors' focus and the general vision for learning at the school.

PTs in Indaiatuba did not talk about the pedagogical approaches included in *Getting Started* as new to them—most said they were familiar with concepts of student-centered learning and used them in their classrooms. They did appreciate the opportunity to review this type of pedagogy; one said, "It's never repeating it too much . . . when you sit down and discuss it, you reflect on what you are doing. You think, maybe I'm not doing it in the best way . . . you can improve." PTs also said that you always learn something new as you discuss these concepts with different people. Many of the PTs spoke of themselves as lifelong learners, and reviewing these pedagogical concepts was one way to keep learning. However, the PTs did not see the pedagogical content of *Getting Started* as particularly relevant to their regular classrooms—instead, they considered it to be guidance on how to use ICT for student learning. This viewpoint is particularly interesting because the *Getting Started* curriculum, in

fact, includes very little content that teachers can directly use with students: The products are primarily for teacher use only (e.g., the weekly lesson planner, curriculum preview, and grade book). Nor did any of the PTs speak about the pedagogical content in relation to their own learning about ICT.

We hypothesize that PTs, together with their MTs, focused their discussions on use of ICT with students and integration of ICT with the curriculum, probably because of the municipality-wide focus on moving classroom teachers into the computer lab. This focus may have been catalyzed by the MTs, who see their role in the system as not just facilitating the course but guiding teachers this year in using the computer lab with their students. It is therefore in their best interests, and in the best interests of the teachers, to focus on student use of ICT, even though that is not a specific focus of the curriculum.

PTs learned from one another in small-group discussions and from approachable MTs. Learning from peers in group discussion was an important component of the experience; one PT said the course gave her a valuable "chance to exchange ideas with her colleagues" both from her school and from others in the municipality. The emphasis on discussion was probably further enabled by the small groups the PTs were in—with only eight participants in each course, there would likely be more time for discussion and a greater possibility of the teachers getting to know one another well and feeling comfortable expressing their views. Finally, the positive view the PTs had of the MTs—all said their MTs were helpful and friendly and someone they could go to for help—undoubtedly made PTs more comfortable having deeper discussions about pedagogy. The addition of an online discussion tool, think.com, to *Getting Started* may also have helped the participants to have rich discussions about how to integrate ICT into the curriculum, not just when they were at a course session but also in between the sessions.

PTs' Application of *Getting Started*
PTs are focused on using ICT with their students rather than using the teacher products presented in Getting Started. The biggest change that PTs spoke about in relation to *Getting Started* was that they now planned to start using ICT with their students, taking them to the computer lab. Although for now they have support in the computer lab (from the MTs and others at the schools), they know that soon they will be on their own. Many are still worried about this eventuality: One said, "If you are using it yourself, it's one thing. But to use it with the kids, that's more challenging . . . that's the real fear for teachers: Is it going to work with my students?"

We heard very little in terms of direct application of the products PTs learn to create in *Getting Started*—a few mentioned that they might try the grade book at the end of the semester, but otherwise the products were not directly used by teachers. PTs instead talked about learning more general word processing and multimedia skills. Even when we asked specifically which product was most significant to them while pointing to the list of activities in the table of contents, PTs responded "Word" or "PowerPoint," thus raising a doubt as to the degree of personal significance of these products. However, they did like the activities in the curriculum—they found them to be useful for learning to use Microsoft Office applications. Their lack of use of the products is probably because of two contextual factors: (1) they have had very little time, since taking the course, to apply what they have learned, and (2) they are being encouraged by the Secretary of Education to integrate ICT into the

curriculum and use computers with their students, so teacher-tools are less relevant to them than tools that can be used with students. There was generally little sense that ICT was becoming a personal tool for PTs as a result of the products they created in *Getting Started,* although those who have computers at home talked about use of the Internet for research.

PTs are beginning to apply what they've learned in the computer lab. We did have the opportunity to see teachers using their new ICT skills directly with students despite the lack of direct application of the tools. We visited the computer lab in each of the four case study schools and frequently were able to see the interviewees in action with their students. It was particularly poignant to see a four-year-old class using the computer lab for the first time; they started by learning the rules of the lab ("only one child per chair!") and how to turn on the computer, and then were allowed to use Microsoft Paint. In elementary grades, most computer use was focused on language arts, which would be expected because technology is required for the virtual book portion of the municipality-wide *Ler Faz Bem* initiative; several PTs said that the writing students were doing on the computers was the first step in the process toward creating a virtual book. In five of the classes we observed, students were looking at an image (often a comic strip or cartoon image) and writing about it. In some classes, students were writing stories, while in one class, students were to rewrite comic strip language into proper Portuguese. Students used word processors and think.com for these projects. In one case, students were to comment on one another's writing using think.com, and in another, students looked at a comic strip about the environment and then answered questions the teacher had posted on think.com to gather their opinions about environmental issues. Generally speaking, activities involving think.com appeared more interactive and student-centered. Other activities were more rote: In a few cases, students were simply copying from handwritten pages into a word processor and the purpose of the activity seemed to be to practice typing.

> **Stories of Impact:**
> **Finding Each Child's Expertise**
> One PT told us about a boy in her classroom who has had a lot of difficulties with school; he does not even know the alphabet well yet. However, in the computer laboratory, he's at the top of the class and has even helped his teacher to solve some challenges. For example, when students were working with Microsoft Paint, he asked if he could add some writing to his drawing. The PT thought it would be impossible for the students to write legibly using the mouse, but he showed her that you can click on the letter icon and type directly into the program, something she'd never seen before. She's told him how much she appreciates his contributions and believes his self-esteem is improved by having a venue in which he can be an expert.

While these activities did not represent particularly innovative uses of ICT, it was impressive to see PTs who previously had been afraid of computers use ICT with their students. PTs said they still needed support in the lab: We frequently met MTs in the computer labs who were assisting the teachers, and it was clear that the teachers were nervous about being in the lab on their own. The high degree of similarity in the activities teachers had students doing suggests that some form of "helping hand" was at work; they were not yet entirely on their own in planning computer activities. The activities using think.com demonstrated that *Getting Started* works well in combination with the other aspects of the municipal schools' ICT

program: Though Secretary of Education employees reported that think.com was not used much last year, its inclusion in *Getting Started* appears to have increased PTs' confidence with the tool, and PTs are now using it with their students.

> **Stories of Impact: Overcoming Fears**
> *A 30-year teaching veteran was initially resistant to learning to use the computer, because of her fears about technology. However, she has become determined to make ICT a part of her students' school experience: It's a big challenge, she said, but you "can't run away from it." She sees a lot of potential for teaching students to read and write using computers, focusing on Word, as another place for students to practice writing in addition to their notebooks. Her next steps with ICT, she said, include implementing her action plan, which relates to science, health, and interpretation of texts, and using spreadsheets to create a grade book and a roll book.*

Action plans were not significant for the PTs. While we asked several PTs about their action plans, few had much to say about them and others only remembered what we were referring to when we reminded them of their preparations for the final presentations. Actions plans did not seem to have been significant for the PTs, although several said that the planning process presented in the action plan modules was familiar to them and that they already used a similar process regularly, although using different terminology. In these cases the current planning models were felt to be quite adequate, and PTs did not indicate they planned to change their current practice. The PTs' familiarity with the process may explain why the *Getting Started* action plans do not appear to have had a large impact on PTs. School directors throughout Indaiatuba will be creating action plans that focus on developing ICT use at their schools, and they are expected to share their action plans with their teachers. When we visited, directors were about to create those plans, and how they are actually implemented in the schools may be an interesting focus of future study.

Getting Started for MTs
MTs had a positive experience implementing the course. We spoke with two of Indaiatuba's MTs who are implementing the *Getting Started* curriculum with teachers. Although neither had experience as a teacher trainer prior to *Getting Started,* both felt well prepared by the Senior Trainer and have had positive experiences implementing the course. They appreciated having small groups of teachers to work with in each training, crediting the group size with their ability to connect to the PTs, form a cohesive group, and ensure that everyone got the help he or she needed to be successful in the course. They were able to gain an understanding of each PT's ICT background and comfort level, and adjust their work to fit. For example, one MT said that at the end of the course, two of her PTs were still not equipped to work with a class in the computer lab on their own, so she has made a special effort to be with them when they take their class to the lab.

MTs see the course as a confidence-builder for teachers. Like the PTs, the MTs emphasized the greatest value of the course is that it gives teachers "confidence to be able to overcome their fear," in addition to teaching them particular skills. They reported that the teachers who have taken *Getting Started* are the ones that are willing to bring their students to the computer lab now, while other teachers lag behind, and that the *Getting Started* teachers

are beginning to see, with the help of the MTs, that ICT can fit into the regular curriculum. The MTs appear to be dedicated to their role: In addition to hearing them talk about guiding teachers' hands as they used the mouse for the first time and learned to double-click, we also saw them in the computer lab with the teachers, demonstrating that they are not just saying they support teachers, they are actually doing it.

Getting Started for School Leaders

School leaders are getting over their own fears about technology. In Indaiatuba, school directors and coordinators are involved not just in seeing the results of *Getting Started* for their teaching staff, but are taking the course themselves. The school leaders' experiences taking the course were similar to the PTs'; they found it useful for helping them get over their fears about technology and learning new ICT skills. One coordinator said that she had been bored and dropped out of purely ICT-focused courses in the past; with *Getting Started,* she not only stuck with the course but also practiced at home because the course "helped [her] see how to use ICT as a tool for teaching." She also said she discovered through the course that ICT is not a "monster with seven heads." Several school leaders mentioned that because of the course, they are able to do work that they previously had to ask their secretaries to do, particularly spreadsheets. One coordinator added that she is now trying to do her domestic budget in Excel!

Schools are early in their implementation of ICT for learning. These school leaders emphasized that they are at the beginning of integrating ICT into their schools: Although some schools have had computers for several years, they are starting to work ICT into the big picture at the school. Having a few teachers trained through *Getting Started* is the tip of the iceberg; they are encouraging other teachers to take the course. Some school leaders are demonstrating how important ICT is to their vision by integrating it into the small amount of weekly planning time they have with the teachers. At one school, the director is planning to use some of the *Getting Started* materials during planning time with teachers, and she is also planning to integrate use of ICT into their schoolwide planning process— for example, using think.com to hold discussions and for voting among teachers. Another school leader noted that using think.com for discussions with teachers will effectively increase the amount of time she has to talk with teachers. She added that her increased knowledge of ICT because of *Getting Started* helps her to be a better role model for the teachers. A third school leader is trying to bring her excitement about *Getting Started* to teachers during planning time, encouraging them to take the course.

School leaders are noticing some changes they attribute to Getting Started. School leaders commented more on the pedagogical content of *Getting Started* than PTs did. Although most PTs did not talk about using the pedagogy of *Getting Started* in their regular classrooms, a few leaders hoped that the ideas would spread. One said that typically in the classroom teachers have control, but in the computer lab that is not the case. She thinks the PTs are realizing, because of taking their students to the computer lab and using the ideas in *Getting Started,* that they do not have to be in control at all times in the regular classroom. Several school leaders noted that it is the teachers who took *Getting Started* who are taking their students regularly to the computer lab now; other teachers wait to go until someone can help them or in some cases do not use the computer lab at all.

Teacher resistance to technology remains a challenge. Several school leaders mentioned that teacher resistance to technology is a challenge that they face, and they are finding that *Getting Started* helps them with that challenge. They emphasized that they needed to get the teaching staff to understand that ICT is no longer optional, that computers are not bad, and that it is in the best interest of the students to have teachers who know how to use ICT well and can pass on useful skills. Because *Getting Started* shows ICT to teachers in a way that is positive and useful for them, and the pedagogical concepts are coherent with other approaches they use, the course is able to help teachers get over their opposition to learning ICT.

Secretary of Education employees find Getting Started useful. The three Secretary of Education employees we interviewed (two pedagogic supervisors and one speech therapist) are also taking *Getting Started* and reported that it has been very useful for them, regardless of the extent of their ICT background. They all reported learning new ICT skills and also plan to integrate ideas from *Getting Started,* particularly the 21st-century skills the course outlines, into the training they do with teachers. One said she was planning to have discussions and polls on think.com for teachers to participate in and was glad that, through *Getting Started,* the teachers have gained the skills needed to participate in an online forum.

Challenges
Few challenges were reported at this early stage of implementation. Interviewees generally had trouble thinking of challenges they were facing in implementing what they had learned or were learning in *Getting Started,* other than the continued challenge of facing their own fears and insecurities and taking that first trip with the students to the computer lab. When pressed, interviewees said they would like to have enough computers in the lab to have one child per computer (a plan that is under way by the Secretary of Education) and printers available. Several also mentioned that establishing rules and discipline in the computer lab is a challenge, and that getting the students to work well in pairs while sharing a computer is at times difficult. A few participants also mentioned that the divide between the teachers who have taken *Getting Started* and are now taking their students to the computer lab, and those who have not, is a challenge—there was a sense of separation from their colleagues because they were doing something different. A few participants commented that it is difficult for some people to take the course during unpaid hours, and they hoped it would be offered during paid time. Several school leaders said that finding time for teachers to use the computer lab can be a challenge, especially for those teachers who work multiple jobs and do not have a computer at home.

Curriculum
Overall, the Getting Started participants we interviewed were happy with the curriculum. Because so many interviewees commented initially on the importance of learning ICT, rather than pedagogy, we asked if they believe the modules that focus almost exclusively on pedagogy (Modules 3 and 10) were important to them; all agreed they were and emphasized how important it was to them to have a curriculum that combined ICT and pedagogy. In light of the negative view of Bloom's taxonomy that had been expressed in the Latin American Region Senior Trainer training held in Mexico in April 2007, we probed participants' reactions to that particular part of the curriculum and found that interviewees had no difficulties with it. All viewed the ideas as interesting, and while a few mentioned other theorists whose work they valued (including Edgard Morin, Paulo Freire, Emilia

Ferreira, and Jean Piaget), none were specifically opposed to Bloom. Most, in fact, seemed to have paid little attention to whose taxonomy it was and had simply found the ideas interesting and reasonably consistent with their own thoughts.

A few interviewees, including one of the MTs, noted that they wished there was more time for each module: The MT would have preferred that each of their sessions last three hours, so that they would have more time for interesting discussions. She regretted that frequently, just when the discussion was getting good, they had to move on to another topic. Across the board, interviewees wanted more: to take the next course, or even to repeat this course so they could get in more practice and catch any details they had missed in the first round.

MTs made some modifications to the curriculum, most importantly the addition of think.com. Most MTs seem to have followed the curriculum closely, though some modifications were reported. One PT, for example, said her MT had skipped around between different modules, and it was unclear whether the Help Guide was available to participants or not. MTs also had to modify the curriculum to make sure teachers would know how to work both with Microsoft Office products, which are available on the *Bosque do Saber* computers, and Open Office for Windows, which is typically what the school computers have. MTs also had to split the course into two parts to accommodate the school summer vacation, but PTs did not report any confusion due to taking the course in two parts.

