SKY Memorial Foundation Program Evaluation

Final Report

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Professor Leyla Ismayilova

By Kimberly Ang, Caitlin Morris and Jessica Rose

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Introduction

The SKY Memorial Foundation (SKY) is a non-profit organization whose goal is to better the lives of the children who attend the SKY primary school in Shikarpur, Nepal. Since the SKY Memorial Foundation has initiated several projects in the Shikarpur community, this evaluation looks at the overall effects of SKY interventions and the specific effects of the financial incentive program on student attendance.

I. Project Rationale and Aims

Although SKY administrators and community participants have an overall impression that SKY interventions are having positive effects, no systematic program evaluation has been conducted to support or validate that hypothesis. To date, the SKY Memorial Foundation has relied exclusively on visual documentation through photographs and videos to recruit donations and track its work. The organization lacks concrete methods of data collection and documentation of the work that it does. As such, there are several reasons for evaluating the effects of both the full package of SKY interventions in Shikarpur, and the SKY financial incentive program in particular, for the organization and its individual program service recipients.

With a broad mission of improving children's lives, SKY initiated a wide array of programs and investments at the SKY school and in surrounding schools. The evaluation team aimed to determine whether SKY interventions as a whole and the incentive program in particular had their intended effects. SKY may use this information to improve its programs, and build an ongoing program evaluation system. This evaluation may also be used to demonstrate

accountability in future grant applications and funding opportunities. In this sense, determining activities' effectiveness and outcomes is in SKY's organizational best interest.

Additionally, the evaluation team hoped that this study would contribute to the knowledge surrounding financial incentive programs in education. Incentivizing school attendance and academic performance is a recent trend in education development. This evaluation may contribute to an understanding of the applicability of this type of incentive program in a rural, low-income, developing country.

This evaluation project explored the following research questions:

1.   What is the relationship between the full compendium of SKY programs and school attendance rates for Class Five students at the SKY Primary School in Shikarpur, Nepal?

2.   What is the relationship between the students receiving a monthly stipend and their school attendance rates for 46 Class Six students at the SKY Primary School?

II. Program Description

SKY Memorial Foundation was founded in August 2010 in memoriam of Sarah, Kendra, and Yuki (hence the acronymic name "SKY") who passed away tragically in a plane crash. The site of the plane crash was a Nepalese government school, which has become the center of SKY Memorial Foundation's operations. SKY's explicitly stated program goal is to better the lives of the children who attend the SKY Primary School in Shikarpur, Nepal.

The SKY Memorial Foundation is run jointly by the parents of the three victims, who are located in Kathmandu, Nepal; San Francisco, USA, and Tokyo, Japan. The Foundation's administrative staff is comprised of family members in Kathmandu, San Francisco, and Tokyo, and partners based in Shikarpur village who manage day-to-day operations.

The SKY organizers have initiated a wide variety of programs both at the SKY school and in peripheral schools in the Bastipur province in Nepal. To date, SKY has assisted six schools by providing funds for improving school facilities with roofs, walls, and student desks. Students also received uniforms, school bags, slippers, and stationery. SKY has supplied clean drinking water and toilets, as well. SKY funding for teachers' salaries enabled the school to open a 6th grade class (it previously served only K-5th grades).

SKY began implementing a financial incentive program in September 2010, by providing monthly stipends for 64 students at the SKY school. SKY asked teachers to identify the most financially challenged female students (and later, male students) and began distributing a small monthly stipend to these students, provided they attended school at least 20 days of every month. The value of the monthly stipend was 100 rupees, or the equivalent of $1.30 (US). Fundraising for the financial incentives occurred on an *ad hoc* basis, and mainly came from the family and friend donors close to the founders.

The incentive program targeted particular challenges in Nepalese rural life and education. Nepal is a low-income, developing country with a relative and absolute low level of funding for public education and challenges for girls' education. In 2009, the average Nepalese GDP per capita was

$435.90, with just 4% of the GDP spent on education (UN Data, 2012). Jamison and Lockheed

(1987) studied Nepalese participation in schooling, learning outcomes, and cognitive abilities

with attention to gender. They found that low family income was the most important deterrent to

parents sending their children to school. Girls face particular risks in educational attainment,

primarily due to the costs families incur by sending their female children to school. While 81.9%

of boys were enrolled in primary and secondary school in Nepal, only 67.5% of girls were

enrolled (UN Data, 2005-2010).

