

# Preparing Girls and Women for 21st Century Success: Intel® Teach Findings

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## Executive Summary

Intel® Teach is reshaping the global educational landscape to better prepare teachers and students for success in a 21st century economy. Launched in 2000, the program has trained more than 10 million teachers in over 70 countries to integrate technologies and project-based teaching methods into classrooms.

Building on more than a decade of investments in education, Intel strives to understand how its educational efforts are helping girls and women reach their full potential. The International Center for Research on Women (ICRW) conducted a qualitative study of the Intel Teach Program's impact on female students and teachers in Chile, India, and Jordan. Researchers strove to understand whether and to what extent the program empowers and advances girls and women inside and outside the classroom.

ICRW determined that Intel Teach cultivates greater knowledge, skills, and self-confidence among female educators to use technologies in their professional and personal lives. The program also helps them to strengthen opportunities to enhance their career. In the classroom, we found that Intel Teach graduates use technologies to create a more engaging, and interactive environment with lessons that resonate with students' lives. This instructional approach elevates girls' voice and confidence in school and at home. It also motivates girls to learn, to collaborate with others, and to think critically—all key characteristics for employment in the 21st century workplace.

While Intel Teach provides both male and female teachers and students with valuable skills and experiences, the following features emerged as being particularly beneficial for girls and women in using technologies for educational, personal, or professional advancement:

- Teachers' use of student-centered and project-based teaching methods can reduce the power imbalance between students and teachers. This allows girls to feel more comfortable asking questions and communicating with their teacher and classmates.
- Participation in Intel Teach facilitates teachers' access to resources, networks, and support. In turn, they are more confident in using technologies in their personal and professional lives. They also garner greater respect from family and community members.
- A focus on project-based learning, problem solving, and collaboration has special relevance for girls who are more likely to face gender-related barriers that limit their voice, aspirations, and access to resources. The skills girls gain through project activities build their self-confidence to communicate with family members, convey their ideas to others, and be active participants in their communities.

ICRW's findings demonstrate that Intel Teach is contributing to empowering women and girls with skills for success in today's increasingly interconnected, digital world. We recommend that governments, corporations, and organizations committed to advancing the world's women and girls through education and technology build on Intel's experience.



## Introduction

Nations with educated populations are more likely to build stronger economies, develop innovative solutions to intractable problems, and advance their society in ways that can be globally influential. It is therefore imperative to prepare the world's youth—who are growing at an unprecedented rate, particularly in low- and middle-income countries—to learn, lead, and succeed in a 21st century global economy. That means equipping the next generation with critical-thinking and problem-solving skills, a collaborative nature, and digital literacy—essential qualifications for operating in an increasingly connected world.<sup>1,2</sup>

Technologies are not only critical components in today's workforce, but also can complement and accelerate student learning.<sup>3,4</sup> However, technologies are not integrated into many formal school curricula. This is in part because of teachers' limited awareness of and competence and experience in using technologies to enhance the educational experience.<sup>5-7</sup> In addition, some educational systems are wedded to an instructional approach that emphasizes rote memorization instead of one that honors students' different interests and creates a classroom environment rich with interaction and inquiry.<sup>8,9</sup>

Intel is reshaping these realities across the world. One of its global educational initiatives, Intel Teach, transforms classrooms to better prepare young people to thrive in today's digital world. Since its launch in 2000, the professional development program has equipped more than 10 million primary and secondary school teachers with skills to integrate technologies and project-based teaching methods into lesson plans. Intel Teach has been implemented in more than 70 low-, middle-, and high-income countries through public-private partnerships with government ministries, teacher training organizations, and schools.