The major modification made to the curriculum was adding think.com, which was done by all the MTs after their training with the Senior Trainer. They, together with Secretary of Education employees and Dr. Cesar Nunes of University of São Paulo, worked out a plan for integrating think.com with the discussion questions in the curriculum, so that teachers would get the experience of a social collaboration tool from *Getting Started.* The Secretary of Education office saw the addition of think.com as an important modification of the *Getting Started* curriculum, because it moved the curriculum beyond the basic Microsoft Office applications—which, especially in examples such as the Assessment Handout, are not particularly supportive of 21st-century, student-centered teaching—to tools that are becoming increasingly more important for technological fluency and are interactive in nature. One example of how they used think.com came from an MT: She said that in Module 10, they divided into small groups and each took on a set of skills (e.g., questioning skills or encouraging skills). Each small group posted about its set of skills on think.com, and then they all read one another's pages and commented on them. This allowed them to cover all the material in the curriculum while also integrating online discussion.

Participants report little use of the products created in Getting Started. Indaiatuba's focus on getting teachers to use ICT with students presents an interesting challenge for the *Getting Started* curriculum. While PTs reported that they enjoyed creating the products in *Getting Started,* there were very few reports that they actually used or even planned to use these products. The PTs see ICT less as a personal tool and are more interested in what they can have their students do in the computer lab, and how this will relate to the regular curriculum. *Getting Started* does not currently include tools that a teacher would be likely to use with students, but teachers in Indaiatuba might benefit from a course that focused more on how they can bring ICT to students.

V. Conclusion

Thus far, Indaiatuba's implementation of *Getting Started* appears to be a success. Those teachers who have taken the course were pleased with its content, felt they were successful in it, and are now more confident in taking their students to the computer lab, which is a major goal in the municipal schools. The addition of the think.com platform appears to have been successful in adding a new, innovative ICT element to the course: In addition to using word processing, multimedia, and spreadsheets, teachers are getting a chance to participate in a Web 2.0 social collaboration space that both builds their Internet skills and is a tool they can use directly with students. Those teachers who have taken *Getting Started* are already in the computer lab with their students and are able to guide them in at least basic uses of the computer (writing in a word processor and writing in think.com were the most common activities we saw).

Getting Started, however, offers participants only basic ICT skills. While the course is intended to help participants develop useful products, course products were not being used by participants in Indaiatuba (even though some school leaders reported that the products were useful to them). Also, in and of itself, *Getting Started* does not provide Indaiatuba's PTs with the preparation they need to use ICT with their students. Teachers with computers at home seem to be beginning to learn about computers on their own, by freely exploring and surfing the Internet, but others did not appear to be motivated to use ICT for their own enjoyment and learning. Teachers may need the opportunity to use ICT for fun themselves before they are able to come up with interesting ways to have their students use ICT, or before they are comfortable allowing their students to explore ICT. It also may be that full localization of the curriculum in Indaiatuba would involve better relating the pedagogical content regarding teaching (Modules 3 and 10) to the particulars of Indaiatuba's reforms.

At the Secretary level, there are concerns that the gap between Intel Teach *Getting Started* and the Intel Teach Essentials Course is still too great—participants do not learn enough skills and become fluent enough that they will be likely to move smoothly from one course to the next. Currently, the technology director for Indaiatuba schools is planning to create a course for teachers that will cover the gap, ensuring that teachers are comfortable with tools such as blogs, Google Docs, digital photos, e-mail, discussion boards, and use of passwords before moving on to the Essentials Course. The addition of think.com to *Getting Started,* she feels, helps ensure that participants will be comfortable with at least discussion boards before moving on.

Only a small percentage of Indaiatuba's teachers have taken the course, and as the first volunteers, they are likely to have been a more motivated group than the teacher population as a whole. Getting the rest of the teaching staff to take the course during non-paid hours may be a challenge—but many in Indaiatuba reported that the first participants are acting as evangelists of a sort, telling other teachers they should take the course because, unlike other ICT courses they may have tried, this one is enjoyable and relevant for teachers. That the course is being taken across levels in the municipal school system—teachers, pedagogic coordinators, school directors, and Secretary of Education staff—may also contribute to the success of the course in Indaiatuba by creating coherence across the municipality in ICT

knowledge and interest (the municipal *Ler Faz Bem* initiative may also be contributing to this coherence, by giving teachers and students the common goal of creating a virtual book).

Indaiatuba is in an early stage of its implementation of *Getting Started.* The Secretary of Education employees and school leaders have yet to finish the course, and only 153 PTs have completed the course. Plans to expand the technology resources in schools exist (increasing the number of computers in labs, adding Classmate PCs in those schools without labs, and purchasing an interactive whiteboard for each school) but have yet to be implemented. Over the course of the year, teachers will be increasingly expected to operate on their own in the computer lab, with less support from the MTs who are currently major enablers of computer lab use at the schools. It remains to be seen what impact *Getting Started* will have in combination with the other parts of the technology program in the school system, but the Indaiatuba case study presents an opportunity to see systemwide impacts that may, as more teachers are trained and more parts of the technology program fall into place, change how students learn about ICT in the Indaiatuba schools.

Intel® Teach Program *Getting Started* Course
2008 China Case Study Report
Torie Gorges, SRI International

I. Executive Summary

The Intel® Teach Program *Getting Started* Course is being implemented throughout China, with a focus on reaching teachers in rural areas. In February 2008 we conducted a case study of the implementation of *Getting Started* in rural Anhui Province, China, and visited four middle schools. The Participating Teachers (PTs) we interviewed had all completed *Getting Started*, most during a three-day session over the summer.

Prior to taking the course, many of the PTs interviewed already had strong Information and Communications Technology (ICT) skills; most had some experience with ICT. Despite their previous knowledge, most PTs were very happy with *Getting Started*. They particularly valued learning about 21st-century teaching and learning and student-centered classrooms, which participants said they learned about both through the discussions during the course and through the teaching methods of the Master Teachers (MTs). ICT learning was somewhat secondary to them; this may be an artifact of the particularly experienced group of PTs we interviewed and may not be representative of the PT population as a whole.

Teachers are beginning to implement what they learned in *Getting Started*. Many said they now take their classes to the multimedia lab to show them PowerPoint presentations they have created. They are also incorporating some student-centered teaching: In particular, PTs mentioned having students work in groups and allowing students to explore to find answers, rather than telling them the answers. However, the shift toward 21st-century teaching is a challenge. Many PTs noted that the Chinese assessment system does not reward creativity and group work; instead, it rewards memorization of correct answers. PTs are concerned about integrating the new teaching methods that so excited them during the course with their duty to prepare their students adequately for exams.

II. Description of the Program in Anhui Province, China

Getting Started is being implemented in rural middle schools in China. Middle school subject matter teachers (as opposed to classroom teachers, who are similar to "homeroom" teachers in the United States) are the primary participants, although a few elementary teachers in schools that are connected to participating middle schools are also able to take part in the course. MTs were trained in early 2007 and PTs were generally trained over the summer. Most of the teachers we interviewed were trained over the course of three eight-hour days. Conditions for the course were not always ideal: One PT course, for example, was held in a room with no air conditioning in the hot summer. In some schools, all or most subject matter teachers were trained, while in others, school leaders selected which teachers would participate in the course.

The rural schools in which *Getting Started* is being implemented are often in very poor areas. At one middle school we visited, only four-fifths of the students go on to high school. At these schools, students and teachers alike generally live at the school during the week and

only go home on weekends, due to the large distance between home and school. Schools tend to have one computer lab and one multimedia classroom (with a computer and projector), but technology resources vary by school. Generally, the computer lab is available only for IT classes, while the multimedia classroom is available for subject matter teachers.

III. Evaluation Methods and Approach
Evaluation Design
To form a picture of *Getting Started*'s impact in China, we conducted interviews in four rural schools in the Anhui province in eastern China. Anhui was selected as the case study site because the schools had trained a large number of teachers in 2007 and were available during the time period of the case study. Within Anhui, we visited two schools in Feixi County, near the capital city of Hefei, and two schools in Shexian County, which is not near a major city. In Feixi, we visited one school about half an hour from Hefei and one about an hour and a half away. In Shexian, we visited one school about half an hour from the county seat and one about an hour and a half away, far up into the mountains. Between the two counties, then, we reached schools that were rural to varying degrees. Another selection criterion used to choose schools for participation in the case study was school leader backing for *Getting Started;* generally only schools whose leaders support the program were selected for the study. In one case, however, a school with a new school leader was selected; the hope was that participation in the study would encourage this school leader to be supportive of *Getting Started*.

At each school, we interviewed approximately four PTs and also conducted short interviews with MTs and school leaders. In a few cases, an MT or a PT from a different school had been brought in for an interview (the reasons for which were unclear). In general, school leaders selected the teachers we interviewed, and they tended to select the teachers they felt had best incorporated the ideas of *Getting Started* into their teaching, as it was considered an honor to be interviewed by someone visiting from the United States and they wanted to represent their schools well. In some cases, the teachers interviewed were considered "the best of the best"—the school leader had selected his or her best teachers to participate in *Getting Started* and then selected the best among those to be interviewed. Because of the school and teacher selection criteria used, this case study should be considered representative of how *Getting Started* works in the best-case scenario, not necessarily how it works with average rural teachers.

Usually MT and school leader interviews were conducted in a group setting and were quite short (5-10 minutes), while PT interviews were conducted individually and were between 30 and 40 minutes long. Ms. Torie Gorges from SRI International (SRI) led all interviews, with translation assistance from Ms. Carol Qin and Ms. Teresa Jin from Intel China.[1] Professor Zhu Yiming, the local evaluator, participated in interviews at two of the schools. While we were conducting interviews, Mr. Xing Lei and Ms. Liu Ling from the Pedagogical Support Team at Peking University asked teachers for feedback on specific aspects of the curriculum. We were also joined on the visits to the schools by employees of the National Center for Educational Technology (NCET) and the local Ministry of Education: Mr. Hao Yunfu,

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[1] Quotes throughout this report are based on in-the-moment translation of interviewees' words and may not be a literal representation of what teachers said.

deputy director, Education Committee, Anhui Province; Mr. Miao Fuguo, division director, K–12 Education Department, Education Committee, Anhui Province; Madam Li Yang, director general, Anhui Center of Education Technology; and Mr. Huang, division director, Training Department, Anhui Center of Education Technology.

Evaluation Instruments

Education Development Center, Inc., and SRI developed four interviews: an MT interview, PT training and follow-up interviews, and a school leader interview. The MT interview asks interviewees about their training experience, any PT training sessions they have conducted, and how the training has affected their classroom practices. The PT training interview asks interviewees about their training experience, the accessibility of ICT in their schools, and their views on how *Getting Started* might change their classroom practices. The PT follow-up interview builds on the training interview, asking PTs specific questions about any changes in their classroom practice resulting from the program, in addition to more basic questions regarding their training experiences and school contexts. The school leader interview asks about interviewees' plans for implementing *Getting Started* in their schools, their views of the program's effect on teachers, and their goals for reform and plans for their school. In China, we primarily used the PT follow-up protocol, since most PTs we interviewed had taken the course at least six months prior to our visits. We also used the MT and school leader protocols.

IV. Findings

PTs' Experiences with *Getting Started*

PTs interviewed were veteran teachers with background knowledge in ICT. The PTs we interviewed represented a variety of subject matters: Chinese, English, social science, mathematics, biology, chemistry, and physics. They were a fairly experienced group, with an average of 14.5 years of teaching experience. The least experienced PT had 6 years of teaching; the most experienced had 25. They tended to have a fair amount of ICT background: Eight mentioned that they had taken previous ICT courses, and almost all were familiar with Microsoft Office products prior to taking *Getting Started*. One had majored in computer science at university, and another said, "frankly speaking, I am very good at making PowerPoints." The PTs' strong ICT background may be an artifact of the interviewee selection criteria used by school leaders, as described above.

PTs were happy with Getting Started, particularly the pedagogical content. PTs reported that they were very happy with *Getting Started*. One PT was surprised to find that by the end of the course, he had taken three pages of notes, something that was new for him. Another said he "cherished" the opportunity to participate in the course. The PTs enjoyed the classroom atmosphere at the training sessions and were impressed with the way the course was taught, although for many it was a new experience to work in a group with their peers. One said he was surprised that the instructors wanted them to work in pairs: There were plenty of computers available, so why share? But by the end he understood that "the intention of the MT was to help the teachers build relationships with each other" and found that he "loved the collaboration." Another highlighted the benefits of the collaboration for him and his peers: They exchanged tech tips with one another, so that he taught his peers

about hyperlinking in PowerPoint while they taught him to freeze cells in Excel, for example.

In general, the PTs we spoke with found the teaching methodology aspects of *Getting Started* more interesting than the technology aspects, which may be because so many came in with prior ICT skills. They commented that *Getting Started* provided them with knowledge on how to apply new student-centered teaching methods, which they had heard about in a recent national education reform training but not learned to implement. Several PTs noted that they appreciated the opportunity to learn new, modern teaching ideas "developed by American experts," and they were pleasantly surprised at how well these Western ideas melded with the Chinese national education reform. Several thought the curriculum had been designed specifically to match.

The PTs we interviewed did not find the technology aspects of the course challenging; many said they already knew the skills presented. Even the few without previous ICT training found the course doable; one said the computer part was "easier than I expected it would be." However, one PT warned that the course would be difficult for participants who came in with no ICT background.

PTs' Learning from *Getting Started*
The teaching methods covered in Getting Started were new for Chinese teachers, and they were interested in learning about them. As mentioned above, most of the PTs we interviewed highlighted the importance of learning how to apply student-centered teaching methods in the classroom, beyond learning ICT skills. Because so many of the PTs interviewed had some ICT skills prior to the course, it is difficult to assess whether the teaching methods presented in *Getting Started* were more salient for them because the ICT skills were not new, or simply because the teaching methods are so different from the norm in Chinese classrooms. It is probably some combination of the two: PTs with less of a background in ICT might see these skills as somewhat more important than the teaching methods presented, but they are still likely to have been impressed by the latter, given how new these ideas are for rural teachers in China.

The PTs interviewed noted that the teaching methods covered in *Getting Started* were "new concepts" for them and left a "strong impression" on them. For some, the ideas were completely new: One said that in normal school, they learned how to deliver content to students. Most agreed that they had some notion of student-centered learning prior to *Getting Started,* but no knowledge of how to implement it in the classroom. One PT said, "For many years, I have wanted to find a way to improve students' learning skills, and now [that I have taken *Getting Started*] I know how to do it." PTs commented particularly frequently on learning about collaboration and how to enact group work in their classrooms. Critical thinking was also a new concept for many of the PTs.