III. Research Literature Review

Education Poverty is a significant barrier for education, and low educational attainment is a

barrier to social mobility. Many programs try to improve educational outcomes with the goal of

moving children and families out of poverty. Higher educational attainment (both years of

schooling and achievement at school) has been consistently correlated with better economic and

health outcomes. Students who attend school more often and for longer have higher paying jobs,

are happier, and exhibit less risk behaviors (Oreopoulos & Salvanes, 2009). Thus, many

programs have focused on keeping kids in school for longer. In developing countries, programs

have affected girls in particular by delaying marriage and decreasing teenage births (Attanasio et

al., 2005).

Financial Incentives Among the wide variety of reforms to improve education, offering

financial incentives or "conditional cash transfers" has gained widespread popularity. Perhaps

the most famous of these programs is Mexico's *Opportunidades* (previously *PROGRESA*)

program that offered cash transfers to families to incentivize attendance and bring children to

regular health clinic visits. Overall, *Opportunidades* had significant impacts delaying boys' entry into the labor force, and movement into non-agricultural sectors. No significant impacts were found for girls' labor force participation. Test scores were unchanged for both girls and boys (Behrman, 2005). Bangladesh experimented with a stipend project which paid tuition fees and monthly stipends for unmarried rural girls who attended recognized institutions, remained unmarried, maintained at least 75% attendance, and secured passing marks in the annual examinations (Schurmann, 2009). Sharma (2010) conducted a randomized control study in Nepal and found significant effects on student achievement for a short term financial incentive program. Even though the size of the incentive in Sharma's study was on average about 3 times the size (300 rupees) as SKY's program, the author still concluded that this program was cost-effective.

Sharma's findings are consistent with other aggregations of monetary incentive programs with positive effects on student outcomes (Slavin, 2010, Fryer, 2010). Programs which focused on incentivizing student "inputs" (such as attendance, number of hours studying) have been more successful than programs that incentivize outputs such as tests scores and grades (Fryer, 2010). Overall, Slavin found that although cash incentives were effective in increasing attendance in secondary schools, evidence for incentives improving primary-level attendance is far weaker.

Finally, a number of articles supported the types of data and collection methods the evaluation team aimed to pursue. In their study of a school subsidy program in Pakistan, Kim, Alderman, and Orazem (1999) describe a parent survey to collect information about student age, distance from school, and parents' education for regression analysis. Nielsen et al. (2006) pointed to

household income and student gender as important factors contributing to rural school attendance. Moreover, the ages of children in the respondent's household may also affect family pressure for children to forego schooling (Gibbison & Murthy, 2003). Although the SKY evaluation team was unable to control for these variables, the team recognized these factors as important ones to record and account for in future evaluations and data analysis.

IV. Methodology

Sampling The sample for this evaluation was made up of four separate classes at the SKY school. Class Five classes from 2010 (n=26), 2011 (n=34), and 2012 (n=34) were compared to evaluate the effects of the full compendium of SKY programs. While some students may have repeated Class Five, lack of access to translated documents prevented the evaluation team from controlling for grade retention. As such, the evaluation team treated each class as a separate group of students.

To evaluate financial incentives, the evaluation team used a Class Six record from July 2012 with 46 total students. The treatment group was made up of the 15 of those students who received incentives, and the comparison group consisted of the remaining 31 students in the class. To evaluate changes in attendance rates for the treatment group, the evaluation team drew from a 2010 record which had attendance information for eight of the 15 treatment group students when they were in Class Four. The evaluation team relied on convenience sampling, since only a few translated documents were available.

