Intel Technology-Based Solution Deployment Research
Standard Research Design and Toolkit

Center for Technology and Learning
SRI International
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Contents

Design Overview

Introduction

This document presents an overview of the Standard Research Design and Toolkit, outlining the broad contours of the suggested research activities that are intended to

- ❐ Identify key success factors and challenges or limiting factors for deployments of Intel technology-based solutions
- ❐ Recommend best practices, course revisions, and approaches to enhance deployment
- ❐ Substantiate policy recommendations for broad-scale 1:1 technology implementations.

This Standard Research Design and Toolkit is intended to be adaptable to multiple settings, levels of effort, and capacities of research teams. Our suggested research activities are in the following phases (Exhibit 1):

- ❐ **Establishing the setting**, which focuses on gathering background information about both the deployment *context* and aspects of the *rollout.*

- ❐ **Customization** of the deployment research, whereby local researchers draw from the Standard Deployment Research Design and Toolkit to select data collection activities and modify the data collection instruments.

- ❐ **Participant recruitment,** which is done using techniques that are congruent with the size and the purpose of the deployment research in any given setting.

- ❐ **Data collection,** which entails research activities (primarily interviews with deployment participants and observations of technology use) to better understand the *enactment* of the deployment and the *changes* that result in policy and practice.

- ❐ **Analysis and reporting**, in which local researchers use a variety of analytic and reporting templates to synthesize data, identify critical success factors and course corrections, and draw connections between enactment and change; this phase draws from interim findings reported to Intel and may also include a comparative global roll-up.

- ❐ **Post-analysis**, which involves iteration of the toolkit.

Although some research activities will be common to all deployment settings, others will apply only to selected settings, warranted either by the nature of the deployment or other parameters of deployment research (such as resources available and capacities of local researchers). Exhibit 1 indicates *essential activities;* activities appropriate *for some contexts,* as determined by the size and the level of effort of the deployment; and activities for *greater depth*, typically to be pursued in deployment settings where additional resources and international research support are available. The sections that follow describe the essential research activities in detail; suggestions for optional activities are highlighted in the sidebars.

Exhibit 1. Timeline of Deployment Research Activities

	Intel Deployment Research Toolkit Timeline of Research Activities					
Phase	**Establishing the Setting**	**Customization**	**Recruitment**	**Data Collection**	**Analysis and Reporting**	**Post-analysis**
Essential Activities	Collect setting background information Identify rollout characteristics Interview Intel staff Interview high-level stakeholders	Customize research plan for the setting and deployment characteristics	Recruit high-level stakeholders Select schools or community institutions for in-depth study Select participants from among teachers or staff and students	Interview school or community leaders Interview teachers or community institution staff. Observe classes or activities Interview students	Compile and report qualitative findings Triangulate findings Synthesize key conclusions	Reflect on study success Iterate toolkit
Activities for Some Contexts	Research prior ICT initiatives in the setting Begin tracking media mentions			Interview students and families at home Interview IT coordinators (where the role exists)	Analyze media mentions	
Activities for Greater Depth				Conduct follow up interviews	Analysis across deployment phases Analysis across different deployments	

The conceptual framework[1] underlying the deployment research activities emphasizes three distinct components:

- ❒ The deployment *context*
- ❒ The nature of the *deployment*, that is, the characteristics of the rollout
- ❒ The *implementation*, that is, the enactment of the deployment in practice and the changes that result.

Among the research activities proposed, the two phases oriented toward gathering information map on to the conceptual framework in the following manner: the *establishing the setting* phase attends to unpacking details about the context and the characteristics of the rollout, and the more conventional *data collection* phase attends to implementation, including activities designed to describe both enactment and change.

The deployment research design emphasizes qualitative methods and an ethnographic orientation toward the research. Protocols and reporting tools are structured with enough flexibility to allow themes to emerge inductively from data to the greatest extent possible. Local researchers carrying

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[1] Described in the memo submitted to Intel on 02/01/2010.

out the deployment research could come from a variety of disciplines and backgrounds. Ideally the expertise of local research teams should include a familiarity with both local education frameworks and policy contexts as well as a comfort with ethnographic interviewing methods (for example, semi-structured interview techniques that allow the priorities and the concerns of interviewees to emerge clearly) and inductive, bottom-up analytic approaches. If required, training will be provided for local researchers to help them develop data collection and analysis skills appropriate for working with qualitative data from interviews and observations. International research partners, such as the Center for Technology and Learning (CTL) at SRI International, may be involved in preparing local researchers in carrying out this work. For more information about the training, please contact Dr. Vera Michalchik (vera.michalchik@sri.com).

Phase 1: Establishing the Setting

Educational and political leaders around the world have recognized the urgent need to prepare their youth for the demands of the 21st century. This preparation includes the use of technology in support of learning, innovation, and active participation in social and economic development. These leaders share the understanding that the goal of equipping youth with 21st century skills involves the transformation of formal and informal educational systems and the opportunities available through them, often by integrating technology solutions with new approaches to teaching and learning.

In many countries, this goal calls for extensive reform of education systems. In each country enacting reform of this nature, educational change happens within—and is therefore shaped by—a local ecosystem of influences. These include the structure, characteristics, orientations, and capacities of the existing education system; national and regional policies; school-specific professional cultures and capacities; and other social, institutional, cultural, and economic factors that transcend the boundaries of school.

Deployment context descriptions

Gathering background information about the setting in which the deployment will occur forms the foundation for a deployment research agenda seeking to explore how educational reform is (and can be) supported by specific technology solutions across diverse settings. Critical background includes information about the context in general, with particular emphasis on issues of education policy and practice, as well as details about the deployment strategies.

> **Analysis of media coverage**
> If the research budget and the capacities of the local researchers allow, we recommend that local evaluators synthesize information from current print and visual media sources on the issues, sensitivities, commonly held positions, and rhetorical stances related to the Intel technology-based solution in the deployment environment.
>
> Although we mention it here as an activity for the early stages of deployment research, the process of tracking and analyzing media reporting could be ongoing throughout the deployment research. In later stages of deployment research, the analysis of media coverage will highlight prevalent attitudes and public opinion about the deployment, and their influence, if any, on the implementation.

The *Deployment Context Form*, designed to address big-picture issues in educational and social change, will be completed by in-country researchers in each deployment setting. As the primary source for gathering initial data about the deployment context, the Deployment Context Form will provide researchers with important background information for understanding and analyzing various facets of the deployment.

Key components of the Deployment Context Form are
- ❒ The structure, characteristics, and capacities of educational and social systems that are affected by the deployment
- ❒ The educational, economic, and digital inclusion policy context
- ❒ The current capacities of the school system, especially with respect to teachers' use of technology to support instruction
- ❒ ICT policy and infrastructure.

Although the Deployment Context Form consists of details local researchers are likely to be familiar with, the form and accompanying instructions will encourage researchers to refer to and cite other sources (government websites, published literature, etc.) to ensure that the information is current, balanced, and accurate.

The Deployment Context Form will be reviewed by Intel team members (and by international researchers in cases where such support is available) and revised by local researchers to address the questions and comments generated during the review process.

Deployment history interviews

Information about the characteristics of the rollout will be obtained from *the Deployment History Interviews* with implementation stakeholders. These include individuals responsible for making decisions about the size and nature of the deployment, such as government representatives, university researchers, and members of the Intel sales team.

If possible, Intel will provide information on the characteristics of the rollout, including the size of the rollout, mechanisms and strategies for distribution, and accompanying resources like professional development workshops and options for technical support. The initial interviews with Intel staff may also help identify other implementation stakeholders perceived as the driving forces behind the deployment and reveal the nature of the shared understanding between the policymakers and Intel with respect to the direction and purpose of the deployment.

> **Follow-up stakeholder interviews**
> If the scope of the deployment research allows, high-level stakeholders will be interviewed again toward the end of the deployment research.
>
> This second round of interviews will offer an opportunity to revisit the topics of the first but from an implementation perspective and to discuss the differences between design and enactment, local adaptations and other emergent changes, successful elements of the deployment, and the lessons learned.
>
> In addition, the second interview will address the media visibility of the deployment, the issues related to managing the public's expectations, and the extent to which public opinion influences, and is influenced by, the deployment.

Implementation stakeholders will inform researchers about goals of the rollout, the alignment between the goals of the deployment and the goals of social or educational reform initiatives, the criteria for determining various aspects of the rollout, and the anticipated outcomes.

Specific topics to be covered in the interviews include the following:
- ❐ Education, social, and economic policy context
- ❐ Description of current strategic educational, social, or economic initiatives
- ❐ Goals for the specific technology solution being deployed
- ❐ The settings (school vs. home or community, grade levels, subject areas, etc.) for the deployment
- ❐ Vision for the deployment
- ❐ Place of the deployment/ technology solution in the sociopolitical context
- ❐ Anticipated indicators of a successful deployment
- ❐ Anticipated challenges and strategies to address them.

Data gathered in this manner will indicate the designed characteristics of the rollout, the planned professional development and technical support, and the manner in which the Intel technology-based solution meets the needs of the deployment setting. These data will set the stage for understanding the educational and social policy context, the extent to which the goals of the technology solution align with the direction of educational or social reform in the deployment context, and the measures and metrics that will be used to evaluate the technology solution. All deployment research efforts should include at least one round of interviews with Intel sales staff and high-level stakeholders at the beginning of deployment research, ideally before or during the initial stages of deployment.

Phase 2: Customization of the Research Design

Local evaluators are encouraged to draft a research plan, which will involve customizing the Standard Research Design and Toolkit presented here for the specific deployment context (including identification of research participants, recruitment strategies, data collection activities, and analysis and reporting approaches). This process is supported by *Research Customization Guidelines* in the toolkit. These guidelines support local evaluators in using their background knowledge of the deployment and the information gathered in the Deployment Context Form and the Deployment History Interview to modify the research design and data collection activities to make them relevant to the local deployment context. In addition to providing a blueprint for the deployment research, the customization guidelines also aid in the selection and customization of data collection instruments. Although the goal of customization is to make the data collection instruments, especially interview questions, relevant for specific settings, local researchers are encouraged to retain the overall goals and high-level categories of the instruments so that the deployment research remains comparable across different contexts.