As Intel Teach expands its reach among teachers, it indirectly influences millions of girls across the globe for whom an education can have a significant impact on the trajectory of their lives. Research shows that girls in school are more likely to delay marriage and childbearing, and less likely to become infected with HIV. With an education, girls also have a greater chance of growing into women who earn higher wages, spend less time doing domestic work, and participate more actively in civic life.<sup>10</sup> Societies stand to benefit, too: A recent study by the World Bank found that closing the gender gap in education would substantially increase national economic growth and well-being.<sup>11</sup> Intel continues to focus on understanding how its educational initiatives are affecting girls and women.

The International Center for Research on Women (ICRW) conducted a qualitative study of the Intel Teach Program's impact on female students and teachers in Chile, India, and Jordan. Researchers

aimed to understand whether and to what extent the program empowers and advances girls and women inside and outside the classroom. Girls in low- and middle-income countries continue to be socially isolated with little autonomy or economic opportunities, and experience limited access to information and technology.<sup>12-16</sup> All of these are barriers that can impede girls' education and successful transition to adulthood. Meanwhile, adult women in the workforce also confront obstacles to their career advancement, including unequal access to technical resources, training options, and professional networks.<sup>17-19</sup>

ICRW's research in the three countries found that the Intel Teach Program cultivates greater knowledge, skills, and self-confidence among female educators to use technologies in their professional and personal lives. The program also helps them to strengthen their career-building opportunities. In the classroom, we found that Intel Teach graduates are using technologies to create a more engaging, interactive environment with lessons that are relevant to students' lives. Importantly, the approach boosts girls' voice and confidence in school and at home. It also motivates both girls and boys to learn, collaborate with others, and to think critically—all key characteristics for employment in the 21st century workplace.

The findings that ICRW gleaned from its research on Intel Teach, which will be elaborated on later in this report, are central to understanding how innovative educational approaches can help girls and women realize their full potential. They also can inform the efforts of other corporations, organizations, and programs committed to advancing the world's women and girls through education and technology.

## Intel Teach: Overview & Research

The Intel Teach Program's curriculum is comprised of 15 distinct courses that are offered both as "pre-service" training for university students studying to become educators, as well as "in-service" training for those who are already teachers. Some courses are geared toward technology newcomers and are delivered in person. Teachers learn how to improve their productivity through the use of technologies, using tools such as multimedia software and spreadsheets. These courses also develop 21st century teaching and learning skills and approaches, such as student-centered instruction, as well as encourage critical thinking and collaboration among students.

Some of the other courses in the curriculum target teachers with intermediate technology skills. These courses provide a deeper exploration of how to apply project-based approaches to broaden students' 21st century skills. Teachers learn how to design units that enhance students' higher-order thinking skills. Such projects require students to work in groups, conduct





*“The role of the teacher has shifted from someone who feeds the students with words to someone who mentors them in their learning process.”*

-Female English teacher from Jordan

online research, delegate tasks, and prioritize relevant information. Participants also learn to plan, develop, and manage a collaborative approach to assessing students’ performance.<sup>20</sup>

The teaching methods and pedagogical approach adopted by Intel Teach graduates enable them to instill students with the ability to navigate various technologies, think critically, work in teams, and credibly convey information.<sup>21</sup> Indeed, it is a collection of skills increasingly demanded by today’s employers.<sup>22</sup>

But do these outcomes make any distinct contributions to girls’ and women’s empowerment and advancement? To answer this question, ICRW conducted qualitative research in Chile, India, and Jordan to determine whether and how the Intel Teach Program is making a

difference in the lives of its female teachers and students, inside and outside the classroom.

ICRW researchers specifically sought to find out:

- How does Intel Teach help teachers create an enabling learning environment for female students?
- In what ways does Intel Teach contribute to the professional and personal advancement of female teachers?
- How do Intel Teach methods enhance female students’ learning and application of skills to their everyday lives?