PTs also learned ICT skills in the course. Despite this focus on the teaching methodology, PTs did report learning ICT skills through *Getting Started*. PTs mentioned learning computer basics: how to search on the Internet as well as how to use word processing, multimedia, and spreadsheet software. One PT said that *Getting Started* helped her get beyond simple word processing, which was what she had known how to do before the course. A PT whose role includes calculating grades for his school said that the spreadsheet

skills he learned were particularly important for him; he has also used the instructional lesson plan, covered in the multimedia section of the curriculum, for the public demonstration lessons he periodically gives. Other PTs said that they improved skills they already have and now can create improved teaching tools, and one added that after learning the basics in *Getting Started,* he is able to more quickly learn other ICT skills on his own.

Use of action plans was mixed. We asked several PTs if they had used their action plans since creating them in the course. Responses were mixed. Several had forgotten the content of their plans or found they were not concrete enough to use. Others had not used them because they had been created with a group of teachers who taught a variety of subjects, and thus were not useful in their particular subject area. A few had put their plans into action, however, and one said that the process of action planning had impressed him and that he is trying to plan more systematically now.

PTs' Application of *Getting Started*
PTs are increasing their use of ICT for teaching. The PTs we spoke with reported that after taking *Getting Started,* they tend to deliver lessons in the multimedia classroom at their schools once or twice a week (some said they would like to use it more often, but there is limited availability). One said he used to use the multimedia classroom about 15 times in a 20-week term, but now he uses it more than 40 times a term. PTs usually use PowerPoint for these classes, and technology is not available for student use. They report that students enjoy class when they get to go to the multimedia room; they are engaged by the multimedia presentations. One said, "Students are excited—it's not like writing on the blackboard." PTs gave examples of PowerPoint presentations that include more and better pictures than are included in the textbooks, so that students gain a better understanding of what they are learning. For example, one PT showed students pictures of an ancient garden in Beijing that had been destroyed, and found that seeing the pictures made students more interested in the topic. Another PT took digital pictures of a school event that his students participated in, inserted the pictures into PowerPoint slides, and had the students analyze the pictures after the event, acting as outside observers rather than as participants. Another had added audio files of the sounds of Beijing street hawkers to PowerPoint slides, so that his students, who live far from the capital and may never travel there, can experience this unique cultural phenomenon.

Some PTs reported doing lesson planning on the computer now; one PT said that when she designs lessons in PowerPoint, she creates more of a "flow" and inserts "questions that keep students thinking," suggesting that her teaching is actually better when delivered via ICT. Another PT said that their school has had contests for teachers to create lesson plans in PowerPoint, and the teachers have found that they like it. Many PTs reported using a grade book in Excel frequently; one said he found spreadsheets much better than counting on his fingers. Another said that the teachers at her school used a spreadsheet to score a student contest and then created certificates, based on the one in the word processing section of the curriculum, to award to students. A third PT created a lesson plan using the skills he learned in *Getting Started* and entered it into a countywide contest, in which he won third prize.

Stories of Impact: Technology in the Community
In one small Chinese village, students have the opportunity to learn about their town's history with the help of technology. A Chinese language teacher told us they have added technology to a project they had already created to help students become more aware of their community. Students go into the field (sometimes literally, into the fields where tea is grown, to talk to farmers) to learn about the environment, historic Ming dynasty buildings, and the economy. They work in groups to collect data and write reports of what they have found. Previously, teachers posted these reports on a board at the school. Now, since they are more comfortable with technology, teachers collect the data, students' reports, and digital pictures of the students at work in PowerPoint presentations, which can be shared with next year's students.

PTs are starting to teach in a more student-centered way. PTs reported a myriad of applications of the student-centered methodologies they learned in *Getting Started*. Although one said he is just figuring out how to incorporate these ideas, many had examples of what they are doing differently in their classrooms now. PTs reported they no longer wanted to be the "sage on the stage"; one said that quite literally, he is no longer on the stage because he moves around the classroom when teaching now. Another PT said he tries to make the classroom a "happy place" for student learning, and others emphasized that they see students as friends now and have greater respect for them and their opinions. One said that while he used to begin the term by saying "I will teach you . . . " he now says, "We will learn . . . " Several language PTs said that instead of telling students the main idea of a story, they ask the students to figure it out. One PT said that in one class, a student came up with a very different interpretation, which the other students laughed at. The PT encouraged the student to explain his thinking, and the student was able to support his interpretation well and convince the other students. The PT was very proud of this moment in his class.

Quite a few PTs reported adding group work to their lessons. One said "the whole class became active" when he allowed them to discuss their different opinions in groups. Another gave an example from a math class in which students were assigned to groups to figure out the circumference of an object. The PT was pleasantly surprised by the results: The students found many different methods to determine circumference and learned the content well. A third said that while it took some time for students to understand how to work in groups, they are now accustomed to it and immediately assign roles to one another when he divides them into groups. Several PTs said that they divide groups by level to differentiate learning: That way, they said, they can challenge high-performing students while still engaging lower-performing students in the content.

Stories of Impact: Role Plays for Relationship-Building
A social studies teacher explained how he is incorporating the new teaching methods he learned in Getting Started into his daily teaching practice, using an example from a class he taught on communication between adolescents and parents. He explained that Chinese parents are often very strict, and teenagers tend to react against them. He wanted to help his students to better understand their parents, while also teaching them a vocabulary word, which translates from Chinese as "counter-reaction."

Instead of simply using the textbook to teach the definition of the word, as he normally would have done, the teacher began by using the questioning skills he learned in Getting Started. He asked the students, "Why is there a divide between you and your parents? Why are you reacting against them?" Then he played a famous song for them, about being friends with your parents. He encouraged students to think about the questions as they listened. Next, he divided students into groups and asked them to participate in role plays. In one role play, students acted out a mother and daughter going to the mall to buy clothes, which leads to an argument. In a second, teenagers arrive home late and get into a fight with their parents about telling them where they've been.

After the role plays, the teacher asked his students to think about the feelings of the different characters: what does the mother feel like when this happens? What kind of words should she use? Students began to see, he said, that arguments occur because people have different opinions. The students fill out a worksheet with two columns, one for parents and one for teenagers, and rows for knowledge, social experience, etc., so that students will understand that parents' life experience is valuable and they are strict as a way of demonstrating their love. Finally, students are asked to write a letter to their parents about a bad communication experience they have had. The teacher found that the letters were very touching and helped students to understand their relationship with their parents.

Challenges for PTs
Making the switch to student-centered classrooms presents challenges. The PTs appreciated the opportunity to see student-centered learning in action during the course and are beginning to implement it in their classrooms. However, they noted quite a few challenges in making the switch to student-centered learning. First, PTs had quite a bit of difficulty implementing good student questioning techniques and group work in the context of their large classes: The typical teacher has 60 students in a room. In addition to the physical difficulties this presents (how do 60 students work effectively in groups in a small classroom, in which there is no room to move desks around?), it also presents pedagogical challenges as teachers try to ask meaningful questions of 60 students, check in on the work of 20 groups, etc. One PT asked us how to keep students focused when she is teaching with ICT; it is new and exciting for the students, and she has trouble maintaining control of the classroom. Although PTs have some ideas of how to implement new teaching techniques as a result of *Getting Started,* they do not yet have the skills to know how to modify the techniques to fit their context or what to do if the techniques go awry.

Second, PTs expressed concerns about the amount of time required for lesson preparation when using student-centered techniques. They noted that it takes a long time to research the Internet to find content, such as pictures, which they normally would have simply gotten from the textbook. One PT said he spends a lot of time anticipating the questions students might ask him. Another said lesson planning used to take him about three hours, but recently, it had taken him three days to do the same amount of work. PTs do not seem to know how to balance their teaching loads, which have not changed, with the new demands on their time presented by a switch to student-centered classrooms.

Third, and probably most important, almost all the PTs we spoke with saw a conflict between the teaching methods in *Getting Started* and the standards they must meet to prepare students for exams. While student-centered methods are touted in the national education reform, they conflict with the type of assessments done in China, and because assessments are so important in determining students' futures, it is difficult for teachers to change their methods. One PT said, "The assessment system in China makes it difficult to completely incorporate the new methods," and another said, "The only way for a student to get a good education and a good job is through the examinations." The assessments assume there is one right answer to each question and leave little room for student creativity. Further, allowing students to explore a topic is more time-consuming than delivering a lecture. PTs feel that they are doing students a disservice if they do not deliver to students the breadth of content they need to know to pass the assessments: One said, "If we completely use the new teaching concepts, we couldn't finish all our teaching tasks." This PT pointed to the page in the curriculum that said 21st-century classrooms are 90 percent facilitation and 10 percent delivery and said that although he would like to teach in a student-centered way, the ratio simply "doesn't make sense" in Chinese classrooms today. Another commented that for the pedagogical ideas in *Getting Started* to truly take root in China, the entire assessment system would need to be overhauled.

PTs would like more time to learn and more technology resources in their schools. In addition to these pedagogical challenges, *Getting Started* participants in China outlined several training implementation challenges. Several PTs suggested that it might help to divide trainees into groups based on their experience with ICT, so that those with little or no ICT skills can focus on the basics while others learn more complex skills. A few participants said they would have liked the course to be extended over a longer period of time, so that there would be more time for PTs to practice what they were learning.

PTs also mentioned resource challenges: Many would like to have students use computers, particularly the Internet, in their classes, but there are not enough computers in the schools. Student use of ICT is restricted to IT classes. PTs also wanted computers and projects in more classrooms so they could deliver class via PowerPoint more frequently. Some PTs said Internet access is slow; others do not have Internet access. Several interviewees suggested that Intel could provide hardware and software to rural schools.

Getting Started for MTs
MTs also believed learning new teaching methods was more important for teachers than learning ICT content. Like PTs, MTs emphasized that the pedagogical aspects of *Getting Started* were as important, if not more important, than the technical content. One said that for participants with some ICT background, the teaching concepts are the most important

part of the program, while for those with little or no ICT skills, ICT is the more salient feature of the course. All agreed that students were the ultimate beneficiaries of the course because their teachers learn to present content in more interesting ways, both through ICT and student-centered pedagogy.

Use of ICT is increasing at Getting Started schools. Some MTs were able to provide information on the impact of *Getting Started* at their schools. One said that use of the multimedia classroom has increased 200 percent since the teachers took the course. Another said she has seen increased use of the multimedia classroom, PTs analyzing exam results using spreadsheets, and PTs creating graphics to show to students. Another emphasized that the PTs in his school are trying to increase collaboration in their classes. A fourth said that PTs have changed the way they think about their students: They treat them as they would their own children now and are friendlier with them.

MTs are changing their teaching methods but face challenges similar to PTs'. MTs also emphasized what they learned through the course: new facilitation methods that they can use both with PTs and with their students. They noted that their Senior Trainers (STs) were encouraging to them, created a good classroom atmosphere, and worked hard to incorporate participants' feedback on the training; in their own training sessions, they tried to follow the STs' example. One said that although she was nervous about teaching other teachers at first, she liked *Getting Started* because "the instructor looks like a friend" and when working with her peers, that was an easier role to take on than a more directive teaching role. Like PTs, the MTs knew a little about student-centered teaching prior to *Getting Started* but had never learned how to apply the concepts. Most felt *Getting Started* gave them these skills.

MTs have also changed what they do with their students. One, who is a subject matter teacher as well as an IT teacher, said, "Before the training, I conducted teaching with a blackboard, [but now] I use multimedia to deliver teaching," and when a student does not know an answer, he is less likely to give the answer to the student and more likely to encourage the student to figure it out. He has found that as a result of these changes in his teaching, his students are performing better, compared to others at the school, than they had in the past. Another said she uses the idea of the "challenges" presented throughout *Getting Started* to differentiate learning in her classroom and also now puts students in groups and gives the groups different tasks to complete. Like the PTs, though, the MTs said it was difficult to break away from a traditional teaching style that is so strongly rooted in China, especially given the strength of the traditional assessment system. One said that traditional methods "have a solid background in China, so we need to work hard to change." Those MTs who are exclusively IT teachers may have more freedom, because there is not a university entrance exam focused on IT, but many teach multiple subjects and find it difficult to change their teaching while still preparing students adequately for exams.

MTs noted a few other challenges: One said he needed to know how to win the support of the school leader, since without school leader support the program would not go far. This MT noted that the computers at his school were configured differently than those he was trained on and it was difficult to set up the configuration properly for the course. MTs were also concerned with the course schedule; three days is a short period of time for PTs to absorb so much information and MTs would have liked to have spread the course out over a longer period, so that PTs would have had more time to practice, and to increase the total

number of training hours. One MT said he would like to have a stronger background in the student-centered teaching ideas presented in *Getting Started:* He was concerned that he was not enough of an expert in these ideas to present them well to the PTs.

Getting Started for School Leaders
School leaders reacted positively to Getting Started. The school leaders we interviewed were very supportive of *Getting Started.* Two of the four, in fact, had attended *Getting Started* alongside the teachers at their schools. One of those leaders reported that he liked the way the course was delivered, particularly because the teaching methods are similar to those endorsed in the national education reform. Because of that alignment, he believes the ideas in *Getting Started* will have staying power at the school. Another leader, who also appreciated the similarities between *Getting Started* and the national reform, said that it will continue to be a challenge to move to student-centered learning, because traditional teaching methods are so ingrained in the minds of teachers. He added that students too will need to adapt to the new methods.

One school leader reported changes he has made as a result of participation in the course. He previously focused his evaluation of teachers solely on the exam results of their students, but now he is more interested in looking at their teaching methods, lesson plans, and use of the multimedia classroom as additional means of evaluation.

Curriculum
Overall, participants were happy with the curriculum, but some updates may be needed. Although the focus of this case study was not on updates to be made to the curriculum, we did gather some feedback from interviewees. Many said that the translation of the curriculum to Chinese requires work; there are parts that are difficult for them to understand. Several mentioned they liked the Help Guide but wished they had more printed copies of it. Participants mentioned *Getting Started* products that they liked and disliked (or used and did not use), but there was such variety that it does not appear any particular products are entirely inappropriate for this context. One participant suggested that the curriculum include real-life examples of student-centered teaching, both from China and other countries. He felt he would better understand the methodology if examples were provided. Finally, participants remain somewhat confused by the section on higher- and lower-order thinking skills. One participant pointed out that "discussion" falls into both high and low categories and reported he had trouble knowing what he should aim for in his classroom discussions.

V. Conclusion
Getting Started has been a great success so far in rural middle schools in Anhui. Participants enjoyed the ICT content of the course (though it was repetitive for many participants in this particular sample), and there are reports that multimedia classroom usage is up in the schools. Most importantly, the participants were fascinated by the pedagogical content of the course. Most had been exposed to the idea of student-centered learning through the national education reform but had little idea of how to implement it in their classrooms. *Getting Started* has given them the opportunity to experience student-centered learning as course

participants and ideas for how to move from being the "sage on the stage" to the "guide on the side."