During the customization phase, researchers are encouraged to work with Intel or an international research support team (as appropriate) to develop a communication plan that allows for formative feedback regarding critical success factors and the possible need for course correction. Elements of the communication plan will include frequency of meetings and specification of a process that will allow local evaluators to discuss interim considerations and findings with Intel.

Phase 3: Recruiting Participants

Selecting groups of participants will depend in part on the planned characteristics of the rollout. For example, a deployment that focuses on schools will include teachers and students but may not include the coordinators of community learning centers or the individuals concerned with home use. A deployment that focuses on enhancing learning across settings, however, is likely to feature home use interviews and interviews with coordinators of community learning centers. Notably, some participant groups (like implementation stakeholders) will be a part of deployment research in all settings, regardless of the specific parameters.

Information about the country contextual factors and rollout characteristics, along with considerations for research customization, can be used to

- ❒ Determine what kinds of sampling, recruitment, and selection will lead to the right amount of diversity of input and thought
- ❒ Identify high-level stakeholders
- ❒ Identify research participants
- ❒ Develop strategies for recruiting research participants that are appropriate for the deployment context and the specific goals of the deployment research.

Local considerations, such as the size of the deployment research project and the purposes of the deployment research, will shape the approach for selecting and recruiting research participants. Researchers in the field will use their understanding of the relevant categories of participation to develop the criteria for identifying groups of participants and the specific individuals who will participate in the research. Ideally, participants will be able to highlight the range of typical experiences with the Intel technology solution; in instances where deployment spans a broad range of contexts or a larger number of individuals, a broader, more diverse group of research participants will be recruited.

High-level stakeholder selection

High-level stakeholders (typically, national and regional leaders who play a key role in the selection and implementation of the Intel technology solution) constitute the first group of participants after Intel staff to be interviewed as part of the deployment research activities. In most instances, high-level stakeholder participants will be recruited through a snowball sampling process: Interviewing will start with one or two policymakers who are deeply involved in the technology deployment; each policymaker in turn will be asked for his or her recommendations for individuals who should be interviewed. The total number of high-level stakeholders interviewed for the deployment research should not exceed five.

School or community institution selection

When the deployment involves distribution of devices in school settings, schools should be selected as the institutional centers for the data collection. When other institutions such as community centers or homes are central to the deployment, sites should be recruited from among these institutions.

To the extent possible,[2] the overall sample of schools, community centers, or homes should represent the range of settings, economic conditions, languages, cultural groups, and any other characteristics that are likely to illustrate typical experiences with the Intel technology solution. In this research, participants will be grouped in a nested manner, meaning that students will be selected from classes taught by participating teachers from selected schools or from within groups of participants in other settings. Because school or community center selection will define opportunities for teacher and student recruitment, it must therefore take teacher and student characteristics into account. Also, the school leader and/or the IT coordinator should be available for interviews at each school.

Teacher and student selection

Researchers will ask school or community center leaders or IT coordinators to identify candidate teachers or staff for interviews. Similarly, teachers or staff will be asked to support researchers in identifying student participants to be interviewed. Home use interviews, if they are applicable for the deployment will be conducted with these students. If researchers intend to carry out home interviews, family agreement to participate in home visits should be a condition for selection for student interviews. This will allow researchers to interview the same students in both home and school settings. In sum, whether a deployment focuses on school, community, or home settings, recruitment will be to target a representative range of participants to the extent possible.

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[2] We recognize that purposive or convenience approaches, which result in a sample of sites that are of known interest or easy to recruit, might be more appropriate for several deployment contexts. Other, more random sampling strategies may not yet be warranted, given the scope of the intervention and costs associated.

Phase 4: Data Collection

Phase 4 includes a variety of activities intended to gather information to help researchers understand the enactment of the deployment on the ground and the changes in attitudes, teaching and learning behaviors, learning environment, and policy that results. Exhibit 2 provides a detailed mapping of the main constructs of the deployment research to the essential data collection activities.

Exhibit 2. Sources of Data Required for the Deployment Research

			Deployment Context Form	Deployment History Interviews	School Leader Interviews	IT Coordinator Interviews	Community Learning Center Staff Interviews	Teacher Interviews	Classroom Observations	Student Interviews	Home Use Interviews
Context	Country	Language	✓								
		Socioeconomics	✓								
		Literacy levels	✓								
		Political climate	✓	✓							
	Institutional Context	Organization and structure	✓	✓			✓				
		Goals	✓	✓							
		Characteristics	✓								
		Capacities	✓	✓	✓	✓	✓			✓	✓
		Policy background	✓	✓	✓	✓					
		Educational reform initiatives	✓	✓	✓	✓	✓				
Deployment	Rollout Characteristics	Size		✓							
		Distribution		✓						✓	✓
		Resources (PD and support)		✓	✓	✓	✓		✓		
		Strategies		✓	✓	✓			✓	✓	✓
Implementation	Enactment	Professional development		✓	✓	✓	✓	✓	✓		
		Technical and other support		✓	✓	✓	✓	✓	✓		
		Use patterns			✓	✓	✓	✓	✓	✓	✓
	Change	Attitudes			✓	✓		✓	✓	✓	✓
		Teaching and learning behaviors			✓	✓	✓	✓	✓	✓	✓
		Learning environment		✓	✓	✓		✓	✓	✓	✓
		Policy		✓	✓	✓					

Researchers should plan to synthesize details of the interviews they conduct as soon as possible after each interview, elaborating on detailed notes and noting areas for exploring broad themes

within the interview. If interviews are recorded, researchers may consider transcribing selected parts then for later inclusion as quotations in reporting documents.

Interviews with school or community center leaders[3]
Researchers will use the *School Leader Interview Protocol* to interview administrators at sites selected for study. The same protocol may be used, with some modifications, to interview administrators in non-school settings as well. These leaders of schools or community learning centers will provide researchers with information about the school or community center site, teachers and students, and the support available for technology users. Their experience may reveal how demands and expectations from the policy level interact with teacher or staff and student needs at the local level. Because school or center leaders have contact with teachers, staff, students, and families as well as officials at local and regional education authorities, their comments may reveal incongruence, if any, between local needs, goals, and capacities and national or regional policy.

It is also likely that school or center leaders will be in a position to compare the Intel deployment with previous reform and development efforts. At the end of their interview, they will be asked to identify candidate teachers for participation in interviews. Any background information they provide on recommended teachers will help to contextualize the observations and interviews researchers will be carrying out within the broader school setting.

Interviews with information technology coordinators
For school and community center settings (school, local educational authorities, community learning centers, etc.) that have technology coordinators, the *Information Technology Coordinator Interview Protocol* supports the collection of descriptive information about technology use in the setting before and after the Intel deployment, the challenges encountered with the device and the deployment, the technical support available to information technology professionals and the nature of support that information technology coordinators provide to teachers and staff. Their perspective will contribute to the understanding of the degree to which technology use is integrated with the overall goals of the organization and the level of support that is needed and provided for technology use.

Interviews with teachers or staff
The *Teacher Interview Protocol* supports the collection of data in school settings that characterize technology use, situates it within the context of the overall classroom practices, and builds understanding of how technology use and classroom practices have changed during the Intel deployment. For out-of-school deployments, the protocol designed for community center staff aims to collect similar kinds of information. In these interviews, teachers or staff will be asked broadly about their challenges, and interests to determine the extent to which the technology use fits in with their overall work needs. Teachers or staff will also be asked about student use of the device and to comment on changes they may have observed or implemented.

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[3] Though many deployments will take place within school contexts some will involve non-school institutions such as out of school learning environments, orphanages, and other places where students participate in organized activities. We use the terms community center and community learning center to describe this broad range of possible non-school settings.

Ideally, classroom observations will also take place for the same teachers who are interviewed. In that case, teacher interviews will also prepare researchers for the classroom observations: Researchers will ask teachers about the lesson planned for the observation period, the learning goals of the activities, and its connection with prior and subsequent lessons.

Interviews with students
Using the *Student Interview Protocol*, researchers will ask students about the nature of their use of the device across settings and probe for how their use of it may have evolved. If possible, interviews will include a component where students demonstrate their normal patterns of device use to researchers. Questions will also focus on the role of parents, other family members, and friends in supporting students with the use of the technology. Researchers will ask students both about their school-related use (as appropriate) as well as other informal uses of the technology.

Classroom observations
In school- or community center- based deployments, researchers will carry out classroom (or activity setting) observations of the same teachers or staff who participated in interviews. Researchers will approach their classroom observations with the goal of obtaining rich descriptions of how the device is being used and how it is integrated with classroom activities. The loosely structured protocol includes narrative as well as other closed-ended items to allow researchers to focus their attention on capturing the events of the classroom in detail while ensuring that essential quantitative information concerning activities and participation are also documented. The same protocol may be used at various stages of data collection.

Home use interviews
In deployments where students take devices home with them at the end of the day, home use interviews will be conducted to learn more about device use in the home. The home use interview will be conducted with participating students and their family members. Teachers or Community Center Coordinators will be asked to recommend participants for the home use interviews. The goal of the home use interview is to learn about device use patterns in the context of the home, with a view to understanding if and how use patterns vary across settings and how the devices may have influenced student learning in the home.

Phase 5: Analysis and Reporting

Qualitative reporting

To report qualitative data, researchers will be provided with the *Qualitative Report Template,* which is thematically organized to capture interview and observation data across sites and participants. It will be important to highlight findings related to policy, deployment successes and challenges, device use, supports, capacity, and change. This information will enable interviewers to begin to make contrasts, also within the template, between new technology use and what was already possible and/or happening; deployment design and implementation; intended change and emergent change; official positions and representations with empirical data; and policy-level discourse and local actors' experiences and understanding of phenomena.

Triangulation of findings

As with all qualitative research, integrating research findings across instruments and data sources will be necessary to strengthen the validity of individual claims. The *Data Triangulation Matrices* are designed to help structure this process and to identify the convergences and divergences in the information gathered from different data sources on key themes. The triangulation process is intended to assist researchers to construct with rigor and validity a case study that tells the story of implementation.