Variables To evaluate the relationship between SKY interventions and student attendance, student attendance rate was the dependent variable. The evaluation team defined student attendance rate as the number of days students were present, divided by the number of days students were expected to attend during a given month. The independent variable was school receipt of SKY interventions since the program began. This bundle of interventions included constructing the school building, providing supplies and clothing for students, teacher salaries, and student stipends. As SKY began implementing its interventions in late 2010, student attendance records from 2010 represented the "before SKY" category. Student attendance records from 2011 represented the second category, "during SKY," as some, but not all, SKY interventions had been implemented at that point. Finally, student attendance records from 2012 made up the "after SKY" category, as all SKY interventions had been implemented by July 2012. Based on the literature review and opinions of SKY administrators, the evaluation team hypothesized that student attendance would increase as the number of implemented interventions increased from 2010 to 2011 and again to 2012.

Individual student attendance was also the dependent variable for the team's second research question. Individual student attendance was defined as the total number of days a student attended school in July 2012. For the subset of eight stipend recipients for whom 2010 attendance data was available, attendance rate (described above) served as the dependent variable. The independent variable for this question was receipt of the most recent $1.30 per month stipend. The evaluation team hypothesized that students receiving the most recent round of stipends would be present more days per month than students who do not receive stipends, and that the rate of attendance would increase from 2010 to 2012 for stipend recipients.

Data Collection The evaluation team utilized only secondary data for this analysis, in the form of official school attendance records from 2010, 2011, and 2012. In the original documents, teachers marked daily attendance for each student in the class. For the purpose of this evaluation, a school manager carried attendance records from the past three years to the nearest village (a two hour hike) to scan copies and sent them to Kathmandu. From Kathmandu, another staff member had to print the photocopy, mark students who were receiving incentives, rescan the marked photos (at the nearest print shop), and send this to document via email.

Data Analysis As each year's attendance records came from a different month, students were expected to attend school for a different number of days per month. As such, the first step in data analysis was to convert the full monthly attendance rolls for 2010, 2011, and 2012 into average monthly attendance rates for each class. Next, the evaluation team conducted a One-Way ANOVA to compare the average attendance rates for the 2010 ("Before SKY"), 2011 ("During SKY"), and 2012 ("After SKY") groups (Research Question #1). Then, the evaluation team analyzed the relationship between stipend receipt and student attendance (Research Question #2) by conducting an Independent Samples t-test. This test compared the average days of attendance in July 2012 for the treatment (stipend) group to the average number of days attended by the comparison group during the same period. Finally, the team analyzed the change in student attendance rate from 2010 to 2012 for eight stipend recipients by conducting a Paired Samples t-test. This test compared the average attendance rate for these students in 2010 to their average rate of attendance in 2012.

V. Challenges Faced

Limitations: Complex Data Collection As the evaluation team had difficulty obtaining data and school records from the ground in Nepal, it was not possible to run as thorough of an analysis of the SKY program efforts as the team would have preferred. If additional student demographic data was available, the evaluation would have included such covariates as gender, family income, previous school performance, and parent education and occupation. This information may have enabled a more in-depth analysis looking at the context and lifestyle of students receiving stipends. Moreover, additional data could have contributed to a better understanding of how the families of stipend recipients were affected by children attending school and receiving additional income. The evaluation team has attached a basic survey for SKY to begin collecting this data (see Appendix). Regressing for these variables would have allowed for more vigorous interpretations and conclusions on causality and program mechanism.

Translation The translation process for analyzing school attendance records was technologically dependent and time-consuming for SKY partners. This evaluation depended on translated records, which meant that the team had limited data to work with and was only able to conduct basic levels of analysis. Additionally, the student attendance data that was made available was challenging to interpret due to the quality and legibility of the documents. Lastly, working with a fairly new organization in rural Nepal posed several significant challenges for our evaluation team. At times, the team opted to limit its requests for data so as to ease the data collection burden on SKY, as data exchange was time consuming and created extra work for staff members at the SKY school.

VI. Results This evaluation's first research question looked at the relationship between the full compendium of SKY programs and school attendance. To evaluate this, the team initially calculated the average class attendance rate for Class Five in 2010 out of 15 days (M= 45.9%, SD= 20.3%), 2011 out of 12 days (M=67.2%, SD= 22.7%), and 2012 out of 17 days (M=64.4%, SD=23.3%). Next, the team conducted a One-Way ANOVA to understand the relationship between average student attendance rate before, during, and after SKY implemented its full set of programs. The One-Way ANOVA indicated that there was a significant relationship between receipt of SKY programs and overall student attendance rate (F=7.72, df=2, p<0.01). To further understand this relationship, the evaluation team conducted a post-hoc Bonferroni test. The results of this test indicated that there was a statistically significant increase in student attendance from 2010 to 2011 (Mean difference=21.6%, p<.01), as well as from 2010 to 2012 (Mean difference=18.5%, p<.01). The Bonferroni test also indicated a slight decrease in average attendance rate from 2011 to 2012, but this decrease was not statistically significant (Mean difference=2.8%, p>.05).