For this qualitative study, ICRW researchers visited the three countries where they interviewed nearly 100 informants, including teachers, students, principals, supervisors, and local Intel staff. The countries were chosen for their variation in geographic location and for their different levels of gender equality, as measured by their Gender Inequality Index (GII) scores.<sup>23</sup> Among the 148 countries for which the GII is calculated, Chile ranks among the top half of the most gender-equitable nations, Jordan is in the bottom third, and India is among the 10 percent of least gender-equitable countries. The three countries also reflect diverse levels of economic development and social progressiveness, as well as unique implementation models of the Intel Teach Program. Specific characteristics of each country are summarized in Box 1.

### Box 1: Country Context

Chile	India	Jordan
<p><b>Demographic and Education Characteristics</b></p> <ul style="list-style-type: none"> <li>• Total population: 17.3 million</li> <li>• 78% of teachers are female</li> <li>• Net enrollment in primary school: 93% female, 94% male</li> <li>• Net enrollment in secondary school: 84% female, 81% male</li> <li>• Adult literacy: 98% female, 99% male</li> <li>• Chile has a very progressive, student-centered education system that aligns well with Intel® Teach methodologies</li> </ul>	<p><b>Demographic and Education Characteristics</b></p> <ul style="list-style-type: none"> <li>• Total population: 1.2 billion</li> <li>• 42% of teachers are female</li> <li>• Net enrollment in primary school: 92% female, 93% male</li> <li>• Net enrollment in secondary school: data not available</li> <li>• Adult literacy: 51% female, 75% male</li> <li>• The key challenge to implementing Intel® Teach methodologies is that teachers lack the consistent and reliable access to technologies to be able to effectively integrate them into classroom instruction</li> </ul>	<p><b>Demographic and Education Characteristics</b></p> <ul style="list-style-type: none"> <li>• Total population: 6.3 million</li> <li>• Equal proportion of male and female teachers</li> <li>• Schools are segregated by sex</li> <li>• Net enrollment in primary school: 91% female, 91% male</li> <li>• Net enrollment in secondary school: 88% female, 83% male</li> <li>• Adult literacy: 89% female, 96% male</li> <li>• The recent (2002) Education Reform for Knowledge Economy encourages student-centered teaching and learning, aligning well with Intel® Teach methodologies</li> </ul>
<p><b>Implementation of the Intel® Teach Program</b></p> <ul style="list-style-type: none"> <li>• Timing: Started in 2000</li> <li>• Partnership: Intel partners with the Pontificia Universidad Católica de Chile to implement the program in both public and private schools and with more than a dozen universities to include the program as part of teacher training</li> <li>• Participation: Intel Teach is delivered through both a pre-service university course and as a voluntary in-service program</li> <li>• Reach: Approximately 25% of teachers in Chile have participated in Intel Teach (40,000/150,000)</li> </ul>	<p><b>Implementation of the Intel® Teach Program</b></p> <ul style="list-style-type: none"> <li>• Timing: Started in 2000</li> <li>• Partnership: Intel partners with state governments, NGOs, and academia to implement the program in both public and private schools</li> <li>• Participation: Intel Teach is delivered through both a pre-service university course and as a voluntary in-service program</li> <li>• Reach: Approximately 28% of teachers in India have participated in Intel Teach (1.8 million/6.5 million)</li> </ul>	<p><b>Implementation of the Intel® Teach Program</b></p> <ul style="list-style-type: none"> <li>• Timing: Started in 2005</li> <li>• Partnership: Intel partners with the Ministry of Education to implement the program in public schools</li> <li>• Participation: Intel Teach is offered as in-service training; while participation is voluntary, it is a mandatory requirement for teachers to qualify for a rank and salary upgrade after 10 years of teaching</li> <li>• Reach: Approximately 80% of teachers in Jordan have participated in Intel Teach (80,000/100,000)</li> </ul>

Sources:  
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+ The Gender Inequality Index is a measure that reflects women’s disadvantage in three dimensions: reproductive health, empowerment, and labor market participation. Scores range from 0 (women and men fare equally) to 1 (women fare as poorly as possible) in all measured dimensions. For the three countries—Chile, Jordan, and India—the scores are 0.36, 0.48, and 0.61, respectively, indicating that women in India are the most disadvantaged while women in Chile are the least.