There is promise that *Getting Started* will have continued impact in Anhui. Participants were eager to learn more and to continue to implement what they had already learned from the course. Many requested additional training, both to gain more ICT skills and a deeper understanding of the pedagogical ideas the course introduced. Furthermore, all the interviewees—school leaders, MTs, and PTs—said they would recommend the course to other teachers, suggesting that scaling up the implementation of the course would be successful. One participant added that he hoped elementary school teachers would receive the course, so that students would benefit from student-centered teaching from the beginning of their schooling, and specifically so that they would come to him better prepared for collaborative work. Two participants mentioned they are already sharing what they have learned with university colleagues who have not taken the course.

Understandably, use of ICT and 21st-century teaching and learning still have a long way to go before they will become a regular part of Chinese schooling. Although PTs are happily using the multimedia classroom in their schools, much of this use is for delivering content to students in a somewhat more exciting way, rather than for teaching students the skills they will need in the 21st century. PTs do not have the opportunity to actually use ICT *with* their students; rather they use it *at* them.

Still, PTs are trying to change the work they do in the regular classroom, incorporating open-questioning techniques, encouraging students to explore and come to their own answers to questions, and putting students in collaborative groups to work. But these are hard changes to make given the educational context in China. Students face exams that judge them—and determine their future—based on their ability to know a breadth, not a depth, of content, and to come up with the right answer, not an interesting or creative one. Further, the average class size in China makes focusing on students difficult: The *Getting Started* curriculum provides the basics of how to do collaboration in the classroom, but it does not help PTs to get 60 students working effectively in groups. PTs need examples of how to implement these techniques effectively given both the content they are required to teach students, as well as the context in which they teach.

Intel® Teach Program *Getting Started* Course
2008 Costa Rica Case Study Report

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I. Executive Summary

The Intel® Teach Programs in Costa Rica are coordinated by the Omar Dengo Foundation and include *Getting Started,* the *Essentials Course*, *Teaching Thinking with Technology*, and *Students as Scientists. Getting Started* was launched in Costa Rica in the final months of 2007. Education Development Center, Inc. (EDC), and the Instituto de Estudios Interdisciplinarios de la Niñez y de la Adolescencia (INEINA) conducted a case study in seven schools on the impact of *Getting Started* on Participant Teachers (PTs) in Costa Rica. The research objectives were to generate a deeper understanding of what PTs think of *Getting Started,* if it has enabled them to use Information and Communications Technology (ICT), if it is filling a relevant need, if PTs see the value in the new teaching methods, and also how they follow up on training when they are back in their schools.

We interviewed teachers who had taken *Getting Started* as part of the Costa Rican Ministry of Public Education's *Plan 200* professional development efforts. The Costa Rican participants had very positive experiences with *Getting Started* and felt that the course adapted to the needs of teachers with different skills levels. They enjoyed sharing with their colleagues in a professional environment and thought that the course helped them acquire critical ICT skills. These participants found many of the products to be useful teaching tools and they also developed a wide range of additional tools. Although they did not feel the course was intended to offer a lot of new pedagogical strategies, they did think it would help them support their students' ICT activities. The PTs did identify two challenges: sufficient time to practice each new software package during the course and limited teacher access to technology in their schools.

II. Description of the Program in Costa Rica

Intel Teach in Costa Rica is coordinated by the Omar Dengo Foundation and includes *Getting Started,* the *Essentials Course, Teaching Thinking with Technology*, and *Students as Scientists. Getting Started* was launched in Costa Rica in the final months of 2007. *Getting Started* in Costa Rica is a 40-hour course focused on using basic productivity software (word processing, multimedia, and spreadsheet software) to create teacher tools designed for teachers with no prior experience using ICT. The course coordinators from Intel and the Omar Dengo Foundation felt that Excel was still a new and challenging product for many Costa Rican teachers so they expanded the amount of time for PTs to work with Excel. Also, the 40-hour length allows PTs to receive credit from the Ministry of Public Education (Ministerio de Educación Pública, MEP) for the program. The actual courses are conducted by a network of Master Teachers (MTs) based throughout the country. Costa Rica has 22 directorates of education and there are two MTs in each directorate who offer the course to schools in the directorate. The MTs are classroom teachers, university educators, or MEP personnel who have been trained in *Getting Started.*

Getting Started was also included as part of a nationwide professional development effort organized by the MEP at the end of the 2007 school year. As part of a new ministry effort, called *Plan 200* in reference to the 200 days of schooling in the Costa Rican school calendar, the MEP organized two weeks of professional development activities in all schools in Costa Rica in November and December of 2007 in conjunction with the end of the school year. In each school a professional development coordinator put together a selection of weeklong training options for his or her fellow teachers, and teachers signed up for whichever training sessions they found most appealing. Both the Essentials Course and *Getting Started* were made available to schools as part of the *Plan 200*. During those two weeks, Intel Teach conducted 51 workshops for 799 teachers in schools around the country. Within the context of the *Plan 200* program, the course is offered over five consecutive days.

The MEP in Costa Rica has a long commitment to ICT as a learning tool in schools through a national ICT program for lower and upper primary, and secondary education, Programa Nacional de Informatica Educativa (PRONIE). This program uses a curriculum developed and supported by the Omar Dengo Foundation called the Learning through Projects Method (*Enfoque de Aprendizaje por Proyectos*). The program uses digital technology and project-based learning to stimulate logical, critical, and creative thinking as students develop an animation or simulation of complex systems. Most Costa Rican public schools have a computer lab with an average of 18 computers that are part of the national program. These labs are under the direction of the computer teacher who uses the PRONIE pedagogical approach and curriculum. In the last few years the MEP has also begun to encourage the use of ICT for administrative purposes like submitting student grades and teachers' yearly lesson plans.

III. Evaluation Methods and Approach

EDC and INEINA at the Universidad Nacional (UNA) were contracted by the Intel Foundation to conduct a small number of follow-up case studies on the impact of *Getting Started* on PTs in Costa Rica. The research objectives were to generate a deeper understanding of what PTs think of *Getting Started,* if it has enabled them to use ICT more, if it is filling a relevant need in their country, if PTs see the value in the new teaching methods, and also how they follow up on training when they are back in their schools. A team of EDC and UNA researchers visited seven schools to interview teachers, principals, or other relevant educators.

The Schools

The evaluation team visited seven schools: Two schools were in the urban area around San Jose; one school was in a rural area of the Central Valley, and the four remaining schools were all one-teacher schools *(escuelas unidocentes)* throughout the region of Guanacaste, one of Costa Rica's poorest regions.

> Plaza Lindo is a primary school serving a densely populated marginal area. It is designated a priority attention school because so many of its 1,000 students live in poverty. The school has three computer laboratories including a CITA (Centros de Innovaciòn con Tecnologìa para el Aprendizaje [Center of Innovation with

Technology for Learning]). One of the school's computer teachers is an MT for two Intel programs, *Getting Started* and the Essentials Course, and she also fulfills the role of technology coordinator in this school promoting the use of ICT.

Colegio Rio Piedras de San Rafael is a technical high school in a rural community in the central valley. It has about 900 students and only one computer lab, which is reserved exclusively for an agricultural technology course.

Colegio de Avila is an academic high school in a large town close to San Jose that serves adolescents for two shifts during the day and adults in the evening. The school has about 1,000 students and one computer lab.

The four "one-teacher" schools are all located in the region of Guanacaste. Three of the schools have 15–30 students, and the fourth school actually has two teachers and more than 40 students. Each teacher is both teacher and administrator for the school. The only school with working computers has two donated PCs in a side room, and one school has a donated PC that had broken down. The two remaining schools did not have computers.

The Teachers
Across these schools we spoke with 16 PTs who had taken *Getting Started* in December 2007. We did not interview the principals; only three schools had principals. Two principals directed our questions to their staff who oversee the *Getting Started* activities in their schools—one was an Intel MT in the building, and the second a professional development coordinator who schedules the programs. The third principal was new to the building and did not know how the program had been handled in the past. We also interviewed a Senior Trainer who oversees the program in Costa Rica.

The PTs had a wide variety of teaching experience, ranging from 2 to 20 years. They also had varying levels of prior experience with ICT. Six PTs had none or almost no prior experience with ICT, three had already taken the Essentials Course, four had had ICT in their pre-service training, and four had taken other ICT courses. Two of the PTs had been secretaries in the private sector before becoming teachers and were very comfortable with computers.

Computer Access
Easy access to computers in their schools was a problem reported by most PTs. All three of the large schools we visited had computer labs for students to use, but the labs are reserved for students and, in two of the schools, were not available for teachers to use for planning and preparation. In the third school, teachers could sometimes work in the lab if there was a spare machine available. Only one of the one-teacher schools had three functioning computers, and one school had a broken computer. Computers are not part of the standard equipment provided to one-teacher schools, and the teachers would need to find local resources to provide computers or participate in a special ICT-focused program.

In contrast to PTs' difficult school access, however, most PTs had access to computers at home. Most of the PTs reported using their home computers to create materials and

perform administrative tasks. Only two PTs reported that they did not have a home computer, and both of them spoke of trying to buy one soon.

Access to the Internet was also problematic in most of the schools. Eleven of the 16 PTs reported no Internet access.

IV. Findings
PTs' Experiences with *Getting Started*
The Costa Rican PTs had very positive experiences with the learner-centered design and the various learning strategies employed in Getting Started. The course adapted to teachers with different skills levels. The PTs enjoyed the learner-centered learning environment created in the course, the course dynamics, and the teaching strategies that were employed by the MTs. Across the board, nearly all the PTs reported that they enjoyed taking the course and found it to be a rich learning experience. Only one PT expressed frustration with the course because he had no previous ICT experience. Whether they were novice or more experienced ICT users, they reported learning new things.

One PT compared the design of the course favorably to another basic ICT course she had taken that entailed a lengthy review of each feature on the Word menu bar: "Despite being an introductory course, it quickly got down to practical use".[1] Because *Getting Started* lets the participants decide what to design with the technology, PTs were able to work on the skills that were new or challenging for them. For example, the novice PTs talked about creating a simple PowerPoint presentation, while for the more experienced PTs the course was a chance to get up to date on different software packages, deepen their skills, or learn shortcuts or advanced features. The more advanced PTs worked on creating forms in Word or building complex interlinked datasheets in Excel.

The PTs in Costa Rica enjoyed sharing and learning with their peers, but working in pairs on a single computer was problematic for some participants. The PTs had positive opinions on the chance to share and reflect on the products with their peers, but there were difficulties when they had to share a computer. Due to limits in the number of computers available during the course, participants worked in pairs on a single computer. This meant they generally worked on one PT's idea. For some participants this was a positive feature because a more experienced PT could coach a less experienced one. But other participants did not appreciate having to create teacher tools with a peer. A few of the less experienced PTs felt frustrated and excluded by their more experienced peers who did the project by themselves.

The Costa Rican PTs value the chance to become comfortable with ICT and to improve their ICT skills. The PTs felt that it is important to know how to use ICT and to introduce the technology into their administrative activities but also into their work with students. Additionally, for those PTs with no prior ICT experience, being able to play and experiment with the technology helped them develop a more positive view of ICT; they

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[1] The original quote is «Que a pesar de ser introductorio, se iba rápido a la práctica».

reported overcoming their fear of the computer and saw how the computer could be a useful tool for their teaching.

PTs' Learning from *Getting Started*
Costa Rican participants felt the course would help them in their ICT work with students. Learning more ICT skills gave the PTs more skills they could share with their students. Some PTs felt the training would help them in their work with students. For the PTs with no prior ICT exposure, they said they would now be able to help their students when they go to the computer labs. The more advanced teachers reported learning advanced techniques to help their students "make prettier projects."

The Costa Rican PTs did not perceive the course to have any substantial discussion about pedagogy or teaching strategies to use with students. The participants we interviewed felt the course was primarily about helping them integrate ICT into their administrative responsibilities and about preparing resources for their classes. For the rural PTs in the one-teacher schools who have to manage all the administrative needs of their schools, this was seen as an important topic and one with the potential to make their jobs easier. When specifically asked, the PTs did not remember any discussion of teaching strategies, or conversations about the use of ICT with students.

PTs' Application of *Getting Started*
Many Costa Rican participants were using the productivity tools for their administrative tasks and had developed new ones. The participants had many comments and observations about the productivity tools created in the course. The MEP in Costa Rica is currently promoting the use of ICT for school information and management, so many PTs found the course very helpful in this regard. PTs were interested in and appreciative of the grade book example in the course, even though few PTs were using it because the MEP has begun distributing its own software tool for this purpose, *Registro Inteligente*. Additionally, since this course coincided with the end of the school year, many PTs were able to make up their exams during the course.

In the interviews, the PTs shared a number of ideas [missing word: for? about?] other productivity tools they had created. (See section below.)

Challenges
The pacing of the course did not provide sufficient time to practice and work with each software package before moving on to the next. Because the courses we researched had all occurred within the MEP's *Plan 200,* the compressed time span of the course reduced the amount of time PTs had to practice with each software package. However, some of the *novice* PTs did report issues retaining the practical knowledge of how to use the computer after the course ended. These participants felt that the five-day compact course required by *Plan 200* did not allow them enough time to work with each software program and really learn the tool. They suggested the course be spread out over a period of weeks to allow participants to work with one software package at a time.

Limited access to computers during the school day was an impediment to using ICT for administrative tasks for many Costa Rican participants. Most of the participants indicated they were using computers to support their administrative tasks and to help

prepare their classes, but they were using a home computer or a cybercafé. Most of the PTs still used paper copies of documents and forms in school and entered the information into their computers at home because they did not have access to a computer at school.

Teacher-Produced Alternate Productivity Tools and Educational Resources.
The PTs we interviewed felt that it is important for teachers to know how to use ICT and that technology could help them in their work. Many had already created new and innovative teacher products in addition to the products in the manual. The following is a list of ideas for productivity tools developed by the Costa Rican participants in *Getting Started*.

Individual Student Evaluation Sheets and Checklists: A couple of PTs created detailed student evaluation sheets that enable the teacher to track daily attendance and a range of holistic indicators (behavior and attitude) in addition to test scores and project work. (See Appendix A.)

Livestock Register: A PT at an agricultural high school had transformed the "grade book" into a register of the pigs and cows at the school farm. For example, he was able to track when the sows were impregnated, which boar was the father, the number of piglets, their weight and size, and other important information.

Schedules for student responsibilities: One PT had posted a wall calendar of the students' assigned responsibilities for keeping the school and classroom clean and organized.

Student nameplates: Some of the PTs had created simple nameplates to identify each student's desk and chair or place at the worktable. Some of the nameplates showed just names, and others were decorated with images. One PT in a one-teacher school felt his students always argued over who got which chair and which desk, and the older students generally had their way over the younger students, so he printed nameplates for each child to have a place in the classroom. In all the small rural schools, the furniture is moved around and rearranged daily as the activities change, and it's difficult to assign a specific row or location.

