Do Early Warning Systems and Student Engagement Activities Reduce Dropout?
Findings from the School Dropout Prevention Pilot Program Impact Evaluation in Cambodia

Volume 1: Main Findings

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Acronyms

CARE       Care International
CL         Computer Labs
EWS        Early Warning System
FOI        Fidelity of Implementation
ICT        Information and Communication Technology
ITT        Intent-to-Treat
KAPE       Kampuchean Action for Primary Education
LAN        Local Area Network
MDI        Minimum Detectable Impact
MOEYS      Ministry of Education, Youth and Sport
QUEST      Quest Alliance
RCT        Randomized Control Trial
SDPP       School Dropout Prevention Pilot
STS        School-to-School International
SY         School Year
TOT        Treatment-on-the-Treated
USAID      United States Agency for International Development
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Executive Summary

Over the past two decades, considerable progress has been made in increasing school enrollment. However, many children do not complete primary or secondary cycles once they enroll. In many countries and regions, a greater percentage of out-of-school children have dropped out of school than have never enrolled in school. Interventions have been conducted in the United States and abroad to prevent dropout, but there is limited evidence on how well they work, particularly in developing countries.

The School Dropout Prevention Pilot (SDPP) Program, a five-year multicountry program funded by the U.S. Agency for International Development (USAID), is designed to identify successful means of decreasing student dropout rates in primary and secondary schools.\(^1\) Its goal is to pilot and test the effectiveness of dropout prevention interventions in four countries—Cambodia, India, Tajikistan, and Timor-Leste—to generate evidence-based programming guidance for USAID missions and countries in Asia and the Middle East. In all four countries, SDPP introduced an early warning system (EWS) and a student engagement intervention to motivate greater student engagement, better attendance and desire to stay in school. This report presents findings from the impact evaluation of the SDPP program in Cambodia.

SDPP Program in Cambodia

Cambodia’s SDPP program had two main components: (1) an EWS; and (2) computer labs (CL) with computer literacy training (Creative Associates International 2012a and Creative Associates International 2012b). The SDPP program was targeted to 7th-, 8th-, and 9th-grade students in six provinces, as these grades and geographic areas exhibited the highest dropout rates and would benefit most from a dropout prevention program (Shrestha, Rajani, Jennifer Shin, and Karen Tietjen 2011a).

The EWS consists of three components: (1) identification of students at risk of school dropout, (2) first response strategies, and (3) community engagement. For Component 1, the SDPP program worked with teachers to identify at-risk students based on six predictors of dropout risk. For Component 2, SDPP helped teachers use a “track and trigger” approach to closely monitor the attendance, behavior and coursework of at-risk students and initiate “first response” activities when students showed signs of struggling, ranging from in-class attention to contact via letter, phone call and/or home visit to case management meetings with school staff. Component 3 focused on raising community awareness about the problem of dropout, working with parent-teacher associations and other community groups on advocacy activities and enlisting their support for the first response activities, working closely with the school.

The CL program consisted of the installation of computer labs and the provision of computer literacy training to target-grade students. Each school receiving this intervention had a dedicated computer room with a host computer, 16 additional computers for students, and a laser printer.

---

\(^1\) SDPP is implemented by Creative Associates International, with international partners Mathematica Policy Research and School-to-School International and local partners Kampuchean Action for Primary Education (KAPE) in Cambodia, Quest Alliance (QUEST) in India, and Care International (CARE) in Timor-Leste. Creative Associates has a corporate office in Tajikistan, which covers the responsibilities of a local partner in that country.
Solar panels installed on computer room roofs provided the computer rooms with electricity. Students received computer lab access for two hours per week (Creative Associates International 2012a). Unique among SDPP countries, this additional intervention was only provided to a subset of schools receiving the EWS intervention. Thus, Cambodian schools were divided into three groups: one treatment group receiving the EWS intervention (the EWS group); one treatment group receiving the EWS and computer lab interventions (the EWS+Computers group); and one control group. The intervention was developed in compliance with the Ministry of Education, Youth and Sport (MOEYS) policy of expanding computer literacy education to lower secondary school and utilized a low-cost CL model to increase the likelihood of continued implementation in Cambodia beyond the funding period.

The SDPP Program was active in schools during two school years (SY), 2012–2013 and 2013–2014. Students and teachers of target grades received a partial year of exposure during the first year of the program (SY 2012–2013) because of the timing of the roll-out of the EWS. Students and teachers of the target grades during the second school year received the program for at least one full school year (SY 2013–2014).  

During two school years of program activity, the SDPP Program targeted students in grades 7, 8 and 9 and their teachers. Students in grades 7 and 8 during SY 2012–2013 received the program for more than one year (grade 9 is the final year of lower secondary school). The evaluation follows: (1) SY 2012–2013 8th-graders who continued to receive the program in SY 2013–2014 in their 9th grade; (2) SY 2012–2013 7th-graders who continued to receive the program in SY 2013–2014, in their 8th grade; and (3) SY 2013–2014 7th grade students.  

SDPP evaluated the fidelity of implementation of the EWS and CL components during field visits conducted in March/April, and June 2014. Overall, schools appeared to implement the EWS as intended (Creative Associates International and School-to-School International 2015). All schools appeared to implement the computer labs as intended; however, assessments of 7th-grade students showed that students’ computer knowledge and skills remained low after one year of the computer lab trainings (Creative Associates International and School-to-School International 2015).

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2 The teachers and school administrators were first trained in August and September of 2012, before the beginning of SY 2012–2013 in October. Another training occurred in October 2013 at the beginning of SY 2013–2014. The computer labs were installed prior to SY 2012–2013, and the computer literacy classes began in October 2012. Because of delays in the identification of at-risk students, the EWS did not begin until January 2013 for 7th-, 8th-, and 9th-grade students in SY 2012–2013. For new 7th-graders and returning 8th and 9th-graders in SY 2013–2014, both the EWS and computer lab sessions began in October 2013.

3 Please see Appendix A for further details about data collection. An eligible subset of the total students and teachers was used in the analysis.

4 Please see Appendix A for further details about data collection. An eligible subset of the total students and teachers was used in the analysis.
Evaluation design

SDPP hypothesized that academic and social support, combined with additional enrichment activities, particularly for at-risk students, and changes in teacher practices, would improve student attitudes and behavior, translating into increased student engagement and reduced school dropout. Guided by this conceptual model, SDPP designed the impact evaluation to address five primary research questions:

1. Does SDPP improve teacher behavior and attitudes?
2. Does SDPP improve student attitudes?
3. Does SDPP improve student engagement in school associated with retention, such as attendance?
4. Does SDPP improve the dropout rate?
5. What are SDPP’s impacts for students most at risk of dropping out of school?

The SDPP evaluation addressed these research questions using a Randomized Control Trial (RCT) in which SDPP compares the outcomes of students and teachers in 108 schools randomly assigned to provide the SDPP Program’s EWS+Computers services and 107 schools randomly assigned to provide the SDPP Program’s EWS-only services, to those of teachers and students in 107 schools randomly assigned to a control group providing business-as-usual services. SDPP also compared outcomes between the two SDPP Program intervention groups (EWS-only and EWS+Computers). With random assignment, exposure to the SDPP Program is not directly related to the choices or pre-existing characteristics of study participants, allowing attribution of any observed treatment-control differences in outcomes to the SDPP Program.

Data collection

The data used in this report were collected from school records and through interviews with teachers and at-risk students. SDPP collected data five times from all 322 schools in the study over four school years, between SY 2011–2012 and SY 2014–2015, to follow the three cohorts of students who were exposed to the SDPP intervention for at least one full school year. SDPP collected information from school records for 191,776 students, and conducted interviews with 18,920 at-risk students and 6,041 teachers and administrators. All final outcomes were measured during SY 2013–2014 for the three cohorts followed (SY 2012–2013 8th graders, SY 2012–2013 7th graders, and SY 2013–2014 7th graders).

EWS+Computers, EWS, and control group schools had comparable characteristics at baseline, with only a few statistically significant differences between the groups. The typical EWS+Computers group school enrolls about 389 7th-, 8th-, and 9th-grade students, compared with 386 students in the EWS group schools, and 356 in the control group schools. Schools in the

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5 Please see Appendix A for further details about data collection. An eligible subset of the total students and teachers was used in the analysis.

6 There were statistically significant differences for 3 of the 90 comparisons of baseline characteristics; 5 would be expected due to chance.
EWS+Computers group and the EWS group had an average of 11 9th grade teachers, compared with 10 teachers in the control group schools. Schools in the EWS group have fewer active school infrastructure programs than schools in the control group, while EWS+Computers group schools were further from the district capital than EWS group schools.

**Impacts of SDPP**

A conceptual model of SDPP Program activities and how they might affect student and teacher outcomes guided the design of the program and the impact evaluation. This model posits that teacher and parent knowledge and practices—shared and reinforced by the larger community—are inputs into students’ attitudes toward school and educational aspirations. These student attitudes translate into student engagement in school, including their attendance, behavior, and academic performance. The complex, cumulative interactions of these factors are inputs into the student’s ability, desire and decision to remain in school or drop out.

The evaluation estimated the SDPP Program impacts on teacher outcomes, student attitudes, student engagement in school, and school dropout. In each domain, SDPP focused on a small set of key outcomes, identified before the analysis began.

The text boxes and figures below summarize findings for the primary measures of effectiveness in domains related to teacher practices, at-risk students’ attitudes toward school, student engagement in school, and school dropout. Estimates of the impact of the SDPP program are based on differences in average outcomes for SDPP and control group students and teachers. These impact estimates represent the difference in the outcome of interest at endline that is attributable to the EWS+Computers and EWS-only programs relative to the status quo. The estimates are expressed as percentage point differences between the treatment and control group; we also present percentage increases or decreases in the primary outcomes across the treatment and control groups. These “percentage changes” should not be interpreted as the percentage “change” that might be calculated in a pre-post or baseline/endline change, but rather, as the increase or decrease in the treatment group’s outcome measure in relation to the control group at endline.

<table>
<thead>
<tr>
<th>SDPP effectiveness in influencing teacher outcomes</th>
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<tr>
<td><strong>Primary research question</strong></td>
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<tr>
<td>Did SDPP affect teacher dropout prevention practices?</td>
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<td><strong>Primary measure of SDPP Program’s effectiveness</strong></td>
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<tr>
<td>• Teacher take-up of dropout prevention practices</td>
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<td><strong>Additional measures of SDPP Program’s effectiveness</strong></td>
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<tr>
<td>• Teacher sense of self-efficacy</td>
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<tr>
<td>• Teacher sense of responsibility</td>
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<tr>
<td>• Administrator dropout prevention practices, sense of self-efficacy, and sense of responsibility</td>
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Statistical tests were conducted to assess whether each impact is significantly different from zero. Impacts estimates are described as *statistically significant* if there is less than a 5 percent probability that it is due to chance (and not to the SDPP Program). Impact estimates are described
as marginally significant if the probability that it is due to chance (and not to the SDPP Program) is between 5 and 10 percent.

The SDPP intervention had a positive, statistically significant impact on teacher and administrator dropout prevention practices for both SDPP program groups (Figure ES.1). Teachers in the control group schools scored an average of 5.94 on the eight-point scale, while teachers in the EWS and EWS+Computers group scored almost one point higher (6.85 and 6.83 points, respectively). These differences were statistically significant.

Figure ES.1. Impacts of the Cambodia SDPP Program on teacher dropout prevention practices

![Bar chart showing impacts of the Cambodia SDPP Program on teacher dropout prevention practices.](image)

**Notes:**
- The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013 and SY 2013–2014, as follows: 1,404 teachers for the EWS + computers group, 1,356 for the EWS group, and 1,305 for the control group.
- Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. For a tabular presentation of these findings, see Appendix Table H.5.
- **/*** Impact estimate is statistically significant at the .01/.05/.10 level.
- +++/+/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

The evaluation also examined teachers’ and administrators’ sense of self-efficacy (ability to respond to factors related to dropout) and sense of responsibility (whether they perceived it was their role to prevent at-risk students from dropping out). The SDPP Program had a marginally significant positive impact on teachers’ sense of self-efficacy in the EWS + Computers group and no impact on administrators’ sense of self-efficacy in either group. The program had a statistically significant positive impact on teachers’ sense of responsibility in both groups, and also improved administrators’ sense of responsibility in EWS+Computer schools.
The SDPP Program had no impacts on at-risk students’ emotional, cognitive, or behavioral attitudes toward school (Figure ES.2), although it did have a positive, statistically significant impact on students’ perceptions of parental support and a marginal impact on students’ perceptions of teacher support. These measures of student attitudes toward school—which SDPP captured by surveying students identified as being at risk of school dropout based on baseline characteristics—could have changed because of changes in teacher or parent attitudes and practices or due to the intervention activities. However, in Cambodia they did not improve for at-risk students exposed to the SDPP Program.

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7 The three measures of student attitudes are constructed from responses to a survey administered to a sample of at-risk students in each cohort. This survey is explained in further detail in the Technical Appendix – Section A.
Findings from the School Dropout Prevention Pilot Program Impact Evaluation in Cambodia

**Primary research question**

Did SDPP affect attendance, overall or for at-risk students?

**Primary measure of SDPP Program’s effectiveness**

- Student average daily attendance

**Additional measures of SDPP Program’s effectiveness**

- Student performance in school
- Student behavior in school

SDPP had no impacts on daily attendance for students overall or for at-risk students (Figure ES.3). In the absence of the program, attendance rates were 79.1 percent for students overall and 70.5 percent for at-risk students. Attendance rates were not statistically significantly different for students in EWS or EWS+Computers schools.
**Findings from the School Dropout Prevention Pilot Program Impact Evaluation in Cambodia**

**Figure ES.3. Impacts of the Cambodia SDPP Program on daily attendance, overall and by at-risk status**

<table>
<thead>
<tr>
<th>Percentage of days attended</th>
<th>All Students</th>
<th>At-Risk Students</th>
<th>Not-At-Risk Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWS group</td>
<td>78.2</td>
<td>69.5</td>
<td>82.1</td>
</tr>
<tr>
<td>EWS+Computers group</td>
<td>79.0</td>
<td>69.6</td>
<td>81.3</td>
</tr>
<tr>
<td>Control group</td>
<td>79.1</td>
<td>70.5</td>
<td>82.4</td>
</tr>
</tbody>
</table>

**Sources:** SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014.

**Note:** The analysis is based on SY 2012–2013 7th- and 8th-grade students and SY 2013–2014 7th grade students. The sample includes 41,284 students for the EWS + computers group (7,098 at-risk, 2,899 not at-risk, and 31,287 not assigned a status), 40,727 for the EWS group (6,920 at-risk, 3,294 not at-risk, and 30,513 not assigned a status), and 37,112 for the control group (6,359 at-risk, 2,743 not at-risk, and 28,010 not assigned a status).

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Tables H.5 and H.6.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

SDPP also estimated impacts on students’ math and language performance and behavior, measured at the end of the school year, but did not find an impact on performance or behavior.

**The SDPP Program reduced dropout for the students that experienced the program during**

<table>
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<th>SDPP effectiveness in influencing school dropout</th>
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<tr>
<td><strong>Primary measure of SDPP Program’s effectiveness</strong></td>
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<tr>
<td>- Global school dropout</td>
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<tr>
<td><strong>Additional measures of SDPP Program’s effectiveness</strong></td>
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<tr>
<td>- Student progression in school</td>
</tr>
<tr>
<td>- Alternative measures of dropout</td>
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</table>

**SYs 2012–2013 and 2013–2014 (Figure ES.4).** Students were considered dropouts if they were no longer continuing their education at the last possible time SDPP observed them. Students who
started the program in 7th grade were considered to have dropped out if they did not re-enroll in school in the most recent year of data collection. Students who started the program in the 8th grade were considered to have dropped out if they did not take all of their second semester exams in their 9th-grade year. No students started the program in 9th grade and received a full year of program services.

Students in SDPP schools with EWS-only dropped out at a rate of 38.7 percent, compared to a rate of 41.1 percent for students in control schools; the difference was statistically significant. Students in EWS+Computers schools dropped out at a rate of 39.3 percent; the difference in this rate and the rate for control group students was marginally significant. At-risk students dropped out at a higher rate: 54.1 percent in control schools, 48.0 percent in EWS schools, and 51.6 percent in EWS+Computers schools. This difference between the EWS-only group and control group was statistically significant.

**Figure ES.4. Impacts of the Cambodia SDPP Program on school dropout, overall and by at-risk status**

![Graph showing school dropout rates](image)


Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013–2014 7th-grade students. The sample includes 45,158 students for the EWS+Computers group (8,381 at-risk, 3,212 not at-risk, and 33,565 not assigned a status), 44,475 for the EWS group (8,221 at-risk, 3,649 not at-risk, and 32,875 not assigned a status), and 41,738 for the control group (7,655 at-risk, 3,153 not at-risk, and 30,930 not assigned a status). Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Tables H.5 and H.6.

**/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

++/+/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.
SDPP also measured grade progression, or whether a student enrolled in the next grade or higher in the following school year. For example, if a student repeated 9th grade, he/she would not be considered a between-grade dropout, but he/she would not be considered as having progressed to the next grade or higher. The SDPP Program had a marginally significant positive impact on grade progression in EWS+Computers schools in Cambodia.

<table>
<thead>
<tr>
<th>What do beneficiaries say about the SDPP interventions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insight into how beneficiaries interacted with the SDPP interventions was obtained through a qualitative research study. Responses from parents, students, teachers and administrators was very positive about both the Early Warning System (EWS) and the Computer Labs (CL) program.</td>
</tr>
<tr>
<td><strong>EWS:</strong> Most of the parents—of both at-risk students and dropouts—claimed they were unaware of their child’s vulnerable status until they received the initial letter from the school. Parents’ initial reaction to being contacted by the school was anger and embarrassment, followed by surprise and then happiness at being apprised of their child’s problems. Nonetheless, students reported their parents became more supportive following contact. Parents encouraged them to study, pressured them to improve their attendance, provided study materials, paid for extra classes, and reduced household chores and outside work. As a result, a majority of at-risk students (88%) said they became aware of the need to change their own behavior, although less than 42% of those who dropped out felt the same need. Most teachers (86%) reported the EWS made their job easier and changed their sense of responsibility for supporting at-risk students. They liked the structured EWS process for tracking students’ attendance and performance, and saw the value of collecting and using data on attendance and performance for discussions with parents. Community members thought the contact with the parents was particularly effective, and school directors noted that once contacted, parents initiated other contact on their own. Virtually all (97%) homeroom teachers reported they intended to continue using the EWS.</td>
</tr>
<tr>
<td><strong>CL:</strong> There was overwhelming enthusiasm for Computer Labs (CL) from students, teachers, school directors and parents. All at-risk students and most dropouts believed computer skills would help them to obtain employment in the future and helped them in their subject classes. They noted the computer classes were a powerful draw in getting them to attend school more regularly. Parents appreciated that the classes were free and believed that computer skills enhanced their child’s future job opportunities. Several confessed they transferred their child to the school to benefit from CL classes. Most of the CL teachers and all of the school directors reported seeing positive effects of the computer labs: they suggested that students who used to be absent a lot were attending school more and behaved better. However, CL teachers complained that there was not enough time or computer stations for individualized practice, especially for students who needed more time. They also expressed concern about their own level of computer knowledge and being able to deal with the CL program on their own. When asked about continuing without the support of SDPP, 96 percent of the teachers hoped they could.</td>
</tr>
</tbody>
</table>

**Discussion**

This study shows that the SDPP Program in Cambodia was successful in reducing school dropout, its ultimate goal in the SDPP’s theory of change for dropout. Among primary outcomes, it improved teacher dropout prevention practices. It also improved several secondary outcomes. It did not effect improvements in primary outcomes for student attitudes and behaviors, such as attendance.