Synthesizing findings

Another important part of the research process will be to synthesize key findings from the data. To this end, researchers are asked to consider questions such as those below to help them make recommendations from lessons learned, success factors, and course corrections to shape future deployments; locate findings in context; link observed changes to implementation characteristics; and characterize the degree to which changes are systemic and potentially transformative.

> *Cross-deployment comparisons*
>
> If budget, research capacity, and data are available, researchers can use the structured formats of the reporting templates to explore comparisons of the findings from their deployment with other previously studied deployments.
>
> This may be helpful in uncovering idiosyncrasies of their local deployment that may not be evident given their in-country perspective. The comparison process will also be most helpful in linking practices and policies with information on successes and challenges.

Context: What are some of the most important prior conditions and organizational aspects of the deployment that have affected its implementation? In what particular ways did the specific contextual factors affect deployment? How did the deployment strategically address the needs inherent in the context?

Goals: How have the deployment's goals become more refined or shifted during the course of implementation? How did the particular features of the deployment affect these goals and vice versa? Were there mismatches or special congruencies between the goals and actual implementation practices that affected the deployment?

Use: What are some of the most important or interesting aspects of how the 1:1 technology solutions and other elements of the package have been used in this setting?

Successes and challenges: In what ways was the deployment most consistently successful? What were some of the more surprising or difficult challenges? Which challenges could have been most readily avoided? Which were insurmountable? What are some of the essential lessons about best practices that were learned from this implementation?

Changes: How have the intended beneficiaries (schools, communities, families, or individuals) been changed by the deployment? Are there ways in which they were expected to change but did not? Are there unexpected changes? How are the changes connected to the features of deployment? How do changes resulting from deployment "cluster" (that is, correlate with one another)?

Perceptions: How do stakeholders and beneficiaries feel about the deployment? Do they consider it a success? Valuable? Are there ways in which they are disappointed? Are there positive outcomes that were unexpected? How do stakeholders and beneficiaries see the deployment in ways that differ from a more public perspective?

Other: What other issues or features of the deployment do you think are important to consider? For which stakeholders or beneficiaries?

Phase 6: Post-analysis

After the research on the deployment, the local research team and Intel should meet to review and iterate on the research toolkit. This meeting will be used to review the toolkit's value and identify recommendations for toolkit modification as needed.

Intel Technology-Based Solution Deployment
Standard Research Design and Toolkit

Toolkit Summary Table

Phase	Instrument/Resources
Establishing the Setting	Deployment Context Form
	Deployment History Interview
Customization	Research Customization Guidelines
Recruitment	
Data Collection	School Leader Interview Protocol
	Information Technology Coordinator Interview Protocol
	Community Learning Center Staff Protocol*
	Teacher Interview Protocol
	Classroom Observation Protocol
	Student Interview Protocol
	Home Use Interview Protocol*
Analysis and Reporting	Data Triangulation Matrices
	Qualitative Report Template
Post-Analysis	

*Optional activities

Deployment Context Form

Instructions

The purpose of this form is to gather information to help local researchers better understand the deployment context and to inform the customization of the deployment research design and the data collection instruments in the toolkit.

This form asks for basic information about policies related to education, economic development, and ICT infrastructure in the deployment setting. **Focus your attention on the priorities you select in Question 1.** For example, if economic development is a greater focus in this deployment than educational improvement, spend more time on the questions in that section.

In addition, many of the questions below refer to national as well as regional context. Although both are often relevant, **please emphasize the setting of the deployment while asking the questions.** In other words, if the deployment is a national initiative, focus on the national context; if the deployment is a regional or local initiative, pay attention to the regional or local context.

You may already know most of the information requested in this form. For any information that you do not know, please refer to basic, authentic sources (for example, government websites) to complete the form. If you refer to any additional resources, please note the source.

Deployment Priorities

What are the general policy goals of this deployment? (Check all that apply.)

- ❐ To improve education
- ❐ To stimulate economic growth
- ❐ To expand ICT access
- ❐ Other _____

Education Policy

2. What is the basic structure or organization of the national and regional education system?
   What is the name of the national education authority? What are the regional and local education authorities that oversee education, and what are their main responsibilities?

3. What is the basic funding model for the national and regional education system?
   Where do schools get their funding? What determines the amount of money that schools receive (for example, do all schools get the same amount, or does it vary by number of children)?

4. Are students required to take any national standardized assessments?
   Are all students in the country tested? If so, in what grades? For what subjects?

5. What are the most important strategic educational initiatives currently being implemented in the deployment setting?
   Please briefly list the main activities and goals of each initiative.

6. Does the deployment setting already have programs focused specifically on educational technology?
   *Please describe the main activities and goals of any **existing educational technology programs** in the following areas:*

   - ❐ Access to ICT
   - ❐ Teaching and learning
   - ❐ Technical skills
   - ❐ Distance learning
   - ❐ Curriculum and assessment

7. Is there a general plan or policy around expanding ICT use at the national or the regional level?
   If so, what are its main components? Who does it impact? What are its goals? How is this national or regional ICT policy or plan related to the ICT policy for education?

8. Does the deployment context have a national or regional ICT policy or plan for education?
   If so, what are the main components of the policy or policies? What are the main instructional ICT policies or goals of the national and regional education systems? What are contended or disputed areas of educational policy that might be related to this deployment?

9. To what degree is the education system centralized or decentralized?
   To what extent does the national government control education at the regional, local, and school levels? How much autonomy do regions and schools have to make educational decisions such as:

   - ❐ Allocating funds in the school budget
   - ❐ Selecting curriculum
   - ❐ Developing and implementing student assessments and examinations
   - ❐ Determining the pedagogical approach used in classrooms
   - ❐ Deciding the scope and direction of educational reform initiatives

10. What are the certification requirements for teachers?
    What level of education and training is required in order to be a teacher in this setting? Does this vary by region? Are the majority of teachers in the country certified?

11. Do teachers typically use technology in their instruction? In general, how comfortable do teachers feel about using technology in their teaching practice?

12. What is the status of the education system and services in each of the following areas? *Please also describe the extent to which quality varies across different regions.*

    - ❐ Facilities (Are the schools mostly in good condition?)
    - ❐ Equipment and resources (What are the basic things necessary for schools to operate effectively? Do most schools have the equipment and resources they need?)
    - ❐ Technology infrastructure (Is it typical for schools to have computers and Internet access? Are there computers in the classroom? Or do students have access to a

computer lab? Is technical support, like an IT administrator, available to schools and teachers?)

13. What is the school calendar year?
When does the school year begin and end? When are the major vacation periods?

14. How many days of the week are schools typically in session and how many hours per day?

Economic Development

15. Does the deployment setting have a national or regional plan for economic development?
If so, what are the main components of the policy or policies? To what extent is the policy contentious or debated?

16. To what extent does ICT development relate to the national or regional development plan?
What areas of the development policy might be related to this deployment?

17. What is the basic funding model for national and regional economic development?
How do the national and local governments plan to fund economic growth? What determines the amount of support that various stakeholders receive?

18. To what degree is the economic development plan centralized or decentralized?
To what extent does the national government control the planning of development initiatives at the regional and local levels? How much autonomy do regions and local businesses have to make economic decisions?

19. To what degree does the national economic development plan align with other policy priorities selected in Question 1?

ICT Policy

20. Does the deployment setting have a national or regional plan for expanding access to ICT and/or developing ICT infrastructure?
If so, what are the main components of the policy or policies? Which government entities are in charge of developing or carrying out the policy? What areas of the ICT plan might be related to this deployment?

21. What is the basic funding model for the ICT plan?
What determines the amount of money dedicated to the plan? How is the money allocated?

22. To what degree is the ICT plan centralized or decentralized?
To what extent does the national government control ICT policy at the regional and local levels? How much autonomy do regions and local authorities have to make decisions such as:

- ❒ Allocating funds in the plan
- ❒ Selecting the technology to distribute
- ❒ Monitoring progress
- ❒ Deciding the scope and direction of digital inclusion initiatives

23. To what degree does the ICT policy align with other policy priorities selected in Question 1?

Other Relevant Policies and Plans

24. Please describe any other policies and plans that may provide relevant context for understanding the deployment

Other Information

25. Please describe any other important information about the deployment setting.

Intel Technology-Based Solution Deployment
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Deployment History Interview Protocol

Instructions

The purpose of this interview is to gather information from implementation stakeholders about the deployment, specifically the role of the technology-based solution in the larger landscape of educational change, economic development, and digital inclusion in the deployment setting. This interview should take approximately 1 hour.

For each part of the interview, begin with the initial open-ended question. The topics listed on the left-hand column are intended to guide your discussion. For each topic, the sample probes listed on the right are intended to initiate conversation and elicit information. Please note that the probes included here are suggestions to help you obtain information about the topic. **You are not required to ask every question listed; you are also welcome to make up other probes as might be appropriate and relevant.**

Questions

Part 1: Rapport building and background information
Please tell us a little about yourself.

☐ *Background*

1. Please tell us about yourself and your role.
2. How long have you been in this position?
3. What are some key focus areas for you? What are some goals you are working toward in these focus areas?

Part 2: Policy context
Please tell us a little about the larger context in which the technology-based solution is/will be deployed. We are really interested in understanding how the deployment fits into other initiatives for educational change, development, and inclusion.

☐ *General policy context*

4. Tell us about the setting in which the technology-based solution is being/will be deployed.
5. What are the strategic educational, social, or economic initiatives of current importance in this context?
6. Are there contended or disputed areas of policy that are relevant for this deployment?

☐ *ICT policy*

7. What is the role of technology in important educational reform or economic development initiatives?
8. Is there an ICT policy or plan that is relevant for the deployment setting? What are its main components? What is the basic funding model for the ICT plan?

9. Is there a plan for economic development that is relevant for the deployment setting?
10. To what extent does the plan for economic development relate to the ICT policy for education?