Looking at the second research question, the evaluation team ran an Independent Samples t-test to evaluate the relationship between receipt of the most recent stipend and student attendance. Students receiving stipends attended more days of school during July 2012 (M=19.6, SD=2.9) than did students not receiving a stipend (M=15.2, SD=5.9), and this difference was statistically significant (t=3.46, df=43.97, p <.01).

Using a Paired Samples T-test, the evaluation team analyzed the relationship between attendance rates in 2010 and 2012 for eight of the stipend recipients (see convenience sampling above). The

t-test results showed a marginally significant increase (t=1.95, df= 7, p<0.1) in the average

attendance rate. In 2010, the average rate for the eight students was 77.5% (SD=17.1%). In 2012,

the average attendance rate for this subset of recipients was 88.0% (SD=8.5%).

VII. Discussion and Conclusions

Full Compendium The average attendance rates for Class Five increased from 2010 to 2011,

and also from 2010 to 2012. The average rate of attendance decreased slightly from 2011 to

2012, but this decrease was not statistically significant. The statistically significant increase in

attendance associated with implementation of some and all SKY programs corroborates the

evaluation team's first hypothesis that attendance rates have increased over time. These findings

indicate that the SKY interventions are having their intended effects.

Financial Incentive These results supported the original hypothesis that attendance rates would

be higher for the recipients of the financial incentive. On average, students receiving the

financial incentive came to school more days per month than students not receiving the financial

incentive. Non-recipient students also showed broader ranges of standard deviations in their

average attendance rates. Additionally, the average attendance rate for eight stipend recipients

increased at a level that approached significance. Again, this supported the evaluation team's

hypothesis that stipend receipt would improve attendance.

The evaluation team was curious about the marginally significant increase in attendance rates for

students receiving the financial incentive over time. One possible explanation is that the sample

size is small and simply did not have the power to show a statistically significant change over

time. However, it is also possible that students receiving the financial incentive were already attending school at higher rates in 2010, before the financial incentive program. Thus in its current form, the program may be encouraging students who are already demonstrating good attendance behaviors. This may be something important for SKY administrators to consider with regard to who the incentive is trying to reach (target group). If the goal of the program is to increase attendance, the financial incentive program should perhaps be targeted to change behaviors in students with low-attendance (particularly because the incentive does not make a significant change in a family's distributional income). In the same line of thinking, the incentive may have larger impacts on low-performing students. This is an idea supported by the literature and relevant to SKY's program goal of supporting all school children.

This data is particularly interesting since the amount provided by the financial incentive is not practically significant in relation to average family income, yet it the relationship between incentive receipt and attendance rates is significant. It is possible that the incentive is working not as a supplement for potential loss of income, but actually incentivizing student behavior via a psychosocial mechanism. These findings corroborate Sharma's 2010 randomized control trial which similarly provided an "insignificant" financial incentive, yet produced significant results. Investigating the mechanism, therefore, by which the incentive changes attendance behavior, would be a prime area for further study.

Overall, this study confirms the hypotheses that both the evaluation team and key stakeholders of the SKY Memorial Foundation created: SKY interventions are having significant and positive effects on student attendance.

Suggestions for Ongoing Program Monitoring and Data Collection To further improve

services at SKY, the evaluation team suggests increased data collection and program monitoring.

Specifically, demographic information about target populations and pre-and post- intervention

information would allow for more definitive measurement of the impact of SKY programs. A

suggested demographic survey and modified attendance forms for students receiving incentives

are attached in the Appendix. Although the evaluation team would have been able to generate

more conclusive findings by utilizing multivariate regression analysis, the barriers inherent in

data collection prevented the collection of information about additional variables. Since students'

background characteristics, family background and parents' education, average income, gender,

prior academic performance, and number of siblings have all been shown to have significant

impacts on student behavior and performance, collecting information about these variables

would strengthen this analysis and give a clearer picture of the effects of SKY programs.

