Mid-Term Evaluation Final Report

**(excerpt)**

# Overview

The project is a five-year project (2019-2024) of a NGO, financed by the Government of Canada through Global Affairs Canada. The project is aimed at addressing barriers to quality education for Palestinian refugee children in grades 1-9 enrolled in every United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA) schools in the West Bank (95 schools) and Gaza (275 schools).

The ultimate outcome of the project is the improved quality of education for children, especially girls, enrolled in UNRWA primary schools in the West Bank and Gaza. This is being measured and reported through a set of mixed-method indicators (qualitative and quantitative) on feelings of social connectedness, improvements in psychosocial well-being, and emotional safety/emotional well-being in classrooms.

This midterm evaluation has evaluated the relevance, effectiveness, impact, and sustainability of the project to understand its performance and to generate actionable learning and recommendations to improve it at midline. As this evaluation has been conducted in year four of a five year project it has assessed progress on outcomes and identified components of the project design or implementation that could be strengthened in its final year. It has also generated actionable learning relevant to the project and to improving similar future projects of the NGO based on what has been learned from delivering the current project.

The evaluation used a quasi-experimental mixed methods (quantitative and qualitative) design with treatment and control schools to assess the project performance at midline compared with baseline results, outcome targets, and the comparison/control group to generate findings and learnings to inform this and future projects.

As part of the midterm evaluation, the client was interested in whether or not primary students at treatment schools exhibit higher engagement levels compared to students at control schools. To do so, a latent factor regression model was estimated to determine respective treatment effects. This excerpt from the full report presents key aspects of the analysis as well as findings associated with the latent factor regression modelling. The analysis was performed using R (The R Core Team, 2019), especially using the lavaan-package (Rosseel, 2012).

# The results

The midterm survey targeted primary students at 66 schools in the territories of both Gaza and West Bank. Table 1 below presents some characteristics of the school sample. As it highlights, the client’s quasi-experimental matching design to determine the treatment and school sample before baseline cannot be deemed successful. Not only varied the treatment and control sample starkly in terms of both number of schools as well as students but also in terms of gender and especially location. Whereas around 39 percent of treatment schools were located in West Bank, none of the control schools were located there. In total, 920 primary students were participated in the survey.

Table 1: The school sample

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Status | # of schools | located in West Bank (in %) | # of students | female (in %) |
| Control | 51 | 39.22 | 739 | 55.48 |
| Treatment | 15 | 0 | 181 | 48.07 |
| Total | 66 |  | 920 |  |

Source: midterm 2022 © the Client

The questionnaires that were administered to both treatment and control primary schools contains three items intended to gauge school engagement. They are presented in table 2 below. In order to answer the questions implied by the items, students could choose one of the following four answer options: never, rarely, sometimes, always. Thus, the resulting survey data collected through these items is categorical in nature.

Table 2: the survey items to gauge engagement

|  |  |  |
| --- | --- | --- |
| Item code | wording | ICC’s |
| PS 5 | Do you share your ideas, opinion, thoughts and feelings in the classroom when you have any? | 0.27 |
| PS 6 | Do you ask your teacher questions? | 0.14 |
| PS 7 | How often do you ask your teacher for help when you do not understand what you study? | 0.11 |

Source: midterm 2022 © the Client

Due to the categorical nature of the survey data associated with the three survey items of interest, interitem associations need to be estimated using polychoric correlations. The results of the polychoric correlation analysis are presented in table 3. Given that engagement was measured through 3 survey items, there are 3 unique interitem correlation coefficients. The items are only moderately correlated ( between ). within the social sciences, effect sizes that are larger than .6 are considered strong. It suggests that the way the client operationalized school engagement through the three items was not effective. This in turn may affect the latent factor modelling to determine treatment effects on school engagement.

Table 3: interitem (polychoric) correlations

|  |  |  |
| --- | --- | --- |
|  | school\_sharing\_ideas | school\_asking\_questions |
| school\_asking\_questions | 0.57 |  |
| school\_ask\_help | 0.46 | 0.5 |

Source: midterm 2022 © the Client

Within educational research, students surveyed are generally located within project schools. Thus, the data structure is hierarchical. The intracluster correlation coefficients (ICC’s) for the three items are presented in table 2. The ICC is a statistic that measures the proportion of variance in a response variable that can be attributed to grouping factors (or random effects) in mixed-effects models. Essentially, it tells you how much of the variability in the outcome is due to differences between groups (such as subjects, schools, or regions) rather than individual differences within groups. The ICC’s associated with the three items are not insignificant. Especially the ICC for the item on sharing ideas is somewhat substantial with about 0.27. This in turn would justify a multilevel latent factor modelling to determine treatment effects on school engagement. In the case at hand, multilevel latent factor modelling was performed using the lavaan package (Rosseel, 2012) in R. At the time of writing, however, the lavaan package does not allow latent factor modelling combining categorical data, using the WLSMV estimator as well as clustering. Since the ICC’s were only moderate in size, it was decided not perform a multilevel latent factor analysis.

Table 4: The results of the confirmatory factor analysis

|  |  |  |  |
| --- | --- | --- | --- |
| Engagement by | Estimate | Standard errors | P-value |
| school\_sharing\_ideas | 1.0000 |  |  |
| school\_asking\_questions | 1.0939 | 0.085769 | 0.0000 |
| school\_ask\_help | 0.8915 | 0.067668 | 0.0000 |

Source: midterm 2022 © the Client

To determine the treatment effects on school engagement a structural equation model was estimated. A Structural Equation Model (SEM) is a statistical technique that combines elements of confirmatory factor analysis and multiple regression to model complex relationships between observed and latent (unobserved) variables. SEM allows researchers to test theoretical models that involve multiple dependent and independent variables, including hierarchical relationships and indirect effects. A confirmatory factor analysis (i.e., CFA) focuses on testing whether the data fit a hypothesized measurement model. In the case at hand, it is used to verify if the relationships between the three survey items in table 2 (i.e., manifest indicators) can be explained through an underlying latent construct (i.e., school engagement). The CFA component of the SEM are presented in table 4 above. The associated fit indices are as follows: RMSEA = 0.032; CFI = 0.988; TLI = 0.995; SRMR = 0.003. Thus, the latent model fit is certainly acceptable.

Table 5: The results of the latent factor regression

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Engagement predicted by | Estimate | Standard errors | P-value | |
| Being located in West\_Bank | -0.441 | 0.101 | 0.000 |
| Being female | 0.206 | 0.064 | 0.001 |
| Age (in years) | -0.029 | 0.027 | 0.288 |
| Being in treatment school | 0.171 | 0.083 | 0.040 |

Source: midterm 2022 © the Client

Table 5 presents the results of the regression of engagement, modelled through the confirmatory factor analysis, on the different predictor variables. All predictors but age included in the model exhibited statistically significant effects on school engagement. Most interestingly, even after controlling for being located in West bank, gender, and age, being located in a treatment school exhibited substantial effects. Being located in a treatment school was associated with an increase of school engagement of around 0.171 standard deviations. At face value, this implies that the project interventions of the client to improve school engagement was effective.