☐ *Overall goal of the project*

11. What is the goal of the broad project or initiative in which the technology deployment is located?
12. What is the role of the technology solution to this project or initiative?
13. What kinds of changes are you anticipating for the project? In relation to that, what kinds of changes do you expect the technology solution to trigger?

Part 3: Deployment goals and planning
Please tell us a little about the deployment. What goals does it serve? Who is it intended to benefit?

☐ *Background*

14. Who is the primary deployment sponsor? Who are the secondary sponsors, if any?
15. How was the initiative conceived? Who were the key champions? Who are the other key stakeholders who were less involved?
16. What are the goals of the deployment? What is it intended to accomplish from your perspective?

☐ *Key characteristics*

17. Can you briefly describe some of the key characteristics of the deployment?
18. What is the size of the deployment in terms of its various components (e.g. schools, devices, teachers, families, community centers)?
19. What is its cost, and how is the cost being determined?
20. What devices are being deployed? Have the devices been customized in any way for this context?

☐ *Target audience and goals*

21. In what settings will the technology solution be deployed?
22. Who is the deployment designed to benefit (schools and teachers, families, etc.)*?*
23. What is the target age level? Is there a target subject area?
24. Why was this age level/ setting/ subject area selected for the deployment?

Part 4: Supports and resources

Please tell us a little about the supports and resources that are part of the deployment. We're interested in understanding how implementers will be trained in using the devices.

☐ *Activities*

25. What are the components of the deployment package?

26. What was the process for determining the components of the deployment package?

27. What activities or supports does the deployment offer its participants? (Probe specifically about training or professional development for teachers; training or support for IT administrators; ongoing supports for teachers such as mentoring and instructional coaching; supports for students, families, community members; resources; access to a network of other schools and teachers or community centers and staff.)

28. Who is responsible for implementing these activities or supports?

☐ *Public opinion*

29. How do implementation stakeholders (government officials, university researchers, etc.) refer to the deployment?

30. How do other stakeholders and the general public (including, if appropriate, the media) refer to the deployment?

31. How is the deployment positioned in the media? What kind of coverage has it received? What is the overall public sentiment about the deployment?

32. Are there any materials, media articles, or research literature related to the deployment that would help contextualize it or give us insight into how it's positioned publically or politically?

Part5: Challenges and critical success factors

Please tell us a little about the supports and resources that are part of the deployment. We're interested in understanding how implementers will be trained in using the devices.

☐ *Evaluation*

33. How will you evaluate the program overall?

34. How will you assess specific program outcomes?

☐ *Success factors*	**35.** In your opinion, what would be critical success factors of 1:1 technology deployments? How will they contribute to the success of this specific deployment?
	36. Do you feel that you have the tools and resources to address these critical success factors?
☐ *Challenges*	**37.** What kinds of challenges, if any, have you faced in implementing a technology policy?
	38. What kinds of challenges do you anticipate for this deployment?
	39. How would you overcome those challenges?

Part 6: Wrap-up

Finally, is there other important information about the deployment that you'd like to share?

Thank you so much for participating! If we have follow-up questions or a follow-up interview in a couple of months or so, would you be willing to participate again? If yes, how could we contact you then?

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit.
Part 2	Focus all questions on changes in the policy context.
Part 3	Omit.
Part 4	Omit questions 22, 23, 26, and 27. Use questions 24, 25, 28, and 29 as is.
Part 5	*Highlight this section.* Change all questions on to focus on observed, rather than anticipated, success factors and challenges.

Research Customization Guidelines

Why Customize?

The Standard Research Design and Toolkit has been developed to support a broad range of deployment types and research efforts. Although the broad research questions and approaches are the same across research contexts, our goal is to ensure that the overall research design and instruments serve the specific needs of local researchers studying deployments of technology solutions in a wide range of settings, and their varying research goals.

What Is Involved?

The Research Customization Guidelines are intended to support local research teams in making customization decisions that help calibrate the research design, data collection activities, and instruments to the local contexts and research goals before going into the field. We have identified six dimensions of local deployment research that inform the customization process. We assume that researchers come to this task with knowledge about their deployment and their research goals. In the customization phase, researchers will situate their deployment project within the Standard Research Design and Toolkit and select research components, instruments, and items as appropriate for their needs and goals.

Customization Steps

1. As you read the dimensions of customization listed in the next section, select the protocols that are most appropriate for your research context. For these protocols, note the revisions you decide are necessary for each instrument or resource you will use in your research. The table below can be used to structure your notes.

Data Collection Instrument/Resources	Describe Customization Planned Here
Research design	
Deployment History Interview Protocol	
School Leader Interview Protocol	
IT Coordinator Interview Protocol	
Community Learning Center Staff Protocol	
Teacher Interview Protocol	
Classroom Observation Protocol	
Student Interview Protocol	
Home Use Interview Protocol	

2. Review the protocols and make the revisions you noted above. Add probing questions as appropriate according to the needs identified above. Wherever possible, insert additional questions as probes rather than modifying the topics in the existing interview protocol. This

allows for data that include both the locally relevant specifics and responses to questions that are comparable across deployments.

3. Substitute general language in the instruments for precise terminology used in your context. Translate documents if required.

Dimensions of Customization

For your deployment, consider which of these dimensions is central to the deployment or reform program designers and which are essential in the community. These considerations may influence your decisions about items to omit from protocols or additional probing questions to consider. Deployments may be designed to address goals not listed here. These should also be noted as part of the customization process.

4. **Local deployment goals**

   Each deployment will be organized to meet different sets of institutional and local goals. Generally, these kinds of devices are adopted on a large scale in hopes of improving one or more of the following education system quality dimensions:

   ❑ Educational transformation
   ❑ Enhancing access to ICT
   ❑ Economic development

5. **Deployment research sponsorship and goals**

   The Standard Research Design and Toolkit can be used in deployment research projects with somewhat different emphases, goals, and budgetary constraints. An understanding of how these factors shape research priorities is useful in selecting research tasks, editing protocols, and informing real-time decisions during data collection.

   Consider the research questions below as you customize to meet research goals.

   ❑ How is the technology being used in and across settings?
   ❑ What supports and contextual factors shape the rollout?
   ❑ What can we say about the value of this deployment in this setting?
   ❑ What best practices are evident in the field and at the policy level?
   ❑ What course corrections might address the greatest challenges for this deployment?
   ❑ How do the design characteristics of the device enable or constrain productive use?

6. **Length and timing of deployment research**

   Some deployment research projects will focus on new deployments, capturing issues associated with start-up, whereas others will study mature programs, examining how patterns of use evolve across time. Consider whether the focus of your project includes start-up as well as evolution of usage and change or whether one point in time should be used for data collection. This decision will be based on the goals of the research sponsors, the characteristics of the local rollout, and the research budget. Once you have decided on the timing and number of rounds of data collection required, revising the protocols may be necessary to suit the needs and the

timing of your data collection. For example, background information can be eliminated in repeat interviews with the same participants, while asking participants to reflect on prior responses may be included.

7. **Local opportunities**

    Most deployments will have something new to offer researchers meriting special attention for improving our understanding of 1:1 technology initiatives. If deployment in your setting is in some way the first of its kind or distinct in the field (for example, serving a new age group or distributed with a new reform package), there may be an interest in highlighting this aspect of the deployment in the research questions and data collection. This decision should be made with the support of research sponsor(s). In cases where special local circumstances shape the overall research goals, researchers should consider the addition of probing questions within the existing protocols.

8. **Institutional context and research participants**

    Often, technology solutions will be deployed in school contexts, but there will also be instances where the primary device distribution and support take place in out-of-school settings, other institutional environments like community centers, or outside institutional settings entirely. In these cases, protocols designed for school technology leaders and teachers will need to be modified.

    When teachers are not present in the rollout context, teacher interviews can be substituted for interviews with the professionals who spend the most time in direct contact with the children or youth. To maintain the nested character of the sampling, children and youth should be recruited from within each participating professional's daily practice. Leaders and technology coordinators should also be identified from within the same institutional setting.

9. **Role of the device in the broader education context.**

    The deployment research toolkit was designed to investigate the factors associated with the success of 1:1 technology rollouts within their context. In some cases, the entire rollout will be a program of distributing devices; in others, the devices will be part of larger education reform initiative, including additional elements such as teacher professional development, improved infrastructure such as Internet access programs, and parent services.

    When device distribution is a part of a larger education reform effort, it is important that the deployment research investigate the entire reform effort, with special attention to the role of the device within the reform. It is not sufficient to focus data collection efforts on the device itself without building an understanding of the reform context or the goals for educational transformation. In these instances, the language of the protocols may need to be revised with names and references to other components of the local reform initiatives to remind research participants of the scope of the research and to ensure that data informs our understanding of the role of the technology solution within the broader educational reform context.

School Leader Interview Protocol[4]

Instructions

The purpose of this interview is to gather a school-level perspective on the implementation of the technology-based solution. This interview should take approximately 45 minutes.

For each part of the interview, begin with the initial open-ended question. The topics listed on the left-hand column are intended to guide your discussion. For each topic, the sample probes listed on the right are intended to initiate conversation and elicit information. Please note that the probes included here are suggestions to help you obtain information about the topic. **You are not required to ask every question listed; you are also welcome to make up other probes as might be appropriate and relevant.**

Questions

Part 1: Rapport building and background information
Please tell us a little about yourself and your role at the school.

☐ *Professional background*

1. How long have you been in this role at this school?
2. Have you been a school leader in other schools?
3. How long have you been doing this work?

Part 2: School reform context
Tell us about the goals for reform and improvement at this school.

☐ *School improvement goals*

4. Are there national or regional goals for school improvement that this school is working toward? If so, what are they?
5. As a school leader, what is your vision for improvement?
6. Where do you see your school in 5 years? What improvements do you expect to see at this school?

☐ *Strategies for educational transformation*

7. What educational initiatives is your school a part of?
8. What school-level strategies are you pursuing to meet these goals?
9. What will you need to do to achieve your vision? What goals have you set for yourself?

