Advantages and Drawbacks of Grade Band Assignment: Early Observations from a Work-in-Progress RCT Testing the Impact of Teacher PD

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ABSTRACT

Math for All (MFA) is a teacher professional development (PD) program that is designed to assist schools and districts in improving mathematics achievement of K–5 students who have diverse strengths and needs.

This poster presents lessons learned regarding the benefits and drawbacks of an RCT design wherein elementary schools are assigned to use either MFA or engage in business-as-usual (BAU) instruction, in one of two specified grade bands.

Although this design helped to facilitate recruitment, some lessons learned are offered, based on the first cohort of schools in the sample.

Key Question Sets

1. **What is the effect of the MFA PD on K–5 teachers' classroom practices, compared to the BAU condition?**
2. **What is the effect of the MFA PD on Grade 4 and Grade 5 students' mathematics achievement on the *Illinois Assessment of Readiness*?**
3. **Several questions with different exploratory, mediating, moderating and descriptive goals.**

Now to design advantages and disadvantages…

INTRODUCTION

In terms of the randomization unit, the decision to randomly assign grade bands within each participating school was made in consideration of several factors, including recruitment, supporting the implementation and sustainability of the MFA intervention, statistical power, and logistics (cf. Roschelle et al., 2014; Shadish, Cook & Campbell, 2002).

This impact study will work with three cohorts of schools. Schools are randomly assigned to participate in the PD either in grades K–2 or in grades 3–5. The treatment window is two school years.

As shown in Exhibit 1, schools that are assigned to have their Grades K–2 teachers receive the PD will be compared to schools where Grades K–2 teachers follow BAU routines (and where Grades 3–5 teachers are assigned to receive the PD).

Conversely, schools that are assigned to have their Grades 3–5 teachers receive the PD will be compared to schools where Grades 3–5 teachers follow BAU routines (and where Grades K–2 teachers are assigned to receive the PD). Confirmatory research questions focus on various teacher and student outcomes.

Exhibit 1. MFA Study Design

Study Conditions (a total of 60 schools or randomized units over the course of the entire project)			RCT Contrasts
30 schools where MFA is provided to Grades K–2 teachers		**30 schools where MFA is provided to Grades 3–5 teachers**	
Grades K–2 teachers who receive MFA PD over two school years		Grades K–2 BAU teachers	MFA impact in Grades K–2
Grades 3–5 BAU teachers		Grades 3–5 teachers who receive MFA PD over two school years	MFA impact in Grades 3–5
Within each two-year cohort (three cohorts total)	Two Facilitator Institutes (40 facilitators, 20 teams)	~20 schools ~240 teachers (120 T; 120 C) ~4,800 students (2,400 T; 2,400 C)	~20 schools ~240 teachers (120 T; 120 C) ~4,800 students (2,400 T; 2,400 C)

Advantages

- Each school is being recruited with the message that it is not a matter of whether it will be exposed to treatment, but at what grades.
- Fewer schools need to be recruited to achieve comparable statistical power as designs that assign whole schools to study conditions.
- Loss of a school would entail minimal differential attrition.
- Logistically easier to maintain communication with the sample.

Challenges (and Lessons Learned So Far)

- Although recruitment may be facilitated because each school receives MFA, this design is not a panacea. We found that some school staff struggled with the idea that they could not choose which grade band will use MFA.
- Logistics around communication may be easier since the treatment is in all schools, but it is still the case that clear, consistent, repeated messaging after randomization has proven to be critical.
- Because schools are assigned to the PD in either grades K–2 or grades 3–5, instructional teams that actively work together cannot be formed around grades 2–3.
- Teachers changing grade bands, or their roles, during a 2-year treatment window can be prevented with school leadership help, and later, addressed via ITT analyses.
- Sometimes in smaller districts all K-2 students are enrolled in one school, and all grades 3-5 students are enrolled in another. We are treating these schools as single, yoked units during randomization.
- The MFA and BAU conditions will be present in the same schools. It is possible that comparison teachers will seek to gain access to PD knowledge and deploy it in their classrooms.
  - Contamination can occur for other reasons, such as: special education teachers working across grade bands; having teacher leaders from the BAU group who facilitate the PD; and principals sharing MFA information with BAU teachers.
  - However, the PD principles are not easily transmitted via casual conversation.
- We are trying to address other potential issues affecting the BAU group (e.g., teachers working harder on mathematics instruction because they perceive MFA as a rival approach, or because they are demoralized for not being selected for MFA participation), by engaging in clear messaging about the importance of the BAU.

CONCLUSIONS

- Grade band assignment has obvious advantages in terms of recruitment, statistical power, and logistics.
- Contamination has, so far, not been a major concern given the complexity of the PD.
- The design is a challenge when dealing with smaller units that do not span target grade levels, but some flexibility in blocking has so far addressed related concerns.
- Communication around random assignment remains paramount; clarifying with staff both the purpose of and results of random assignment has been our greatest challenge.

References

Roschelle, J., Feng, M., Gallagher, H., Murphy, R., Harris, C., Kamdar, D., Trinidad, G. (2014). *Recruiting Participants for Large-Scale Random Assignment Experiments in School Settings*. Menlo Park, CA: SRI International.

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