1. Inquiry Questions

1. What are the knowledge, motivation, and organizational barriers that prevented Al-Bayan first primary school for girls’ mathematics teachers from supporting improved student’s math achievement? [As measured by the achievement of an average score of 467 in a mock TIMSS mathematics testing by August 2017.]

2. What are the knowledge, motivation, and organizational recommended solutions to those barriers?

2. Key Literature

Teachers’ importance to students’ mathematics achievement (Saritas & Akdemir, 2009; Rowe, 2003)

Role of mathematics in college admission, global economy, life, prosperity. (Porkess, 2012; McCormick, 2011)

Mathematics teachers’ quality and student achievement (Darling-Hammond, 1997; Ferguson & Ladd, 1996)

Best practices in teaching mathematics (Creemers & Kyriakides, 2011; Daro, 2006; National Mathematics Advisory Panel, 2008)

Mathematics teachers’ KMO needs (Darling-Hammond, 1999; Goldhaber & Brewer, 1996; Robin, Lloyd, & Rowe, 2008)

3. Methods and Data Analysis

Survey:
• 15 Teachers, 100% response rate
• 19 items (17 Likert-scale of 4 with 2 open ended)
• Simple calculations of percentages analysis

Interviews:
• 18 questions (all open-ended)
• Thematic analysis

Document analysis:
Received 8 teachers’ sample lessons Using an expert to judge content based on a pre-designed criteria

4. Results & Findings

Knowledge
Factual: Teachers lack basic knowledge about TIMSS

Conceptual: Teachers do not know the concepts addressed by TIMSS mathematics, nor are they aware of its overall structure

Motivation
Self-efficacy: Teachers do not believe they are capable of teaching mathematics test-taking strategies

Organization
Cultural Settings: Teachers are under-paid and pay is not based solely on performance

Professional Development: Teachers have insufficient professional development opportunities related to achievement tests and test-taking strategies

Resources: There are not enough teachers to teach math in the Al Bayan first primary school

5. Integrated Solution for KMO

• All 15 mathematics teachers to participate in professional development training

• Training with a math expert, at school theater, for 25 weeks

• Introduction to achievement tests, then training on best math teaching practices followed by test taking strategies

• Examination of evidence-based best practices and test-taking strategies that can improve students’ achievement

• Every practice will be taught utilizing relevant theories, demonstration & modeling, practice & feedback, application, coaching & feedback

6. Future Research

• Repeat the study at a primary school for boys of a similar caliper to Al Bayan First Primary

• Repeat including more best practices during the data collection

• Study the other two stakeholders at Al Bayan first primary school, i.e. students and administrators

• Conduct a study at one of the high performing international schools with a research question such as “What factors influenced the high achievement of X school’s students in Y achievement test?”