Posters and banners: Many PTs had created small (one-page) posters of important topics, motivational sayings, or key reminders to hang on the walls of the classroom.

Parent Invitations: One PT had used the computer to create parent invitations to visit the school on parents' night. This teacher suggested that the "student award" activity in the module was not a very useful tool in Costa Rica, so she designed and printed these invitations instead and the students decorated them by hand.

Hand-outs and resources: PTs made worksheets or resource materials for their students on the computer. Since some schools lacked textbooks or resource materials for some topics that teachers wanted to cover, the PTs were able to provide their own resources to students from the computer.

Group planning documents: There are particular planning needs for teachers in the one-teacher schools, and these PTs reported using the computer to help in that process. Since these teachers teach multi-grade classrooms, they cover the same topics with all students but give activities with different levels of complexity to each age group. In one school, we observed

that each student had his or her own weekly lesson plans printed with activities, goals, and objectives, and the students reflected on their achievements and checked off the activities as they completed the tasks throughout the week.

Supervisory Reports: Costa Rican teachers are required to submit a variety of reports to their MEP supervisors throughout the year. The reports vary from yearly lesson planner to detailed "minutes" of the week's activities. A recent doctoral dissertation at the UNA found that teachers in one-teacher schools have to complete more than 60 different forms or reports each year. The participants felt the computer made it easier to produce and update these reports.

V. Conclusion

Getting Started was very well-received by the PTs in Costa Rica, regardless of their prior level of experience with ICT. All the PTs were able to develop or deepen their ICT skills while creating helpful products to improve their professional life. The only concern raised by the participants was that the version of the course they had taken was too compressed in time, and they would have benefitted from having more days between sessions for them to practice with each software application. The PTs felt that knowledge of ICT was very important and were excited by the possibility of incorporating more technology into their work. Since the course, many PTs had already created new and innovative teacher products.

Intel® Teach Program *Getting Started* Course:
A Case Study of Four Nigerian Schools

Evaluation By:
Blueprint Global Services Limited

I. Executive Summary

The education sector in Nigeria has become the new focus of technology products such as laptops and software. Intel® and the One Laptop Per Child (OLPC) have become the latest news items in this change. Intel has deployed technology in classrooms across Nigeria, starting with a pilot project at the Government Junior Secondary School, Jabi, Abuja, and now about five schools each in all 37 Nigerian states (including the Federal Capital Territory) through two government agencies—Universal Service Provision Fund and the Education Trust Fund. Teacher training on teaching with Information and Communications Technology (ICT) is a key component of the ICT for education programs from Intel.

This report discusses the findings from the Intel Teach *Getting Started* Course, using a case study of four Nigerian secondary schools.

Key Findings

- All the Master Teachers (MTs) and Participant Teachers (PTs) in this case study participated in *Getting Started* between June and August of 2007.
- The majority of the participants had previous contact with ICT. However, their levels of experience, access, and usability were very low.
- *Getting Started* was the first exposure of most PTs to the 21st century teaching method. A large proportion of MTs, however, had previous exposure to the 21st century method—although they claimed it was still all new to them.
- During their training, participants found that they could remember more of what they learned when they experimented with the 21st century method. The MTs reported that the course had prepared them well enough to facilitate the course for PTs in their schools.
- A lot of the MTs reported that the role plays during the MT trainings helped to increase their confidence to lead PT training sessions on their own.
- Participants reported five main outcomes when asked about the impact of the training on their professional experiences: 1) ability to improve lesson content using research, 2) better presentation skills, 3) improved computer knowledge, 4) improved teaching outcomes, and 5) improved learning outcomes.
- Participants remembered and used more of the ICT than the pedagogy from *Getting Started.* However, the study also suggested that participants' use of ICT is still low because of lack of steady electric power, limited availability of computers, and unsteady Internet connectivity in their schools. They reported that the large class sizes were a challenge for them to apply the pedagogy to their teaching as much as they should have.
- Participants have applied ICT learning to carry out their administrative chores and to support classroom teachings.

- A large proportion of the PTs reported that the productivity tools they had learned during *Getting Started,* and which they used to create products after their training, helped make their work easier.
- The study suggested that participants do not fully understand the concept and objectives of the 21st century teaching method.
- Most of the PTs have not yet implemented parts or all of their action plans. A large proportion of them could not even remember what they had planned to implement back in their schools.
- The computer labs were the place where all the participants in the study had access to technology (computers and the Internet), while in their schools.
- The school leaders reported changes in teachers who participated in *Getting Started* – the PTs are excited about their new capabilities, including Internet skills, presentation and computer skills, and new pedagogy.

Limitations/Challenges

- The major challenges faced during *Getting Started* included lack of steady power and the limited number of computers for teachers. These are also the key challenges faced daily in the schools.
- Participants reported that limited access to computers and the Internet are key reasons for limited implementation of *Getting Started* learnings in the schools.
- Unsteady power supply further limited PTs' access to available technology.

Limited lesson time (or period per lesson) makes it difficult for PTs to integrate either the ICT or pedagogy into the existing curriculum.

II. Description of the Program in Nigeria

Recently, debates on reforming the education sector have been going on within the government and non-government circles. The majority of interventions are ongoing by the government, private sector, and multilateral donor agencies to build capacity and achieve the desired change in the education sector. Lately, the education sector has become the target market for technology manufacturers, in the name of ICT for education. As part of the efforts to enhance education outcomes in the country and ensure the outputs of the education system meet the expectations of today's employer, *Getting Started* was introduced to Nigerian teachers and learners. One of the Intel's education programs, *Getting Started,* aims to help teachers: (1) learn and apply ICT to help them carrying out usual tasks, (2) create ICT products and aids that support their teaching, and (3) learn and apply the 21st century educational concepts.

The *Getting Started* pilot course took place in Nigeria with the training of four Senior Teachers (STs) at a secondary school in Abuja in May 2007, followed by the training of a

number of MTs and PTs. So far, more than 3,000 additional teachers, including MTs and PTs, have been trained in Nigeria. Blueprint Global Services (BGS) Limited, a local evaluation firm, with support from Intel's worldwide evaluation teams (Education Development Center, Inc., and SRI) has been conducting the evaluation of Intel education programs in Nigeria since the program began. BGS has been involved with localizing the evaluation instruments, selecting the case study schools with the Intel education manager, visiting case study schools, and interviewing participants and school leaders.

As part of the effort to understand the impact of *Getting Started,* an in-depth study was conducted in four Nigerian secondary schools located in two states: Government Secondary School (GSS) Gwagwalada, GSS Gwarinpa, and GSS Garki in Abuja; and GSS Minna in Niger. This evaluation is a follow-up to the end-of-training evaluation conducted earlier that looked at training experience. It is expected that the results of this study will enable a deeper understanding of what PTs think of *Getting Started* and answer the following questions:

- Has *Getting Started* enabled PTs to use ICTs more?
- Is it filling a relevant need in their countries?
- Do PTs see value in the new teaching methods?
- How did PTs follow up on training and learning back in their schools?

III. Evaluation Methods and Approach
Overview of Evaluation
Results of this evaluation are informed by interviews with teachers (MTs and PTs, excluding STs) and school leaders at case study schools. Additional data were gathered from interviews of PTs administered as questionnaires.

Sample sizes
The sampling frame consisted of schools with the highest number of PTs and MTs and those that had the greatest likelihood of implementing the skills taught in *Getting Started.* The Nigerian regional training agency RTA, the Intel education manager, and the BGS evaluation team jointly selected the case study schools. The sample size consisted of 45 respondents:
- Six school leaders made up of principals and vice principals (one each from GSS Gwagwalada and Garki, and two each from GSS Minna and Gwarinpa)
- Eight MTs (two from each case study school)
- 31 PTs—seven MTs from GSS Gwagwalada (three interviews and four questionnaires were administered in this school); eight MTs from GSS Gwarinpa (four interviews and four questionnaires); eight MTs from GSS Garki (five interviews and three questionnaires); eight MTs from GSS Minna (six interviews and two questionnaires)

Data Collection Methods
The evaluation plan was for data to be collected in face-to-face interviews. We attempted to reach more PTs over the limited schedule and so the majority of the data was collected face to face while a few were collected through written questionnaires. Sources of information

were PTs and MTs who participated in *Getting Started* and school leaders who observed the participants before, during, and after the course.

Timing of Study
This study was set to occur at a time after *Getting Started* so that the PTs would have had considerable time to apply what they learned from the course. This is 10 months after the pilot course in Nigeria and enough time to study the course's impact.

IV. Findings
Teachers' Experiences with *Getting Started*
Sixty-one percent of PTs and 63 percent of MTs are experienced teachers with more than 10 years of classroom experience. Fifty-five percent of the PTs and 43 percent of the MTs teach various forms of science and technology. All the MTs and PTs teach senior secondary school students.

The MTs and PTs in this study participated in *Getting Started* between June and August 2007.

Participants had a very low level of ICT experience. The majority of PTs (81 percent) and MTs (71 percent) stated they had taken computer classes before, and a large proportion of the PTs (77 percent) and MTs (86 percent) claimed they were not new to ICT, as they had used it at some point. They pointed out, however, that their previous level and frequency of technology use were too low for them to be classified as competent users. Their previous exposure to ICT had been sending e-mail or taking computer classes; access to technology was very limited after the course. However, some of the PTs (42 percent) reported that their use of computers was limited to their training in computer classes and to using e-mail.

All the case study schools had Internet access. Computers are available in dedicated computer labs. In some cases not all of the computers were connected. In all the cases, the Internet speed was very slow with intermittent connectivity, as reported by the PTs. The average class size of the case study schools was 100 students.

All the PTs reported that Getting Started was their first contact with the 21st century teaching method. They were somewhat familiar with ICT but were not frequent technology users.

The MTs' experience with the 21st century teaching method varied, as the majority of them (88 percent) reported that Getting Started was not their first encounter with it. However, they were still new to the approach, as they had less than one year's experience in the method; some stated that they had challenges putting what they learned to practice. Some of their first reactions to the approach, in their own words, were:
o *[The approach] was different at first, but it became easier when I started using it. It is interactive [and it] helps [us to] know where students can improve.*
o *I found out that it provides students with a good way to express themselves.*

Teachers' Learning from *Getting Started*
Although the PTs had no prior experience with the 21ˢᵗ century teaching method before participating in Getting Started, the majority reported that the 21ˢᵗ century facilitation enabled them to learn better during their training. For instance, the study suggested that both MTs and PTs found that the experiential hands-on approach made learning *stick* without memorizing; they found their colleagues to be useful learning resources during collaboration, and the *plan-do-review-share* cycle helped them put together better presentations and criticize one another constructively.

The MTs found the Help Guides very useful for refreshing ICT memories during implementation. The MTs reported liking most the cycles of production and ICT areas—Word and Excel.

The majority of the MTs reported feeling adequately prepared by the training to facilitate other teachers. However, they suggested that reducing the pace of the training could further increase teacher preparedness in future training sessions. After their own training, all the MTs have facilitated at least one *Getting Started* course for about 20 participants, over a one-week duration, in their schools in 2007.

The study suggested that PTs found the ICT part of their learning more memorable than the pedagogy. A few PTs (3 percent) mentioned the 21ˢᵗ century teaching skills as one of the things they took away from *Getting Started*. The study suggested that the majority of PTs and MTs learned how to use ICT in new ways to carry out professional tasks. PTs reported that *Getting Started* was not their first time using ICT, but they learned how to use it in new ways through integrating technology with their regular teacher chores and administrative tasks, such as preparation of lesson plans, assessment questions, and seating charts.

Teachers' Application of *Getting Started*
Teachers are not using computers and the Internet enough for administrative and teaching purposes. The majority of the PTs reported limited access and use of computers to carry out regular teacher chores, such as preparation of roll book, lesson plans, student assessments, grade book, and teaching aids. Teachers reported that the current situation where the computers and Internet access are available only at the labs makes it difficult to prepare teaching aids and administrative materials. The teachers reported that when they did have access to computers and the Internet, they found Internet resources and ideas that helped them enhance their teaching and productivity.

None of the case study schools had computers in the classrooms. Although all the case study schools had computer labs with Internet access for teachers, the teachers reported the following challenges that limited their use of the labs:
• Few computers compared to the number of teachers (and students) in the school, so there were always queues to use the facilities
• Slow Internet access or availability on just a few computers, so there were usually long lines
• Lack of an alternative power supply during power outages—some schools had diesel generator sets but did not usually have funds to fuel them

- Tight schedule during school hours, which prevents teachers from having enough time to create ICT products for administrative and teaching purposes

In spite of the limited access to computers and the Internet, the majority of the PTs (71 percent) reported that since the course, they have used ICT at some point and in various ways to: support teaching in their classrooms, research materials to support existing lesson notes, prepare examination questions, prepare examination grades for students, prepare presentations to support classroom lesson notes, and prepare assessments and grades.

Overall, frequency of using technology to teach was very low (only a few times in a term). PTs reported that they taught with ICT in the following ways: supporting students conducting Internet research, helping students use computers to prepare presentations, and giving students assignments that require them to use various ICT areas. Only 52 percent of the PTs reported having used ICT in their teaching.

Sixty-one percent of PTs have created a few sample productivity tools taught during Getting Started. The teachers reported that the tools were useful to their profession—the following enabled them to find fun in their job and made their work easier:
- Word Processing: newsletter, weekly lesson planner, certificates
- Multimedia: None of them reported having created any of the sample multimedia products. However, they reported having creating other multimedia products, such as certificates and lesson notes.
- Spreadsheets: grade book

The majority (55 percent) of PTs reported that they have taught their students using elements of the 21st century method. However, further inquiry suggests that the majority of teachers have a different idea of what the 21st century pedagogy is:
- The study suggests that the majority of the teachers believe they are using the 21st century method when they use PowerPoint slides to teach.
- Some teachers (from GSS Minna) claim to have started implementation of the 21st century method because they started teaching after-school computer classes.
- Some PTs feel they are teaching the collaboration element of the 21st century method because they now require their students to conduct assignments and research in groups.
- Some PTs believe they are now implementing 21st century pedagogy because they now teach students computers; an example is the GSS Minna, where the principal hinted that they have provided more computers for student use and after-school computer classes.

Access to the Getting Started Help Guide and knowledgeable colleagues provided needed references to quickly increase mastery of ICT skills.

The majority of the PTs could not readily remember their action plans. Only 35 percent of the PTs have implemented parts of their action plan since the course. They reported action plan implementation as follows: showing students how to create ICT objects and how to use the Internet; grouping students to research projects.

PTs who did not implement their action plans stated lack of technology tools (computers, Microsoft Office, projectors), lack of power, limited time for class lessons, and very large

student class size as reasons. It will be useful to look at ways to work around these challenges in future training sessions, and also include these solutions in future *Getting Started* training, because the majority of the teachers feel these challenges are an oversight on the part of program designers and that the program is not designed for the Nigerian environment.