## Key Findings

### Intel Teach Fosters an Enabling, Interactive Learning Environment

Educators trained by Intel Teach effectively used technology and project-based lessons to engage students while also honoring their different interests and strengths. The Intel Teach approach to learning helped facilitate a lively, interactive classroom environment that encouraged creativity, collaboration, and communication. The following are specific ways in which teachers developed such an atmosphere for learning.

#### ***Breaking the power imbalance between teachers and students***

Building an enabling learning environment requires teachers to know their students' interests and learning abilities. This is not the norm in many countries, where instructors traditionally are more didactic in their delivery of lessons: teachers lecture; students listen and memorize.

The Intel Teach Program however, encourages a more hands-on approach in which teachers use technologies to facilitate students' discovery of knowledge. Our study found that students' curiosity, autonomy, and motivation to learn increased once they recognized they didn't need to solely rely on their teacher for information. They could find it independently—on the Internet, for instance—and teachers encouraged them to do so. As a result of this more interactive approach, educators in Chile, India, and Jordan transformed the learning environment into a more equitable, reciprocal setting.

And it didn't end there. To increase communication, some teachers set up blogs as well as shared their e-mail addresses so students could contact them. This kind of interaction also helped break the power imbalance

between teachers and students, which is important for all students, but particularly for empowering girls.<sup>24,25</sup> In many cultures, girls are taught to do as they are told and to not speak up or question authority. But when teachers—usually viewed as unapproachable authority figures—allow space for students to interact with them and perceive them as mentors, girls are more likely to participate in discussions, ask questions, and feel that they are important to the learning process.<sup>26,27</sup>

#### ***Tailoring instruction to students' learning styles and needs***

Studies show that in many cases, boys and girls learn differently.<sup>28</sup>

In general, girls often have high performance standards and can be self-critical.<sup>29</sup> They

therefore benefit from more encouragement

and positive reinforcement from teachers. Alternatively, boys often have unrealistically high estimates of their own academic abilities and achievements, and can benefit from projects that encourage them to challenge their limits.<sup>30</sup> As teachers interact with students and pick up on these subtle differences, they can tailor their teaching methods to better reach their students.

Intel Teach equips instructors with the capacity to do just that—and to utilize technologies to modify classroom instruction to engage visual, audio, or kinesthetic learning. Doing so enhances how both high- and low-achievers comprehend and retain information.

Across the three countries, many teachers lauded their expanded repertoire of instructional approaches. "Now I have a variety of teaching methods to use to explain the lesson to the students," a female Jordanian teacher

*"[After participating in Intel Teach] what died in me was the formal teacher who only knew how to deliver information."*

-Female math teacher from Chile

said. “I can pick the method depending on the students’ previous knowledge and learning style.”

We also found that teachers’ understanding of how technologies can facilitate learning yielded new levels of flexibility and creativity. For instance, when a secondary level English teacher in India realized that her students needed extra help with pronunciation beyond just reading aloud in class, she created podcasts that the students could listen to on computers or mobile phones.

#### ***Relating classroom lessons to students’ lives***

Students learn more when they can connect topics to their everyday lives. Intel Teach methods provide this opportunity through practical applications of classroom lessons and student-centered projects.

For example, a Jordanian teacher made mathematics relevant to the real world by creating lessons that highlighted how math is used in nature and sports. “I turned mathematics from something boring into something interesting that students want to learn about and can understand,” she said. In India, students studying drug addiction interviewed addicts, family members of addicts, and police officers to understand why addiction happens and its consequences. By relating drug use to real people, youth attained a deeper, personalized educational experience, making it more likely that they will retain what they learned.

