# LOOKING INTO THE NON-COGNITIVE DIMENTION OF MATHEMATICS TEACHING

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Non-cognitive abilities are known to predict future success of students (Heckman & Kautz, 2012). In Japanese elementary schools, students' whole person development is typically assumed to be the primary goal of education (Lewis, 1995). The society embraces the holistic development of students as an important goal of education, and Japanese educators tend to consider education as a way to help students develop holistically as they make use of diverse situations of academic teaching. Then how do teachers in Japan actually promote students' non-cognitive abilities in their classes, and how do they master the expertise?

To investigate this issue, this study recruited 14 experienced elementary school teachers. The data collection involved video-taped observations of their math lessons and follow-up teacher interviews on their intentions of the key actions and interactions during the math lessons. In addition, students' questionnaire on non-cognitive learning developed based on the three key constructs (autonomy, relatedness and competence) of the self-determination theory was given to their students after the math lessons.

The study revealed that in the classes taught by the teachers, students reported a higher level of autonomy, relatedness and competence compared to students taught by novice teachers. The study also revealed that the teachers' key actions were targeted to nurture socio-emotional development of the students in the changing situations of their math teaching such as valuing others' perspectives in the process of problem solving, gaining confidence to speak up one's mathematical ideas in front of their classmates and learning to overcome challenges with others. Most of the teachers attributed this aspect of their expertise to local-level lesson study and mentorship.

Based on this finding, lesson study groups are now being organized across the world with the goal to help novice teachers master the expertise to elicit students' non-cognitive learning in their academic classes. The findings from project would inform how teachers in different cultural contexts could learn to promote students' non-cognitive abilities and what kind of localizations are necessary in each context.

## References

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