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[4] This protocol may be used with minimal modifications for interviews with administrators in non-school settings.
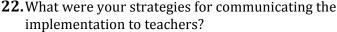
Part 3: Intel technology-based solution
Tell us about how the Intel-based technology solution relates to the goals for reform and improvement at this school.

☐ *Deployment description*

10. Describe the technology solution at your school.
11. Have any policies or practices been put in place to support the successful use of the device?
12. Were the devices distributed along with professional development for teachers?
13. Were there any special programs for others at the school?
14. Which organizations and individuals contributed resources to support the use of this technology?

☐ *Deployment expectations*

15. What will a successful implementation look like?
16. How will you measure progress toward that success?

☐ *Relationship between deployment and vision for school reform*

17. How does this technology solution fit in with the school's strategies and vision?
18. How does it fit with the larger reform program that the school is a part of?

Part 4: Planning and communication
Tell us about how you planned for the implementation of the technology solution and communicated your implementation plan.

☐ *Planning*

19. How did you plan for the implementation of the solution at your school?
20. What changes did you have to make to existing systems, structures, and processes?
21. What additional resources did you have to put in place?

☐ *Communication*
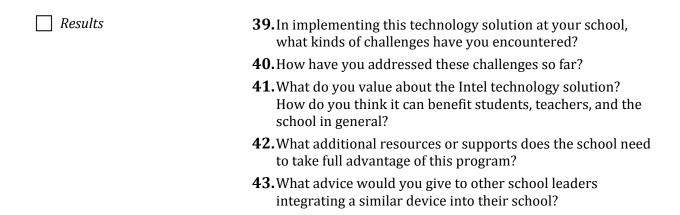
22. What were your strategies for communicating the implementation to teachers?
23. What were your strategies for communicating to parents and students?

Part 5: Supports
What supports are available to facilitate implementation of the technology solution?

☐ *Support for school*   **24.** What support do you have as a school leader to implement the solution?

☐ *Support from school to teachers*   **25.** Describe the type of training and support offered to teachers and students at your school specifically to support the deployment.

26. What supports do teachers have to help them improve their ICT proficiency?

27. What supports do teachers have to help them integrate the deployment/technology solution into their instruction?

28. What supports are available to teachers to troubleshoot or solve technical problems?

☐ *Support among teachers (through teacher collaboration)*   **29.** How do teachers collaborate to support one another in implementing the technology solution?

Part 6: Usage, buy-in, and results
How are teachers and students using the device and with what results?

☐ *Buy-in*   **30.** Who has chosen to participate in the program?

31. What is the general perception among students and staff about the deployment?

32. How have teachers responded so far to the deployment?

33. How have students responded so far to the deployment?

34. How have parents reacted?

☐ *Usage*   **35.** How do teachers use the device at this school?

36. For what activities do you see teachers and students using the device?

37. How have teachers integrated the device with their overall learning goals?

38. What can you tell me about individual student use outside class?

☐ *Results*

39. In implementing this technology solution at your school, what kinds of challenges have you encountered?

40. How have you addressed these challenges so far?

41. What do you value about the Intel technology solution? How do you think it can benefit students, teachers, and the school in general?

42. What additional resources or supports does the school need to take full advantage of this program?

43. What advice would you give to other school leaders integrating a similar device into their school?

Part 7: Wrap-up

Finally, is there anything else you would like to tell me about your experience with this program? Thank you so much for participating! If we have follow-up questions or a follow-up interview in a couple of months or so, would you be willing to participate again? If yes, how could we contact you then?

At the conclusion of the interview, ask the school leader to identify candidate teachers for interviews.

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit.
Part 2	Questions may be used without modification.
Part 3	Questions 10, 17, and 18 may be used without modification. Modify questions 11–16 to focus on how the technology solution has evolved.
Part 4	Questions 20 and 21 may be used without modification. Modify questions 19, 22, and 23 to focus on how communication and planning has evolved
Part 5	Questions may be used without modification.
Part 6	*Highlight this section.* Questions 35–43 may be used without modification. Modify questions 30–34 to focus on how buy-in among stakeholders has changed.
Part 7	Questions may be used without modification.

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Information Technology Coordinator Interview Protocol

Instructions

The purpose of this interview is to gather information from IT coordinators about the planning, implementation, and support of the Intel technology solution. This interview will last approximately 45 minutes to an hour.

For each part of the interview, begin with the initial open-ended question. The topics listed on the left-hand column are intended to guide your discussion. For each topic, the sample probes listed on the right are intended to initiate conversation and elicit information. Please note that the probes included here are suggestions to help you obtain information about the topic. **You are not required to ask every question listed; you are also welcome to make up other probes as might be appropriate and relevant.**

Questions

Part 1: Rapport building and background information
Please start out by telling us about yourself and your job.

☐ *Job title and professional background*	**1.** What is your title? **2.** How long have you been doing this work?
☐ *Job duties*	**3.** Please tell us what your job here is like. **4.** Can you describe a typical day for you in this job?
☐ *Job Goals*	**5.** What are your goals in this position? **6.** What do others consider to be a job well done for this position?

Part 2: Goals and purposes of the program
Please tell me about the Intel technology solution program and your role in it.

☐ *The context of technology-supported reform and development*	**7.** Is there an education reform or economic development initiative that the technology solution is a part of? **8.** How does this program fit in with the larger [name of local initiative]?

☐ *IT coordinator's responsibilities in the program*	**9.** What are your responsibilities in this larger ICT plan?
	 10. Are you involved in
	     a. ICT planning and policy?
	     b. ICT readiness/infrastructure?

   c. Program implementation?
   d. Technical training and support?
   e. School-wide or community-wide resources (for project, schools, teachers, students)?
   f. Others?

How?

□ *ICT access and use prior to the deployment*

11. Prior to the program, what kinds of technology did students have access to?
12. Prior to the program, what were the most common types of technology used here?
13. Prior to the technology solution, how did your school or institution manage teacher/student use of ICT (e.g., computer on cart/wheels, block scheduling, etc.)?
14. How has this changed with the program?

Part 3: School and classroom ICT readiness

Please tell me about the ICT infrastructure at your school or center—the equipment, connectivity, space resources, and anything else that supports ICT use.

□ *Connectivity at the school*

15. Is the connection fast and reliably available?
16. Is there a protocol for Internet security? How are students protected online?

□ *Local network infrastructure*

17. Is there a local infrastructure allowing for shared file storage and collaboration between students?
18. Can students print and scan within the school or center network?

□ *Maintenance and support*

19. Who carries out maintenance and support tasks for ICT at the school or center?
20. Are maintenance and support needs being met?
21. How did the technology solution deployment influence maintenance and support needs and activities at the school or center?

Part 4: Deployment specifics

Please tell me about the Intel devices and their introduction at this school.

□ *Device description*

22. Was the device distributed with included software or other resources?
23. What are the device capabilities that are most important

for this deployment?

☐ *Supports*	**24.** Have any policies or practices been put in place to support the successful use of the device?
	25. Did teachers or center staff initially receive training? Did others?
	26. Which organizations and individuals contributed resources to support the use of this technology?
	27. What additional resources are needed (if any) to make the program a success?

Part 5: Usage
Please describe the kinds of device uses that are typical with the students and classes at this school or activities at this center.

☐ *User identification*	**28.** Who are the users of the devices at this school or center?
	29. To whom were the devices distributed? How were they selected?
☐ *Usage*	**30.** How have teachers or staff integrated the devices with their instructional practices?
	31. For what activities do you see instructors and students using the devices?
	32. Do you think the devices are used primarily in school or out of school?
	33. How do you support these activities?
☐ *Difficulties*	**34.** What are common problems for users and classrooms/groups?
	35. Who solves problems and how?
	36. What happens if an individual has difficulty outside school or center use?

Part 6: Level of buy-in and value of ICT integration
Do you have a sense of how much the school community is supportive of the technology initiative?

☐ *Engagement from school or center leadership*	**37.** Are there school or center leaders who have been especially engaged in the deployment?

☐ *Teacher or staff buy-in and engagement*	**38.** Is there a lot of variety in terms of teacher or staff engagement with the technology solution?
	39. In general, are teachers and staff supportive of and engage, in the technology solution?
	40. Are there teachers or staff who are less interested? Do you know their reasons?
☐ *Student engagement*	**41.** Have most students reacted positively to the technology solution?
	42. If some students have reacted negatively, do you know what they don't like about it?

Part 7: Wrap-up

Finally, is there anything else you would like to tell me about your experience with this program? Thank you so much for participating! If we have some follow-up questions or a follow-up interview in a couple of months or so, would you be willing to participate again? If yes, how could we contact you then?

At the conclusion of the interview, ask the IT coordinator to identify other candidates for interviews.

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit.
Part 2	Omit questions 7 and 8.
	Modify questions 9 and 10 to focus on how the IT role has changed. Questions 11–14 may be used without much modification, but change "prior to" to "earlier in" in questions 11–13.
Part 3	Focus all questions on changes in infrastructure since last visit.
Part 4	Omit questions 22 and 25.
	Questions 23, 24, 26 and 27 may be used without modification.
Part 5	Focus all questions on changes in buy-in and engagement.
Part 6	*Highlight this section.*
	Use questions 35–43 without much modification.
	Modify questions 30–34 to focus on how buy-in among stakeholders has changed.

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Community Learning Center Staff Interview Protocol

Instructions

The purpose of this interview is to gather information from the coordinator of a community learning center (or other informal learning contexts) on the implementation of the technology-based solution. This interview should take approximately 1 hour.

For each part of the interview, begin with the initial open-ended question. The topics listed on the left-hand column are intended to guide your discussion. For each topic, the sample probes listed on the right are intended to initiate conversation and elicit information. Please note that the probes included here are suggestions to help you obtain information about the topic. **You are not required to ask every question listed; you are also welcome to make up other probes as might be appropriate and relevant.**

Questions

Part 1: Rapport building and background information
Please tell us a little about yourself, your role in this center, and your experience with technology.