Intel Teach also promotes using technologies to contribute to and make sense of the world students live in. This is especially important for girls, who best learn how to use technologies when they can apply them to understand real world problems and help their communities.<sup>31-34</sup> In Chile, for instance, a group of female students were motivated to create posters and pamphlets on the computer for a campaign to promote a

cleaner school environment. In India and Jordan, female students gained a deeper understanding of Excel\* by using it to analyze cricket scores and stock market prices, respectively (see Box 2).

### **Intel Teach Aids Educators’ Professional and Personal Advancement**

Our study found that many female teachers were enjoying both personal and professional benefits from their participation in the program. We highlight below some of their experiences and show how the training improved women’s self-confidence, increased their access to professional development opportunities, and rewarded them with new leadership roles.

#### ***Deepened self-confidence in using technology***

According to a study on the Internet gender gap, 40 percent of women who did not use the web said it was because they were not familiar or comfortable with technology.<sup>35</sup> This was also true for many female educators, particularly older ones, who participated in Intel Teach. After the program however, graduates were able to adeptly discuss computer-related topics with school colleagues and family members. Their anxiety about using technology disappeared.

This newfound self-confidence also moved women educators in Chile, India, and Jordan to use technologies more in their personal lives. For instance, when a female teacher from India was too embarrassed to ask her male doctor about a health problem she was experiencing, she turned to the Internet. Her online research directed her to the treatment she needed. Other teachers used technologies to communicate with family and friends, conduct financial transactions such as online banking or shopping, and find information on a range of issues.

## **Box 2: Learning Math Through Understanding the Stock Market**

After participating in Intel® Teach, a female math teacher at a girls’ school in Jordan strayed from the syllabus and decided to teach her 9th grade class about the stock market for a math unit. She started by asking the girls basic questions about the stock market and had them search the Internet for the answers, as well as definitions of important terms. Next, her students researched different sectors of the economy to understand how they make profits and impact stock prices. Some students also took a field trip to Amman to interview traders and observe the market in action. Others talked with religious leaders to understand what financial transactions are acceptable under Islamic law. Afterwards, she transformed her classroom into a mock stock market. She gave groups of students each a pot of money to invest. The “brokers” then chose their investments, tracked their movement on the Internet, and calculated earnings and losses in Excel\* spreadsheets. In the end, some students who were initially hesitant to learn about the stock market became more interested once they understood how stock prices related to industries that affected them. Many girls also passed on their new knowledge about buying and selling stocks to their families.

## Box 3: Training Opportunity Helps Advance Teacher's Career

A female primary school teacher in Chile with 33 years of experience took the Intel® Teach course in 2006 at a time when she had only basic computer skills. She became fascinated with how to integrate technologies to enhance student learning and sought additional training opportunities in Chile and elsewhere, including spending three months at the University of British Columbia in Vancouver, Canada. In 2010, she won a regional competition for a lesson plan that incorporated interactive white-board software to teach aspects of Spanish, math, science, and art. In 2012, another lesson plan she developed was selected by the Ministry of Education as one of 20 best practices in the use of interactive technology learning tools. Her award was enough prize money to buy a laptop and furnish a home office. She also received a significant pay raise as compensation for her professional development training. In her current role as a computer science teacher, she incorporates technologies into lesson plans to strengthen the digital competencies of her students 4 to 13 years old, who come from a low-income area of Santiago. She has also led Intel Teach methodology courses and belongs to a professional network of innovative technology teachers in Chile sponsored by the Ministry of Education, Teach Chile, and Microsoft. Indeed, the success of this daughter of “campesinos” or country people—including a father and mother who never finished primary school—has made her parents proud.

A female teacher in India summed up the value of her new confidence this way: “When you know how to use technology,” she said, “it enhances your standard of living.”

### **Increased access to professional development**

Our research found that the knowledge and confidence women acquired through the Intel Teach training better positioned them to seek new professional development and learning opportunities.

In Jordan, a number of teachers expanded their technical skills by participating in software program trainings or enrolling in information technology courses at the local university. Similarly in Chile, educators said Intel Teach laid the groundwork for them to expand their learning. One Chilean teacher credited the program with fueling her passion for using technologies in the classroom and driving her to search for additional career development opportunities (see Box 3).