In Cambodia, teacher take-up and implementation of dropout prevention practices promoted by the EWS could be a particularly strong driver of dropout prevention in terms of convincing students and their parents that students should sit for end-of-year exams and enroll in the next school year, but not as influential in ensuring daily attendance in an environment where families’ need for students to help with work or chores at home is particularly strong. While attendance and dropout are strongly associated, they can occur independently of one another. It was also expected

**Table ES.1. SDPP Program impacts on primary measures of program effectiveness in Cambodia**

<table>
<thead>
<tr>
<th>Impacts</th>
<th>EWS only</th>
<th>EWS + Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher dropout prevention practices</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>At-risk student attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Emotional attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cognitive attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Behavioral attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Attendance</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Overall</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>At-risk</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Dropout</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>Overall</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>At-risk</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

+++ +/-/+ Statistically significant positive impact at the .01/.05/.10 level.
— ——/— ——/—— Statistically significant negative impact at the .01/.05/.10 level.
○ Impact is not statistically significant.

**Table ES.2. SDPP Program impacts on additional outcome measures in Cambodia**

<table>
<thead>
<tr>
<th>Impacts</th>
<th>EWS only</th>
<th>EWS + Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher outcomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher self-efficacy</td>
<td>○</td>
<td>+</td>
</tr>
<tr>
<td>Teacher sense of responsibility</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Administrator dropout prevention practices</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Administrator self-efficacy</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Administrator sense of responsibility</td>
<td>○</td>
<td>+++</td>
</tr>
<tr>
<td>Student attitudes toward school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-risk student perceptions of parent support</td>
<td>○</td>
<td>+</td>
</tr>
<tr>
<td>At-risk student perceptions of teacher support</td>
<td>+++</td>
<td>○</td>
</tr>
<tr>
<td>At-risk student perceptions of computer training</td>
<td>○</td>
<td>++</td>
</tr>
<tr>
<td>Student engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math performance</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Khmer performance</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Behavior</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Dropout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progression</td>
<td>○</td>
<td>+</td>
</tr>
</tbody>
</table>

+++ +/-/+ Statistically significant positive impact at the .01/.05/.10 level.
— ——/— ——/—— Statistically significant negative impact at the .01/.05/.10 level.
○ Impact is not statistically significant.
that the computer labs would motivate students to attend school more regularly. That it did not could be a result of the the way the computer literacy component was designed and configured. The computer lab program may not have been implemented frequently enough or with skilled enough instructors to motivate students to attend school. Three students shared one computer terminal during the computer literacy class, so limited time for student practice may have dampened enthusiasm.

Neither the EWS nor the computer lab component was strongly aimed at modifying student attitudes towards school. The EWS focused on improving school support and outreach to families of at-risk students to increase their awareness about dropout and how to help their child avoid it. The computer literacy and lab component focused on improving the relevance of education, offering skills that parents and students purported to value. It did not specifically target class performance (as in Tajikistan) or student attitudes (as in India and Timor-Leste). That the student engagement program interventions in India, Tajikistan, and Timor-Leste were all designed to encourage students to see school as a fun and supportive place may be a subtle, but potentially important, difference in encouraging more regular attendance. Although the presence of the computer lab improved students’ perception of computer training it did not improve attendance, as expected. Thus, it seems that neither the EWS services alone nor the EWS services coupled with computer lab activities were sufficient to improve students’ attachment to schools, which does not appear to be a necessary intermediate step in the reducing dropout in lower secondary school in the Cambodian context.

The EWS+Computers group did not experience more positive impacts on any of the primary measures of program effectiveness when compared to the EWS group. The lack of additional positive impacts could be a result of the the way the computer literacy component was designed and configured. The impact results suggest that computer training and the existence of a computer lab—as provided—do not produce sufficient benefits for at-risk students to overcome other barriers to educational participation. This is an important finding, because adding computer labs can be a costly intervention. Findings from the SDPP study might suggest that computer training is unlikely to be worth the substantial investment required if the focus is on the outcomes of students at risk of dropout.

It seems that the relatively low-cost implementation of EWS alone, without an additional engagement component, was sufficient to reduce dropout in Cambodia. The conditions in the target provinces in Cambodia may have provided the right context for improving dropout. Dropout in Cambodia was high (41 percent in the control group), and teacher dropout prevention practices were relatively low (5.94 out of 8 scale score for the control group), so there was room for improvement on both measures. It may be that an EWS is most successful at reducing dropout in countries with poor teacher dropout prevention practices combined with a high dropout rate.

Comparing these findings to those of the rigorous evaluations of SDPP in the three other study countries will allow us to draw some general conclusions about the effectiveness of SDPP in the broader Asian context. Additional discussion of the impacts of the SDPP programs across all SDPP countries is presented in a separate, four-country summary report (Creative Associates International and Mathematica Policy Research 2015).
I. Introduction

Over the past two decades, considerable progress has been made in increasing school enrollment. From 2000 to 2011, the number of children not enrolled in school worldwide has declined from 102 million to 57 million—a reduction of almost 45 percent (Millennium Development Goals Report 2013). This effort has been supported by extensive research evaluating interventions aimed at increasing access to schooling in developing countries (Petrosino, Anthony, Claire Morgan, Trevor Fronius, Emily Tanner-Smith, and Robert Boruch 2012). However, many children do not complete primary or secondary cycles once they enroll; out of the 137 million children worldwide who entered 1st grade in 2011, 34 million are likely to leave school before reaching the last grade in primary school (Millennium Development Goals Report 2013). In many countries and regions, a greater percentage of out-of-school children have dropped out of school than have never enrolled in school. Interventions have been conducted in the United States and abroad to prevent dropout; however, there is limited evidence on how well they work, particularly in developing countries.

The School Dropout Prevention Pilot (SDPP) Program, a five-year multicountry program funded by the U.S. Agency for International Development (USAID), is designed to identify successful means of decreasing student dropout rates in primary and secondary schools. Its objective is to provide evidence-based programming guidance to USAID missions and countries in Asia and the Middle East (AME) on student dropout prevention by piloting and testing the effectiveness of dropout prevention interventions in four countries: Cambodia, India, Tajikistan, and Timor-Leste. In order to understand ways of mitigating dropout in the four target countries, SDPP used a three-stage process: (1) undertaking a literature review to identify international best practices in school dropout prevention; (2) analyzing dropout trends and identifying risk factors and conditions associated with dropout in each country as part of a situational analysis; and (3) designing, implementing, and rigorously evaluating interventions to keep students at risk of dropout in school. Earlier reports describe findings from the first two stages of the project (Brush, Lorie, Jennifer Shin, Rajani Shrestha, and Karen Tietjen 2011; Creative Associates International 2014a, 2014b; Shin, Jennifer, Rajani Shrestha, and Karen Tietjen 2011a, 2011b; Shrestha, Rajani, Jennifer Shin, and Karen Tietjen 2011a, 2011b).

Based on the findings from the literature review and situational analyses, as well as input from key stakeholders in the four countries, SDPP worked with the Ministry of Education in each country to identify two interventions to address dropout. In all four countries, SDPP introduced an Early Warning System (EWS) and a student engagement intervention to motivate students to stay in school.

Early Warning System (EWS) is a dropout prevention strategy that has shown promise in the United States, but for which little international evidence exists. EWS interventions involve identifying students at risk of school dropout (“at-risk students”), monitoring the progress of these

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8 SDPP is implemented by Creative Associates International, with international partners Mathematica Policy Research and School-to-School International and local partners Kampuchean Action for Primary Education (KAPE) in Cambodia, Quest Alliance (QUEST) in India, and Care International (CARE) in Timor-Leste. Creative Associates has a corporate office in Tajikistan, which covers the responsibilities of a local partner in that country.

9 The SDPP dropout prevention interventions were contractually prohibited from including conditional cash transfers or economic incentives, which have already been demonstrated to be effective by prior research.
students by using regularly updated school records, and then taking “first-response” actions when students show signs of struggling. In reviews of dropout prevention research conducted by the What Works Clearinghouse, U.S. Department of Education, two versions of EWS, the Check & Connect program and ALAS program, were found to help keep middle and high school students from dropping out and potentially help them progress in school (American Institutes of Research 2006a, 2006b). However, existing research does not tell us whether EWS would have similar impacts in developing countries, given the different educational and cultural contexts in these countries. Similarly, the effectiveness of these types of programs on students of younger ages and lower grades is not known.

In developing countries, there is evidence that other types of interventions designed to mitigate the factors that affect dropout, such as cash transfers (in specific contexts), scholarships, and school construction, can improve enrollment, attendance, and retention (see, for example, Angrist, Joshua, Eric Bettinger, Erik Bloom, Elizabeth King, and Michael Kremer 2002; Levy, Dan, Matt Sloan, Leigh Linden, and Harounan Kazianga. 2009; Schultz 2001). Interventions that target specific groups of students, such as girls (see, for example, Friedman, Willa, Michael Kremer, Edward Miguel, and Rebecca Thornton 2011; Oster, Emily, and Rebecca Thornton 2011) and students in rural areas (see, for example, Miguel, Edward, and Michael Kremer 2004) have also proven successful. However, to our knowledge, the SDPP evaluations present the first rigorous evidence on the effectiveness of EWS in the developing country context. Studies of interventions that have incorporated academic activities, such as tutoring, computer labs, and other after-school activities, have had mixed results, though there is little rigorous evidence from evaluations that focus specifically on these activities (Banerjee, Abhijit, Shawn Cole, Esther Duflo, and Leigh Linden 2007; Brush, Lorie, Jennifer Shin, Rajani Shrestha, and Karen Tietjen 2011).

The SDPP Program for each of the four countries included an EWS combined with additional activities in the schools that varied depending on the country. The additional activities were designed to motivate greater student engagement, better attendance, and increase the desire to stay in school. The interventions were rolled out to the target grades in each country at various times during 2012.

Although all of the SDPP programs included the EWS, they were distinct enough to merit independent evaluations in each country. The implementation of the EWS in four diverse countries allowed experimental evaluation of the effectiveness of these interventions in several contexts with different populations, strengthening the external validity of our findings.

SDPP conducted rigorous evaluations of the effectiveness of the SDPP Program in each of the four countries. In each country, schools that were eligible to receive the program were identified, recruited, and asked to consent to participate in the study. Eligible schools in targeted regions were then randomly assigned to either a SDPP treatment group, which offered the SDPP intervention package, or a control group, which did not. For each country, SDPP estimated program effects by

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10 The grades targeted in each country are as follows: grades 7, 8, and 9 in Cambodia; grade 5 in India; grade 9 in Tajikistan; and grades 4, 5, and 6 in Timor-Leste.
comparing the outcomes of students and teachers in SDPP schools with the outcomes of those in control schools.

This report presents findings from the impact evaluation of the SDPP Program in Cambodia. In Cambodia, the program included an EWS in all schools, which was combined with computer labs and computer literacy training in a selected subset of schools. The impact evaluation draws on school records and survey data collected in 108 EWS+Computers schools, 107 EWS-only schools, and 107 control schools across six provinces in Cambodia. The student sample consists of 7th, 8th, and 9th-grade students from each of the two school years (2012–2013 and 2013–2014) during which the SDPP Program was in effect.

The findings and information on the impact evaluation for SDPP in Cambodia are presented in two volumes. Volume 1 presents the impact evaluation findings and Volume 2 details the methodology used.

This report—Volume 1—is organized as follows. Section II describes the SDPP Program and its implementation in Cambodia. Section III discusses the impact evaluation design and describes the types of outcome domains used to evaluate the program. Section IV discusses the sample and data collection. Section V describes the characteristics of the sample prior to implementation. Sections VI presents the impacts of the program on teacher outcomes, attitudes toward school, engagement in school, and school dropout. Section VII presents school level dropout trends. Section VIII discusses the findings and conclusions.

Volume 2—a technical appendix—provides more details on the study, including the further detail on the sample frame, data collection, estimation procedures, subgroup analyses, robustness checks, and additional exploratory analyses.
II. SDPP Program in Cambodia

The SDPP Program in Cambodia had two main components: (1) an EWS; and (2) computer labs with computer literacy training. (Creative Associates International 2012a, 2012b). To the extent possible, these activities built on existing Ministry of Education curriculum and procedures to facilitate sustainability after the project ended.

A. Targeting grades and geographic areas for intervention

Using data from the national education management information system, SDPP identified the population for whom dropout was most prevalent and who would benefit most from a dropout prevention program. Dropout was found to be the highest in the lower secondary cycle—grades 7, 8, and 9—where the dropout rate was about 22 percent, compared with primary dropout (9 percent) and upper secondary dropout (12 percent) (Figure II.A.1) (Shrestha, Rajani, Jennifer Shin, and Karen Tietjen 2011a). Consequently, the Cambodia SDPP Program targeted 7th-, 8th-, and 9th-grade students in six provinces with high dropout rates—Banteay Meanchey, Battambang, Kampong Speu, Prey Veng, Pursat, and Svay Rieng.11

Figure II.A.1. National dropout rates by grade (2009–2010)

Sources: Creative Associates International (2014a)

11 The dropout rate overall for 7th, 8th, and 9th graders in these districts according to Ministry records was about 23 percent, ranging from 18.5 percent to 29.2 percent.
Figure II.A.2. Target regions of the SDPP Program


B. Interventions

1. Selecting SDPP interventions

SDPP selected dropout prevention interventions to be implemented on the basis of: (1) a review of the existing domestic and international evidence on interventions designed to decrease school dropout; (2) an analysis of existing policies and programs in each country that could affect dropout; (3) situational analyses of the factors and conditions associated with school dropout in each country; and (4) input from key stakeholders in each country. The literature review found little rigorous evidence on dropout prevention interventions in an international context.\textsuperscript{12} Conditional

\textsuperscript{12} See Brush, Lorie, Jennifer Shin, Rajani Shrestha, and Karen Tietjen (2011) for complete findings from the literature review.
Findings from the School Dropout Prevention Pilot Program Impact Evaluation in Cambodia

Cash transfer interventions showed consistently positive impacts on school dropout, but other evidence was mixed or focused on U.S.-based interventions.

SDPP conducted primary research focused on grades 7-9 in three provinces (Banteay Meanchey, Battambang, and Pursat) identified in the analysis of dropout rates, in order to identify key factors and conditions associated with school dropout in Cambodia. 13 The situational analysis collected data from at-risk students, dropouts, their parents/guardians, school administrators and teachers, community members and local education officials in 30 school-communities.

Findings from the SDPP Situational Analysis indicate that the top three causes of student dropout among students in grades 7-9 in the target districts fell into two categories: (1) economic reasons; and (2) academic and school-related reasons (Figure II.B.1). 14 Economic reasons were most commonly cited by children and their families: nearly half the at-risk students and their parents, and one-third of the dropout and parent/guardian respondents named the inability to pay for school expenses, and about half pointed to the need to supplement household income through work. More than 70 percent of at-risk students and almost 80 percent of dropouts cited domestic chores. (Creative Associates International 2014b). However, many lower secondary school students also drop out of school for academic and school-related reasons: about 20 percent of at-risk students and dropouts cited poor academic performance and failed exams. Almost a third of dropout students reported being unable to keep up with their lessons.

Figure II.B.1. Reported causes of dropout

![Figure II.B.1. Reported causes of dropout](image)


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13 The other three districts were added later to meet sampling requirements.

14 See Creative Associates International (2014b) for complete findings from the situational analysis.
These reasons led to or were exacerbated by high student absenteeism (Figure II.B.2). About 25 percent of at-risk students and 35 percent of dropouts missed more than two days of school per month and nearly 35 percent of at-risk and more than 55 percent of dropouts had missed more than 15 consecutive days of school. Nearly 60 percent of the parents/guardians were not aware of their child’s school attendance. Nearly 40 percent of the at-risk students reported their parents allowed them to stay home when not ill.

*Figure II.B.2. Absenteeism reported by dropouts and at-risk students*

![Bar chart showing absenteeism](image)


Many at-risk students reported poor treatment by teachers and an unsupportive school environment (Figure II.B.3). More than a third thought their teachers didn’t think they were intelligent. Nearly one third of students reported that teachers treated some students better than others, generally the stronger students. Nearly the same percentage said teachers were critical of those who gave an incorrect answer, but few children criticized teachers for using physical punishment (12 percent of at-risk students and 13 percent of dropouts). Student engagement is relatively low, with only little more than one-third completing homework assignments and a quarter reporting being bullied. One out of five at-risk students say school is not fun (Figure II.B.4).
In October 2011, SDPP convened a consultation workshop on program design in Cambodia to solicit ideas for and determine the school-based dropout prevention interventions with the greatest chance of both success and of sustainability. SDPP led stakeholders—including nongovernmental organizations and education authorities—through the main findings from the literature review and situational analyses, and discussed intervention options for the SDPP Program. The SDPP contract parameters—which excluded economic subsidies, vocational training, construction/infrastructure
improvements and general teacher training—were reviewed. Design workshop participants ranked a set of intervention options. SDPP then selected the interventions for Cambodia using these rankings along with additional program considerations. Two complementary inventions were planned, based on power calculations, sample size parameters and timeline.

One of the complementary interventions was aimed at reducing negative student behaviors associated with dropout, such as attendance, and the other aimed at student motivation, based on the findings of the situational analysis, which found that students and their parents did not perceive schooling as useful or providing the skills needed in the job market. Stakeholders in Cambodia selected EWS as the primary program component and computer labs with computer literacy instruction as a second intervention.

2. Early warning system

The purpose of the EWS was to identify and provide targeted support to students at risk of dropping out of school. The EWS used existing data in schools as well as teacher input to identify at-risk students, closely monitor them, and target them for additional support. It was intended to enhance the capacity of schools to address the needs of at-risk pupils, strengthen the partnership between the parents/guardians and school personnel to monitor and improve school attendance and performance, and raise awareness among parents/guardians and the community about the value of children staying in school and what parents/guardians can do to support their children. The EWS consisted of three components: (1) identification of students at risk of school dropout; (2) first response strategies; and (3) community engagement.

In Component 1, the SDPP Program in Cambodia worked with teachers to identify at-risk students based on six measures of dropout risk. These included the globally recognized ABCs of dropout—attendance, behavior, and coursework—and were augmented with other contextually specific indicators—overage and distance to school (Associates International 2014b). SDPP worked with teachers to score and rank students’ relative risk level. Students with the highest score were deemed at-risk students.

Component 2 used a “track and trigger” approach to closely monitor the progress of at-risk students and initiate “first response” activities when students showed signs of struggling. Teachers recorded

15 While USAID’s AME Regional Bureau recognized the role that economic, infrastructure/construction, and school quality barriers could play in families’ decisions not to send their children to school, these types of interventions were excluded from experimentation for a variety of reasons. A solid research base already existed for economic subsidies and cost alleviation measures. Infrastructure improvements and construction exceeded USAID manageable interests. Desire to focus on dropout-specific interventions eliminated general teacher training for instructional improvement, which was already funded under other programs. Finally, funding for USAID Basic Education prohibited expenditure of SDPP budget on vocational education activities.

16 The SDPP contract specified two recommendations for interventions. SDPP was originally a three-year program, and did not provide sufficient time to design, develop, and implement multiple interventions in each country.


18 Please see Appendix A for more details on the SDPP determination of dropout risk.
and tracked key student behaviors, such as attendance, behavior and coursework. Signs of problems—for example, frequent absences or failed classes—triggered an immediate set of response actions, ranging from in-class attention to contact via letter, phone call and/or home visit with parents, to case management meetings with school staff to develop an individualized program of intervention.