☐ *Current experience*

1. How long have you been working at this center? Have you had your current position the entire time?

2. How long have you been working in these kinds of centers?

3. Have you ever worked in schools (primary, secondary, college, or university)?

☐ *Background with technology*

4. What experience do you have supporting IT or children's use of technology?

5. Tell us about how you use technology in other settings—at home or other workplaces, for example.

Part 2: Learning context
Please tell us a little about this center and your work at it.

☐ *Context*

6. Tell us about the center. What is its primary function?

7. What kinds of activities are offered? Who are the typical participants?

8. Can you describe a typical day for participants?

36

☐ *Practice/ activities*

9. What kinds of activities do you coordinate or lead?
10. What resources do you use to help planning activities?
11. How do you gauge progress among the participants/learners?

Part 3: Intel technology solution

Please tell us a little about your experience with using the Intel educational technology.

☐ *Example of one specific activity*

12. Please describe one activity in which you have used the technology.
13. How did you plan and prepare for this activity? What resources did you use?
14. What did you do? What did the children do?
15. How did the children respond to the activity? Did you assess what they were learning?
16. What kinds of products, if any, did they produce?

☐ *Integration with daily practice*

17. What kinds of activities have you been able to use the technology with, in general? (Note: Refer to questions 13-17 for further probes if necessary.)
18. How have the children responded, in general, to the use of the technology?

☐ *Perceived impact/value of the technology*

19. How do you think this program might benefit participants? Children's learning?
20. How might it benefit family members or the community beyond participants in this program? Organizations that provide services, businesses, faith-based entities, etc.?
21. How do you think this program could benefit you as an educator?

☐ *Challenges to implementation*

22. What kinds of challenges and barriers have you encountered with using the technology in the community center context?
23. How have you addressed these challenges?

Part 4: Professional development

Please tell me a little about the professional development that you have received as part of the Intel technology solution.

☐ *Participation i, and value of professional development*

24. Have you participated in professional development specific to the technology solution and related programs?

25. If yes, what did your professional development activities consist of?

26. What did you find most valuable about this professional development?

27. In what ways do you think the professional development could be improved?

Part 5: Support for implementation

Please tell us about the various kinds of support you have received to help you implement the technology (support for implementation, technical support, support from colleagues, etc.). Please also tell us about any difficulties you may have encountered and how they were addressed.

☐ *Support for implementation*

28. How was the Intel technology solution explained to you at the start?

29. What support were you offered to help you learn about start using the technology? Have you received all the support you were offered?

30. Has the implementation been carried out in a way that reflects the initial plan? If not, what are some of the major differences?

☐ *Technical Support*

31. Have you encountered any technical difficulties in using the technology?

32. To what extent do you receive support to help address these difficulties? (Probes: Who provides the support? How often do you need the support? How often do you receive it? What is the nature of the support you receive? Is the support you receive always in response to a problem or is it also proactive?)

☐ *Support from community center leadership*

33. To what extent do you feel supported by the leadership at the center in implementing this technology? And in resolving the challenges you have faced?

☐ *Support from colleagues*

34. Do you have colleagues at this center or beyond with whom you can share your experiences? Have your colleagues shared their experiences with you?

35. Has interacting with your colleagues helped you use this technology?

Part 6: Wrap-up

Finally, is there anything else you would like to tell me about your experience with this program? Thank you so much for participating! If we have some follow-up questions or a follow-up interview in a couple of months or so, would you be willing to participate again? If yes, how could we contact you then?

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit.
Part 2	Omit questions 6 and 8.
	Modify questions 7 and 9–11 to focus on changes, if any, since the previous visit/ interview.
Part 3	Questions 12–18 may be used without much modification.
	Focus questions 18 23 on changes since the previous interview, modifying the phrasing as appropriate. If possible, refer back to the interviewee's prior responses while asking these questions.
Part 4	Focus questions 24–27 on changes if any since the previous interview, modifying phrasing as appropriate.
Part 5	Omit questions 28–30.
	Focus questions 31–35 on changes since the previous interview, modifying the phrasing as appropriate.
Part 6	May be used without modification.

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Teacher Interview Protocol

Instructions

The purpose of this interview is to gather information from teachers about the implementation of the Intel technology-based solution. This interview should take approximately 1 hour.

For each part of the interview, begin with the initial open-ended question. The topics listed on the left-hand column are intended to guide your discussion. For each topic, the sample probes listed on the right are intended to initiate conversation and elicit information. Please note that the probes included here are suggestions to help you obtain information about the topic. **You are not required to ask every question listed; you are also welcome to make up other probes as might be appropriate and relevant.**

Questions

Part 1: Rapport building and background information
Please tell us a little about yourself as a teacher.

☐ *Current experience*

1. What grade levels and subjects do you teach?
2. How long have you been teaching at this school?
3. Do you have any other roles at the school (like departmental head or instructional coach) in addition to being a classroom teacher?

☐ *Background*

4. How long have you been teaching?
5. How much experience do you have with using technology in the classroom to support your teaching?

Part 2: Classroom and school context
Please tell us a little about your school and how you teach.

☐ *Classroom practice*

6. Can you describe a typical lesson in your classroom?
7. What resources do you use while planning your lessons?
8. How do you gauge your students' progress?

☐ *School reform context*

9. What are the expectations that your school administration or higher level administrators have of you?

10. Right now, are you actively trying to change the ways teaching and learning happen in your classroom? What are you doing that is new or different?

11. Is this a change that others in your school or community are also working on, or are you doing this on your own?

Part 3: Intel technology solution
Please tell us a little about your experience with using the Intel educational technology.

☐ *Integration with classroom practice*

12. Please describe one lesson or activity in which you have used the technology. (Probes: What was the activity? What did you do? What did students do? What sorts of resources did students use? What kinds of products, if any, did students produce? How did you assess what students were learning?)

13. How did you plan and prepare for this lesson? What resources did you use?

14. What kinds of lessons and activities have you been able to use it with, in general?

15. How have your students' responded to the use of the technology?

☐ *Perceptions/ buy-in*

16. How do you think this program could benefit your students?

17. How do you think this program could benefit you as a teacher?

☐ *Challenges*

18. What kinds of challenges and barriers have you encountered with using the technology in the classroom?

19. How have you addressed these challenges?

☐ *Prior technology experience*

20. Did you use technology in your classroom previously? If so, how?

Part 4: Professional development

Please tell me a little about the professional development that you have received as part of the Intel technology solution.

<table>
<tr><td>☐ Professional development participation</td><td>21. Have you participated in professional development specific to the technology solution and related programs?

22. If yes, what did your professional development activities consist of?

23. What did you find most valuable about this professional development?

24. In what ways do you think the professional development could be improved?</td></tr>
</table>

Part 5: Support

Please tell us about the various kinds of support you have received to help you implement the technology (support for implementation, support from the school administration, technical support, support from colleagues, etc.). Please also tell us about any difficulties you may have encountered and how they were addressed.

<table>
<tr><td>☐ Support for implementation</td><td>25. How was the Intel technology solution explained to you at the start?

26. What support were you offered to help you learn about and start using the technology in the classroom? Have you received all the support you were offered?

27. Has the implementation been carried out in a way that reflects the initial plan? If not, what are some of the major differences?</td></tr>
<tr><td>☐ Technical support</td><td>28. Have you encountered any technical difficulties in using the technology?

29. To what extent do you receive support to help address these difficulties? (Probes: Who provides the support? How often do you need the support? How often do you receive it? What is the nature of the support you receive? Is the support you receive always in response to a problem or is it also proactive?)</td></tr>
<tr><td>☐ Support from school administration</td><td>30. To what extent do you feel support from school leadership/administration for the integration of technology into instruction?</td></tr>
</table>

☐ *Support from colleagues*

31. To what extent have you been able to share your experiences with the technology with your colleagues? Have your colleagues shared their experiences with you?

32. Has interacting with your colleagues helped prepare you to use technology in class?

Part 6: Wrap-up

Finally, is there anything else you would like to tell me about your experience with this program? Thank you so much for participating! If we have some follow-up questions or a follow-up interview in a couple of months or so, would you be willing to participate again? If yes, how could we contact you then?

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit this section.
Part 2	Omit questions 6–8. Modify questions 9–11 to focus on changes, if any, since the previous interview.
Part 3	Questions 12–15 may be used without modification.
	Focus questions 16–19 on changes, if any, since the previous interview, modifying phrasing as appropriate.
	Omit question 20.
Part 4	Focus questions on changes since the previous interview.
Part 5	Omit questions 25–27.
	Focus questions 28–32 on changes, if any, since the previous visit, modifying the phrasing as appropriate.
Part 6	Wrap up.

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Classroom Observation Protocol

Part 1: Background information

Observer(s):_____

Observation Date: *(DD/MM/YYYY)* _ _ / _ _ / _ _ _   **Observation Start Time:**

Length of the Observation *(minutes)*: _ _ _   **Observation End Time:**

School Name:_____

District / Local Authority / Region:_____

Teacher Name: _____

Subject: _____

Number of Students: Number of Boys   Number of Girls   Total:

_____   _____   _____   _____

Average Student Age:

_____

Teacher's stated goals for the lesson: (*If possible, speak with the teacher before the observation begins and complete this section with the following information: What is the teacher planning to do? How does the lesson/activity fit in with the unit that the class has been doing before? Are there are particular outcomes the teacher is hoping for?)*

Physical Arrangement: *(Draw or describe the physical arrangement of the classroom.)*

Technology: (*Describe the technology resources present in the classroom and include the number of each. Fixed technology resources, like desktop computers and projectors, can be included in the diagram of the classroom above.)*

Part 2: Observation notes

In this section, please take detailed notes in real time as you observe classroom activities.
The following questions serve as guidelines for what you will document during the classroom observation. Your descriptions of all the classroom activities should include answers to questions 1–6. For each topic/question, please note what you observe in the left-hand column; you may use the right-hand column to note your hypotheses and conjectures about what you think.

Structure of the lesson
Describe the structure of the lesson that you observe. What is happening in the classroom? What are the teacher and the students doing?

What you see	*What you think*

Interactions between the teacher and students
How do the teachers and students interact? Try to capture examples of the type of questions teachers ask students and how students respond, as well as the questions students ask teachers and the teacher's responses.