Online networks were also integral to increasing teachers' access to information and professional support. Through these networks, teachers were able to exchange innovative lesson plans, teaching resources, experiences, challenges, and advice with other professionals. Some online forums also engaged students and parents, too. For instance, a Jordanian female teacher used social media to link her students with an American university so they could ask questions about English. The American students and professors responded via video message and/or a PowerPoint\* presentation. For women especially, using such social networking platforms to engage with others outside of their immediate communities can be an empowering experience, according to Intel's recent “Women and the Web” report. When women connect with a wider network it expands the possibilities they believe are

open to them and fosters a sense that they can change their lives.<sup>36</sup>

### **Leading as technology educators and innovators**

Intel Teach graduates' desire to share their knowledge with others propelled a number of them into new leadership roles in their schools and districts.

For example, a female instructor in India created websites and blogs to provide teachers and students with learning resources for mathematics. The website for teachers has a platform for sharing lesson plans, conversation pages to discuss common challenges students experience in learning math concepts, and other teaching material, such as PowerPoint presentations and videos. The class blog provides a platform where students can view assignments, discuss challenges with homework, and share valuable resources.



*“You have to climb a ladder, you go step by step. Intel Teach was my first step—the fear of trying other tools has gone away.”*

– Female math teacher from India



## Box 4: Creating Technology Resources for Other Teachers

After training with Intel® Teach, a female secondary school English teacher in India started incorporating technologies into how she taught and evaluated student performance. As she saw how technologies helped her in her job, she wanted to share her methods with other teachers to make their jobs more efficient. She started an organization, Creative Teachers of Rajasthan (CTOR) to provide training, information, and resources to other teachers and a platform for discussing education challenges and successes. CTOR offers face-to-face meetings, as well as a website with a bulletin board, e-learning tools, lesson plans, tools for teachers, and a blog where teachers and students interact. She also developed a program in Excel\* named “Results” to help teachers compile and calculate students’ grades. She has shared this program with colleagues through online and webinar trainings. She also presented it to her district’s director of education who then made use of the Results program mandatory for all teachers in the district.

Another Indian teacher founded an organization to help educators advance professionally by using technologies in the classroom and for student assessments (see Box 4).

### Intel Teach Enriches Student Learning

When teachers incorporate project-based learning in the classroom, students’ academic performance increases, they retain knowledge longer, and they gain a greater ability to integrate and explain concepts.<sup>37,38</sup> As the nature of the global economy changes, skills attained through project-based and student-centered learning—such as critical thinking, collaboration, and digital literacy—will be essential to prepare students to participate in the workforce.<sup>39</sup>

The following highlights how such Intel Teach-based activities contributed to students’ lives and readied them for success in a global economy.

#### **A greater curiosity and motivation for learning**

Our study found that as students’ confidence in and curiosity to independently use technologies grew, they became more motivated to learn.

*“In the past I would give homework and only the clever ones would do it. Now even low-achievers like using technology and are more motivated to do the assignment. Everyone wants to learn more.”*

-Female English teacher from Jordan

For instance, when students in Jordan and India saw their instructors apply technologies in a lesson, youth volunteered to search online for additional information. They also offered to “computerize” lessons by researching the study

topic online and creating a PowerPoint presentation for the teacher to present.

A teacher in southern Chile who completed Intel Teach was particularly innovative with technology by using it to keep students in school. When a school lunch program was introduced in an indigenous village, the teacher noticed that students would eat, and then skip afternoon classes. She also observed how much students enjoyed using computers. She decided to use this to her advantage by scheduling computer classes at the end of the day. As a result, school attendance increased; students now had an extra incentive to stay through the full school day.