Component 3 focused on raising awareness within the community about the importance of schooling and the problem of dropout. SDPP worked with parent-teacher associations and other community groups on advocacy activities and enlisted their support in implementing some of the first response activities, working closely with the school. For many school communities, this was the first time that community or school organizations and their members engaged in student support activities, not limited to fundraising or infrastructure improvement. This component also included outreach activities, such as school events to discuss how parents can support their child in school. These activities were designed to directly change the behaviors of community members, parents, and students themselves.

**3. Computer Labs**

About 20 percent of at-risk students, dropouts, teachers and school administrators surveyed said that having computers at school would make school more interesting, fun and/or useful. The same percentage of at-risk students and dropouts indicated a desire for vocational training and job-related support: access to computers and lessons on basic computer literacy could provide students skills that are sought-after in the job market. Offering training in basic computer skills could motivate students to—and convince their parents to let them—stay in and attend school regularly.

SDPP installed computer labs and provided computer literacy training to target-grade students. Unique among SDPP countries, this additional intervention was only provided to a subset of schools receiving the EWS intervention. Cambodia schools were divided into three groups: one treatment group receiving the EWS intervention (the EWS group); one treatment group receiving the EWS and computer lab interventions (the EWS + Computers group); and one control group. Each school receiving this intervention had a dedicated computer room with a host computer, which served as the teacher’s workstation, and 16 additional computers for students connected to the host computer through a Local Area Network (LAN), and a laser printer. Solar panels installed on computer room roofs provided the computer rooms with electricity. Students received computer lab access for two hours per week with an average of three students per terminal per class (Creative Associates International 2012a).

**C. Program implementation**

The SDPP Program was active in schools during two school years, 2012–2013 and 2013–2014 (Figure II.C.1). Students and teachers of target grades received a partial year of exposure during the first year of the program (SY 2012–2013) because of the timing of the roll-out of program
activities. Students and teachers of the target grades during the second school year received the program for at least one full school year (SY 2013–2014).19

19 The teachers and school administrators were first trained in August and September of 2012, before the beginning of SY 2012–2013 in October. Another training occurred in October 2013 at the beginning of SY 2013–2014. The computer labs were installed prior to SY 2012–2013, and the computer literacy classes began in October 2012. Because of delays in the identification of at-risk students, the EWS did not begin until January 2013 for 7th-, 8th-, and 9th-grade students in SY 2012–2013. For new 7th-graders and returning 8th and 9th-graders in SY 2013–2014, both the EWS and computer lab sessions began in October 2013.
Figure II.C.1. Rollout of the interventions in Cambodia

<table>
<thead>
<tr>
<th>Program rollout</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>E</td>
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<tr>
<td>EC</td>
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<tr>
<td>EOA</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Data collection</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>X</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: School year in Cambodia lasts from October to June.

T = teacher and school administrator training begins; E = EWS intervention rolled out to students; C = Computer labs rolled out to schools and students; EOA = end of activities; X = Impact evaluation data collection in schools.

2011–2012 school year
2012–2013 school year
2013–2014 school year
2014-2015 school year
D. Fidelity of Implementation

As part of the research design, Fidelity of Implementation (FOI) was measured to determine the extent to which the SDPP interventions were being implemented as designed. SDPP evaluated the FOI of the EWS and after-school components in March/April 2014 and June 2014.

To assess the fidelity of the EWS implementation, SDPP examined how well schools and teachers identified at-risk students, tracked their attendance, communicated with parents, and provided follow-up support. In the second year of implementation, two rounds of FOI data were collected and analyzed.

Overall, schools appeared to implement the EWS as intended, having high levels of implementation fidelity (Creative Associates International and School-to-School International 2015). In round 1, 90 percent of the schools scored met or exceeded the threshold score of 80 percent. Schools met or exceeded the threshold for two of the components (identification of at-risk students, tracking and monitoring at-risk students), but fell below the threshold for two components (communicating with parents/guardians and undertaking follow-up actions) (Figure II.D.2).

Results from the second round showed notable improvement. In round 2—limited to schools which had fallen below the threshold in round 1—80 percent of schools met or exceeded the threshold.
for fidelity. (Figure II.D.1) By component, 91 percent of schools met or surpassed the threshold score for tracking research students and 94 percent for communicating with parents. Although 74 percent of schools met or exceeded the threshold level for follow-up action, primarily case management, which was below the threshold, this showed considerable improvement from round 1 (Figure II.D.2).

Figure II.D.1. EWS: Proportion of schools meeting or exceeding 80% FOI threshold

![Graph showing proportion of schools meeting or exceeding 80% FOI threshold.](image)


Figure II.D.2. EWS: Proportion of schools meeting or exceeding FOI threshold by component

![Graph showing proportion of schools meeting or exceeding FOI threshold by component.](image)

To assess the implementation of the computer labs, SDPP looked at whether the computer labs were in place and functional, if students received instruction according to the official curriculum and if support was provided for computer labs and instruction. Fidelity of Implementation was high, with mean scores of 80 percent or higher. In Round 1, 97 percent of classrooms received two hours or more of instruction each week, and all computer lab materials were available and functioning. The greatest proportion of schools met the threshold in Component 1 (100 percent) followed by Components 3 and 2. Because of the high FOI, a second round of data collection was not conducted.

During a second round of data collection in June 2014, student assessments were administered to 7th-grade students to determine their level of computer literacy. Compared to a pre-test given to the same students, there were some improvements; however, overall the study found that the majority of students could not correctly answer most items (Creative Associates International and School-to-School International 2015).

Figure II.D.3. Computer labs: proportion of schools meeting or exceeding 80 percent FOI threshold

<table>
<thead>
<tr>
<th>Component</th>
<th>Round 1 (n=108)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1 (Labs)</td>
<td>100%</td>
</tr>
<tr>
<td>Component 2</td>
<td>81%</td>
</tr>
<tr>
<td>Component 3</td>
<td>93%</td>
</tr>
</tbody>
</table>


Figure II.D.4. Computer labs: Average FOI Scores by Component and Data Collection Round

<table>
<thead>
<tr>
<th>Component</th>
<th>Round 1 (n=108)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1 (Labs)</td>
<td>98%</td>
</tr>
<tr>
<td>Component 2</td>
<td>93%</td>
</tr>
<tr>
<td>Component 3</td>
<td>94%</td>
</tr>
</tbody>
</table>

Finally, SDPP examined to what extent control group schools may have received components of the SDPP Program. From a randomly selected group of 51 control schools, the study found that very few schools reported having teachers transfer in from SDPP schools, and none had implemented SDPP Program elements or materials (Creative Associates International and School-to-School International 2015).

**III. Evaluation Design**

**A. SDPP Theory of Change**

A conceptual model of SDPP Program activities and how they might affect student and teacher outcomes guided the design of the impact evaluation (Figure III.A.1). This model posits that teacher and parent knowledge and practices—shared and reinforced by the larger community—are inputs into students’ attitudes toward school and educational aspirations. These student attitudes translate into student engagement in school, including their attendance, behavior, and academic performance. The complex, cumulative interactions of these factors are inputs into the student’s ability, desire and decision to remain in school or drop out.

*Figure III.A.1. Cambodia SDPP conceptual model*
The ultimate goal of these activities is to reduce school dropout, and SDPP activities involved working directly with teachers, administrators, and parents with this goal in mind. Teachers received extensive training to influence their attitudes toward and practices used with at-risk students, as well as instruction on how to use a new EWS. The EWS was designed to improve student attendance and attitudes toward school, both directly (through interactions with students) and indirectly (through interactions with teachers and parents). The idea behind this system is that, by changing teacher, administrator, and parent knowledge and behaviors toward students, student attitudes toward school should change. This improvement in attitudes should lead to more student engagement in and attachment to school, which in turn should reduce school dropout. Likewise, the computer lab activities were designed to improve student attitudes toward school and encourage attendance by teaching students computer literacy skills.

Recognizing the complex processes that lead to dropping out, mechanisms through which the SDPP interventions aim to reduce dropout are varied and focused on influencing intermediate outcomes—specifically the attitudes, practices, and behaviors of teachers, parents, and students—that that may be related to dropout.

B. Research Questions

Based on this conceptual model, SDPP designed the impact evaluation to address five primary research questions: 20

1. Does SDPP improve teacher behavior and attitudes?
2. Does SDPP improve student attitudes toward school?
3. Does SDPP improve student engagement in school associated with retention, such as attendance?
4. Does SDPP improve the dropout rate?
5. What are SDPP’s impacts for students most at risk of dropping out of school?

C. Evaluation Design

To answer these questions, SDPP used a randomized controlled trial design, as depicted in Figure III.C.1. SDPP randomly assigned schools to either an SDPP EWS-only group that provided the SDPP EWS program, an SDPP EWS+Computers group that provided the SDPP EWS program and the CL program, or a control group that operated as usual by comparing relevant outcomes for students, teachers, and administrators in schools with the SDPP program (the EWS-only group and the EWS+Computers group) to the outcomes of students and teachers in schools randomly assigned to the control group.

20 See Murray, Nancy, Quinn Moore, Larissa Campuzano, Kathy Buek, Emilie Bagby, and Mark Strayer 2012 for details on the evaluation design.
A randomly assigned control group is a crucial element of a rigorous impact evaluation because it allows the evaluator to estimate what would have happened in the absence of the program. With well-implemented random assignment, the students and teachers in treatment schools will be similar to those in control schools in terms of their pre-existing characteristics. The only systematic difference between these groups is that the students and teachers in the treatment group were offered the SDPP Program, and the students and teachers in the control group were not. The result is that any observed treatment-control differences in outcomes can be attributed to the SDPP program and not to pre-existing differences in the characteristics of students, teachers, and schools in the sample.

**Figure III.C.1. SDPP Randomized Control Trial design in Cambodia**

From 322 eligible schools in Cambodia, 107 schools were randomly assigned to the control group, 107 schools were randomly assigned to the SDPP EWS-only group, and 108 schools were randomly assigned to the SDPP EWS+ Computers group. Over the course of the project, data was collected on 60,739 individual students and 2,516 teachers in control schools, 65,079 students and 2,677 teachers in SDPP EWS-only schools, and 65,958 and 2,810 individual students and teachers in EWS+Computers schools.

1. **Study eligibility**

To be eligible for the evaluation, schools in Cambodia had to: (1) offer grades 7, 8, and 9; (2) not have high migration; (3) be accessible; (4) have a room available for the computer lab; (5) employ at least four teachers with computer skills; and (6) not have a pre-existing computer lab. The
evaluation team identified 322 schools that met these criteria\textsuperscript{21}; 107 were randomly assigned to the SDPP EWS-only group, 108 were assigned to the SDPP EWS plus computer lab group, and 107 were randomly assigned to the control group.

2. Primary impact analysis

Given the RCT design, the assessment of the SDPP program’s effectiveness focuses on the difference in average outcomes at our final follow-up between students and teachers randomly assigned to the SDPP group and those randomly assigned to the control group. Because random assignment means that there should be no systematic differences in baseline characteristics between the SDPP and control groups, a simple difference in outcomes across groups provides a rigorous, unbiased estimate of the SDPP Program’s impact. However, we are able to increase the precision of the impact estimates and our ability to identify impacts as statistically significant by using statistical models that adjusted for small differences in the initial characteristics of the study groups that may have arisen by chance or because of survey nonresponse.\textsuperscript{22} In this way, the impact estimates adjust for baseline values of the outcomes of interest, as well as individual and school-level characteristics. RCT impact estimates are considered the gold standard in evaluating program effectiveness.\textsuperscript{23, 24}

These impact estimates represent the difference in the outcome of interest at endline that is attributable to the SDPP Program relative to the status quo. The estimates are expressed as percentage point differences between the treatment and control group. The impact estimates reported in this study should be interpreted as the difference in outcomes that resulted from exposure to SDPP. For example, an “X” percentage point favorable impact on school dropout indicates that, on average, the dropout rate under SDPP is “X” percentage points lower than it would have been under business-as-usual operations. We also present percentage increases or decreases in the primary outcomes across the treatment and control groups. These “percentage changes” should not be interpreted as the percentage “change” that might be calculated in a pre-post measure or baseline/endline change, but rather the increase or decrease in the treatment group’s outcome measure in relation to the control group at endline.

The impact analysis includes all students in targeted grades in SDPP and control schools, regardless of whether the students in the SDPP schools participated in SDPP Program activities. Therefore, the estimates represent the average impact of the SDPP Program on all students in the enrolled schools. These are called intent-to-treat (ITT) estimates—they reflect the fact that not every school or student intended to be treated (via program services) actually participated in the program. The ITT estimates therefore answer the policy-relevant question—do programs make a

\textsuperscript{21} Power calculations conducted as a part of the study design and conversations with the SDPP team in Cambodia suggested that a sample size of 322 schools would need to be included in the study in order to detect a 7 percentage point impact on dropout. This sample size was much larger than in other SDPP countries given the three study arms and the number of schools meeting the eligibility criteria in the targeted geographies. See Appendix A for more information on these calculations.

\textsuperscript{22} Statistical significance is explained in Section IV; see text box on “statistical significance.”

\textsuperscript{23} Multiple comparison concerns apply in the analysis of multiple treatments. Given that there are three research groups in Cambodia, SDPP adjusts for the additional comparisons that emerge from this design using the Scheffé method, which adjusts the statistical significance level for all possible comparisons (Scheffé 1959). This correction is applied to all analyses in Cambodia.

\textsuperscript{24} Please see Appendix B for more details on the impact estimation methods.
difference for schools that choose to enroll? These types of estimates are widely used in large-scale evaluations and preserve the integrity of the random assignment design.

SDPP worked with 7th, 8th, and 9th graders from SY 2012–2013 and SY 2013–2014. Therefore, SDPP worked with: (1) SY 2012-2013 8th graders, who continued to receive the program in SY 2013-2014 in their 9th grade year; (2) SY 2012-2013 7th graders, who continued to receive the program in SY 2013-2014 in their 8th grade year; and (3) SY 2013-2014 7th graders, who received the program only during SY 2013-2014. The analyses look at outcomes for these cohorts of students. SDPP schools and control school outcomes are compared, and differences are estimated while controlling for school-level and individual-level information regarding the school year during which they received SDPP.

3. Impact analysis for at-risk students

The SDPP Program was intended to affect outcomes more strongly for students at risk of dropout than for students not at risk, since the goal of the EWS was to train teachers to identify and work with students that are at risk of dropping out of school. Therefore, SDPP analyzed the impacts on students at risk of dropout. SDPP identified students in SDPP and control schools as at risk based on student characteristics before they entered the 8th grade, mimicking the EWS identification process as closely as possible with available data. SDPP was limited to the SY 2012–2013 8th grade students in looking at at-risk subgroups, since SDPP was only able to get baseline information from student records for students who had been in school in 7th grade (7th graders’ school records do not follow them from primary school). Therefore, SDPP was unable to use baseline data to characterize either SY 2012–2013 or SY 2013–2014 7th graders’ at risk status; SY 2012–2013 9th graders were not included in any of our impact analyses, since they received the SDPP Program for less than a year. SDPP conducted a subgroup analysis of the SY 2012–2013 8th grade students that SDPP identified as at-risk. This subgroup analysis is part of our primary assessment of whether the SDPP Program effectively accomplished its goals (or was effective).

Importantly, the students identified as at risk for the subgroup analysis in SDPP schools based on baseline characteristics are not necessarily the same as those identified by the EWS in SDPP schools. However, there is substantial overlap in these groups. SDPP focused the primary analysis on the subgroup of students identified as at risk of dropout based on their baseline characteristics because it would allow us to identify at-risk students in the control group using an analogous process. More critically, preserving the integrity of the random assignment design requires that subgroup analysis be based on baseline characteristics observed before receiving program services, and students in both SDPP and control schools are thus identified as being at-risk in the same manner.

4. Additional subgroup analyses

In addition to looking at impacts separately for at-risk students, SDPP also conducted several additional subgroup analyses. The SDPP Program was not designed to have different impacts for different subgroups of students (other than students at-risk of dropout), however the literature suggests that outcomes and impacts might vary for different types of students. There might be differential impacts for students with certain characteristics (such as gender, or being over-age for their grade), for different types of schools (such as the percentage of at-risk students in a school
and the school’s distance to the district capital), or for different types of teachers (such as differences by gender or by full-time teaching status) (Table III.C.1). These subgroup analyses provide interesting context for the interpretation of the main findings but are not part of the primary assessment of program effectiveness. Because these subgroup analyses were exploratory, SDPP did not adjust statistical significance thresholds for multiple comparisons when there were multiple subgroup comparisons being made. These additional subgroup analyses provide interesting context for our interpretation of the main findings and insight into the groups for which the SDPP Program may be more or less successful.25

Table III.C.1. Primary and additional subgroup analyses

<table>
<thead>
<tr>
<th>Subgroup Type</th>
<th>Subgroup Type</th>
<th>Definition</th>
<th>Analysis Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>At-risk students / Not-at-risk students</td>
<td>Students</td>
<td>Students were identified as being most at risk of dropping out based on information on their characteristics available in school records at baseline before entering the target grade.</td>
<td>Primary</td>
</tr>
<tr>
<td>Female/male</td>
<td>Students; Teachers</td>
<td>Student and teacher sex was determined from school records.</td>
<td>Additional</td>
</tr>
<tr>
<td>Full-time teaching status</td>
<td>Teachers</td>
<td>Teachers were determined to be full-time or not full-time (part-time, contract, volunteer, or other types of teachers that are not full time employees)</td>
<td>Additional</td>
</tr>
<tr>
<td>Over-age / not over-age</td>
<td>Students</td>
<td>A student is considered to be over-age if he or she is two years older than the appropriate age for his or her grade, compared to those who were within two years of the appropriate age.</td>
<td>Additional</td>
</tr>
<tr>
<td>High % at-risk/low % at-risk</td>
<td>Schools</td>
<td>SDPP divided schools into a group that was at the 70th percentile or higher in percentage of at-risk students at baseline among control group schools (the high percentage group) and a group that was below the 70th percentile (the low percentage group).</td>
<td>Additional</td>
</tr>
<tr>
<td>Distance to school</td>
<td>Schools</td>
<td>SDPP defined schools that were below the control school median for distance to district capital as schools “close” to the district capital (the “not remote” group) and schools that were at or above the median as schools “far” from the district capital (the “remote” group).</td>
<td>Additional</td>
</tr>
</tbody>
</table>

5. Primary and additional measures of SDPP’s effectiveness

To select outcomes for the impact study, SDPP identified the key domains that were expected to be affected by the SDPP Program as indicated by the program theory of change: (1) teacher behavior and attitudes; (2) student attitudes; (3) student engagement in school; and (4) school dropout. Within each of these domains SDPP identified key outcomes that the SDPP program was intended to affect; these primary outcomes can be used to assess whether the program achieved its goals. In addition to the primary outcomes, the evaluation presents findings for additional

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25 Because these subgroup analyses were exploratory, SDPP did not adjust statistical significance thresholds for multiple comparisons when there were multiple subgroup comparisons being made (Schochet, Peter Z. 2009).
outcomes to provide context to the primary analysis and more detail on how students and teachers may have been affected by SDPP.