The MTs seemed to remember their action plan themes: computerization of teaching and making classrooms more student-centered. However, they reported not having been able to implement their action plans due to limited availability of technology tools.

After being trained, all the MTs have facilitated at least one Getting Started course made up of about 20 participants, over a one-week duration, in their schools in 2007. They claim that the facilitation experience helped them increase their confidence in teaching *Getting Started* elements to their own students. Power outages and limited number of computers were bad memories that the MTs mentioned when reporting what did not go well during facilitation. Some of the MTs reported that they regret not using ICT to teach their own students since their training.

Getting Started for School Leaders
This study interviewed 33 percent of the principals; other school leaders interviewed were vice principals. All the school leaders are experienced in their field, having put in 15–44 years at this level. Apart from two who have spent more than 10 years in their present schools, others (67 percent) have only spent 2–7 years in their present schools.

All the school leaders reported that they supported the introduction of Getting Started in their schools. They have expressed further support by contributing their own finances to the program and by nominating PTs. The school leaders reported that PTs are excited about how the course has enabled them to simplify their professional work and become better and informed teachers.

The principals reported having seen the following changes in their teachers: supporting students to use the Internet for research, creating more activities centered around groups of students, researching new ideas, and typing lesson notes in the labs. They also reported that the introduction of the course is enabling PTs to change their pedagogical practices and perspectives to a new one that makes learning richer and benefits the students by enhancing performance. The fact that ICT simplifies teachers' work—administrative and teaching—is the attraction of the course for other teachers who have not attended the program.

GSS Gwarimpa has trained all its teachers, and two schools have trained almost all their teachers. The school leaders confirmed the numbers of trained teachers as follows:
- *GSS Gwarimpa:* 20 MTs and 80 PTs out of 100 teachers
- *GSS Gwagwalada:* 5 MTs and 94 PTs out of 100 teachers
- *GSS Minna:* 10 MTs and 55 PTs out of 95 teachers
- *GSS Garki:* 11 MTs and 76 PTs out of 89 teachers

Schools' Reform Goals
The majority of the school leaders stated their reform goals as computer literacy for all teachers, technology literacy for all students through teaching it in classrooms, and a school policy of typing examination questions on the computer instead writing them on the chalkboard.

Impact of *Getting Started*
The majority of the PTs (97 percent) reported that they have benefited in various ways from participating in, and applying what they learned from, Getting Started. In their own words, the PTs expressed the course impact on teaching and classroom practice as follows:
- Impact on teaching:
  o *I now use the Internet to update my teaching materials*
  o *It has improved my presentation skills*
  o *Improved my computer knowledge*
  o *My students learn better when they collaborate with one another—it makes the learning process easier*
  o *I am now more confident with teaching some abstract topics*
- Impact on classroom practice:
  o *I am more student centered—I now allow my students to do most of the work*
  o *I now allow my students to discover things by themselves*
  o *Now, I group students more often for assignments*

The MTs reported several observed benefits of *Getting Started* on the teaching practices of their PTs:
- Their PTs have been learning about ICT through hands-on practice, collaboration, and peer review during the course.
- The PTs found the ICT skills useful because the productivity tools were all familiar and related to their day-to-day professional chores, such as planning their lesson notes and weekly schemes, preparing the attendance roll, and typing their exam questions. Further, the MTs stated that their PTs found grading easier with ICT.
- The PTs now allow their students to participate more in the classes, use the lab computers to prepare lesson plans, and go to the Internet café to research lesson topics.

Challenges

The following challenges were reported by the teachers and principals in the interviews:

Though all the case study schools have computers in their laboratories, the majority of the PTs (74 percent) reported that lack of access to computers and the Internet has not enabled them to apply parts of the course as much as they would like to. The problem seems to be the limited number of computers, which causes the labs to be *overcrowded,* according to the teachers. Lack or limited number of PCs and overhead projectors in the schools was stated as a challenge to practicing creating technology tools for teachers' use and teaching aids. The school leaders also mentioned that the limited number of computers for a large number of students is a challenge to implementing *Getting Started* in the classrooms.

During the course, the teachers faced challenges related to the shortage of computers and power outages. The school leaders report that they are faced daily with outdated and slow computers, shortage of computers, poor Internet access, and power outages. Lack of an alternative power supply during power outages did not allow access to available computers.

The large student-to-teacher ratio in the classrooms (average of 100 students to one teacher in the schools) was mentioned as a limitation to implementing Getting Started in the classrooms.

The majority of the teachers reported that the 21ˢᵗ century teaching method consumes far more time than is provided in the current lesson periods (limited to between 35 and 45 minutes), and so most of the teachers believe Getting Started will not work in Nigeria. Thus, the majority of them are not even making efforts to implement *Getting Started* in the classroom. This may be the reason why some teachers mentioned that the 21ˢᵗ century facilitation method was a part of the program they perceived as less useful.

V. Conclusion

The study shows that teachers in all four case study schools perceive Getting Started as a computer course—the most memorable learning and most applied elements came from the ICT areas rather than the pedagogy. The major challenges they claim to face are the lack of access to technology and limited availability of alternative power, which further limits access to technology. Since ICT is relatively new in Nigeria and Nigerian schools, it is apparent that teachers are still making efforts to improve their ICT skills—anything else is secondary. This finding was also observed in an earlier end-of-training teachers' survey and observations. The majority of the teachers reported some degree of familiarity with ICT before the course and very limited access to technology after the course, and this seems to impact negatively on their ability to effectively integrate ICT into their administrative and teaching activities. In the words of one MT: *Although we find the course useful, we do not have adequate technology to implement Getting Started beyond our course period.*

It is obvious from the study that PTs failed to separate the ICT and pedagogy that come with Getting Started in view of the limited availability of technology tools. One

would have thought that teachers who have limited access to technology would implement more of the pedagogy. The study attempted to find where teachers, perhaps, implemented the pedagogy that they learned in the classrooms, despite the limitation of technology tools that is common to all the schools studied. However, there is no indication that the teachers found the pedagogy memorable enough to apply them. The majority of reasons for not applying learning from *Getting Started* was lack of access to technology. Although the thinking was that pedagogy should have been applied more where technology was lacking, this was not so, as the study suggests.

There was no doubt that PTs learned some level of ICT skills. However, this study suggests they did not seem to have taken away the pedagogy learning. This study result, where the majority of the teachers can remember more of the ICT than the pedagogy, is consistent with a previous evaluation. The teachers see *Getting Started* as merely an introduction to the computer. Likely reasons for this include lack of access to computers either at home or in schools. Since the majority of the Nigerian schools still do not have adequately equipped computer labs with functional systems, it may be suggested that future training sessions increase efforts to communicate the course objectives and the distinctions between the two teaching tools: ICT and pedagogy.

Most teachers could not even remember their action plans because some time had passed since the course, and they were not provided with printouts. Some MTs and PTs suggested that printouts of the action plans be given to participants during future training sessions. Further inquiry suggests that some school leaders did not encourage teachers enough to start implementation. For instance, in one of the case study schools, the principal believed that providing after-school computer classes alone would ensure that *Getting Started* learning is implemented without the hassles of limited lesson periods. Some teachers did not feel compelled to implement an action plan because it did not count toward their appraisals. Perhaps future training could look into a pre-program awareness for school principals with an objective for them to set expectations for PTs and make those expectations clear to them in teacher appraisals.

In conclusion, teachers suggested the need for slower-paced refresher courses and additional technology facilities to support implementation by PTs. Some teachers also mentioned the need for a simplified version of the training manuals and Help Guide to assist them in training students with ICT.

Intel® Teach Program *Getting Started* Course
2008 Vietnam Case Study Report

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I. Executive Summary

The Intel® Teach Program has had a presence in Vietnam since 2004, and the pilot training of the Intel Teach *Getting Started* Course—one of the newer program offerings in the Intel Teach program portfolio—was conducted in Ho Chi Minh City in November 2006 with 39 Master Teachers (MTs) from Ho Chi Minh City and Hue. *Getting Started* has been quite successful in Vietnam, and several cities and provinces within Vietnam are registered for this program. About 22,833 primary, secondary, and high school teachers from seven cities and provinces have participated in *Getting Started* up until now.

To confirm evidence of the program's impact, Education Development Center, Inc. (EDC), and SRI had proposed conducting separate case studies in five countries. Vietnam was one of the countries chosen for these case studies, and our collaborator for this study was the Center for Educational Evaluation and Accreditation (CEEA) at the HCMC University of Pedagogy. The case study sample consisted of four schools: two high schools in Hue, central Vietnam; and one high school and one elementary school in Ho Chi Minh City, southern Vietnam. EDC and CEEA interviewed eight Participant Teachers (PTs), five MTs, and four school leaders. In the four schools that were part of this case study, computer/Internet access tended to not be a very big hurdle for the PTs interviewed.

PTs' Experiences with *Getting Started*

When asked what some of the main things they learned in *Getting Started* were, Vietnamese participants mostly talked about the new teaching methods, or about the Information and Communications Technology (ICT) or specific applications of ICT such as accessing the Internet or using Word, Excel, or PowerPoint. They were excited about the new learning environment created in *Getting Started,* the cycles of production, and the novel teaching strategies used by the trainer, and they valued the hands-on nature of the course that allowed them to develop a practical knowledge of ICT .

Impact on PTs

Almost all the participants reported that they used more ICT in their lessons to make the class more interesting and engaging to their students. Although this was mostly in the form of giving presentations to the class, some PTs mentioned having their students use ICT as well. Most PTs reported using group work and experiential learning the most since the course. Action planning and the productivity tools were not being used as much.

School Leaders' Views of *Getting Started*

All four school leaders reported liking the program and considered it valuable and relevant to the reform efforts under way in their schools. They all mentioned the changing environment in the classrooms, with students becoming livelier and more engaged, and

teachers becoming more approachable. They also mentioned examples of the impact of *Getting Started* on their PTs, such as their eagerness to implement and the newfound collaborative working environment.

MTs' Views of *Getting Started*
MTs' views of *Getting Started* mostly mirrored the PTs' views in that they all said they liked the curriculum, especially the new teaching methods. All the MTs had prior ICT experience, so it was only the pedagogy that was new to them. They also reported having implemented elements of the new teaching methods, such as group work, pair and shares, experiential learning, and group discussions with their students. Most of the MTs mentioned that the course prepared them to lead PT training sessions themselves.

Challenges
Shortage of time and disparity in PTs' ICT skills were two challenges that were often reported. Despite the right policy environment for implementing project-based approaches to teaching and learning, there still existed a misalignment between the education reform policy and the Ministry of Education and Training (MoET) curriculum and other requirements. Teachers and school leaders mentioned this as a challenge, as they were now asked to implement new teaching methods while being held accountable to the same standards and assessments previously used.

II. Description of the Program in Ho Chi Minh City and Hue, Vietnam
Getting Started **in Vietnam**
Intel Teach has had a presence in Vietnam since 2004, and the Essentials Course, previously known as Intel Teach to the Future, was their first program offering in Vietnam. *Getting Started* is one of the newer program offerings in the Intel Teach program portfolio, and the pilot was conducted in Ho Chi Minh City in November 2006 with 39 MTs from Ho Chi Minh City and Hue. This pilot was supported by Intel, the MoET, and the Departments of Education and Training in Ho Chi Minh City and Hue. *Getting Started* has been quite successful in Vietnam, and several cities and provinces within Vietnam are registered for this program. About 22,833 primary, secondary, and high school teachers from seven cities and provinces have participated in *Getting Started* up until now, including teachers from Nguyen Dinh Chieu and Tuong Lai Schools (Da Nang) for vision-impaired students.

Education Reform Context in Vietnam
Vietnamese general education has been criticized in the recent past for its underdeveloped, ineffective, and heavy curriculum. Schools have been facing many difficulties: Physical conditions are not sufficient; there is a lack of well-equipped computer labs and libraries; and textbooks and teacher training journals are inadequate. Teachers were mainly using what they studied previously in colleges and universities and passing on their dated knowledge to students. Textbooks were full of theories and removed from reality, stifling creative thinking.

However, requirements for change and innovation from the government and society have put the Vietnam MoET and the school systems into a new phase, thus improving the condition of the education system. New policies were introduced, and the MoET's emphasis

on increasing innovation in teaching and learning by training teachers in effective use of ICT is an example of the efforts under way to improve the school system.

III. Evaluation Methods and Approach
Methods and Instruments
To confirm evidence of the program's impact, EDC and SRI had proposed conducting separate case studies in five countries, where EDC and SRI would conduct site visits in collaboration with a local researcher. Vietnam was one of the countries chosen for these case studies, and the site visits were to include visiting schools and interviewing teachers, principals, and other relevant educators in the schools. Our collaborator for the Vietnam case study was the CEEA at the HCMC University of Pedagogy.

The four case study schools were proposed by the CEEA staff, who also did the interview scheduling. The interviews each ranged from 45 to 90 minutes depending on translation requirements. If the interviewees were pressed for time, the CEEA staff conducted the interview in Vietnamese. If the interviewees had extra time to spare, EDC staff conducted the interviews, with the CEEA staff providing translation for both parties. All interviewees were compensated for their time.

EDC and CEEA used previously developed interview protocols for MTs, PTs, and school principals for these case studies but revised the protocols slightly to add some pertinent new questions. The MT interview asks interviewees about their training experience, any PT training they have conducted, and how *Getting Started* has affected their classroom practices. The PT follow-up interview asks PTs specific questions about any changes in their classroom practice resulting from the course, in addition to more basic questions regarding their training experiences and school contexts. The school principal interview asks interviewees to talk about their plans for implementing *Getting Started* in their schools, their views of the program's impact on teachers, and their goals for reform and future plans for their school.

Sample
The case study sample consisted of four different schools: three high schools and one elementary school from two cities. Two of the high schools were in Hue, central Vietnam; one high school and one elementary school were in Ho Chi Minh City, southern Vietnam. These were the two cities where *Getting Started* had piloted in 2006.

PTs
EDC and CEEA interviewed eight PTs from the four schools. All the PTs had been teaching for more than 5 years, reporting teaching experiences ranging from 8 to 31 years. With the exception of two PTs, the teachers had all been teaching for more than 15 years. Subject areas taught spanned physics, Vietnamese literature, English, and geography, and a couple of the PTs were teaching elementary school children, hence covering all subject areas. Seven of the eight PTs interviewed had some knowledge of basic ICT, and five of them had been previously trained in the Essentials Course. However, none of the PTs had been using ICT in their teaching on a regular basis.

MTs
Five MTs were interviewed by EDC and CEEA; four of them were ICT teachers in their schools and one MT was a math teacher. Four of the MTs had been teaching from 4 to 10 years, while one MT had been teaching for more than 30 years. Two of the MTs also assumed the role of computer lab administrator from time to time. They had all conducted multiple PT training sessions with teachers from their schools and other schools, as well as training for school leaders.