Additional Recommendations for SKY:

(1) **Increase data collection:** As explained above, a number of variables affect student behavior.
Attached is a basic survey for SKY to distribute and collect student demographic
information. This information could also be valuable for SKY in considering new programs
and services. In addition to collecting background information, SKY could benefit from
creating a regular evaluation plan. Research shows that interventions like SKY's have a high
impact in the first few years, but that positive effects "drop off" later on. Ongoing program
monitoring and long-term follow up with program participants could ensure continued
program quality and performance.

(2) **Pre and post data collection:** Before implementing new interventions, SKY should collect baseline information on the intervention participants. When compared to "post" program data, this would allow SKY to measure the exact changes and effects of the intervention.

(3) **Standardizing the method for program selection** After considering the target group for the financial incentive, SKY may benefit from standardizing its process for selecting incentive recipients. This could be a list of criteria (family income, previous attendance rate) that students must meet before being invited to the program. Standardizing selection could help to ensure objectivity, consistency, and effective targeting of students who will benefit the most from the intervention.

(4) **Consider electronic data collection, if possible:** Given the recommendations to increase data collection in general, using a computer to enter and process data could ease the process. This could help to prevent translation errors on attendance records, and to send information to international organizations if another opportunity for evaluation or funding arises later.

(5) **Articulating desired program theories and goals:** SKY's stakeholders have a strong intuitive sense of what services are most valuable and needed in the community. The foundation is already creating significant and positive effects in the school community. The evaluation team believes that SKY is in a position to make even more significant and diverse impacts on improving the lives of children at SKY. As the organization moves forward in creating new programs, it should define and articulate specific outcomes so that it can show how and why its programs are effective. Specific, measurable goals, such as student attendance, but also nutrition and risk behaviors, are common measurements that could help SKY not only create targeted and focused programs, but show to evaluators and foundations outcomes that they are interested in.

VIII. Appendix

Table 1. Sample Student Attendance Record

CLASS __ (1, 2, 3,4 ,5, or 6)	MONTH ____	YEAR _____	Total number of days of school: ____
Randomly assigned student ID	Male/Female	Days attended school in the past month	Monthly Incentive Recipient? Yes/No

You and Your Family

1. **Are you a man or a woman?**

   O   O

   Man   Woman

2. **Did you complete primary school?**

   O   O

   Yes   No

3. **Did you complete secondary school?**

   O   O

   Yes   No

4. **How much money does your household make each month?**

   _____ Rupees

Your Children

1. **How many sons do you have?**

    O   O   O   O   O
    1   2   3   4   5+

2. **How old are your sons? Please list their ages _____Years old**

3. **How many daughters do you have?**

    O   O   O   O   O
    1   2   3   4   5+

4. **How old are your daughters? Please list their ages. _____Years old**

5. **Have any of your children received a school bag from SMF?**

    O   O
    Yes   No

6. **Have any of your children received slippers from SMF?**

    O   O
    Yes   No

7. **Have any of your children received a school uniform from SMF?**

    O   O
    Yes   No

8. **Have any of your children received stationery from SMF?**

    O   O
    Yes   No

9. **Have any of your children received lunch from SMF?**

    O   O
    Yes   No

10. **How long does it take your children to walk to school?**

    O   O   O   O
    0-10 minutes   11-30minutes   31-60minutes   More than 1 hour

11. How often does your child come home early from school?

O	O	O	O
Never	Rarely (1-2 times pe r month)	Sometimes (3-5 times per month)	Often (more than 5 times per month)

12. How often does your child miss school because he or she has to take care of siblings?

O	O	O	O
Never	Rarely (1-2 times per month)	Sometimes (3-5 times per month)	Often (more than 5 times per month)

13. How often does your child miss school to work on the farm?

O	O	O	O
Never	Rarely (1-2 times per month)	Sometimes (3-5 times per month)	Often (more than 5 times per month)

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