Table III.C.2. Primary and additional measures of Cambodia SDPP Program’s effectiveness at endline (SY 2012–2013 and SY 2013–2014)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Primary measures of program effectiveness</th>
<th>Secondary measures*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher outcomes</strong></td>
<td>Teacher dropout prevention practice scale (range: 1 to 8), SY 2012–2013 and SY 2013–2014, grade 7, 8, and 9 teachers</td>
<td>Teacher’s sense of responsibility for at-risk students scale (range: 1 to 4), SY 2012–2013 and SY 2013–2014, grade 7, 8, and 9 teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teacher’s sense of self efficacy scale (range: 1 to 5), SY 2012–2013 and SY 2013–2014, grade 7, 8, and 9 teachers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrator dropout prevention practice scale (range: 1 to 8), SY 2012–2013 and SY 2013–2014, school administrators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrator’s sense of responsibility for at-risk students scale (range: 1 to 4), SY 2012–2013 and SY 2013–2014, school administrators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrator’s sense of self efficacy scale (range: 1 to 5), SY 2012–2013 and SY 2013–2014, school administrators</td>
</tr>
<tr>
<td><strong>Dropout</strong></td>
<td>Students were considered dropouts if they were no longer continuing their education at the last possible time SDPP observed them. Students who started the program as 8th graders in the first year of implementation were considered to have dropped out if they did not complete their final grade 9 exams in the second year of implementation. Students who started the program as 7th graders in the</td>
<td>Progression from 7th grade to 9th grade or higher for the SY 2012–2013 7th grade cohort and progression from 7th grade to 8th grade or higher for the SY 2013–2014 7th grade cohort.</td>
</tr>
</tbody>
</table>
### Primary measures of program effectiveness

- first and second years of implementation were considered to have dropped out if they did not enroll in school for the 2014/2015 school year (as 8th and 9th graders, respectively).

### Secondary measures*

- Exploring the impact of SDPP on these additional outcomes of interest is meant to be descriptive in nature, to provide context and better understand the impacts on the primary measures by which SDPP’s effectiveness is determined. In these exploratory analyses on additional outcomes, SDPP did not adjust statistical significance thresholds for multiple comparisons when presenting impacts of the program. SY = school year.

Within the teacher outcomes domain, the primary outcome measure is a scale representing teacher dropout prevention practices (Table III.C.2). SDPP worked directly with teachers to improve their knowledge and practices related to preventing dropout. Since teachers inspire and shape student attitudes and behaviors, changes in teacher practices may represent catalysts for student change.

Changes in student attitudes should then result from these changes in teacher attitudes and practices, and so SDPP looks at outcomes within the student attitudes domain. The three primary outcomes in this domain are student emotional, cognitive, and behavioral attitudes toward school. Changes in student attitudes should then result in changes in student engagement in school, including in their attendance. Low attendance may indicate that students are less active participants in their own education, which could be a sign that students are on their way to dropping out of school. Finally, SDPP analyzes student dropout at the time of the final data collection.

In addition to the primary outcomes, the evaluation analyzes additional information to provide context to the primary analysis and increase understanding of the ways in which the program was and was not effective in influencing a particular domain. Table III.C.2 lists these additional outcomes, which include teacher attitudes and practices, student perceptions of teachers and parents, academic performance, behavior, and grade progression.

### IV. Sampling and data collection

This report draws on data from three sources: (1) student records collected from schools; (2) surveys conducted with at-risk students; and (3) surveys conducted with school administrators and teachers teaching 7th, 8th, or 9th-grade homeroom, math, and Khmer language courses. SDPP collected this data at five points in time, over four school years, from the school year before the rollout of the program (SY 2011–2012) to the school year after completion of the program (SY 2014–2015) (Figure II.C.1). Across the five rounds of data collection, SDPP gathered information on the three cohorts used in the analysis, their teachers, and their schools.

Across all data collection rounds SDPP gathered data from 322 schools—108 in the EWS+Computers group, 107 in the EWS group, and 107 in the control group—that are used in the impact analysis (Table IV.1). SDPP analyzed data on students from school records for 54,855 students in the EWS+Computers group, 54,323 students in the EWS group, and 50,336 students in the control group. Similarly, SDPP analyzed information collected from interviews with 1,755 students from the EWS+Computers group, 1,817 students from the EWS group, and 1,694 students from the control group. SDPP administered 1,639 interviews to eligible 7th-, 8th-, and 9th-grade teachers in the EWS+Computers group, 1,591 interviews to eligible 7th-, 8th-, and 9th-grade teachers in the EWS group, and 1,587 interviews to eligible 7th-, 8th-, and 9th-grade teachers in...
the control group. SDPP also administered 241 interviews to school administrators in the EWS+Computers group, 239 interviews to administrators in the EWS group, and 229 interviews to administrators in the control group.\textsuperscript{26}

Table IV.1. Study sample sizes

<table>
<thead>
<tr>
<th>Source</th>
<th>EWS + computer lab group</th>
<th>EWS group</th>
<th>Control group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>108</td>
<td>107</td>
<td>107</td>
<td>322</td>
</tr>
<tr>
<td>Student records</td>
<td>54,855</td>
<td>54,323</td>
<td>50,336</td>
<td>159,514</td>
</tr>
<tr>
<td>Student survey</td>
<td>1,755</td>
<td>1,817</td>
<td>1,694</td>
<td>5,266</td>
</tr>
<tr>
<td>Teacher survey</td>
<td>1,639</td>
<td>1,591</td>
<td>1,587</td>
<td>4,817</td>
</tr>
<tr>
<td>Administrator survey</td>
<td>241</td>
<td>239</td>
<td>229</td>
<td>709</td>
</tr>
</tbody>
</table>

Sources: SDPP baseline and follow-up student records, school questionnaire, student questionnaire, and teacher self-administered questionnaire, June 2012, January 2013, May/June 2013, May 2014, and December 2014.

Note: Sample sizes refer to the number of unique data points from each data collection source that is used in the impact analyses. Data on different cohorts come from different rounds of data collection.

SDPP administered school questionnaires to the school director or deputy director to gather information about school characteristics, enrollment, and teacher characteristics during each data collection round. We administered teacher questionnaires to directors, deputy directors, and 7th, 8th, and 9th-grade math, language, and homeroom teachers at the end of SY 2011–2012, SY 2012–2013, and SY 2013–2014. The teacher questionnaire included questions related to respondents’ experience and training, awareness of risk factors related to dropout, and attitudes toward and practices used with at-risk students. Eligible teachers and administrators responded at a rate of 80 percent, 83 percent, and 82 percent at each data collection point (SY 2011–2012, SY 2012–2013, SY 2013–2014), respectively.

During each round of data collection, SDPP obtained official student records to glean information on the attendance, school performance, demographics, and enrollment of the three cohorts. During three rounds of data collection, at the start of SY 2012–2013, the end of SY 2012–2013, and the end of SY 2013–2014, SDPP also interviewed students who were at risk of dropping out of school (based on their baseline characteristics) to assess their attitudes about school. A subset of at-risk students from each cohort was sampled for interviews and included in the analyses. The actual sampling process in the field varied by cohort because of the data available to identify student risk status at the time of sampling. SDPP describes this process in detail in Appendix A.

As mentioned earlier, to identify at-risk students for the evaluation, SDPP only used data that were available in school records for all SDPP and control group schools. This is a different method than the one used to identify at-risk students via the EWS in SDPP schools. To identify students based on school records, SDPP used three analogs of the six at-risk components used in Cambodia’s EWS at-risk identification process: (1) attendance from March 2012 during the previous school

\textsuperscript{26} Please see Appendix A for further details about data collection. An eligible subset of the students and teachers was used in the analysis.
year (SY 2011–2012); (2) 1st semester SY 2011–2012 exam score in Khmer and math; and (3) over-age for grade status.\textsuperscript{27,28}

At-risk students who were selected for an interview responded to questions about demographics; emotional, cognitive, and behavioral attitudes toward school; and perceptions of teachers and parents. Sampled students responded at a rate of 64 percent, 68 percent, and 55 percent at each data collection point (at the end of SY 2011–2012, SY 2012–2013, and SY 2013–2014), respectively.

V. Characteristics of the sample prior to implementation

Having data on the sample members before they are exposed to the intervention is a crucial element of a rigorous impact evaluation; it provides information on the sample’s baseline characteristics and allows us to check for equivalence between the treatment and control groups. In the case of SDPP in Cambodia, the characteristics of students and teachers gathered before the intervention started in schools in October 2012 is our reference point for all subsequent measurement and analysis.

SDPP and control group schools had comparable characteristics at baseline (SY 2011–2012), with only a few statistically significant differences (Table V.1, top panel). The typical EWS+Computers group school enrolled about 389 7th, 8th, and 9th-grade students, compared with 386 students in the EWS group schools, and 356 in the control group schools. Schools in the EWS+Computers group and the EWS group had, on average, 11.1 and 11.2 9th grade teachers, compared to 10.2 in the control group schools. The attendance rate in 7th and 9th-grade in EWS+Computers schools was 2–3 percentage points higher than the attendance rate in control group schools. Schools in the EWS group had fewer active school infrastructure programs than schools in the control group, while EWS+Computers group schools were further from the district capital than EWS group schools.\textsuperscript{29}

SDPP found few statistically significant differences between the EWS+Computers, EWS and control group characteristics for 7th, 8th, and 9th grade teachers. Teachers in all three groups were between 32 and 33 years old, and 33–37\% were female. The distribution of teaching certification was slightly different between the EWS and control group schools. Fifty-three percent of EWS+Computer and control group teachers had less than ten years teaching experience, compared to 47 percent of teachers in the EWS group schools. For both groups, less than 2 percent of teachers had 30 years or more of teaching experience. Very few teachers had received training related to

\textsuperscript{27} Students in 7th grade who were 15 years old on the first day of school were assigned a risk status of 1, and those who were 16 years or older on the first day were assigned a risk status of 2. Eighth-grade students who were 16 years old were assigned a risk status of 1, and those who were 17 years or older were assigned a 2. Data was available for behavior scores; however, the level of missing data was judged to be too severe to use.

\textsuperscript{28} Because schools do not include 6th grade, SDPP was only able to collect pre-intervention data for these analogs for the SY 2012–2013 8th and 9th grade cohorts, when they were in 7th and 8th grade, respectively. The SY 2012–2013 9th grade cohort is excluded from the analyses because they did not receive the intervention for a full school year, so the analysis of at-risk students includes only students in the 8th grade in SY 2012–2013 who were identified as at risk of dropping out of school.

\textsuperscript{29} Given the large number of comparisons made, SDPP expects that these differences occurred by chance.
at-risk students, and even fewer had received this training within the previous year. Baseline scores on the teacher dropout prevention practice scale were between 6.1 and 6.3, on an 8-point scale.

Table V.1. Average school and target grade teacher characteristics before intervention (7th, 8th, and 9th grade, SY 2011–2012) (percentage unless indicated otherwise)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>EWS + computer lab group</th>
<th>EWS group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>School characteristics prior to intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades offered, SY 2011–2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer grades other than 7, 8, and 9</td>
<td>29.6</td>
<td>23.4</td>
<td>28.0</td>
</tr>
<tr>
<td>Enrollment (number of students), SY 2011–2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 7</td>
<td>162.5</td>
<td>161.1</td>
<td>151.7</td>
</tr>
<tr>
<td>Grade 8</td>
<td>127.7</td>
<td>126.6</td>
<td>116.4</td>
</tr>
<tr>
<td>Grade 9</td>
<td>97.9</td>
<td>98.8</td>
<td>87.6</td>
</tr>
<tr>
<td>Number of teachers, SY 2011–2012</td>
<td>24.9</td>
<td>24.3</td>
<td>23.2</td>
</tr>
<tr>
<td>Teachers per grade, SY 2011–2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 7</td>
<td>12.5</td>
<td>12.5</td>
<td>11.7</td>
</tr>
<tr>
<td>Grade 8</td>
<td>12.2</td>
<td>12.5</td>
<td>11.8</td>
</tr>
<tr>
<td>Grade 9</td>
<td>11.1*</td>
<td>11.2**</td>
<td>10.2</td>
</tr>
<tr>
<td>Student-teacher ratio, SY 2011–2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 7</td>
<td>13.4</td>
<td>13.2</td>
<td>13.2</td>
</tr>
<tr>
<td>Grade 8</td>
<td>10.9</td>
<td>10.2</td>
<td>9.9</td>
</tr>
<tr>
<td>Grade 9</td>
<td>8.8</td>
<td>8.8</td>
<td>8.5</td>
</tr>
<tr>
<td>Attendance rate at time of head count, SY 2011–2012 (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 7</td>
<td>79.8*</td>
<td>77.8</td>
<td>77.3</td>
</tr>
<tr>
<td>Grade 8</td>
<td>76.8</td>
<td>75.6</td>
<td>75.1</td>
</tr>
<tr>
<td>Grade 9</td>
<td>78.3*</td>
<td>77.9</td>
<td>75.5</td>
</tr>
<tr>
<td>Active school programs, SY 2011–2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No other active programs</td>
<td>80.0</td>
<td>83.2</td>
<td>74.8</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>8.6</td>
<td>3.7**</td>
<td>11.2</td>
</tr>
<tr>
<td>Textbooks or materials</td>
<td>5.7</td>
<td>7.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Scholarships or incentives</td>
<td>1.9</td>
<td>5.6</td>
<td>3.7</td>
</tr>
<tr>
<td>Other active programs</td>
<td>6.7</td>
<td>7.5</td>
<td>13.1</td>
</tr>
<tr>
<td>Distance to district capital (kilometers)</td>
<td>12.8 ++</td>
<td>10.2</td>
<td>11.9</td>
</tr>
<tr>
<td>Grade 7, 8, and 9 math, language, and homeroom teacher characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to intervention (SY 2011–2012)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>32.4</td>
<td>33.2</td>
<td>32.5</td>
</tr>
<tr>
<td>Female</td>
<td>37.2</td>
<td>37.0</td>
<td>33.2</td>
</tr>
<tr>
<td>Highest level of certificationc</td>
<td></td>
<td>†††</td>
<td></td>
</tr>
<tr>
<td>Primary pedagogical certificate</td>
<td>1.1</td>
<td>0.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Lower secondary pedagogical certificate</td>
<td>77.5</td>
<td>78.8</td>
<td>74.1</td>
</tr>
<tr>
<td>Upper secondary pedagogical certificate</td>
<td>20.5</td>
<td>20.0</td>
<td>22.8</td>
</tr>
<tr>
<td>Higher certification</td>
<td>0.9</td>
<td>1.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Teaching experience overallc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 10 years</td>
<td>54.4</td>
<td>46.8</td>
<td>53.3</td>
</tr>
<tr>
<td>10 years to less than 20 years</td>
<td>19.5</td>
<td>24.0</td>
<td>22.6</td>
</tr>
<tr>
<td>20 years to less than 30 years</td>
<td>24.6</td>
<td>28.3</td>
<td>23.0</td>
</tr>
<tr>
<td>30 years or more</td>
<td>1.5</td>
<td>0.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Received training related to at-risk students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever</td>
<td>4.8</td>
<td>4.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Less than 1 year ago</td>
<td>1.0*</td>
<td>1.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Teacher dropout prevention practice scale (range: 1 to 8) d</td>
<td>6.1</td>
<td>6.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Sample size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>108</td>
<td>107</td>
<td>107</td>
</tr>
<tr>
<td>Teachers</td>
<td>1,006</td>
<td>990</td>
<td>906</td>
</tr>
</tbody>
</table>
Sources: SDPP baseline teacher self-administered questionnaire and school questionnaire, June 2012 and January 2013.

Note: Differences between SDPP and control group means were tested using two-tailed t-tests unless otherwise indicated. The teacher analysis accounts for clustering of teachers within schools. Sample sizes for some characteristics may be smaller due to missing responses.

a A single teacher may teach multiple grades/subjects.

b External programs are those funded and implemented by organizations other than the school system. More than one external program can operate in a school. Examples of other programs include tutoring or remediation programs and community mobilization programs.

c Differences between treatment and control group distributions were tested using a chi-squared test.

d This scale represents the sum of teacher responses to eight items that indicate whether the teacher reports recording daily attendance, taking action if the student is absent three days in a month, giving weak students feedback, discussing support for weak students with other teachers, developing plans to support weak students, communicating with parents of weak students, meeting with weak students, and being willing to come early or stay late to help weak students.

***/*** Difference between the indicated treatment group and the control group means is statistically significant at the .01/.05/.10 level.

+++/+++ Difference between early warning system + computer lab group and early warning system group means is statistically significant at the .01/.05/.10 level.

†††/†† Difference between the indicated treatment group and control group distributions is statistically significant at the .01/.05/.10 level.

●●●/●● Difference between early warning system + computer lab group and early warning system group distributions is statistically significant at the .01/.05/.10 level.

Students who were in 7th and 8th grade in SY 2011–2012 were also similar across the EWS+Computers, EWS, and control groups (Table V.2). About 48 to 49 percent of students in all groups were female, and about 3.6 to 4.3 percent of students in all groups were not appropriately aged for their grade. Of the EWS+Computers group students, 75.2 percent were at risk of school dropout at baseline, compared with 72.5 percent of EWS only group students and 75 percent of control group students. The difference between the EWS+Computers group and the EWS only group was marginally significant. Daily attendance was high across all groups, at about 96 percent. Average math scores across all groups were between 63.3 and 64.1 percent. The difference between Khmer scores in the EWS group (66.5 percent) and in the control group (68.5 percent) was marginally significant. Students in the at-risk sample were more likely to be over-age for their grade, but otherwise had similar characteristics to the students in the full sample.

30 Assuming regular progression, the 7th and 8th grade students in SY 2011–2012 would have been in 8th and 9th grade in SY 2012–2013.

31 Throughout the report, SDPP uses the term “marginally significant” to refer to differences with p-values of 0.10 or lower and “statistically significant” to refer to differences with p-values of 0.05 or lower.

32 At baseline, SDPP examined a large number of comparisons (3 comparisons each for 193 school, student, teacher, and school administrator characteristics). Of the comparisons related to student attitudes, SDPP found more differences between groups than what one would expect based on chance. There was little evidence of systematic differences in the treatment and control groups in baseline characteristics other than student attitudes. Please see Appendix H for further discussion on baseline characteristics.
### Table V.2. Average student characteristics before intervention (7th and 8th grade, SY 2011–2012) (percentage of students unless otherwise indicated)

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>EWS+ Computers Group</th>
<th>Full Sample EWS Group</th>
<th>Control Group</th>
<th>EWS+ Computers Group</th>
<th>At-Risk Sample EWS Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>48.0</td>
<td>48.0</td>
<td>48.8</td>
<td>44.8</td>
<td>44.0</td>
<td>45.1</td>
</tr>
<tr>
<td>Over-age for grade&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.6</td>
<td>3.8</td>
<td>4.3</td>
<td>6.8</td>
<td>7.7</td>
<td>7.0</td>
</tr>
<tr>
<td>Factors related to risk of dropout</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Categorized as at-risk based on Baseline Information&lt;sup&gt;b&lt;/sup&gt;</td>
<td>75.2 *</td>
<td>72.5</td>
<td>75.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Daily Attendance during prior school year&lt;sup&gt;c&lt;/sup&gt;</td>
<td>96.1</td>
<td>95.6</td>
<td>96.5</td>
<td>95.9</td>
<td>95.0</td>
<td>96.1</td>
</tr>
<tr>
<td>Academic Performance on average 1st and 2nd semester exam scores (range 1-100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>64.1</td>
<td>63.3</td>
<td>63.4</td>
<td>65.8</td>
<td>64.3**</td>
<td>66.8</td>
</tr>
<tr>
<td>Khmer</td>
<td>67.8</td>
<td>66.5*</td>
<td>68.5</td>
<td>62.1</td>
<td>60.7</td>
<td>61.5</td>
</tr>
<tr>
<td>Sample size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>108</td>
<td>107</td>
<td>107</td>
<td>108</td>
<td>107</td>
<td>107</td>
</tr>
<tr>
<td>Grade 7 Students</td>
<td>17,039</td>
<td>16,895</td>
<td>15,568</td>
<td>8,442</td>
<td>8,259</td>
<td>7,695</td>
</tr>
<tr>
<td>Grade 8 Students</td>
<td>13,473</td>
<td>13,136</td>
<td>11,903</td>
<td>6,331</td>
<td>6,083</td>
<td>5,680</td>
</tr>
<tr>
<td>Students Overall</td>
<td>30,512</td>
<td>30,031</td>
<td>27,471</td>
<td>14,763</td>
<td>14,342</td>
<td>13,375</td>
</tr>
</tbody>
</table>

Sources: SDPP baseline student survey and school records data collection, June 2012 and January 2013.