In addition to questions, please also note the other ways in which the teacher and the students interact.

What you see	*What you think*

Interactions among students

Do students have an opportunity to interact with one another? If so, how do they interact? Do they work on a task together? Do they provide feedback to one another?

What you see	*What you think*

Use of the technology/device

Is the technology/device being used as part of the activity? If so, how and for what purpose? Are teachers or students experiencing difficulties in their use of the technology/device? Are they able to troubleshoot?

What you see	*What you think*

Use of other resources

What other resources are used by the teacher? (Note the materials that the teacher uses during the lesson (chart paper, blackboard, visual aids, computers, etc.). What, if any, other technologies are being used in the lesson?

What you see	*What you think*

Other observations

What else is characteristic of what the teacher does? What else do students do?

What you see	*What you think*

Part 3: Reflections on the lesson

Please reflect on the lesson and complete the following questions as soon as possible after the observation.

1. What is the teacher's overall approach to classroom instruction (facilitator, classroom manager in control, teacher as co-learner, etc.)?

2. Did the students seem to be clear on the procedure of the activity or confused?

3. What components of the lesson/activity did students seem enthusiastic about? Include specific examples of student comments and actions to illustrate.

4. How did the students respond to the technology used? (Did they seem bored, interested and involved, etc.?)

5. Was there something about the technology that seemed difficult for the teacher or students to do? Did any glitches with the technology impede the process of the lesson?

6. What other reflections do you have about the lesson?

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Student Interview Protocol

Instructions

The purpose of this protocol is to gather stories and examples from students about their expectations and experiences integrating the Intel technology-based solution. **For each section, begin with the open-ended question.** Use probes as needed to ensure that you obtain all the information listed in the left-hand column. Example probes are provided on the right, but feel free to make up your own. **You do not need to ask every sample question listed in the right-hand column.** Allow the interview to flow naturally and look for opportunities to ask follow-up questions when interesting topics arise.

If possible:

- ❒ Select a diverse group of students.
- ❒ Ask students to bring the device with them to the interview.
- ❒ Tape record the interview for future reference.
- ❒ Introduce yourself, the purpose of your visit, and set expectations for the interview before you begin.

Questions

Part 1: Rapport building and background information

Let's go around the room. Please tell me your first name, what grade you are in, and how long you've been using the device.

☐ *General rapport building*

1. What do you like to do with your free time?
2. What are your favorite subjects in school?
3. What do you want to do when you grow up?

Part 2: Device use demonstration
Can you show me something interesting you've learned to do with the device?

☐ *Use demonstration*

4. How did you learn to do that?
5. How often do you do this in school?
6. Do you do this with the device at home or elsewhere outside school?

Part 3: Device use stories Tell me about a recent time when you were asked to use the device by an adult.

☐ *Use description*

7. What did you do? Why?

8. Who else was involved?

9. What did you learn?

Part 4: General use patterns
What are some of the ways you frequently use the device?

☐ *Use types*

10. I'm going to read a list of different ways you might use the device. For each item I read, raise your hand if this is something you do frequently in school or your community center. *Note: Read the activities listed below one at a time, counting the number of students that raise their hands for each. If you are on schedule, ask a few students as they raise their hands to give examples. Depending on how the conversation has been going, this is a good opportunity to even out participation among students.*

    a. Do research for schoolwork
    b. Type your assignments
    c. Take notes, quizzes, or tests
    d. Send e-mail to friends or teachers
    e. Chat with friends or teachers
    f. Create presentations and projects
    g. Collaborate with others
    h. Draw pictures or work with photos
    i. Write stories, blogs, wiki content, fliers, or publications
    j. Play games

☐ *Use frequency and setting*
    11. How often do adults ask you or allow you to use the device?
    12. What subject(s) do you mostly use the device for?

Part 5: Reflections

Can you tell me what you think about the device?

☐ *Likes and dislikes*
    13. What are some of your favorite things about using the device?
    14. What do you like least about using the device?
    15. If you could make improvements to the device, what would you do?

☐ *Impact*
    16. What's different now that you are using the device?
    17. If you use computers at home or anywhere else, how is using this device different?

Part 6: Other information

Is there anything else you would like to tell us about what you've done or would like to do with this device?

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Use without modification, particularly if these are new participants.
Part 2	Use without modification.
Part 3	Use without modification.
Part 4	Use question 10 as is, but ask students to describe how their use has changed. Change questions 11 and 12 to focus on changes in use.
Part 5	Use without modification. *Highlight questions 16 and 17.*
Part 6	Use without modification.

Home Use Interview Protocol

Introduction

The purpose of this protocol is to gather stories and examples about device use in informal settings—namely, the home. Ideally, this interview should be conducted with multiple family members, including the primary user of the device. **For each section, begin with the open-ended question.** Use probes as needed to ensure that you obtain all the information listed in the left-hand column. Example probes are provided on the right but feel free to make up your own. **You do not need to ask every sample question listed in the right-hand column.** Allow the interview to flow naturally and look for opportunities to ask follow-up questions when interesting topics arise. This interview will take approximately 45 minutes.

Questions

Part 1: Rapport building and background
Can you tell me about your family and your home environment?

☐ *Family members*
1. Who am I speaking with?
2. How many people live in your house?
3. How long have you been living here?

☐ *Occupations*
4. What do members of your family do for a living?
5. How long have they been in their profession(s)?

Part 2: General technology experience
What kinds of technology do you frequently use?

☐ *General technology ownership*
6. Do you own a computer? If so, how many and since when?
7. Do you have an Internet connection in your home? If so, since when?
8. What other information technology do you own (television, radio, etc.)?

☐ *Previous technology use*
9. Before owning the device, how often did you use these technologies?
10. Before owning the device, what did you use technology for?

Part 3: Device usage
How do you use the device in your home?

☐ *Device users*

11. Who is the primary user of the device?
12. Who else in your home uses the device?
13. Does anyone outside your home use the device?

☐ *Types of device use*

14. What do people in your home use the device for?
15. How frequently do you use the device for particular purposes?

16. I'm going to read a list of different ways you might use the device. For each item I read, tell me if this is something you do and how often.
Note: Read the activities listed below one at a time, noting responses for each item. If you are on schedule, ask family members to give examples and provide more detail. Depending on how the conversation has been going, this is a good opportunity to even out participation among family members.

　　　a. Find information on the Internet
　　　b. Communicate with friends or family (e-mail, chat, or instant messaging)
　　　c. Do school work
　　　d. Manage finances
　　　e. Participate in social networking activities
　　　f. Draw pictures or work with photos
　　　g. Write stories, blogs, wiki content, fliers, or publications
　　　h. Play games
　　　i. Watch videos

17. Is there anything else you would like to tell us about what you've done or would like to do with this device?

☐ *Motivations for use*

18. What motivates you to use the device?
19. What do you like most about the device?
20. Who encourages you to use the device?
21. Whom do you encourage to use the device?

☐ *Barriers to use*

22. What are some challenges to using the device?

23. Have you had any technical problems with the device? If so, how did you resolve them?

24. What supports would you need to take full advantage of the device?

25. What do you like least about using the device?

26. If you could make improvements to the device, what would you do?

Part 4: Reflection

What has changed since owning the device in your home?

☐ *Perceived impact*

27. Has having the device at home helped you do or find anything you couldn't do or find before?

28. Has having the device at home made any difference for you and your family?

29. If you use computers at home or anywhere else, how is using this device different?

Follow-up

If the deployment research design calls for multiple rounds of data collection, this protocol can also be used for the follow-up interview. In these cases, it will be appropriate to focus on observed change since the original research phase. More specific guidelines for customization are as follows:

Section	Suggested Modification
Part 1	Omit.
Part 2	Omit questions 9 and 10. Change questions 6–8 to focus on changes in general technology use.
Part 3	Focus all questions on changes in use patterns.
Part 4	*Highlight this section.* Use without modification.

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Data Triangulation Matrices

Please use the two tables below to reflect on how each data source informs your understanding of the ideas below. This document is designed to bring together data from various sources to support later analysis and the emergence of key findings.

Describe what you have learned about each item below according to each data source. If detailed descriptions of the topics listed on the left are needed, consult the reporting template.

Matrix of Context-Level Data

This matrix will help bring together data from different sources concerning the deployment setting and characteristics.

	Interviews with implementation stakeholders	Interviews with school or community leaders	Interviews with IT coordinators	Other sources
Context of Deployment				
Target population	e.g., Program is intended for children ages 5–12. Also serves low-income children ages 12–17.			
Education system structure and characteristics				
Education reform goals				
Program supports				
Political climate				
Rollout Characteristics				
Rollout features				
Planning				
Relationship to deployment planners				

Matrix of School- and Classroom-Level Data*

The following matrix will help bring together data from different sources concerning the deployment in school and classroom contexts. In some cases cells may be left blank.

	Interviews with school leaders	Interviews with IT coordinators	Interviews with teachers	Classroom observations	Interviews with students and families	Other sources
School-Level Implementation						
Device access						
Supports for use of educational technology						
Buy-in and commitment						
Capacity and readiness						
Organizational/ Professional culture						
Professional autonomy						
Teacher growth						
Teacher collaboration						
Leadership (at schools or other learning contexts)						
Classroom-Level Implementation						
Integration of the device into curriculum, instruction, and assessment						
Typical classroom instruction/ activity						

	Interviews with school leaders	Interviews with IT coordinators	Interviews with teachers	Classroom observations	Interviews with students and families	Other sources
School-Level Implementation						
Independent research						
Communication						
Innovative instruction						
Extension of learning beyond the classroom						
Changes in Teaching and Learning						
Changes in teacher attitudes						
Changes in instructional practices						
Changes in curriculum and assessment						
Changes in students' learning behaviors						
Changes in policies and politics						
Unexpected or emergent changes						

*This matrix may be adapted, with some modifications, to synthesize data gathered in out-of-school settings as well.

Qualitative Report Template

Please use the headings, questions, and guidelines in this template to write your qualitative report.