#### **Deepened understanding of topics**

Research shows that students acquire a more comprehensive understanding of concepts when they learn through multiple sources and use a variety of skills to solve problems. Further, students are more likely to retain their understanding of a particular concept when they use technologies to conduct experiments and create presentations and reports that require them to apply their knowledge.<sup>40</sup>

Students reported that when their teachers used technologies in lesson plans, they internalized more and remembered what they learned for a longer period compared to when they only read about concepts in

*“When we are working in groups, we have more time to think about the topic and we can ask better questions. In a traditional lesson, we would not have had the time or opportunity to think about and understand a concept on this level.”*

-Female student from India



a book. Watching videos, playing with 3-D models on SMART boards, or even just viewing images over the Internet deepened their learning. That was the experience of an Indian student who was studying the French Revolution. She felt that she better understood life during that era after she found pictures on the web of how people dressed then, what a guillotine was and how it functioned, and what cities looked like. Later, she was able to recall what events took place then because she could visualize different time periods.

The Intel Teach approach also encourages students to work in groups, which allows them to learn at their own pace. Students explained that sometimes the pace of traditional lessons is too fast and doesn't give them a chance to think about and understand a concept. Group learning provided a space for them to discuss questions among peers first, and then ask their teacher for clarity. This process further deepened their learning, they reported.

***Improved collaboration, critical thinking, and time management***

Teachers said that students learned how to collaborate effectively when they worked in groups to complete projects. This may be particularly important for girls; studies show that they are more engaged in learning about science and technology when they have opportunities to collaborate.<sup>41,42</sup>

By working in groups, students also learned how to manage their time by assessing the steps necessary to complete a project, prioritizing and delegating tasks, and creating timelines. Project-based assignments gave students opportunities to learn how to conduct research online, sift through vast amounts of information, and select the most relevant pieces. Finally, youth learned how to provide constructive criticism of their fellow classmates' work.

Taken together, these are all important skills for today's competitive workforce, which often requires employees to juggle multiple responsibilities simultaneously, provide feedback, work in teams, and regularly meet deadlines. Such abilities also can be applied to everyday life, and students whose teachers participated in Intel Teach were already doing just that. In Jordan, many said they used their time management and delegation skills to prioritize household chores and assign tasks to their younger siblings. And in India, a girl used her newfound problem solving and web searching prowess to figure out how to fix a vase her brother

*"Using project-based methods in the classroom enhances our thinking so whenever there is a problem, we don't become hectic and panic, but rather think about it calmly and patiently and reach a decision."*  
-Male student from India



## Box 5: Using Confidence and Communication to Combat Early Marriage in India

A teacher in India who participated in Intel® Teach assigned her students a project on the causes and harms of child marriage in their community. Students used the web to look up information and then traveled door-to-door to survey residents about why parents tend to marry off their daughters at a young age. They also informed residents about the harms of the practice. One student explained that through this project she learned to communicate with people from different backgrounds and ages. She learned how to express her views and convey ideas in an amicable manner. She became more confident in her ability to communicate persuasively and contribute to family discussions. When her relatives noticed how she had matured, they told her that she was all grown up and ready to marry. Using what she learned about early marriage and her new confidence in expressing her opinions, she was able to speak up to her parents and say, “Yes, I am grown up, but I am still a minor and so it is not yet time for my marriage.” She shared the harms of early marriage with her relatives and explained that she wants to finish her education before getting married. Ultimately, she was able to convince them to let her stay in school and delay marriage.

broke. She found the answer in an online video. When she told her parents about the mishap, they were impressed by her resourcefulness.

### Intel Teach’s Importance for Girls

While both boys and girls benefit from engaging in classroom activities that promote digital literacy, collaboration, and other aptitudes, use of Intel Teach methods provides certain benefits that are particularly important for female students.