Note: Differences between SDPP and control group means were tested using two-tailed t-tests. The analysis accounts for clustering of students within schools. Sample sizes for some characteristics may be smaller due to missing responses.

<sup>a</sup>A student is considered over-age for his or her grade if he or she is two years older than the appropriate age for the grade.

<sup>b</sup>A student was identified as at-risk if: (1) the student received a score of 2 on the indicator related to attendance; (2) the sum of the student’s at-risk indicators (at-risk index) was greater than or equal to 4; or (3) the student’s at-risk index was in the upper 44th percentile of the distribution of the at-risk index for the student’s class.

<sup>c</sup>Only defined for students in the sample that were in phase I data collection. The daily attendance rate is the percentage of school days a student attended during the school year, constructed by averaging the monthly percentages for the most recent school year.

**/*** Difference between the indicated treatment group and the control group means is statistically significant at the .01/.05/.10 level.

**/*** Difference between early warning system + computer lab group and early warning system group means is statistically significant at the .01/.05/.10 level.
VI. Impacts of SDPP

The evaluation estimated the SDPP Program’s impacts on teacher outcomes, student attitudes, student engagement in school, and school dropout. This chapter discusses the extent to which the SDPP Program was successful in improving the primary measures of program effectiveness in each of these domains. The assessment of the SDPP Program’s effectiveness focuses on program impacts measured as the difference in average outcomes at final follow-up between students and teachers randomly assigned to the SDPP group and those randomly assigned to the control group, adjusting for baseline characteristics. The impact estimates reported in this study should be interpreted as the difference in outcomes that resulted from exposure to SDPP. For example, an “X” percentage point favorable impact on school dropout indicates that, on average, the dropout rate under SDPP is “X” percentage points lower than it would have been under business-as-usual operations. In some places, to provide additional context we also present percentage increases or decreases in the primary outcomes across the treatment and control groups. These “percentage changes” should not be interpreted as the percentage “change” that might be calculated in a pre-post measure or baseline/endline change, but rather the increase or decrease in the treatment group’s outcome measure in relation to the control group at endline.

The discussion is organized by outcome domain, as follows: (1) teacher behavior and attitudinal outcomes; (2) student attitudes; (3) student engagement in school; and (4) school dropout. Impact findings for primary and additional measures of program effectiveness are presented with bar charts corresponding to the mean outcome level by random assignment group status. Differences that are statistically different than zero are indicated with asterisks.

Statistical significance

Estimates of the impact of the SDPP Program are based on differences in average outcomes for SDPP and control group students and teachers. In interpreting these estimates, it is important to evaluate whether they are sufficiently large that it is unlikely that the difference is due to chance (indicating that the SDPP Program did have an impact). With this in mind, statistical tests were conducted to assess whether each impact is significantly different than zero. Impacts estimates are described as statistically significant if there is less than a 5 percent probability that they are due to chance (and not to the SDPP Program). Impact estimates are described as marginally significant if the probability that they are due to chance (and not to the SDPP Program) is between 5 and 10 percent. In tables and figures, the statistically significant impacts at the 1 percent, 5 percent, and 10 percent levels are denoted with asterisks as ***, ** or *.

The chance (1%, 5% or 10%) that the reported findings are falsely reporting an impact increases as additional tests are conducted. Therefore, caution should be used when interpreting the meaning of our exploratory analyses of additional outcomes and subgroups because we do not correct for the total number of comparisons being made. Individual tests of these additional contrasts of program effects for other subgroups are provided as additional context for the main findings.
A. Impacts on teacher outcomes

Teachers can shape the attitudes and actions of students through their actions. As shown in the theory of change conceptual model (Figure III.A.1), a teacher’s actions might represent the first level of change in improving intermediate student outcomes and reducing school dropout. The SDPP Program worked directly with teachers to improve their knowledge and awareness of dropout, training them to identify at-risk students and work with those students and their families to provide support and strengthen their attachment to school. Teachers were taught to use the EWS to improve their dropout prevention practices. CL teachers received training on computers and managing the computer labs. Changes in teacher actions can be early indicators of changes in student behaviors.

This section discusses the impacts of SDPP on teachers’ and administrators’ knowledge, attitudes, and practices related to dropout.

1. Impact on teacher take-up of dropout prevention practices

The primary measure of SDPP’s influence on teacher outcomes is the teacher dropout prevention scale. This scale combines responses to eight questions posed to homeroom teachers, who were the focus of the EWS intervention, and to teachers of math and language. The questions focus on teacher behavior that might help at-risk students succeed in school. (See Appendix C for details on the creation of the scale.)

<table>
<thead>
<tr>
<th>Teacher Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary measure of program effectiveness</td>
</tr>
<tr>
<td>• Teacher take-up of dropout prevention practices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Teachers sense of self-efficacy in dealing with dropout</td>
</tr>
<tr>
<td>• Teachers’ sense of responsibility for addressing dropout</td>
</tr>
<tr>
<td>• Administrators’ dropout prevention practices, self-efficacy and sense of responsibility</td>
</tr>
</tbody>
</table>

Teacher dropout prevention practices scale (primary measure)

Teachers responded to a questionnaire. Scoring is based on an 8-point scale corresponding to eight survey items that indicate whether the teacher has adopted dropout prevention practices. The items include:

- ✔ Recording daily attendance
- ✔ Taking action if the student is absent three days in a month
- ✔ Giving weak students feedback
- ✔ Discussing support for weak students with other teachers
- ✔ Developing plans to support weak students
- ✔ Communicating with parents of weak students
- ✔ Meeting with weak students
- ✔ Willingness to arrive early or stay late to help weak students
The SDPP Program showed a positive, statistically significant impact on teacher dropout prevention practices (Figure VI.A.1). Teachers in EWS schools scored 6.85 and teachers in EWS+Computers schools scored 6.83 on the 8-point dropout prevention scale, compared to 5.94 for teachers in the control schools. Both of these represent 15 percent improvements for both the EWS and the EWS+Computer groups relative to the control group.

Figure VI.A.1. SDPP’s impacts on teacher dropout prevention practices at endline (SY 2012–2013 and SY 2013–2014)

Sources: SDPP baseline and follow-up teacher self-administered questionnaires and school records data collection, June 2012, January 2013, May/June 2013, and May 2014.

Note: The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013 and SY 2013–2014: 1,404 teachers for the EWS + computers group; 1,356 for the EWS group; and 1,305 teachers for the control group.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. For a tabular presentation of these findings, see Appendix Table H.5.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.
++*/+++ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

Although a higher percentage of SDPP group homeroom teachers remained homeroom teachers for the duration of the intervention (44 percent of SY 2012 homeroom teachers in EWS schools and 46 percent of SY 2012 homeroom teachers in EWS+Computer schools remained in SY 2014) than for control group homeroom teachers (32.3 percent of SY 2012 remained in SY 2014), the impact on teacher practices may have been greater had a larger percentage of SDPP benefitted from two full years of SDPP training and intervention implementation. Further, a sizable portion of SDPP school teachers—23 to 24 percent—had never received any training related to at-risk students.

33 Higher scores indicate better practices to prevent dropout.
SDPP also examined impacts on six additional measures: one related to actions taken to reduce dropout, two related to teacher training, and three related to teachers’ understanding of dropout. Consistent with the improvements in teacher dropout prevention practices, teachers also demonstrated increased knowledge of dropout risk factors. In EWS+Computers schools, teachers could identify an average of 72 percent of risk factors for school dropout and in EWS schools, teachers could identify 69.4 percent. These scores were higher than control schools, where teachers could identify only 57.8 percent of risk factors; the differences were statistically significant. In the EWS+Computers and EWS groups, teachers performed 80.4 percent and 82.4 percent of possible actions related to dropout, compared to 75.3 percent among teachers in the control group, differences that were statistically significant. These positive impacts on teachers in SDPP schools are observed despite the fact that a sizable portion of SDPP school teachers—23 to 24 percent—had never received any training related to at-risk students. The outcomes for these additional measures are presented in detail in Appendix Table C.3.

SDPP also explored the effects of the SDPP Program on additional subgroups that were not directly targeted by the program but are still of interest. These comparisons provide useful context and can suggest pathways through which SDPP might be working.

SDPP examined impacts on the primary teacher outcome, the teacher dropout prevention practices scale, for four pairs of subgroups (Figure VI.A.2). In particular, SDPP estimated impacts separately by the teacher’s gender, the percentage of at-risk students in a school, the school’s distance to the district capital, and the teacher’s full-time teaching status. SDPP had a positive impact on teacher prevention practices in almost every subgroup in both the EWS+Computers and the EWS group. The only difference in subgroup impacts was for gender, where female teachers showed a greater increase in teacher prevention practice scale than male teachers in the EWS group, though the difference was only marginally significant. Otherwise, there were no strong subgroup patterns in impacts on the teacher dropout prevention practices scale.  

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34 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.

35 Differences between impacts for each subgroup were tested. There was a statistically significant difference between the impact estimates for females and for males in the EWS group.
**Figure VI.A.2. SDPP Program impacts on teacher dropout prevention practices at endline, by subgroup**

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Full-time</th>
<th>Not full-time</th>
<th>High % At-risk</th>
<th>Low % At-risk</th>
<th>Remote schools</th>
<th>Not remote schools</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.83***</td>
<td>0.92***</td>
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<td>0.87***</td>
<td>0.93***</td>
<td>0.96***</td>
<td>0.88***</td>
</tr>
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<td><strong>EWS+Computers Group</strong></td>
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<td>0.83***</td>
<td>0.87***</td>
<td>1.57***</td>
<td>1.00***</td>
<td>0.95***</td>
<td>0.96***</td>
<td>0.88***</td>
</tr>
</tbody>
</table>

**Sources:** SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; baseline and follow-up teacher self-administered questionnaires and school records data collection; June 2012, May/June 2013, and May 2014.

**Note:** The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013, and SY 2013–2014.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. Because these subgroup analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons. Differences between subgroup impacts were tested using two-tailed t-tests. Differences between the EWS+Computer and EWS-only groups were not tested for in subgroup analyses.

***/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

†††/††/† Statistically significant difference between the subgroup impact estimates for the EWS+Computers group at the .01/.05/.10 level.

<><><> Statistically significant difference between the subgroup impact estimates for the EWS group at the .01/.05/.10 level.
Tenacious Teacher Keeps Student in School

Now that teachers in SDPP schools are armed with a new approach to keeping at-risk students in school, they see they can make a big difference. Even their students can see the impact their teachers are having. Chantha Raksmei is one student who credits the efforts of his teacher, Phoeurn Samphors, to keeping him in school. “I’m very happy that I could come to class again and I commit to completing secondary school,” says Raksmei.

A Grade 7 student at Banteay Kraing Secondary School in Cambodia, Raksmei had never found school easy. He struggled for years. At age 16, he had repeated two grades and now was older than his classmates. Discouraged, he now missed school frequently. Samphors, his teacher, knew Raksmei was on a fast track to dropping out of school, but he also knew what he could do to prevent that from happening.

Samphors had received Early Warning System (EWS) training, so he was able to identify Raksmei as at-risk of dropping out of school. When he noticed all of Raksmei’s absences, he immediately sent a letter to Raksmei’s parents to let them know their son was missing school. He followed up the letter with a phone call, but nothing changed. After sharing Raksmei’s story during a school case management meeting to discuss at-risk students, Samphors planned for the next step in the EWS process.

Samphors visited Raksmei’s home to find out what was going on and come up with a plan with his parents to keep Raksmei in school. Raksmei’s mother was stunned to see her son’s teacher at the door. “At first I wondered why the teacher visited my home, and then I realized that it must have been about my son’s absences,” says Raksmei’s mother. She explained she needed her son to watch the family’s cattle while his father was away working as a taxi driver. It was simply a matter of supporting the family’s survival; she would not send her son back to school.

Samphors wasn’t about to give up. He and the school director, accompanied by a member of the PTA, visited Raksmei’s home once again. They told Raksmei’s mother they understood her situation, but urged her to reconsider since the family would much better off if her son received a good education. They asked her to pass the message to Raksmei’s father in hopes of changing their decision. She promised she would discuss it with her husband and would ask him to visit the school the next time he was home. Later that week, Raksmei’s father came to meet with Samphors and the school director, and together they came up with a plan for Raksmei to stay in school.

“If his teacher, school director and PTA member had not visited my home and advised my family, I would have let my son drop out of school,” says Raksmei’s father. Raksmei is only one of many other at-risk students who are in school today because of a tenacious teacher and others who put dropout prevention steps into practice. At Banteay Kraing, the school director noted the dropout rate declined precipitously.
2. Impact on additional teacher outcomes

Besides the primary measure of SDPP’s effect on teachers’ dropout-related practices, SDPP used two other scales to examine teachers’ sense of self-efficacy and sense of responsibility for at-risk students. SDPP provides these findings here because they may be of interest and could help paint a more complete picture of teachers’ experiences.36

a. Teacher sense of self-efficacy

An additional indicator of the SDPP Program’s effectiveness in addressing dropout is influencing teachers’ belief that they are capable of affecting factors associated with student dropout, such as poor behavior, disinterest in class, and absenteeism. This outcome is measured according to the teacher sense of self-efficacy scale, which SDPP adapted from Tschannen-Moran and Hoy (2001). The questions focus on teacher beliefs that they can help at-risk students succeed in school, such as whether the teacher thinks he or she can encourage students to value learning and provide assistance to families in helping their child succeed in school.

Responses to the questions about teachers’ self-efficacy ranged from 1 (nothing) to 5 (a great deal) and were compiled into a scale in which higher values corresponded to a higher sense of self-efficacy.

The difference between the EWS+Computers group and the control group was marginally significant. There was no impact on the EWS only group. Teachers in the EWS+Computers and the EWS group schools had an average score of 3.55 and 3.54, respectively, on the 5-point sense of self-efficacy scale, compared with 3.50 for teachers in the control group schools (Figure

36 As described in Section III, because these analyses are exploratory, SDPP does not adjust the results for multiple comparisons, despite the large number of comparisons being made.
VI.A.3). This means that teachers typically felt they could do between “some” and “quite a bit” to respond to factors associated with dropout.

*Figure VI.A.3. SDPP Program impacts on teacher sense of self-efficacy at endline (SY 2012–2013 and SY 2013–2014)*

Source: SDPP baseline and follow-up teacher self-administered questionnaires and school records data collection, June 2012, May/June 2013, and May 2014.

Note: The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013 and SY 2013–2014. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

+*/++/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
b. Teacher sense of responsibility for at-risk students

In addition to teacher sense of self-efficacy scale, SDPP developed a scale to measure teachers’ sense of responsibility for students at risk of dropping out. The questions in this scale focus on teachers’ opinions about ways to prevent students from dropping out of school.

**Teacher sense of responsibility for at-risk students scale**

This scale is based on teacher agreement with the following five statements about at-risk students:

- ✓ Students at risk of dropping out of school should work harder
- ✓ Little can be done by the teacher or school to help students at risk of dropping out
- ✓ If a student is at risk of dropping out, it is mainly the fault of the parent/guardian or family
- ✓ At-risk students face too many challenges to succeed in school
- ✓ At-risk students need more help than teachers have time or resources to provide

Responses for this scale ranged from 1 (strongly agree) to 4 (strongly disagree). The scale score is the mean of the five items. Higher values correspond to a higher sense of teacher responsibility for at-risk students.

The differences between scores in the EWS+Computers and EWS groups and the control group were statistically significant. **(Figure VI.A.4)**. They represent 2 percent improvements for both groups relative to the control group. Teachers in all research groups tended to have a moderately high sense of responsibility for at-risk students. The average score for teachers in the EWS+Computers and EWS schools was 3.32 and 3.33 (out of 4), respectively, indicating that teachers tended to agree that they bore responsibility for at-risk students. The average score for teachers in the control schools, 3.25, indicates that control school teachers have a slightly lower sense of responsibility for at-risk students.

*Figure VI.A.4. SDPP Program impacts on teacher sense of responsibility at endline (SY 2012-2013 and SY 2013-2014)*
Source: SDPP baseline and follow-up teacher self-administered questionnaires and school records data collection, June 2012, May/June 2013, and May 2014.

Note: The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013 and SY 2013–2014. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.

The moderately high scores on both the teacher sense of responsibility scale and the teacher sense of self-efficacy scale indicate that teachers feel responsible for at-risk students, and that they have some ability to address factors associated with dropout. SDPP presents additional information about the findings for additional teacher outcomes and for administrators in Appendix C.
EWS Fosters Teacher’s Sense of Responsibility for Her Students

Since SDPP came to work in my school I’ve been completing my school records regularly,” says Tith Socheata, a homeroom teacher at Veal Pong Secondary School in Cambodia.

Socheata is one of 15 homeroom teachers at Veal Pong trained by SDPP to use an Early Warning System (EWS) in her classroom to identify and support students at-risk of dropping out of school. She explains how the EWS has made a difference in her classroom and those of her fellow homeroom teachers. “Before SDPP we didn’t fill in the school documents very well.” But all that has changed.

Low salaries have forced many school personnel to work additional jobs to supplement their family income. These second jobs compete with the time teachers should be completing work at school. Tasks that teachers don’t consider important, particularly administrative duties like keeping up their school records, are frequently the first tasks to fall by the wayside when teachers take on second jobs.

However, since the SDPP Program began working with her school, Socheata now sees how important these tasks are and why she should do them every day. It has changed the way she does her job. “SDPP made me more aware of how important it is to complete all student documents such as student attendance lists, study record books, tracking books and scoring books. I used to occasionally check on my student attendance list, but now I know I should record this regularly.”

Teachers have learned from SDPP that these administrative tasks are not just bureaucratic motions, but critical activities for monitoring students and keeping them in school. The Early Warning System helps schools to record, track, and monitor students’ attendance, behavior, and course performance. It enables teachers to use this information to identify and then follow up with students who are at risk of dropping out. “It’s not new, but I understand now how this information can be used to help students. It’s the responsibility of the homeroom teachers like myself to fill in all school documents accurately and on time. This way I can follow up with at-risk students,” says Socheata.

Soy Thirin, Director of Veal Pong School, admits the Early Warning System has really changed the behavior of his homeroom teachers. “It’s not as difficult as it was before to get my homeroom teachers to keep their student records up to date. They compete to complete their documents on time,” says Thirin.
3. Impact on additional school administrator outcomes

Impacts were also estimated for school administrators’ dropout-prevention practices, sense of self-efficacy, and sense of responsibility for at-risk students. Each of these outcomes was measured in the same way as the teacher outcomes.

a. Administrator dropout-prevention practices

The SDPP Program had a positive, statistically significant impact on administrators’ dropout prevention practices in Cambodia, for both the EWS and EWS+Computers group (Figure VI.A.5).

Figure VI.A.5. SDPP Program impacts on administrators’ dropout prevention practices scale

![Bar chart showing the impact on administrators' dropout prevention practices scale.]

Source: SDPP baseline and follow-up teacher self-administered questionnaires and school records data collection, June 2012, May/June 2013, and May 2014.