1 Study Methods

In this section, please describe your sample and provide basic information about (1) the government representatives you interviewed,(2) the sites you visited, (3) people you interviewed, and (4) the lessons you observed. Also, please describe any methods that differed from those described in the research toolkit.

1.1 Stakeholder Sample

List the name, title, and role of each of the government representatives interviewed.

1.2 Site Visit Sample

Provide a description of each of the schools or community centers that were visited. For each site, include:

1.2.1 **Name** of the site

1.2.2 **Date of each visit** and the stage relative to the rollout timeline

1.2.3 A brief **description of the site** itself, including its location, its physical condition and resources, the economic status of the area, and anything about the surrounding community that would help others better understand the site

1.2.4 An overview of the **history of reform** in the site including a brief description of the **level of technology availability and use** before and after the deployment relative to other sites in the area

1.2.5 A description of who was interviewed including site IT administrators, leaders, and an overview of the number of teachers or staff and student research participants.

2 Context of Deployment

In this section, describe what you learned about how features of the large-scale educational or social context for the deployment (the city, state, or country) have shaped deployment strategy. Focus on factors that might affect the implementation of the deployment. Note that school or community context will be discussed below.

2.1 Target Population

Describe the target population of the deployment in terms of its demographics: ethnicity and gender, socioeconomic characteristics, literacy levels, language, and culture. What other features of the target population are relevant to deployment?

2.2 Education System Structure and Characteristics

Describe the overall structure of the education system or relevant aspects of the target community. What are the features of the system that create opportunities or challenges for the deployment?

2.3 Education Reform Goals

Describe the overall education goals of the education authority or social agency in charge of deployment (local school district, national government, etc.). What are the goals for student outcomes and skills? How is the deployment expected to support the goals?

2.4 Program Supports

Describe the supports and resources that the education authority or social agency in charge of deployment provides to help schools improve. Supports may include professional training, resources, funding, etc. Also describe constraints imposed by the authority that might limit school or community improvement efforts.

2.5 Political Climate

Describe the political climate surrounding the deployment. Who are the primary political stakeholders and what do they stand to gain? How is the public discussion of the rollout framed in the media?

3 Rollout Characteristics

In this section, describe what you learned about the deployment rollout.

3.1 Rollout Features

Describe the basic characteristics of the deployment, including the scope of the deployment, the characteristics of the devices as deployed, and the broader reform or development context (if any) that the deployment is part of.

3.2 Planning

Describe the planning process for the deployment. What aspects of the context were taken into account? What aspects were overlooked?

3.3 Relationship to Deployment Planners

Describe the nature of the relationship between the schools or community entities carrying out the deployment and the deployment planners.

4 Site-Level Implementation

In this section, describe various aspects of implementation at the site level across the visited sites. Please include (1) strong or unique examples in each category, (2) what is common or similar across sites, and (3) any important variations or exceptions across sites.

4.1 Device Access

Describe the deployment in terms of technology **available in the sites**. What is available and where are those resources located? Please describe any other supporting hardware, software, and technology equipment used to support the implementation.

4.2 Supports for Use of the Device

What types of training and supports are available to sites, teachers, staff, or students specifically to support the deployment? What supports do teachers or staff have to help them improve their proficiency with technology? To help them integrate the deployment/technology solution into their instruction?

4.3 Teacher or Staff Buy-in and Commitment

Describe the extent to which teachers or staff support or resist the deployment. How do they show this support or resistance?

4.4 Teacher or Staff Capacity and Readiness

To what extent are teachers or staff prepared to implement the deployment? Do teachers or staff describe specific areas in which they need additional training or support?

4.5 Site Professional Culture

Describe the professional culture and environment at the sites.

4.6 Professional Autonomy

How much autonomy did teachers or staff at the sites you visited have with respect to decisions about their day-to-day practices? What was the process of trying new things or learning new things for teachers or staff?

4.7 Teacher or Staff Growth

Was there evidence that teachers or staff were supported in experimentation and professional development? Was professional development directed in part by their interests and goals?

4.8 Teacher or Staff Collaboration

Did you encounter evidence that teachers or staff collaborate with one another in their work? Did collaboration happen in connection with the use of the device or other technology? Are there other communities of collaboration in which teachers are involved where they gain ideas, energy, or insight into developing innovative teaching and learning practices?

4.9 Site Leadership

Describe the role of site leaders in relation to the deployment. For example, are the school leaders you interviewed working to build a common vision of learning within their schools? How do community leaders describe their goals for their communities and youth? Describe the

consistency (or lack of consistency) among national or regional goals and school or community leaders' visions for effective practice.

5 Classroom-Level Implementation (for school-based deployments)

In this section, describe typical and innovative patterns of technology use (related to the deployment) at the schools you visited. Please include (1) strong or unique examples in each category, (2) things that are common or similar across schools, and (3) variations across schools or important exceptions.

5.1 Integration of the Device into Curriculum, Instruction, and Assessment

5.1.1 Curriculum
Describe how teachers are incorporating the device into their curriculum. What synergies, if any, are being created between curriculum and the device?

5.1.2 Teaching and Learning
Describe how ICT has been integrated into the classroom. How has it been used to provide new or improved learning opportunities for students? What challenges related to integrating technology did you hear about in your interviews?

5.1.3 Assessment
Describe how teachers are incorporating the device into assessment practices. What synergies, if any, are being created between assessment practices and the device?

5.1.4 Integration Challenges
Did you learn of any device uses that could not be connected with curriculum, instruction, or assessment?

5.2 Typical Classroom Instruction
How do teachers typically make use of the device in their instruction? What do teachers and students do during lessons? Were there any differences between how teachers described their practice and what researchers observed in the classrooms?

5.3 Independent Research
Did students at the schools you visited use the devices to search for material or analyze information? If so, please comment on this including a description of the diversity of resources accessed.

5.4 Communication
Were devices used to support the practice and development of communication skills? If so, please comment on how common this kind of use was and on the range of communication styles and formats. Please also note if communication practice ever involved outside audiences.

5.5 Innovative Instruction
Describe any innovative uses of the device for teaching and learning. Examples include involving students in projects, asking students to collaborate, having students assess their own work or the work of peers, etc.

5.6 Extension of Learning Beyond the Classroom

Describe any efforts to use the device to extend learning outside the classroom. Are students connecting with community members, learning about other cultures, or having the opportunity to learn from experts outside the classroom?

6 Lesson Descriptions (for school-based deployments)

Please describe six individual lessons that you observed, providing a paragraph description of each. For your descriptions, please select:

6.1 Three Innovative Lessons

To select the most innovative lessons, please consider strong examples of student-centered teaching and learning and powerful or creative uses of the deployment.

6.2 Three Typical Lessons

To select the typical lessons, please consider the type of instruction that is most common in your country (and at the schools you visited) **at this point in time**.

For each of the descriptions, please describe what happened during the lesson. What were the teacher and students doing? What types of products were students creating? Were students working alone, in groups, or as a whole class? How were the teacher and students interacting?

7 Changes in Community Center Experience (for nonschool deployments)

In this section, summarize responses from community center staff and student interviews to describe the changes that are taking place as a result of the deployment. In each category below, please include (1) strong or unique examples in each category (2) what is common or similar across sites, and (3) any important variations or exceptions across sites.

7.1 Changes in Staff member Experience

Describe any changes to staff members' routine practices that are related to the introduction of the device in the site. Include staff members' own assessment of the importance of these changes or relevance to their overall work goals.

7.2 Supports for Device Use

What kinds of supports (either technical or substantive) are in place for staff and students in their use of the device?

7.3 Integration of the Device into Daily Practice

7.3.1 Student Activities

How have the students' routine activities changed with the introduction of the device? Has the device been integrated with existing activities or introduced as a part of entirely new programming or some combination of the two?

7.3.2 Learning Opportunities

How has the device influenced learning opportunities in the site? Have learning opportunities that existed at the site been influenced by the device? Do students use devices in ways that formally or informally support their learning?

7.4 Typical Use

How do staff and students typically use the device in their instruction? Were there any differences between how staff and students described their practice and what researchers observed in the classrooms?

7.5 Communication

Was the device used to support the practice and development of communication skills? If so, please comment on how common this kind of use was and on the range of communication styles and formats. Please also note whether communication practice ever involved outside audiences.

7.6 Innovative Use

Describe any innovative uses of the device for providing learning opportunities. Examples include involving students in projects, asking students to collaborate, having students assess their own work or the work of peers, etc.

7.7 Extension of Learning Beyond the Site

Describe any efforts to use the device to extend learning outside the site. Are students connecting with community members or following up with further use at home or in school?

8 Changes in Teaching and Learning (for school-based deployments)

In this section, summarize responses from teacher, student, and school leader interviews to describe the changes that are taking place as a result of the deployment of the device. In each category below, please include (1) strong or unique examples in each category, (2) what is common or similar across schools, and (3) any important variations or exceptions across schools.

8.1 Changes in Teacher Attitudes

Do the data from teacher and school leader interviews indicate any shift in teachers' attitudes (toward teaching, students, the use of device, etc.)? Please elaborate with specific examples.

8.2 Changes in Instructional Practices

Do teachers and school leaders report any shifts in instructional practices that arise from the use of the device? If so, what are they?

8.3 Changes in Curriculum and Assessment

Do the data from teacher and school leader interviews indicate any shift in curriculum and assessment practices? How so?

8.4 Changes in Students' Learning Behaviors

Do the data from student and teacher interviews indicate any shift in students' attitudes (toward school, learning, the use of device, etc.)? Do the data indicate any changes over time in how students learn? Please elaborate with specific examples.

8.5 Changes in Policies and Politics

Do the data indicate a shift in policies or politics at the school, regional, or national levels? Please elaborate with specific examples.

8.6 Unexpected or Emergent Changes

Do the data indicate that the technology solution was deployed in a manner that was different from what was intended? Did participants' experiences vary considerably from what was anticipated? Did participants use the devices in unexpected ways and did the use of the device bring about unanticipated changes in their attitudes, learning behaviors, etc.?

9 Other Information or Examples

Include any other important information or examples that do not clearly fit under any of the previous headings. Describe why the information or examples are significant for deployment research.