In many parts of the world, women continue to face barriers that slow or prevent their

*“Before, we wouldn’t be able to express our views in front of the whole class, but then when you have to speak in front of others, you get used to it and your self-confidence increases. Now we can speak on any topic, at any time.”*

-Female student from India

advancement. They have fewer economic opportunities than men and don’t enjoy the same legal rights; they also tend to be socially isolated and experience violence at higher rates.<sup>43-47</sup>

These disparities are often more exaggerated for adolescent girls, who tend to have less access to information and services due to limited mobility, cultural restrictions, or because of educational limitations.<sup>48</sup> Girls also are expected to transition quickly into adult roles—such as becoming a wife and mother—while they are still children themselves. They often lack the resources to do this successfully. However, some of the capabilities girls obtain through Intel Teach methods can help them overcome traditional barriers and prepare them for future success as employees, mothers, wives, and civic participants.

We identified the following changes that Intel Teach inspires as particularly important for female students:

### **Enhanced communication skills and voice**

Girls’ confidence elevated through the Intel Teach experience of giving class presentations about their findings from group projects. Similarly, many of the project-based activities developed by Intel Teach graduates transformed girls into better communicators, equipping them with the courage to express their opinions to their family and people in their community. These projects included interviewing a bank manager to learn about educational loans in Jordan, conducting a door-to-door survey about child marriage in India, and organizing an environmental campaign to promote reusable bags in Chile. It’s through such experiences that girls learn to interact with others outside of their normal social circles. And, they learn how to relate to people of different ages and cultural and economic backgrounds. All of these are crucial skills that will help them succeed in a globalized workforce (see Box 5).

### **Increased autonomy**

Our study found that students in Chile, India, and Jordan came to recognize that they have the power to discover the knowledge they want and need on their own. This is an important realization for girls—particularly those in some low- and middle-income countries who tend to become isolated as they enter adolescence. During this time, many parents require their daughters to take on more household chores and are less inclined to allow them to go out in public. Many girls are ultimately cut off from accessing a world of information that could help them grow intellectually and socially.<sup>49</sup>

Through the Intel Teach approach, instructors send the message that girls are capable of finding valuable information on their own. This is coupled with girls



experiencing what it is like to learn autonomously, which heightens their self-confidence and leadership potential. Girls' leadership skills and sense of empowerment are often strengthened as they identify problems, take on increasing responsibility, gener-

*"Technology has made us independent...Before when we wanted to do something we had to rely on our parents, the library, the teacher. Now we can just look it up on our own."*

-Female student from India

ate demonstrable results from their work, and see how they can impact the world around them.<sup>50</sup> By learning to trust their capabilities, girls realize that they have what it takes to advance and succeed.

confident in using technologies in their personal and professional lives. They also garner greater respect from family and community members.

- A focus on project-based learning, problem solving, and collaboration resonates with both boys and girls, but can have special relevance for girls who are more likely to face gender-related barriers that limit their voice, aspirations, and access to resources. The communication skills girls gain through activities that involve interacting with their community and presenting in front of their class can be particularly important. These abilities build girls' self-confidence to communicate with family members, convey their ideas to others, and be active participants in their communities.

## Lessons Learned

Particular features of Intel Teach emerged as being especially helpful for girls and women in using technologies for educational, personal, or professional advancement. They are:

- Teachers' use of student-centered and project-based teaching methods can reduce the power imbalance between students and teachers, resulting in a more collaborative, interactive learning environment. This allows female students to feel more comfortable asking questions and communicating with their teachers and the rest of their classmates.
- Participation in Intel Teach facilitates teachers' access to resources, networks, and support. For female teachers, particularly older ones, Intel Teach gives them the technical skills and agency to realize these gains. In turn, they are more

ICRW's findings demonstrate that Intel Teach is contributing to empowering women and girls with skills for success in today's increasingly interconnected, digital world. Female teachers and students are gaining these vital benefits through Intel Teach's combination of student-centered, project-based, inquiry-driven pedagogy and its incorporation of technologies into the learning process. Governments, corporations, and organizations committed to advancing the world's women and girls through education and technology can benefit from—as well as build on—Intel's experience.



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