Note: The analysis is based on 7th-, 8th-, and 9th-grade homeroom, math, and language teachers during SY 2012–2013 and SY 2013–2014.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of teachers within schools and school-year and grade fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/***: Impact estimate is statistically significant at the .01/.05/.10 level.

++/+/: Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.

In addition, administrators in EWS+Computer schools identified an average of 75.2 percent risk factors for school dropout out of a list of 8 and administrators in EWS schools identified an average of 71.4 percent, compared to control school administrators, who only identified an average of 62.6 percent of the risk factors. The differences between SDPP group school administrators and control school administrators were statistically significant.
b. Administrator sense of self-efficacy

Consistent with the findings for teachers’ sense of self-efficacy, there were no statistically significant impacts on administrators’ sense of self-efficacy (Figure VI.A.6).

**Figure VI.A.6. SDPP Program impacts on administrator sense of self-efficacy**

![Graph showing scores on a five-point scale for EWS only, EWS+Computers group, and Control group.]

Sources: SDPP baseline and follow-up teacher self-administered questionnaires.

Note: Analysis accounts for clustering of administrators within schools. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are regression adjusted. Because these additional analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.

++/+/+/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
c. Administrator sense of responsibility

SDPP had a positive, statistically significant impact on administrators’ sense of responsibility in the EWS+Computers group, but not in the EWS only group (Figure VI.A.7). Administrators in all research groups tended to have a moderately high sense of responsibility for at-risk students. The average score for teachers in the EWS+Computers and EWS schools was 3.42 and 3.37 (out of 4), respectively, indicating that administrators tended to agree that they bore responsibility for at-risk students. The average score for teachers in the control schools, 3.30, indicates that control school administrators have a slightly lower sense of responsibility for at-risk students.

*Figure VI.A.7. SDPP Program impacts on administrator sense of responsibility*

<table>
<thead>
<tr>
<th>Score on a four-point scale</th>
<th>EWS only</th>
<th>EWS+Computers group</th>
<th>Control group</th>
</tr>
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</tbody>
</table>

Sources: SDPP baseline and follow-up teacher self-administered questionnaires.

Note: Analysis accounts for clustering of administrators within schools. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are regression adjusted. Because these additional analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/++/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
School Director Lowers Dropout with EWS

The school dropout rate at Chrey Secondary School in Cambodia was on the rise, but since the school personnel participated in an SDPP training on how to implement an Early Warning System (EWS), that trend has changed. Nong Sokhorn, the school director, notes how following the EWS has helped him and his homeroom teachers work together to tackle the dropout problem.

He points to the way the EWS draws on existing MoEYS data collection procedures, such as student attendance lists, study record books and scoring books, to monitor students identified as at risk for school dropout. At the SDPP Program’s training on EWS, they learned how to analyze their school records and use them to inform parents about what is happening with their children. For example, he explains that after a student misses three days of school he and the homeroom teacher meet with the parents to find out why the student has missed school and what can be done to improve the student’s attendance. He sees the EWS as supporting the student’s ongoing schooling through a stronger partnership between the school and family.

But it takes commitment and consistency to make the EWS work effectively. Nong Sokhorn outlines what he has done to support dropout prevention measures in his school. He spends much of his time reviewing school documents and reading case management reports for at-risk students completed by his homeroom teachers.

He also regularly meets with teachers to discuss what is happening with the students identified as at-risk. “My homeroom teachers now complete the school documents correctly and on time,” says Nong Sokhorn. “They seem to be clear with their tasks after the training on how to use an Early Warning System.” His teachers agree.

“I value the efforts to prevent students from dropping out because today’s students are the future to developing the nation,” says homeroom teacher Nhith Chinda. “SDPP has really alerted me and other homeroom teachers to pay more attention to at-risk students by tracking what is happening to them and providing them with direct follow-up.”

Sokhorn hosts meetings with community leaders, including local monks, to ensure they are working together to keep students in school.

Their combined efforts are paying off. According to the school’s report, Chrey Secondary School’s dropout rate has dropped since the school started using the EWS.
B. Impacts on at-risk students’ attitudes toward school

The SDPP theory of change conceptual model (Figure III.A.1) suggests that a change in teacher knowledge and practices could lead to a change in student attitudes toward school. SDPP found improvements in teacher dropout prevention practices and in teachers’ sense of responsibility and teachers’ sense of self-efficacy. These changes could translate into a change in student attitudes. SDPP captured these attitudes by surveying students whom SDPP identified—via the available baseline data as described in Section IV—as being at risk of dropout.

This section presents findings on the impact of SDPP on attitudes of at-risk students.

1. Impact on primary measure of student attitudes toward school

As described earlier, SDPP used three primary measures to determine the effectiveness of SDPP on student attitudes: emotional, cognitive, and behavioral attitudes toward school.\textsuperscript{37, 38}

The emotional attitudes toward school scale measures how a student feels toward school. Each measure is constructed from a series of questions related to the scale and is grouped to create a 4-point scale. A higher score represents more positive attitudes toward school (See Appendix D for details on the construction of the scales, and for findings using alternative constructions of all three primary measures).

### Emotional attitudes toward school

Students identified as being at risk of dropping out of school responded to a questionnaire. This scale is based on student responses to the following six survey items related to how students feel about school:

- School is a fun place to be.
- There are teachers I can talk to.
- I participate in school activities after school.
- I enjoy participating in class activities.
- I look forward to school.
- A tutoring program would help me with my studies.

\textsuperscript{37} SDPP constructed the three measures of student attitudes from responses to a survey administered to a sample of students in each of the three cohorts. Students in the SY 2012–2013 8th grade cohort were identified as at-risk based on their characteristics prior to receiving the intervention. Because this is the only cohort for whom SDPP could identify their risk status before the SDPP program started in schools, this is the only cohort included in at-risk student analyses. The survey was developed through developing and testing new questions and adapting existing student engagement, cognitive and behavioral attitudes surveys (see Fredericks, Jennifer A., Phyllis Blumenfeld, Jeanne Friedel, and Alison Paris, 2005; and Finlay, Krystina A. 2006.).

\textsuperscript{38} Because these measures are the primary outcomes in the at-risk student attitudes domain, SDPP adjusted the statistical significance threshold for multiple comparisons using the Benjamini-Hochberg method.
There were no impacts on emotional attitudes toward school in either SDPP group (Figure VI.B.1). The average scores for all groups were relatively high. The average score for students in the both EWS+Computers and EWS schools was 3.61 (out of 4); the average score for the control group was 3.59.

Figure VI.B.1. SDPP’s impacts on at-risk students’ emotional attitudes toward school

![Graph showing the average scores for different groups]

Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students. The sample includes 596 students for the EWS+Computers group, 623 for the EWS group, and 566 for the control group.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Impacts were adjusted for multiple comparisons using the Benjamini-Hochberg method. For a tabular presentation of these findings, see Appendix Table H.5.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.
++/+/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

SDPP targeted students who were at risk of school dropout. However there are additional subgroups of students for whom the understanding the effects of SDPP on student attitudes would provide useful further context in understanding the intervention and the potential pathways through which it has effects. Here, SDPP explores the impacts of the program on the emotional attitudes of at-risk students toward school using additional subgroups of interest. SDPP targeted students who were at risk of school dropout. However there are additional subgroups of students for whom the understanding the effects of SDPP on student attitudes would provide useful further context in understanding the intervention and the potential pathways through which it has effects. Here, SDPP explores the impacts of the program on the emotional attitudes of at-risk students toward school using additional subgroups of interest. There were no statistically significant impacts on at-risk students’ emotional engagement within any of these subgroups (Figure VI.B.2).

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39 As described in Section III, because these analyses are exploratory, the results are not adjusted for multiple comparisons, despite the large number of comparisons.
**Figure VI.B.2. SDPP’s impacts on at-risk students’ emotional attitudes toward school, by subgroup**

Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these subgroup analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

There were no statistically significant differences between subgroup impact estimates.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/>+/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

The **cognitive attitudes** toward school measures how a student thinks about school and school work. Each measure is constructed from a series of questions related to the scale and is grouped to create a 4-point scale. A higher score represents more positive attitudes towards school.

### Cognitive attitudes toward school

Students identified as being at risk of dropping out of school responded to a questionnaire. This scale is based on student responses to the following nine survey items related to how students think about school:

- I will complete grade 9.
- Completing grade 9 will be useful to my family and me.
- Missing school affects my performance in school.
- Doing homework helps me do well in school.
- I am interested in the work I get to do in my classes.
- I check my school work for mistakes.
- I need extra help with my studies or homework.
- I have difficulty paying attention in school.
- I try to do my best at school, even if it is not perfect.
Scores were lower on the cognitive attitudes toward school scale than on the other two scales, with scores between 3.02 and 3.04, but there were no statistically significant impacts of SDPP on at-risk students’ cognitive attitudes toward school. (Figure VI.B.3).

**Figure VI.B.3. SDPP’s impacts on at-risk students’ cognitive attitudes toward school**

As with emotional attitudes toward school, we explore the impacts of SDPP on the cognitive attitudes of at-risk students using additional subgroups of interest. **SDPP found that the SDPP Program had a small, marginally significant impact on cognitive attitudes toward school for over-age students in the EWS+Computers group** (Figure VI.B.4).
Figure VI.B.4. SDPP’s impacts on at-risk students’ cognitive attitudes toward school, by subgroup

Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these subgroup analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

There were no statistically significant differences between subgroup impact estimates.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+/* Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

The behavioral attitudes toward school scale measures how a student reports behaving in relation to school activities. Each measure is constructed from a series of questions related to the scale and is grouped to create a 4-point scale. A higher score represents more positive attitudes toward school.
There were no impacts of SDPP on at-risk students’ behavioral attitudes toward school. (Figure VI.B.5).

Figure VI.B.5. SDPP’s impacts on at-risk students’ behavioral attitudes toward school at endline

<table>
<thead>
<tr>
<th>Score on a four-point scale</th>
<th>EWS group</th>
<th>EWS+Computers group</th>
<th>Control group</th>
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Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students. The sample includes 596 students for the EWS+Computers group, 623 for the EWS group, and 566 for the control group.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Impacts were adjusted for multiple comparisons using the Benjamini-Hochberg method. For a tabular presentation of these findings, see Appendix Table H.5.

***/***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+** Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.
Similarly, the SDPP team found no impacts of the program on at-risk students’ behavioral attitudes toward school among any of the subgroups (Figure VI.B.6).

**Figure VI.B.6. SDPP’s impacts on at-risk students’ behavioral attitudes toward school, by subgroup**

![Bar chart showing differences in SDPP and control group means in scores on a four-point scale](chart.png)

Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these subgroup analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

There were no statistically significant differences between subgroup impact estimates.

* *** Impact estimate is statistically significant at the .01/.05/.10 level.

** Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.
2. Impact on additional measures of student attitudes toward school

In addition to measuring impacts on the three primary student attitudinal outcomes described above, SDPP also assessed the SDPP Program’s impacts on three other attitudinal outcomes for at-risk students: their perceptions about teachers’ and parents’ support of their success in school; and their perceptions of computer training. These scales were based on responses to the at-risk student survey. Higher scores on these scales represent more positive student perceptions of the support they receive from teachers and parents, and more positive views of computer training.

SDPP found a statistically significant positive impact on student perceptions of teacher support for the EWS group, representing a 3 percent improvement. There was no impact for the EWS+Computers group (Figure VI.B.7). Students from the EWS group and EWS+Computers group scored, on average, 3.15 and 3.11 points (out of 4); the control group scored 3.05.

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40 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.

41 Appendix D describes the construction of these measures.
Figure VI.B.7. SDPP Program impacts on at-risk students’ perceptions of teacher support at endline

Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note: The analysis is based on SY 2012–2013 8th grade at-risk students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

++++/+++ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
Teacher Support: My Teacher Helped Me Stay in School

The stories of students who drop out of school are very similar: they have high demands placed on them at home that compete for their time and attention; they frequently miss school; and they fall behind and perform poorly in their studies. Both Sammang Chanrey and Boerun Kimneth share this story of struggle, failure and dropout.

As the oldest daughter in her family, Sammang was always busy helping her mother cook, clean and watch her younger brothers. Her father was forced to travel to another province to find work, so her mother relied heavily on Sammang’s support. Her mother admits that regular school attendance was not a high priority.

Boerun lived with his mother, two older brothers and younger sister. His parents were divorced and he was expected to help at home to support the family. Although his mother wanted her son to go to school, she was too busy to monitor what was happening with his studies and was unaware of his frequent absences and poor performance.

SDPP’s Early Warning System—which identifies students who are at-risk of dropping out so they can be provided with the support they need to stay in school—kicked in just in time.

Once Sammang and Boerun were identified as being at high-risk for dropout, letters were sent to their families and visits were conducted in their homes to discuss what could be done to improve their attendance. But getting them to school every day was just the first step. If the school and classroom weren’t inviting and supportive, at-risk students like Sammang and Boeurun would continue to miss class and perform poorly on their schoolwork.

Teachers at their school were taught ways to make the classroom more inviting and supportive, ranging from simple things to more complex. Sammang’s and Boerun’s homeroom teacher agrees it takes more than tracking attendance to keep students in school. He says, “Identifying at-risk students is the first important step of an EWS so that school staff know who to provide extra support to.” He listed what he was doing in his classroom to support at-risk students: greeting them by name, asking how they were doing, showing an interest in their schoolwork, making sure they understood the lesson, and providing advice and guidance.

Making teachers aware of the need to create a child-friendly, welcoming, and supportive classroom has reaped results. “If my homeroom teacher didn’t follow up and motivate me, I might have stopped my studies,” says Boerun. Sammang agrees. “I have come to school regularly and performed better in class because of my homeroom teacher.”
SDPP found a statistically significant positive impact on students’ perceptions of parental support in the EWS+Computers group, representing a 2 percent improvement. There was no impact on the EWS group. (Figure VI.B.8).

**Figure VI.B.8. SDPP Program impacts on at-risk students’ perceptions of parental support at endline**

Students identified as being at risk of dropping out of school responded to a questionnaire. This scale is based on student responses to the following 10 survey items related to how students perceive the support provided by their parents:

- My parents know when I have not completed my homework and assignments.
- My parents have talked with my teacher about my exam scores or absences.
- My parents have talked with my teacher about my attendance.
- My parents make sure I go to school every day.
- It is important to my parents that I do well in school.
- My parents attend school events.
- My parents talk to me about improving my grades.
- My parents try to support me with my studies.
- My parents free up my time for schoolwork.
- My parents want me to complete my current grade.

<table>
<thead>
<tr>
<th>Score on a four-point scale</th>
<th>EWS Group</th>
<th>EWS+Computers Group</th>
<th>Control Group</th>
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<tbody>
<tr>
<td>1</td>
<td>3.38</td>
<td>3.39**</td>
<td>3.32</td>
</tr>
</tbody>
</table>

**Student perceptions of parental support**

Sources:  SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014; follow-up student surveys, May/June 2013 and May 2014.

Note:  The analysis is based on SY 2012–2013 8th grade at-risk students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.

++/++/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
“My Parents Support My Schooling Now”

As the oldest son in his family, Ny Vichet was expected to get up early every morning to herd the family’s five cattle. He also helped his mother cook, cut grass for the cattle, and feed the pigs. All of this extra work caused him to arrive late to school almost every day and miss as many as three days each week. It also caused him to get poor grades in almost all his classes, and then he began failing his exams.

His homeroom teacher Samun Bopha and the school director were ready to take action. They had participated in Early Warning System (EWS) training and knew that Vichet was at high risk for dropping out of school. So when Vichet’s attendance didn’t improve after sending letters to his family, they visited his home. “Students’ parents and community members are surprised to see me visiting their homes,” says Bopha.

Vichet’s mother, Kim Sreynith, was at first embarrassed. She did not know how badly her son’s grades were suffering and that he was at high risk of dropping out. But then she was grateful as Bopha explained how regular attendance was critical to doing well in school and how completing his schooling was essential to Vichet’s future. Sreynith responded immediately to what she learned. Bopha was thrilled when Vichet appeared at school the following day.

Vichet says that his parents’ attitudes totally changed after his teachers’ visit. Sreynith revealed that she didn’t want her son to be uneducated like she was. Until the meeting with Vichet’s teachers, she had no idea how difficult it was for her son to do well in school when he arrived late or was absent. “I don’t want him to be like me,” she confessed. She promised to reduce her son’s work load and encourage him to go to school each day.

Vichet noticed a big difference in the way his parents supported his schooling after the visit from his teacher. “If my teacher didn’t visit and motivate my parents to allow me to go back school, I would have dropped out of my class,” says Vichet. “Although I’m not a clever kid, I commit to continue my studies to grade 9.” Vichet has now completed grade 7 and, with support from his parents, is on his way to fulfilling his goal.
In Cambodia, students identified as being at risk of dropping out of school responded to questions about the usefulness of computer training and the importance of computer skills. This scale is based on student responses to the following six survey items related to how students perceive the computer training:

- Learning computer skills would help me find a job.
- Learning computer skills would help me with my studies.
- Learning computer skills is important to my future.
- If my school offered computer training, I would attend school.
- If my school offered computer training, I would be sure to attend school the day when computer lab is scheduled.
- If my school offered training in computer skills, I would be more likely to stay in school.

Students in the EWS+Computers schools also demonstrated better perceptions of computer training than students in the control schools and the EWS schools (Figure VII.9). There was no impact on the EWS group.

**Figure VII.B.9. SDPP Program impacts on at-risk students’ perceptions of computer training at endline**

- **3.53**
- **3.62**
- **3.52**

<table>
<thead>
<tr>
<th>Score on a four-point scale</th>
<th>EWS Group</th>
<th>EWS+Computers Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: SDPP baseline, and follow-up school records data collection and at-risk student questionnaires.

Note: Differences between SDPP and control group means (or EWS+Computers, EWS only, and control group means, if applicable) were tested using two-tailed t-tests. Mean values are regression adjusted. Because these analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

**/** Imp. act estimate is statistically significant at the .01/.05/.10 level.

+/**/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
Computer Literacy Makes School More Relevant

Ry Phanith, a 15 year old Cambodian 9th grade student, is passionate about the computer. He is one of 292 students at Bay Damram Lower Secondary School receiving computer training as one of the interventions for USAID’s School Dropout Prevention Pilot (SDPP) project. In response to parent and student complaints that they were not getting the skills that would advance their education or improve their chances of employment, SDPP installed a low-cost, solar powered computer lab and trained teachers as instructor in 108 schools.

There are 33 students in Phanith’s Grade 9 class. Although he looks younger than his fellow classmates, his commitment to learning the computer makes him seem older and more mature. Indeed, both his teachers and fellow students consider him to be the hardest working student in the computer class. “I’m enthusiastic to learn the computer because being knowledgeable in computer skills is vital for my future study and career,” Phanith said. “I’m really interested in typing articles in the computer, inserting and modifying pictures into the article. When we are fluent in these skills, we will be able to design layouts of newspapers and magazines.”

“Phanith is one of the most active students in my computer class,” said Meas Chanbopha, Phanith’s computer teacher. “Whenever I give practice exercises to my students, Phanith always completes his before the other students. When he is unclear on any points of the lessons he always asks me to explain further.”

Phanith has two younger brothers and one sister. His parents are farmers and expect him to help at home and in their gardens. Between his school and home obligations he keeps very busy. He also has a long commute to school and even though he is lucky and has a bike, the 4 kilometer ride along the country roads to school still takes a lot of time. On days when the weather is good it takes over 20 minutes to ride to school.

Despite his long commute and competing obligations, Phanith rarely misses school since he’s learned about the importance of attending school every day. He is even sorry when school is closed because of public holidays! He is especially disappointed if it’s on a day when he has his computer class. This year Phanith sits for the Grade 9 exam. He is confident he will pass and credits the support he has received from the SDPP Program in part for getting this far in his education.