School Leaders
EDC and CEEA talked to two principals and two vice principals, and they had been in leadership positions ranging from 3 to 15 years, with the exception of one principal who had been holding leadership roles for about 22 years. All the school leaders interviewed were very involved in and deeply concerned about the welfare of their teachers and students.

Computer/Internet Access in Schools
In the four schools that were part of this case study, computer/Internet access tended to not be a very big hurdle for the PTs interviewed. All the schools had at least two computer labs, with all computers Internet-accessible. Some of the schools had separate multimedia classrooms with a computer and a projector, and these tended to be for teacher use only. Teachers could choose to hold their classes in these multimedia rooms when they planned to use ICT in their teaching. The other option was to bring a computer and projector into the classroom, but this needed to be coordinated with the ICT teacher.

Some infrastructural challenges were, however, reported in the PT interviews. The number of multimedia rooms, if they existed at all, tended to be limited so the rooms needed to be booked in advance to ensure availability. Also, teachers would need to take turns, as not everyone could use them at the same time. A couple of subject matter teachers pointed out that they needed to obtain special permission to use the computer labs, as the labs were typically within the purview of the ICT teachers. And lastly, though access was not much of an issue for the teachers, a PT pointed out that students could access computer labs only when they had classes or at other predetermined times, which prevented them from using computers to look up information whenever they wanted to if they did not have home access to computers and the Internet.

IV. Findings
This section outlines the key findings from this case study research and presents it from the perspectives of the three groups of interviewees EDC and CEEA talked to: the PTs, the MTs, and the school leaders.

PTs' Experiences with *Getting Started*
When asked what some of the main things they learned in *Getting Started* were, PTs mostly talked about the new teaching methods, or about the ICT or specific applications of ICT such as accessing the Internet or using Word, Excel, or PowerPoint.

Vietnamese PTs were excited by the new learning environment created in Getting Started, the cycles of production, and the novel teaching strategies used by the trainer. When talking about the new teaching methods, the participants were most often referring specifically to the cycles of production (planning, doing, reviewing, and sharing), the collaborative working atmosphere in the course, and the experiential learning they encountered in the course. For example, one PT described how he had been previously aware of student-centered and project-based approaches to teaching as he had trained in the Essentials Course. However, he emphasized that the cycles of production and the collaborative working style underscored in this course were still new to him. He clarified that teachers in Vietnam typically worked independently and never shared with one another, an observation that was echoed by a couple of other PTs as well. For such teachers to suddenly experience a collaborative learning environment was an effective demonstration of successful group work. Though they had been reading and otherwise hearing about it, its effectiveness was made clear in *Getting Started.* The cycles of production of planning, doing, reviewing, and sharing served the purpose of clarifying to the Vietnamese PTs how they could organize group activities.

Another elementary school PT gave an example of how, since taking *Getting Started,* she divides her class into groups and tells them to share their ideas with one another. She reminds her students that when they share their ideas with one another, it makes for a much more interesting class than working on their own. She said this worked well last year when she was teaching third grade students, but that it was not working as well this year as she was teaching second grade students.

The Vietnamese PTs value the hands-on nature of the course that allowed them to develop a practical knowledge of ICT. As mentioned earlier, PTs tended to talk about specific applications of ICT, mostly accessing the Internet, when asked to describe *Getting Started.* Though seven of the eight PTs interviewed had some prior basic knowledge of ICT, it tended to be rather theoretical. For example, an Essentials Course-trained PT explained how he had used Microsoft Office (Word, Excel, and PowerPoint) prior to taking *Getting Started,* but at a very basic level. He said he could only do simple tasks, such as inserting text in slides, and did not know how to use animation in PowerPoint or access the Internet. Learning to access the Internet was a feature of the course he really appreciated, as he was now able to download images and pictures for his class. It appeared as though the immersive or experiential learning technique modeled in *Getting Started* was successful in bolstering teachers' confidence levels to newer heights. They were willing to experiment more, and their confidence grew as they kept experimenting.

Getting Started helped Vietnamese PTs develop the confidence to explore and learn about ICT on their own. On a related note, since their course, PTs also seemed more willing to problem-solve on their own or via the Help Guide before turning to ICT teachers for answers. A PT explained how Excel was new to her, especially using commands and making graphs, and recounted how she now used the Help Guide to problem-solve when she had any issues, whereas she would previously seek support from the IT staff in her school. An MT also commented how his workload had eased up considerably since *Getting Started,* as he encouraged PTs to find solutions on their own or in the Help Guide before turning to the ICT teachers. Another high school PT from Hue mentioned how the PTs in her school were using the Help Guide like a dictionary, always referring to it.

Being able to access the Internet on their own was an exciting part of the course for the Vietnamese PTs. Being able to access the Internet was an exhilarating experience for PTs who were new to it. One PT exclaimed to us how she was getting used to accessing the Internet every day, adding that she was quite sad on days that she was not able to do so. She said she used the Internet to check her e-mail, read the news, and look for movies or clippings to include in her lessons.

Impact on PTs
All the PTs were of the unanimous opinion that *Getting Started* did have an impact on their professional life. They were ready with examples of how their classroom practices or their lesson planning and preparation had changed as a result of the course. One PT gave the example of how he now divides his class into groups and asks them to work together following the cycles of production (planning, doing, reviewing, and sharing). This was by far the most common example given by PTs of how they had changed their teaching practices in the classroom. Almost all the PTs reported that they used more ICT in their lessons to make the class more interesting and engaging to their students. Although this was mostly in the form of giving presentations to the class, some PTs mentioned having their students use ICT as well.

Vietnamese PTs have increased the use of ICT to support their teaching.
All the PTs interviewed were using ICT in their classes, and their use took two forms typically: 1) accessing and downloading information from the Internet to use in their classes, and 2) using PowerPoint presentations in their class. One PT gave the example of using ICT to compensate for the fact that his school did not have a physics laboratory where students could conduct experiments. He uses the Internet instead to show students some of the experiments. Another PT remarked that learning to use ICT in her teaching was the most valuable aspect of *Getting Started* to her. She feels that when she changed her teaching style, her students also changed accordingly. She elaborated that her students did not wait for their teacher's guidance any longer; instead they asked and even demanded to work on their own to finish their projects. They were active participants in the class now.

> A PT gave the example of using ICT to compensate for the fact that his school did not have a physics laboratory where students could conduct experiments. He uses the Internet instead to show students some of the experiments.

Group work and experiential learning are the 21ˢᵗ-century teaching strategies that Vietnamese PTs have adopted since the course. Without a single exception, all the PTs talked about using group work and experiential learning or self-learning in their classrooms. A literature teacher gave the example of dividing her class into groups and having each group discuss topics in literature ranging from novels or poems to authors. All groups then had to share what they learned about their topic with the rest of the class. Before taking *Getting Started* she had not believed that students could work by themselves, and preferred that they listen to her lecture. But once she realized that they could think critically on their own, she started giving them assignments to do on their own, and this has made class more interesting. She currently gives about two long-term projects to her students every year.

A geography teacher from Hue made an observation of how using ICT in teaching and using the new teaching methods go together, and are both equally valuable. She recounted how she made the students active participants in the class by asking them to join her in finding information for the lessons. For example, when teaching a lesson on Asia, she would include information from all countries (such as flags) in her PowerPoint presentation, something she used to do on her own. But since taking the course, she has her students search for information on the Internet and send it to her, which she then includes in her lessons. She remarked that this made the lesson more interesting to her students.

> A literature teacher gave the example of dividing her class into groups and having each group discuss topics in literature ranging from novels or poems to authors. Each group then had to share what they learned about their topic with the rest of the class. Before taking *Getting Started* she had not believed that students could work by themselves, and preferred them to listen to her lecture. But once she realized that they could think critically on their own, she started giving them assignments to do on their own, and this has made class more interesting. She currently gives about two long-term projects to her students every year.

Action planning is poorly understood and implemented by most of the Vietnamese PTs. The PTs' response to being asked about action planning tended to be one of the following: Either they liked it and were using it regularly (users), or they had done one for the course but not used it since (low-users), or did not even remember what an action plan was (non-users). Of the eight PTs interviewed, only two were users, the remaining were a mix of low-users and non-users.

The users saw value in the exercise of action planning; for example, one PT remarked how she uses an action plan with her class curriculum to keep her on track and to know when she was falling behind and needed to complete a topic. She liked making plans for herself and liked the evaluation portion of the exercise. The low-users see some merit to the exercise, but they are not happy with their end product due to lack of time or skills to prepare a good one and hence do not implement it. The non-users do not even remember action planning and have no recollection of doing something similar during the training. Some of the PTs even confused action planning with lesson planning or unit planning (from the Essentials Course).

The productivity tools are not being used by the Vietnamese PTs, and most of the tools did not seem to be very relevant to their practice. The productivity tools do not appear to be very useful to the PTs as very few PTs reported using them, and most of the PTs reported not using the productivity tools at all since taking *Getting Started.* One PT from Ho Chi Minh City recounted that she mostly used PowerPoint and Word, the former for preparing lessons and the latter for preparing lesson plans. She said she did not have much use for Excel, as she did not need to calculate student grades; they typically did it by hand in student grade books for the elementary grades. Another high school PT from Hue reported a higher use of the productivity tools from *Getting Started.* She said she prepared multiple choice tests for her students, and other products she mentioned having used were the grade book and seating chart. She said she had also used a classification system for students to keep track of their two scores, their actual test scores and classroom behavior scores. The

productivity tools she considered least useful for herself were the certificate and student of the week, as the school did those for the teachers.

MTs' Views of *Getting Started*

MTs' views of *Getting Started* mostly mirrored the PTs' views in that they all said they liked the curriculum, especially the new teaching methods. The MTs all had prior ICT experience, so it was only the pedagogy that was new to them. All the MTs interviewed reported implementing elements of the new teaching methods, such as group work, pair and shares, experiential learning, and group discussions with their students. One MT remarked that he

was an ICT teacher in an elementary school, and before taking *Getting Started* he was not sure how he could apply student-centered approaches to his primary school students. But he realized in the training that he could apply them to any age group and now asks his students to familiarize themselves with the topic before class, so that they can then share their knowledge with one another in class and discuss.

> An MT from Ho Chi Minh City remarked that he was an ICT teacher in an elementary school, and before taking *Getting Started* he was not sure how he could apply student-centered approaches to his primary school students. But he realized in the training that he could apply them to any age group and now asks his students to familiarize themselves with the topic before class, so that they can then share their knowledge with one another in class and discuss.

With the exception of one MT, they all said that they left the course feeling prepared to train PTs. The MT who said the initial training did not prepare him to conduct PT training on his own, said his confidence level was only about 15 percent to 20 percent after the initial training. He created an MT forum where MTs could meet online and offline and discuss and share ideas to boost their confidence levels. This was a success, and now there are about 2,800 members in this forum.

School Leaders' Views of *Getting Started*

Three of the four school leaders that EDC and CEEA talked to had taken *Getting Started* themselves as PTs. The fourth school leader had not taken the course but had read the entire curriculum to make sure it would be a good fit for his school.

All four school leaders reported liking Getting Started and considered it valuable and relevant to the reform efforts under way in their schools. Integrating ICT into teaching and implementing student-centered teaching methods were both reform imperatives from the MoET, and *Getting Started* was helping the teachers to do both. This was a primary motivator for the school leaders to promote *Getting Started* in their schools. Two of the schools we visited were fully *Getting Started*-trained—in other words all teachers, barring only the new recruits, were *Getting Started*-trained. The school leaders of the remaining two schools talked about conducting more courses, and one principal from Hue specifically mentioned plans to have all his teachers trained in *Getting Started*.

The school leaders all mentioned the changing environment in the classrooms, with students becoming livelier and more engaged, and teachers becoming more approachable. All the school leaders commented on the changing classroom environment in their schools. A vice principal from Ho Chi Minh City remarked how implementing the new teaching

methods had changed teachers' interaction styles with their students. He mentioned that the teachers in his school had become more approachable to their students. Another principal from Ho Chi Minh City also pointed out that the most change she had observed was in student-teacher interactions. She mentioned that teachers were friendlier with their students now. A vice principal from Hue also remarked on the change in the learning environment. She said it was friendlier and the learners were closer, making it easier to voice their ideas in a group. She also noted that the students were more confident and they talked more freely, making the classroom atmosphere friendlier.

School leaders all mentioned instances of the impact of Getting Started on their teachers, such as eagerness to implement and the newfound collaborative working environment. One benefit a school leader pointed out was that teachers were now eager to try out on their own what they learned in the course. Previously, he would have to urge them to integrate ICT in their lessons and implement student-centered teaching methods, but after *Getting Started* he finds that he does not have to remind anyone; teachers are eager to implement.

One school leader from Ho Chi Minh City reported being impressed by how the learners worked together in the course. She noted that the process of self-learning made the learners very active in the learning process. Another school leader mentioned that he wanted the teachers to collaborate first; only then would they be able to encourage collaboration among students. He felt that in *Getting Started*, teachers collaborated, cooperated, and shared their ideas and thoughts.

Most of the school leaders recognized that the ICT covered in this course was rather basic, but they also thought that the curriculum and the Help Guide were detailed and specific, ensuring proficiency in accomplishing basic ICT tasks. The most common uses of technology mentioned were PowerPoint for lessons and the Internet to find relevant material for classes.

Challenges
Despite the right policy environment for implementing project-based approaches to teaching and learning, there still exists a misalignment between the education reform policy and the MoET curriculum and other requirements. PTs, MTs, and school leaders mentioned this as a challenge, as they are now asked to implement new teaching methods but are held accountable to the same standards and assessments previously used. A majority of the PTs and MTs mentioned the misalignment of the education reform activities and the MoET requirements to be a challenge to their implementing what they learned in the course, and this was underscored by all the school leaders. For example, some PTs, MTs, and school leaders pointed out that while the reform directives ask teachers to implement technology-integrated lessons, student-centered teaching, and group work, the heavy curriculum content makes it extremely difficult to balance all requirements. It puts teachers in the difficult position of having to choose between covering the curriculum content and having students work on group activities.

Another school leader mentioned assessment to be a challenge. The MoET assessments have not changed to reflect the reform in the education policy; and this creates a tension in

the teachers of having to decide whether to teach to the test or to teach to promote student understanding.

Shortage of time was another commonly mentioned challenge by the PTs, MTs, and the school leaders. One of the most commonly mentioned challenges by the MTs and the school leaders was that of time, or the lack thereof. All the MTs mentioned how time in the course was too short and how the PTs needed more practice time. One MT clarified that they were aware they could offer the course for a longer duration, but they then ran the risk of PTs deciding it was too long a course for them and not enrolling. One MT recounted a strategy she uses, that of requiring her PTs to only complete one productivity tool in each ICT area and they could choose which one to do. The curriculum as originally written asks PTs to complete two productivity tools from each ICT area, one required and one optional.