“The combination of the computer lab and the EWS has reduced the dropout rate in my school in this academic year,” said Tak Chankoy, Bay Damram School Director. “SDPP is not only providing my students with a special life skill (computer literacy), but the program is also following up with at-risk students on attendance, behavior and course performance.”
C. Impacts on student engagement in school

The SDPP Program’s theory of change conceptual model suggests that an improvement in student attitudes toward school will result in an improvement in their engagement in school. SDPP used three outcomes to measure student engagement in school: attendance; academic performance; and behavior. SDPP used school records to construct the outcome measures. Because the SDPP Program was intended to improve student attendance, it is the primary measure by which we determine the SDPP Program’s effectiveness in this domain.

This section presents findings on the impact of SDPP on student engagement in school.

1. Impact on student’s daily attendance in school

Because SDPP was intended to improve student attendance, it is the primary measure used to determine SDPP’s effectiveness in this domain. Students at risk of dropping out may miss excessive amounts of school, causing them to do poorly on their school work and fall behind in their studies, discouraging and alienating them from their studies, school and classmates. SDPP estimated impacts on attendance for all students as well as for students identified as at risk of dropout based on their baseline characteristics.

**SDPP had no impact on attendance for the cohorts exposed to the program for at least one year (Figure VI.C.1).** Students in EWS+Computers schools had an average daily attendance rate of 79.0, while students in EWS schools had an average daily attendance rate of 78.2 percent, compared with 79.1 percent for students in control schools. These differences were not statistically significant.42

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42 SDPP also calculated school-level attendance rates using head counts from the day of data collection and average monthly attendance rates using student records. These measures show some statistically significant impacts on attendance in the EWS+Computers and EWS group schools in SY 2012-2013 and SY 2013-2014, depending on the grade and measure. The construction of these measures and the results are detailed in Appendix I Section D.
Average attendance rates differed for at-risk students in the EWS+Computers group (69.6 percent), the EWS group (69.5 percent), and the control group (70.5 percent), but these differences were not statistically significant. Appendix E presents findings based on alternative measures of attendance.

**Figure VI.C.1. SDPP Program impact on daily attendance, overall and by at-risk status**

SDPP collected aggregate attendance data via headcounts during each data collection effort during mid-morning. These values were similar in SDPP and control schools.

The attendance rate from these data was then compared to attendance measures derived from student level data from school records. The attendance rate based on the headcount was lower than the rate determined through school records in both research groups.


Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students and SY 2013–2014 7th grade students. The sample includes 41,284 students for the EWS + computers group (7,098 at-risk, 2,899 not at-risk, and 31,287 not assigned a status), 40,727 students for the EWS group (6,920 at-risk, 3,294 not at-risk, and 30,513 not assigned a status), and 37,112 students for the control group (6,359 at-risk, 2,743 not at-risk, and 28,010 not assigned a status).

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Tables H.5 and H.6.

***/**/** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/**/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.
The SDPP Program was not designed to have different impacts for different subgroups of students (other than students at-risk of dropout); however, the literature suggests that outcomes and impacts might vary for different types of students.43 **Consistent with our main findings, SDPP had no effect on attendance in any of the subgroups** (Figure VI.C.2).

**Figure VI.C.2. SDPP Program impacts on daily attendance for students overall at endline, by subgroup**

![Graph showing SDPP Program impacts on daily attendance for students overall at endline, by subgroup.](image)

*Sources: SDPP baseline and follow-up school records data collection, June 2012, January 2013, May/June 2013, May 2014, and December 2014.*

*Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013–2014 7th-grade students. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these subgroup analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

There were no statistically significant differences between subgroup impact estimates.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.

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43 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.
2. Impact on additional measures of student engagement in school

In addition to measuring impact on daily attendance described above, SDPP assessed the program’s impacts on two other engagement outcomes: academic performance in math and language; and behavior in school.

Math, language, and behavior performance

Performance data came from second-semester scores for students. For math and Khmer language, schools scored students on a 100-point scale, 1 to 100. For behavior, schools scored students from 1 to 3: 1 is “good/very good,” 2 is “fair,” and 3 is “poor.” These values were reverse-coded so that higher scores correspond to better behavior.

a. Academic performance in math and language

SDPP also examined program impacts on academic performance, since an increase in attendance might result in an overall improvement in performance in school. SDPP did not attempt to directly influence academic performance, and therefore this is not part of our determination of program effectiveness.\(^{44}\)

**SDPP found that the SDPP Program had no effect on academic performance (Figures VI.C.3 and Figure VI.C.4).** Average math scores among the three groups ranged from 60.6 percent to 62.7 percent. Average Khmer scores ranged from 67.8 percent to 69.2 percent. The impacts on math and Khmer exam scores were not statistically significant.

*Figure VI.C.3. SDPP Program impacts on math performance at endline*

44 Moreover, impact estimates for academic performance may be biased if the program was successful in keeping low-performing students in school. Also, as described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.

Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013- 2014 7th-grade students. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

+++/+++ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.

Figure VI.C.4. SDPP Program impacts on Khmer language performance at endline

![Graph showing EWS Group, EWS+Computers Group, and Control Group scores](image-url)
b. Student behavior in school

SDPP had no impact on behavior scores (Figure VI.C.5). Behavior scores were already near the maximum of three, so there was little room for improvement.

**Figure VI.C.5. SDPP Program impacts on student behavior**

<table>
<thead>
<tr>
<th>Score on a three-point scale</th>
<th>EWS Group</th>
<th>EWS+Computers Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
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<td>0</td>
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</tr>
</tbody>
</table>


Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013–2014 7th-grade students.

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. Because these are additional outcomes and the analyses are exploratory, statistical significance thresholds were not adjusted for multiple comparisons.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

***/+/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.

Appendix E presents additional findings for the engagement domain based on alternative measures of attendance, including an alternative approach to accounting for missing values from school records.
D. Impacts on school dropout

Reducing school dropout is the primary goal of the SDPP intervention. Students who drop out of school prematurely forgo a considerable amount in yearly earnings over their working lives (Duflo, Esther 2001), limit their access to further education and training, reduce their ability to contribute to the well-being of their community, and add to wastage of the resources invested in their schooling. SDPP used school records to measure dropout from school.

For Cambodia, SDPP defined the primary dropout measure as within-grade (whether a student completes the school year for an end of cycle target grade) or between-grade (whether a student enrolls back in school the year after completing a target grade), depending on the cohort.45 A student was considered to be a within-grade dropout if the student missed any of the 2nd semester exams, and a student was considered to be a between-grade dropout if the student was not enrolled in the next school year. In this section, SDPP uses school records to measure dropout from school.

This section presents findings on the impact of SDPP on student dropout from school.

1. Impact on primary measure of school dropout

SDPP decreased dropout for students in the EWS schools and the EWS+Computers schools (Figure VI.D.1). Students in EWS schools dropped out at a rate of 38.6 percent, compared with 41.1 percent for students in control groups; this difference was statistically

45 Students who started the program in 7th grade in SY 2012–2013 or SY 2013–2014 were considered to have dropped out if they did not re-enroll in school in the most recent year of data collection. Thus, for these two cohorts, we use a between-grade dropout measure. Students who started the program in the 8th grade in SY 2012–2013 were considered to have dropped out if they did not take all of their second semester exams in their 9th-grade year, a within-grade dropout measure.
significant. EWS+Computers students dropped out at a rate of 39.3 percent, and the difference compared to the control group was marginally significant.\textsuperscript{46}

**At-risk students in the EWS schools dropped out at a rate 6.1 percentage points lower than at-risk students in the control group, and this difference was statistically significant.** At-risk students in the EWS+Computers schools dropped out at a rate 2.5 percentage points lower than those in the control group; however, this difference was not statistically significant.\textsuperscript{47} There was no difference in impacts between the EWS and the EWS+Computers groups.

SDPP also measured between-grade dropout among the SY 2012-2013 and SY 2013-2014 7th grade cohorts, and found a marginally significant reduction in between-grade dropout in EWS+Computers groups, but not in EWS only schools. These results are presented in detail in Appendix Table F.2.

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\textsuperscript{46} This translates to a reduction in dropout of about 1,500 students in EWS only schools and of 1,200 students in EWS+Computer schools. This gross calculation uses rounded numbers and assumes that impacts would be similar for all students in the target grades in study schools. Under alternate assumptions these numbers could vary.

\textsuperscript{47} We also estimated the treatment-on-the-treated (TOT) impacts for students who were identified through the EWS for SDPP services using quasi-experimental techniques. The TOT estimates are consistent with the impacts for at-risk students presented here (See Appendix J for details).
Figure VI.D.1. SDPP Program impact on school dropout, overall and by at-risk status

Because three cohorts of 7th, 8th, and 9th-grade students received the intervention and were exposed for different periods of time at different points in time, SDPP also explores dropout separately for each cohort (Figure VI.D.2). As mentioned earlier, SDPP did not assess dropout for the cohort that was in 9th grade during SY 2012–2013, since they were exposed to SDPP for less than one year. Dropout rates differed substantially across the three cohorts who received SDPP for at least one year. The cohort year is defined as the year in which the students entered the target grade, though we measure dropout at the latest available data point. For the SY 2012–2013 8th-grade cohort, SDPP had an impact on dropout as measured at the end of the 2013–2014 school year (when the students should have been completing 9th grade). Students in the EWS group dropped out at a rate of 44.3 percent, compared to 48.7 percent in the EWS+Computers group and 50.0 percent in the control group. The difference between the EWS group and the control group was statistically significant and the difference between the two SDPP groups was marginally significant. There were no impacts on dropout for the SY 2012–2013 7th-grade cohort or the SY 2013–2014 7th-grade cohort, as measured at the start of SY 2014-2015.

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48 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.
**Figure VI.D.2. SDPP Program impacts on school dropout, by cohort (SY 2012–2013 and SY 2013–2014)**


Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013–2014 7th-grade students. The sample includes 45,158 students for the EWS+Computers group (8,381 at-risk, 3,212 not at-risk, and 33,565 not assigned a status), 44,475 for the EWS group (8,221 at-risk, 3,649 not at-risk, and 32,875 not assigned a status), and 41,738 for the control group (7,655 at-risk, 3,153 not at-risk, and 30,930 not assigned a status).

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Table H.7.

***/**/* Impact estimate is statistically significant at the .01/.05/.10 level.

++/+ Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

SDPP also explored the SDPP Program’s impacts on school dropout for the four additional subgroups of interest: gender, over-age for grade status, whether the school has a low or high percentage of students at risk, and school distance to the district capital. SDPP found statistically significant reductions in dropout in EWS schools for several subgroups, including males, students of an appropriate age for their grade, and students in schools with a low percentage of at-risk students (Figure VI.D.3). There was a marginally significant reduction in dropout among females. There was a statistically significant reduction in dropout among EWS+Computers schools that

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49 Cohorts are shown in the order of oldest to youngest – the SY 12-13 8th grade cohort was the first to complete 9th grade and age out of the study, followed by the SY 12-13 7th grade cohort and then the SY 13-14 7th grade cohort.

50 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.
were far from the capital, and a marginally significant impact on students of an appropriate age for their grade.

*Figure VI.D.3. SDPP Program impacts on school dropout at endline, by subgroup*

<table>
<thead>
<tr>
<th>Percentage point difference in SDPP and control group school dropout rates</th>
<th>Female</th>
<th>Male</th>
<th>Overage</th>
<th>Not overage</th>
<th>High % At-risk</th>
<th>Low % At-risk</th>
<th>Remote schools</th>
<th>Not remote schools</th>
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<td>-1.4</td>
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<tr>
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<td>-2.5**</td>
<td>-2.7**</td>
<td>-2.8**</td>
<td>-2.2</td>
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Note: The analysis is based on SY 2012–2013 7th- and 8th-grade students, and SY 2013–2014 7th-grade students. The sample includes 45,158 students for the EWS+Computers group (8,381 at-risk, 3,212 not at-risk, and 33,565 not assigned a status), 44,475 for the EWS group (8,221 at-risk, 3,649 not at-risk, and 32,875 not assigned a status), and 41,738 for the control group (7,655 at-risk, 3,153 not at-risk, and 30,930 not assigned a status).

Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Table H.16.

There were no statistically significant differences between subgroup impact estimates.

***/**/*** Impact estimate is statistically significant at the .01/.05/.10 level.

++/+**/+ Difference between the EWS only group and the EWS+Computers group is statistically significant at the .01/.05/.10 level.
Conquering Dropout in Cambodia—One Student at a Time

“I’m very happy that I have completed 9 years of basic education and I am committed to becoming an engineer in the future,” says Em Vibol, a grade 10 student at Rohal High School in Banteay Meanchey, a northwestern province in Cambodia. A year earlier, Vibol was identified as at risk of dropping out of school by the Early Warning System, an intervention of USAID’s School Dropout Prevention Pilot (SDPP) Program.

When Vibol was in grade 9, he lived with his father, grandmother and younger brother and sister; his mother and older sister had migrated to work in Thailand. Vibol was very busy with housework—cleaning, cooking, looking after his siblings and helping his father with rice farming—and as a result was frequently absent from school. The frequent absences caused him to perform poorly in most subjects. Frequent absences and poor performance are two major predictors of dropout.

Using the EWS, Vibol’s homeroom teacher, Um Kot, identified him as an at-risk student who needed to be closely monitored and provided with additional support. She visited his home to find out the reasons for his absence and encouraged his father to allow him to attend school regularly. Contacting parents through home visits, letters and phone calls provides an opportunity for teachers to inform parents of their child’s absence, discuss the problems affecting their attendance and performance, and urge them to allow their children to complete at least 9 years of basic education.

During the visit, Um Kot explained the significance of education to Vibol’s family. Um Kot says, “Students’ parents were surprised to see me turn up at their home when their child had repeated absences or when they were out of school for some time.”

Vibol’s family was not only surprised, but also happy to see that his teacher was interested and concerned about his studies. His father, Heu Ean, did not complete primary education and did not want his son to be like him. “As a poorly educated person, I can only find low-skilled jobs and cannot earn much from this type of work. I promise to allow my son to go to school regularly since I don’t want him to be low educated like me.” Vibol’s 81-year-old grandmother, Tuon Ao, shares this sentiment. “I always remind my grandson to pay attention and study because knowledge is a treasure which cannot be stolen.”

As a result of his teacher’s visit and extra attention, Vibol’s attendance in school improved. Over time his performance in his coursework improved as well and he was able to complete grade 9.
2. Impact on additional measures of school dropout

a. Grade progression

SDPP also calculated a measure of grade progression for students in two 7th grade cohorts, those who entered 7th grade in SY 2012-2013 and those who entered 7th grade in SY 2013-2014. Grade progression is expressed in terms of whether a student enrolled in the next grade or higher in the year(s) following exposure to the SDPP program. Although not included in the school dropout domain, as described in Table IV.1, this measure provides additional information on students’ successful progression in school.

The SDPP Program had a marginally significant positive impact on grade progression in EWS+Computers schools, but not in EWS only schools (Figure VI.D.4)

Figure VI.D.4. SDPP Program impact on grade progression at endline


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51 As described in Section III, because these analyses are exploratory, SDPP did not adjust the results for multiple comparisons, despite the large number of comparisons.
Note: The analysis is based on SY 2012–2013 7th grade student cohort and SY 2013–2014 7th grade student cohort. Differences between SDPP and control group means were tested using two-tailed t-tests. Mean values are adjusted for baseline characteristics. The analysis accounts for clustering of students within schools, and cohort and school year fixed effects. For a tabular presentation of these findings, see Appendix Table F.3.

***/*** Impact estimate is statistically significant at the .01/.05/.10 level.

See Appendix F for findings related to the dropout domain based on alternative measures of dropout. Also see Appendix G for findings for two additional measures of grade progression. The first measure is defined as a student enrolling in the next grade, but not higher, in the following school year. In the second measure, a student who started the SDPP Program while in 8th grade is considered to have been promoted to the next grade if their school records indicated that he or she completed 9th grade and was promoted to 10th grade.
Qualitative Research Findings in Cambodia

During the second year of intervention implementation in the treatment schools, the SDPP team conducted a Qualitative Research Study in Cambodia to better understand: (1) why changes in student and teacher behaviors and attitudes had happened; and (2) how beneficiaries and targets (students, teachers, school directors, parents and community members) responded and reacted to the interventions. Some findings are highlighted below.

What do beneficiaries say about the Early Warning System?

Economic issues were the driving force in deciding whether to stay in school or drop out. Students who ultimately did leave pointed to their poor performance and attendance as the final things that pushed them out the school door. When asked who made the decision to leave school, the overwhelming majority (93%) confessed they were the decision maker. More than two-thirds of at-risk and dropout students confirmed someone from the school—generally their teachers—contacted their families about their poor attendance. Most of the parents—of both at-risk students and dropouts—claimed they were unaware of their child’s vulnerable status until they received the initial letter from the school.

A majority of at-risk students (88%) reported the school’s contact with their parents made them aware of the need to change their own behavior; in contrast, only 42 percent of those who dropped out felt any need to modify their behavior. Most (88% of at-risk students and 78% of dropouts) reported their parent’s attitude changed after the contact with school personnel. They received more encouragement to study, pressure to improve their attendance, better provision of study materials, and payment for extra classes. The most notable change in the families of the dropouts was allowing their children to return to school and reducing their household chores and outside work. But, ultimately, the need to help support their families as well as embarrassment over their lagging studies forced the students out. They also sadly recounted that the ongoing school contact with their parents fostered regret for being unable to go to school and increased their desire to return. Two-thirds (65%) of those who dropped out felt the school could have done more to keep them in school.

Parents’ initial reaction to being contacted by the school was anger and embarrassment, followed by surprise and then happiness at being apprised of their child’s problems. Most (76%) said that they are now more aware of the importance of schooling and have a better understanding of what they can do to support their child’s education and performance. They noted that teachers were supportive. Nearly all (91%) felt the School Dropout Prevention Pilot Program influenced either the decision for their child to stay in school, and pointed to the EWS for improvements in their child’s attendance patterns and for increasing their motivation to do their schoolwork.

Most teachers (86%) reported the EWS made their job easier and changed their sense of responsibility for supporting at-risk students. They liked the structured EWS process for tracking students’ attendance and performance, and saw the value of the collecting and using data on attendance and performance for discussion with parents. They said it helped them establish a more positive relationship with the students. Virtually all (97%) homeroom teachers reported they intended to continue using the EWS. All of the school directors and nearly all of the teachers noted changes in student behavior after contact with the parents. School directors also mentioned there was more contact with the school initiated by the parents after the first school contact with them. Community members thought the contact with the parents was particularly effective.
**What do beneficiaries say about the Computer Labs?**

There was great enthusiasm for Computer Labs (CL) from everyone—students, teachers, school directors and parents. Although they had many ideas on how to improve the CL—more computer stations, more practice time, and course content—there was almost unanimous support for them and a high level of determination to continue operating them in their schools.

Most students (99% of at-risk and 79% of dropouts) identified skills such as the ability to type text and documents, create and insert tables, calculate, use color, change fonts, edit pictures, and save documents. All (100%) at-risk students and most (91%) dropouts believed these skills would help them to obtain jobs in the future. The majority of students (92% of at-risk and 74% of dropouts) believed that their new computer skills helped them in their subject classes by improving the accuracy of their calculations, improving their knowledge of Khmer and their learning of English. The majority of students (80% of at-risk and 57% of dropouts) noted CL classes were a powerful draw in getting them to attend school more regularly. At-risk students (86%) and dropouts (72%) reported their parents think the computer classes were a good idea.