Apart from shortage of training time, inadequate class time was another manifestation of the time challenge that was reiterated by several interviewees. Interviewees mentioned not having the time to prepare technology-integrated lessons for their classes, as well as not having enough class time for students to work on projects.

Disparity in the ICT skills of PTs was mentioned as a challenge by the MTs. Some of the MTs mentioned the disparity in ICT skills among PTs to be a difficulty when training, which made it a challenge for them to offer the same training to the group. One MT mentioned a strategy she uses successfully, that of grouping the PTs such that each group was balanced with high- and low-ICT skilled teachers.

Another related observation made by most interviewees was about the conflating of teaching experience with ICT skills; a majority of the interviewees remarked how the more experienced teachers were new to ICT, and thus picked up the new teaching methods far more easily than the technology integration.

V. Conclusion
The introduction of *Getting Started* in Vietnam seems to have come at a very opportune time. The education reform context had changed, and the current policy encourages teachers to be using new teaching methods with their students and to be integrating ICT in their teaching. For teachers faced with this directive of changing their teaching practices, *Getting Started* was a good introduction to some ways in which they could be integrating ICT in their teaching and changing their instructional practices. It helped Vietnamese participants to develop the confidence to explore and learn about ICT on their own. They were excited by the new learning environment created in the course, the cycles of production (planning, doing, reviewing, and sharing), and the novel teaching strategies used by the trainer. Being able to access the Internet was another exciting part of the course. As a result, Vietnamese participants have increased the use of ICT to support their teaching, and they reported using group work and experiential learning the most since the course. To summarize, it can be said that *Getting Started* is successful in Vietnam, with an increasing reach into more provinces and cities.

Appendix A

Alumno:

Liceo de Puriscal — Hoja de Evaluación de Artes Industriales

Sección _____

Profesor: Lic. EDDIE ALBERTO GUZMAN MASIS   **Encargado Legal:** _____   1 Periodo 2008

L	K	M	J	V
		M		
		T		

Semana:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Mes	Febrero			Marzo				Abril			Mayo					Junio			
Lunes	11	18	25	3	10	24	31	7	14	28	5	12	19	26	2	9	16	23	30
Martes	12	19	26	4	11	25	1	8	15	29	6	13	20	27	3	10	17	24	1
Miércoles	13	20	27	5	12	26	2	9	16	30	7	14	21	28	4	11	18	25	2
Jueves	14	21	28	6	13	27	3	10	17	1	8	15	22	29	5	12	19	26	3
Viernes	15	22	29	7	14	28	4	11	18	2	9	16	23	30	6	13	20	27	4

Criterios de evaluación:

- Cumple con gabacha
- Sigue proceso asignado
- Aporta material y recurso
- Cuida herramientas y bienes
- Interacción Social
- Colabora con tareas de taller
- Participación en clase
- Cuaderno al día y ordenado
- Cumple Normas de Seguridad
- Orden y Aseo del Área de Trabajo

2 tardías = 1 a.

	Ausencias	Tardías

Asistencia 5%

Concepto 5%

Trabajo Cotid 50%

Nota: El Trabajo Cotidiano vale 50%, es proporcional a la asistencia, en la cual si falta un 20% o más pierde el derecho de hacer Pruebas de Convocatoria. No falte, cumpla con el material, trabaje y sea responsable. Art.36 REA.

Prueba #1	Pruebas 30%
Prueba #2	
Trabajo Extraclase #1:	T.Extrac. 10%
Trabajo Extraclase #2:	
Trabajo Voluntario de Reciclaje: 25 kg. Periódico y 200 latas. O 60 kg. De Periódico o 345 latas	Promedio:

Croquis:

Dirección:

Registro Anecdótico:

Día: Mes:

Appendix B

Intel® Teach Program Getting Started Course
Participant Teacher Follow-Up Interview
(About 6-12 months following Training)

Introduction: Thank you for taking the time to talk with me today. The purpose of this interview is for us to learn more about how the Intel Getting Started Course has affected your teaching practice. Your answers to these questions will be used in a larger case study of the Getting Started program to identify areas for improving the program. This interview is not used to judge you or your teaching.

We will be asking you some questions about your background, your experience with the Getting Started Course and its value to you in your teaching.

We want to assure you that this project does not evaluate you or your school; we're looking to learn from your experiences to get a better understanding of how the Intel Getting Started Course is working for you, your school, and your country.

BACKGROUND

1. **Can you tell me a little about your background as a teacher? (How long? What age levels? Where? Where trained?)**

2. **What kinds of experiences had you had with technology before you took the Getting Started Course? (Had you taken computer classes? Used computers? How much? For what purposes?)**

EXPERIENCE WITH THE GETTING STARTED COURSE

3. **When did you take the Getting Started Course? Please describe a little about your experience in the course. (Was the course what you expected?)**

4. **What were some of the main things that were taught in the Getting Started Course? Were these things new to you?**

   Note to evaluator: Ask further questions on:
   a) Technology skills, including technology areas and the Internet, resources for learning such as the Help Guide or peers, and creating products such as newsletters or curriculum overviews;

   b) Elements of 21st c. learning, including hands-on experience with teacher facilitation, collaboration, cycles of production, and representing ideas or information;

   c) Action planning.

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5. **What did you feel was most interesting or valuable to you in the course? (What aspects of the course did you like the best? What aspects weren't as useful?)**

IMPACT ON PARTICIPATING TEACHERS

6. **Have you been able to apply what you have learned in the course? (What have you applied or used? Where and when? Have you been able to create anything using technology in your school?)**

7. **Has the course had any impact on your teaching? (On your classroom practice? On your planning and preparation?)**

   Note to evaluator: Ask further questions on:
   a) Technology use in teaching?

   b) Elements of 21st c. learning (teacher facilitation, collaboration, cycles of production, and representing ideas or information using alternative means)?

   c) Action planning? Did you use your action plan after the course?

8. *Since completing the training, have you used/created any of the productivity tools introduced in the Getting Started Course? (Note: Ask specifically which tools they have used or created in each of the three technology areas.)*

9. *Can you look over some of these different products from the Course? Are they useful to you as a teacher? Why or why not? (Note: Show them some of the different teacher tools samples provided)*

YOUR SCHOOL

10. *What type of computer and Internet access have you had since taking the Getting Started Course? (Note to evaluator: Ask further questions on how this has affected the possible application of aspects of the course.)*

11. **What kinds of changes in instruction or reform efforts are currently underway in your school, as far as you know? *(Note to evaluator: Ask further questions on reforms related to technology, pedagogy, or curriculum; and also whether the reform is initiated at the local, regional or country level.)***

12. **What are some challenges you may have faced when trying to implement in your classroom what you learnt in the Getting Started Course? *(Note: Ask specifically about technology, administrative and instructional challenges.)***

LOOKING FORWARD

13. **Looking ahead, do you think that your teaching practices and approaches might change, especially with respect to use of technology or supporting students for learning 21st century skills? (If so, how?)**

14. **Do you think the skills, approaches, or ideas Getting Started Course can, over time have more of an impact on your teaching?**

15. **Based on your experiences, do you think *other* teachers that you know would be interested in taking the Getting Started Course? Why or why not?**

16. **Is there anything else about the Getting Started Course and your experiences since taking the course that you would like to comment on?**

Thank you for taking the time to talk with us today! Your feedback helps the Intel Getting Started Course improve and grow.

Intel® Teach Program Getting Started Course
Master Teacher Interview
(After MT's own training and/or Trainings with PTs)

Introduction: Thank you for taking the time to talk with me today. The purpose of this interview is for us to learn more about how you view the Intel Getting Started Course on the impact you think it will have on teachers in your school. Your answers to these questions will be used in a larger case study of the Getting Started program to identifying areas for improving the program. This interview is not used to judge you, the training you deliver to teachers in your school, or your teaching.

We will be asking you some questions about your background, your experience with the Getting Started Course, and the value you believe it will have to teachers in your school.

We want to assure you that this project does not evaluate you or your school; we're looking to learn from your experiences to get a better understanding of how the Intel Getting Started Course is working for you, your school, and your country.

BACKGROUND

1. **Can you tell me a little about your background as a teacher? (How long? What age levels? Where? How you became an ICT teacher?)**

2. **What kinds of experiences have you had with training teachers to use technology in the past? (_Note to evaluator/interviewer: Make sure they understand we're asking about before the GS course_.)**

3. **What kinds of experiences have you had with 21st century teaching and learning approaches before the Getting Started Course?**

   [IF APPLICABLE] Can you tell me when you first learned about or started thinking about some of these ideas? Can you tell me what you thought?

EXPERIENCE WITH THE GETTING STARTED COURSE

4. **When did you take the Getting Started Course? Please describe a little about your experience in the course. (Was the course what you expected?)**

5. **What were some of the main things that were taught in the Getting Started Course? Were any of these things new to you?**

   Note to evaluator: Ask further questions on:
   a) **Particular features of the technology, such as the Help Guide, or particular kinds of products, such as classroom assessment, curriculum preview, or grade book;**

   b) **Elements of 21st c. learning, including hands-on experience with teacher facilitation, collaboration, cycles of production, and representing ideas or information;**

   c) **Action planning.**

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6. **What did you feel was most interesting or valuable to you in the course? (What aspects of the course did you like the best? What aspects weren't as useful?)**

7. **Did your training include guidance on how you would yourself train teachers at your school? How so? How much do you feel prepared to conduct a training yourself? What else might help you in your preparation?**

EXPERIENCE IN CONDUCTING PT TRAININGS (MAY NOT YET BE APPLICABLE)

8. *Have you conducted any trainings yet with teachers at your school? (At other schools?) How many so far? When?* *(Note to evaluator: Ask further questions on the approximate time frame, e.g., "started one in January that I completed last week.")*

9. **How do you feel the training went (or, how has it been going?)? Can you say what has gone well? What hasn't gone well?**

10. **How much have your teachers been learning about technology in the course? About 21c. pedagogy?**

    Note to evaluator: Ask further questions on:
    a) **Technology skills, including the four technology areas and the Internet, resources for learning such as the Help Guide or peers, and creating products such as newsletters or curriculum overviews;**

    b) **Elements of 21st c. learning, including hands-on experience with teacher facilitation, collaboration, cycles of production, and representing ideas or information; and**

    c) **Action planning.**

11. **[IF APPLICABLE] Thinking about the challenges in conducting the training that you've mentioned, what could make it go better? Are there additional resources or supports that you need? What else might help you in your preparation to conduct trainings in the future?**

IMPACT ON MASTER TEACHERS' OWN CLASSROOM PRACTICE

12. **Have you been able to apply what you have learned in the Getting Started course in your own classroom teaching? What have you applied or used? Where and when? Have you been able to create anything new using technology since taking the course?**

13. **Has the course had any impact on your teaching? On your classroom practice? On your planning and preparation?** *(Note to evaluator: Ask further questions on same specifics as in Q4, as needed, with attention to the applicability of the Action Plan they created in the course.)*

14. **Have you wanted to apply things you learned in the course that you haven't been able to apply yet? Can you say more about this? Have there been any particular barriers, such as technology access, curriculum requirements,**

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preparation time, or school policies, that have affected you in applying what you've learned in your own teaching?

LOOKING FORWARD

15. Looking ahead, do you think that your teaching practices and approaches might change, especially with respect to use of technology or supporting students for learning 21st century skills? If so, how?

16. What kinds of changes in instruction or reform efforts are underway in your school, as far as you know? Do you feel the course aligns or supports those reform efforts? How so?

17. Do you think the skills, approaches, or ideas in the Getting Started Course can, over time have more of an impact on your teaching? On how others teach in your school? On teaching or learning generally in your region?

18. Based on your experiences, do you think most classroom subject matter teachers would be interested in (or benefit from) taking the Getting Started Course? Why or why not?

19. Is there anything else about the Getting Started Course and your experiences since taking the course that you would like to comment on?

   [IF APPLICABLE] Anything else about your experiences in conducting the course training yourself that you'd like to comment on?

Thank you for taking the time to talk with us today! Your feedback helps the Intel Getting Started Course improve and grow.

Intel® Teach Program Getting Started Course
School Leader Interview

Introduction: Thank you for taking the time to talk with me today. The purpose of this interview is to hear about your perspective on the impact of the Intel Getting Started Course in your school. Your answers to these questions will be used in a larger case study examining the impact of Getting Started and identifying areas for improvement of the program. We will be asking you some questions about your background, your experience with the Getting Started Course and its implementation in your school, and the larger reform goals that the program is a part of in your region or country.

We want you to know that this project does not evaluate you or your school; we're looking to learn from your experiences to get a better understanding of how the Intel Getting Started Course is working in your school and in your country more broadly.

BACKGROUND

1. **What is your background in education? (Years as a school leader? Teaching experience? Professional training?)**

2. **Please tell me about your history here at this school. How long have you been here, and what roles have you had?**

3. **What has been your involvement with bringing the Intel Getting Started Course to your school?**

IMPLEMENTATION OF THE GETTING STARTED COURSE

4. **How many teachers in your school are involved with the Getting Started Course? Are there plans to train more teachers?**

5. **How does the Getting Started Course fit with larger reform goals in your school?**

6. **What, if any, infrastructural challenges (computers, internet access) have teachers faced during the Getting Started Course?**

7. **What kinds of technology infrastructure challenges do you face in your school in general?**

IMPACT ON PARTICIPATING TEACHERS

8. **What is your experience with the Intel Getting Started Course? Have you had an opportunity to observe a training?**
      a) **If YES, what were your impressions?**
      b) **If NO, what, if anything, have you heard from participating teachers?**

9. **In what ways do you think the training is preparing teachers to use technology in their work as teachers?**

10. What have you seen or heard about teachers doing with technology as a result of the training?

11. In what ways, if any, have you seen that the training is introducing teachers to new pedagogies or ways of teaching?

12. Have you seen an impact on teachers' work with students as a result of their participation in the Getting Started Course? If yes, please describe.

13. What other impact on participating teachers, if any, have you seen or heard about in your school as a result of the Getting Started Course?

REFORM CONTEXT AND FUTURE PLANS

14. What are your school's long-term goals for using technology to support teaching and learning?

15. How does implementation of the Getting Started Course fit with larger reform goals in your school? (e.g. goals related to teachers' use of technology and student-centered pedagogy)

16. How does implementation of the Getting Started Course fit with larger educational reform goals in your region or country?

17. Based on what you have observed in your school and among your teachers, how interested do you think *other* school leaders would be in having the Getting Started Course at their school? Why or why not?

18. Is there anything else about the Getting Started Course and the experiences of Participant Teachers that you would like to comment on?

Thank you for taking the time to talk with us today! Your feedback helps the Intel Getting Started Course improve and grow.