Parents appreciated that the classes were free and believed that computer skills enhanced their child’s future job opportunities. Several confessed they transferred their child to the school offering the CL classes. Although most (92%) of the parents said they were aware that the school offered computer classes, only 10 percent said they had visited the CL and only 13 percent said they had seen any of their child’s computer class work. Most (90%) parents said the classes have increased their child’s skills and ability to use computers. More than 80 percent said the classes helped their child with his studies, attendance or behavior. Virtually all (98%) parents said that the computer classes were effective to address school dropout.

The teachers and school directors agreed: students enjoyed and benefitted from CL; they improved attendance; and, parents were pleased for the opportunity their children had to learn technology. Teachers noted the joy on the students’ faces when they were practicing on the computers. When asked why, they identified three reasons: 1) the CL room was cooler, cleaner, more comfortable and more attractive than other classrooms; 2) the content and the hands-on learning activities used in the computer classes was more engaging (the “how-to” video clips, drawing pictures and inserting them into the documents, typing text, and seeing their work printed out); and 3) they appreciated the opportunity to learn modern technology that they felt would be extremely useful for finding good jobs.

Most of the CL teachers (96%) and all school directors saw positive effects of the computer labs on students. They suggested that students who used to be absent a lot were attending school more. They also observed that students transferred from other schools to obtain this computer training. They felt their students benefitted from the classes and demonstrated a good mastery of the mastered computer skills. They also noted improved behaviors. For instance, the students were willingly cleaning the classroom, arriving early for class, and practicing on the computers without complaint. Students complained when the CL class fell on a holiday and asked for it to be rescheduled. However, CL teachers complained that there was not enough time or computer stations for individualized practice, especially for students who needed more time. They also expressed concern about their own level of computer knowledge and being able to deal with the CL program on their own. When asked about continuing without the support of SDPP, 96% of the teachers hoped they could.
VII. School-level dropout trends

The analyses presented thus far use student-level measures of dropout. This section presents different types of data to explore if alternative measures can provide additional insight or support to the findings presented earlier. SDPP has complementary grade-level measures of dropout using data on enrollment and transfer counts from school records, as is often done in education studies.\(^{52}\)

Constructing grade-level rates based on counts requires a much smaller data collection effort than gathering details about all individual students in a grade or school. School systems often report aggregate measures of enrollment and dropout as part of regular reporting, and stakeholders often find these measures to be easier to understand and interpret than other measures. Therefore, for readers more accustomed to these measures, SDPP presents them in addition to the student-level estimates. These grade-level measures are available for 7th, 8th, and 9th grade. SDPP presents aggregate between-grade and within-grade dropout rates over time, across three complete school years (SY 2011–2012 to SY 2013–2014) for 7th–9th grades in SDPP and control schools.\(^{53}\)

Grade-level measures, although much easier to collect than individual-level data, typically suffer from substantial measurement error because it is difficult to distinguish between enrolled students, dropouts, transfers, repeaters, and newly enrolled students. Aggregate dropout measures actually include students in all of these situations. The magnitude of the aggregate dropout measure is therefore sensitive to whether more students transferred in or repeated the grade than dropped out or transferred out; the magnitude could even change signs to show a negative dropout rate. As a result, depending upon the levels of transfer, repetition, and dropout, there may or may not be observable trends in dropout when using measures such as these that are constructed from aggregate grade-level counts.

The between-grade dropout rate is available for only 7th and 8th grades in study schools, since no school offered 10th grade. This aggregate measure varied widely across grade and school year in both SDPP and control schools. The dropout rate was much higher for both grades (20.6 percent to 25.8 percent) after SY 2013—2014 than it was after SY 2011—2012 or after SY 2012—2013, when it ranged from -15.8 percent to 6.0 percent (Figure VII.1).\(^{54}\) Between SY 2013—2014 and SY 2014—2015, 7th-grade dropout was 22.5 percent to 22.6 percent in the EWS+Computers and EWS only group, respectively, compared to 25.8 percent in the control group, and this difference was statistically significant. Between-grade dropout in the 8th grade was -5.9 percent in the EWS only group, compared to 0.7 percent in the EWS+Computers group, and this difference was also statistically significant. There were three other marginally significant differences between groups: the between-grade dropout rate between SY 2011-2012 and SY 2012-2013 was lower in the EWS+Computers group than in the EWS only group and the control group. Also, the between-

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\(^{52}\) The number of students enrolled at the start of each school year, and the number of students enrolled during the last month of each school year (March) were collected and used to calculate within-grade and between-grade dropout.

\(^{53}\) Since most schools only offer 7th, 8th, and 9th grade, SDPP was not able to collect 10th grade enrollment information. Thus, SDPP has a between-grade measure for 7th and 8th grade students only.

\(^{54}\) If more students enrolled in the school during the school year than dropped out or transferred out during the same time frame, then the dropout rate would be negative.
grade dropout rate between SY 2012-2013 and SY 2013-2014 was lower in the EWS group than in the EWS+Computers group.

The rates presented here for 7th and 8th grade differ greatly from the dropout rates shown in Figure VI.D.1. This difference arises partially because the global dropout measure includes overall dropout for students in grades 7, 8, and 9 over one to two school years, while the school measure focuses on the between-grade dropout measure at the end of each school year. In addition, the school between-grade dropout measure counts the number of students enrolled at specific points in time, in particular at the start and end of the school year, and uses these grade level values to derive the dropout rate, instead of following individual students over time to observe what happens to them. As such, students who transfer in and out of schools during the year are not properly accounted for in the measure, leading to error. Only including aggregate measures introduces error to the dropout measure.

Figure VII.I. School between-grade dropout rates, by grade and school year

<table>
<thead>
<tr>
<th>School year</th>
<th>Grade 7</th>
<th>Grade 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-2012</td>
<td>EWS+Computers Group</td>
<td>EWS Group</td>
</tr>
<tr>
<td>2012-2013</td>
<td>+6.0</td>
<td>5.3</td>
</tr>
<tr>
<td>2013-2014</td>
<td>22.5**</td>
<td>22.6**</td>
</tr>
</tbody>
</table>
| **Note:** Between-grade dropout is measured by the number of students enrolled at the beginning of an initial school year and the number enrolled at the beginning of the following year. Since this measure does not account for transfer students, there are negative values in instances where there were more new students who entered the grade than there were dropouts.


Differences between SDPP and control group means were tested using two-tailed t-tests.

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55 It is possible to incorporate counts of transfer students in such a measure; however, often records of transfers are not kept consistently in schools. SDPP presents these aggregate measures in Appendix F, incorporating the available transfer information.
Within-grade dropout rates varied across school year and study group, but generally followed the same pattern across grades (Figure VII.2). In SY 2012–2013, dropout rates across all grades were between 10.8 percent and 22.5 percent. As with between-grade dropout, within-grade dropout rates were higher in SY 2013–2014, ranging from 30.5 percent to 36.3 percent. Across all three grades dropout rates were highest in the control group, and lowest in the EWS group, and the difference between the two was statistically significant. In SY 2012–2013 the EWS group dropout rate was 10.8 percent, compared to 17.3 percent in the EWS+Computers group, and this difference was statistically significant.

**Figure VII.2. School within-grade dropout rates by grade and school year**

Differences between SDPP and control group means were tested using two-tailed t-tests.

### Sources

### Note
Within-grade dropout is defined by the number of students who were enrolled in school at the beginning of the school year and the number enrolled at year’s end. A student is considered to be enrolled in the school at the end of the year if he or she took all second semester exams.


Differences between SDPP and control group means were tested using two-tailed t-tests.

### **/**/*** Difference from the control group is statistically significant at the .01/.05/.10 level.

### +/+/* Difference between the EWS group and the EWS + computers group is statistically significant at the .01/.05/.10 level.

Given the measurement issues in these dropout rates, it is challenging to draw conclusions about the effectiveness of the program using grade-level estimates. These estimates can be useful in understanding how the level of dropout might change across grades (for example, it is at a similar level across all grades 7-9), but cannot be used to estimate an accurate level of dropout.

SDPP also examined trends using similar information for enrollment and for attendance, as measured by headcounts. During each round of data collection, the SDPP team counted the number of students present in all grade 7, 8 and 9 classrooms on the day of data collection by entering
classrooms during a mid-point in the school day and counting the number of students present. The headcounts collected by SDPP during each data collection round show that the average number of grade 7, 8 and 9 students present at the time of data collection was generally similar in SDPP and control schools, though there were some differences but no clear trend over time across groups. This number was then compared to attendance measures derived from student level data in order to determine how similar the two data sources were. Typically, the average number of students present was lower as determined through the head count when compared to attendance rates obtained directly from school records. Appendix I presents these findings in more detail.

VIII. Discussion

The SDPP Program in Cambodia aimed to reduce school dropout among students in 7th, 8th, and 9th-grade—the lower secondary grades in Cambodia. SDPP interventions included an EWS to identify and target support to students at risk of dropout and computer labs to induce child engagement and attachment to school. SDPP hypothesized that computer labs for students, along with changes in teacher practices and involvement of parents introduced through the EWS, would improve student attitudes and behavior, translating into increased student engagement and reduced school dropout. The SDPP evaluation in Cambodia examined the effectiveness of SDPP using a randomized controlled trial in which SDPP compares the outcomes of students and teachers in 108 schools randomly assigned to provide EWS services and computer labs (EWS+Computers) and in 107 schools randomly assigned to provide EWS services only, to those of teachers and students in 107 schools randomly assigned to a control group providing business-as-usual services. The evaluation of the SDPP Program in Cambodia is part of a broader study of similar dropout prevention interventions implemented in four Asian countries.

A. Overview of findings

SDPP examined the effectiveness of the SDPP Program on the primary and additional outcomes SDPP was intended to affect related to teacher practices, at-risk student’s attitudes toward school, student engagement in school, and school dropout. Figure VIII.A.1 shows SDPP’s impacts according to its theory of change. The boxes banded in red show the outcomes on which SDPP had statistically significant or marginally statistically significant impact as measured by the impact evaluation.
Findings from the School Dropout Prevention Pilot Program Impact Evaluation in Cambodia

Figure VIII.A.1. SDPP conceptual model with program impacts

Notes: The thickness of the border around each box indicates the number of statistically significant or marginally significant favorable impacts on the primary and secondary outcomes within the given domain. Impacts on subgroups are not included.

Statistically significant impacts for this domain were found on one outcome

- Student Engagement in School
- Student Attitudes
- Teacher Behavior and Attitudinal Outcomes
- Teacher Prevention Practices and Support
- Parent Support
- Teacher, Parent, and Community Knowledge and Awareness

Statistically significant impacts for this domain were found on two outcomes

- Attendance
- Behavior
- Performance
- Student Attitudes and Aspirations
- Teacher Prevention Practices and Support

Statistically significant impacts for this domain were found on three outcomes

- Dropout

SDPP positively affected teacher dropout prevention practices, the primary measure of interest, in both intervention groups. There was also an improvement in teachers’ sense of responsibility in both groups and self-efficacy in the EWS+Computers group, as well as administrators’ dropout prevention practices in both groups and administrators’ sense of responsibility in EWS+Computers.

a Dropout includes the primary measure of dropout, global dropout
b Attendance is daily attendance averaged over the entire school year.
c Students are assigned a behavior performance score by their teachers.
d Math and language performance is measured on a range of 0–100, with 0 being the lowest and 100 the highest.
e Student attitudes and aspirations are measured only for at-risk students and include students’ emotional, cognitive, and behavioral attitudes toward school.
f Teacher and administrator prevention practices and at-risk student perceptions of teacher support.
g Parent support is measured by the at-risk students’ perceptions of parent support scale.
h Teacher and administrator self-efficacy and sense of responsibility.
schools. However, the program did not have an impact on at-risk students’ behavioral, cognitive, or emotional attitudes toward school or on daily attendance in either intervention group, although it did have a positive impact on student perception of teacher support in the EWS only group and of parental support in the EWS+Computer group. Most importantly, SDPP reduced school dropout in both the EWS and EWS+Computers schools. SDPP reduced school dropout among students identified as at risk based on their baseline characteristics in EWS schools only. Tables VIII.A.1 and VIII.A.2 summarize the impacts.

*Table VIII.A.1. SDPP Program impacts on primary measures of program effectiveness in Cambodia*

<table>
<thead>
<tr>
<th>Impacts</th>
<th>EWS only</th>
<th>EWS + Engagement (Computers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher dropout prevention practices</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>At-risk student attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Emotional attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Cognitive attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Behavioral attitudes toward school</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Attendance</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Overall</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>At-risk</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Dropout</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>Overall</td>
<td>——</td>
<td>——</td>
</tr>
<tr>
<td>At-risk</td>
<td>——</td>
<td>—</td>
</tr>
</tbody>
</table>

++/+/+/+ Statistically significant positive impact at the .01/.05/.10 level.
——/——/—— Statistically significant negative impact at the .01/.05/.10 level.
○ Impact is not statistically significant.

*Table VIII.A.2. SDPP Program impacts on additional outcome measures in Cambodia*

<table>
<thead>
<tr>
<th>Impacts</th>
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<th>EWS + Engagement (Computers)</th>
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</thead>
<tbody>
<tr>
<td><strong>Teacher outcomes</strong></td>
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<tr>
<td>Teacher self-efficacy</td>
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<td>+</td>
</tr>
<tr>
<td>Teacher sense of responsibility</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Administrator dropout prevention practices</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Administrator self-efficacy</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Administrator sense of responsibility</td>
<td>○</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Student attitudes toward school</strong></td>
<td>○</td>
<td>+</td>
</tr>
<tr>
<td>At-risk student perceptions of parent support</td>
<td>○</td>
<td>+</td>
</tr>
<tr>
<td>At-risk student perceptions of teacher support</td>
<td>+++</td>
<td>○</td>
</tr>
<tr>
<td>Perception of computer training</td>
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<td>++</td>
</tr>
<tr>
<td><strong>Student engagement</strong></td>
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<td></td>
</tr>
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<td>Math performance</td>
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<td>Khmer</td>
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<td>○</td>
</tr>
<tr>
<td>Behavior</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td><strong>Dropout</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progression</td>
<td>○</td>
<td>+</td>
</tr>
</tbody>
</table>

++/+/+/+ Statistically significant positive impact at the .01/.05/.10 level.
——/——/—— Statistically significant negative impact at the .01/.05/.10 level.
○ Impact is not statistically significant.
B. Contextual factors related to findings

In interpreting findings from the evaluation, it is useful to consider the policy environment in which SDPP was implemented and other contextual factors that may have influenced its effectiveness.

SDPP succeeded in reducing dropout, but not in increasing attendance. While attendance and dropout are strongly associated, they can occur independently of one another. In Cambodia, teacher take-up and implementation of dropout prevention practices promoted by the EWS could be a particularly strong driver of dropout prevention. SDPP interventions worked directly with teachers at school and parents at home to change their knowledge and awareness of dropout. As part of the EWS, homeroom teachers monitored at-risk students’ attendance and contacted parents if students were consistently absent. This work was intended to improve the dropout prevention practices of teachers and parental support for students.

SDPP succeeded in increasing scores on the 8-point teacher dropout prevention practice scale by almost one point in both the EWS+Computers and EWS only group, which represents a 15 percent improvement relative to the control group. Both teachers’ and school administrators’ sense of responsibility for at-risk students improved. The fidelity of implementation analysis found that the EWS was implemented as intended (Creative Associates International and School-to-School International 2015). Findings from the qualitative analysis confirmed that parents and community members experienced increased communication with teachers and knew that they were encouraging children to stay in school and attend regularly (Creative Associates International 2015). Using the EWS, schools and their teachers appear to be particularly effective in convincing students and their parents that students sit for end-of-year exams and enroll in the next school year. They do not seem to be as influential in ensuring daily attendance in an environment where families’ need for students to help with work or chores at home is particularly strong. The situational analysis findings presented earlier indicated that economic reasons are the predominant factors for both dropping out and missing school. While parents and students seemed to have gotten the message about not dropping out, the day-to-day imperatives of work and helping at home may have made it difficult for SDPP to affect attendance positively. It appears possible that the EWS succeeded in encouraging parents and students to not drop out of school completely, but was not sufficient to reduce the barriers that keep children from attending school every day.

It was also expected that the computer labs would motivate students to attend school more regularly, attracted by the prospect of gaining computer literacy, which most students lacked and could acquire primarily only through costly private courses. That the computer lab program did not increase attendance could be a result of the way the computer literacy component was designed and configured. The computer lab program may not have been implemented frequently enough or with skilled enough instructors to motivate students to attend school. Three students shared one computer terminal during the computer literacy class, so limited time for individual student practice may have dampened enthusiasm. Findings from the qualitative analysis show that both students and teachers were concerned that student acquisition of computer skills was constrained by these factors, and the weak results from an early computer skills test seems to support this.

Neither the EWS nor the computer lab component was strongly aimed at modifying student attitudes towards school. The EWS focused on improving school support and outreach to families...
of at-risk students to increase their awareness about dropout and how to help their child avoid it. The computer literacy and lab component focused on improving the relevance of education, offering skills that parents and students purported to value. It did not specifically target class performance (as in Tajikistan) or student attitudes (as in India and Timor-Leste). That the student engagement program interventions in India, Tajikistan, and Timor-Leste were all designed to encourage students to see school as a fun and supportive place may be a subtle, but potentially important, difference in encouraging more regular attendance. Although the presence of the computer lab improved students’ perception of computer training it did not improve attendance, as expected. Thus, it seems that neither the EWS services alone nor the EWS services coupled with computer lab activities were sufficient to improve students’ attachment to schools, which does not appear to be a necessary intermediate step in the reducing dropout in lower secondary school in the Cambodian context.

It was also expected that the computer labs would motivate students to attend school and would improve their perceptions of school; however, students and teachers in the EWS+Computers group did not experience more positive impacts on any of the primary measures of program effectiveness when compared to the EWS only group. The lack of additional positive impacts could be a result of the way the computer literacy component was designed and configured. The impact results suggest that computer training and the existence of a computer lab—as provided—do not produce sufficient benefits for at-risk students to overcome other barriers to educational participation. This is an important finding, because adding computer labs can be a costly intervention. Findings from the SDPP study might suggest that computer training is unlikely to be worth the substantial investment required if the focus is on the outcomes of students at risk of dropout.

It seems that the relatively low-cost implementation of EWS alone, without an additional engagement component, was sufficient to reduce dropout in Cambodia. The conditions in the target provinces in Cambodia may have provided the right context for improving dropout. Dropout in Cambodia was high (41 percent in the control group), and teacher dropout prevention practices were relatively low (5.94 out of 8 scale score for the control group). After two years of implementation, teachers in the EWS only and EWS+Computers groups had average scores of 6.85 and 6.83, respectively, which showed considerable improvement but were low compared to the three other SDPP countries, where teachers scored at or above 7.4, including those in the control group. This not only leaves room for improvement, but also suggests that with higher teachers scores—coupled with teachers’ already high sense of responsibility—student attitudes and behaviors may improve. It may be that an EWS is most successful at reducing dropout in countries with poor teacher dropout prevention practices combined with a high dropout rate.

C. Conclusion

This study shows that the SDPP Program in Cambodia was successful in improving some outcomes – particularly teacher dropout prevention practice and school dropout – but not some intermediate outcomes such as attendance and student attitudes. Comparing these findings to those of the rigorous evaluations of SDPP in the three other study countries with different contexts will allow us to draw some general conclusions about the effectiveness of SDPP in the Asian context. Additional discussion of the impacts of the SDPP Program across all SDPP countries is presented in a separate, four-country summary report (Creative Associates International and Mathematica Policy Research 2015).
References


