

Evidence report

Social and emotional competency assessment tool, Kwale county, Kenya
(2019)

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Abstract

The Social and Emotional Competency Assessment tool is a teacher-led social and emotional competency rating scale that was adapted and tested as part of an exploratory case study conducted in Grades 1-3 of one government primary school in Kwale county, Kenya, between June and October 2019. Teachers used the tool to assess four of the seven competencies of the Kenya Competency Based Curriculum (KCBC) in a group of 187 children (165 students in round 1 and 187 students in round 2, 47% girls).

Factor analysis of 20 of the initial 23 questions was used to update the tool to provide five questions per competency, for four of the seven Kenya Competency Based Curriculum competencies. Concurrent calibration showed significant progress in Grade 1-3 learners' demonstration of behaviours that build the competencies, based on use of the tool at two timepoints. Significant correlations were found between results for individual competencies. Cronbach's alpha and an Item Response Theory model revealed strong internal consistency.

It is recommended that the tool be used by teachers with larger sample sizes, to explore further the findings.

Introduction

Overview of skills, outcomes, or constructs being assessed

Which skills, outcomes, or constructs are measured by the tool?

The tool, updated as part of the research, provides five questions to measure each of four of the seven KCBC competencies: Self-efficacy, Communication and collaboration, Critical thinking and problem solving, and Learning to learn. Teachers chose to focus on the skills of Communication and collaboration and Critical thinking and problem solving, in their action research to build skills as part of the study.

How are these skills, outcomes, or constructs defined?

Communication is described as ‘integral to the acquisition, practice and development of all other core life skills’ (UNICEF MENA Regional Office, 2017, p. 1). It includes the ability to listen actively, and is thus essential to **collaboration**, which underpins the ability to work in a group or team. Enhancing the use of language and understanding, communication supports the development of higher order skills such as reasoning and inference (Ramadi et al., 2016, p. 50). These are skills which underpin **critical thinking**, itself fundamental to **problem-solving**. Collaboration is considered essential to a problem-based learning approach (Savery, 2006, p. 13). Indeed, the 2015 PISA included an assessment of ‘collaborative problem-solving’ defined as the ‘capacity of an individual to engage effectively in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution’ (UNESCO, 2016, p. 248).

Arguably, problem-solving depends on the other three other elements: communication, collaboration and critical thinking. The skill of problem-solving is said to foster positive social transformation, to contribute to community-based solutions to problems, and enhance social engagement in community work (Weitzman, E and Weitzman, P, in Deutsch, 2006, pp. 185–209).

The two competencies of focus are also integrally connected to the other competencies of the KCBC. The ability to communicate and collaborate, to think critically and solve problems, all contribute to enhanced **self-efficacy** (Webster, 2006). They also all contribute to citizenship, for example through the reduced risk of violence and discrimination stemming from good communication (Faour & Muasher, 2011), and enhanced social engagement supported by cooperation skills (Tyler, 2011). Critical thinking and problem solving are integral to Creativity and imagination, creativity being closely connected to cognitive abilities, including analytic and evaluative skills (Sternberg, 1988). Along with strong communication and collaboration, they are also critical to **learning to learn** – the skills required to benefit from the opportunities education provides throughout life (Delors, 1998, p. 37). Finally, digital literacy is an extension of other communication skills (Webster, 2006). More generally, all of these skills have been shown to contribute to better wellbeing. For example, problem-solving skills help avoid the mental stress

and its physical implications associated with unsolved problems (World Health Organisation, 1999, p. 1). Cooperative learning is correlated with stronger psychological health, including the ability to form relationships (Lavasani et al., 2011, p. 1805).

Why is it important to policy, practice, communities and theory to measure these skills, outcomes or constructs?

A brief overview of empirical literature presenting the results of the assessment of social and emotional skills at the individual rather than the classroom level, points to the limited number of measurement tools adapted to 'non-western' contexts.

A review of four large scale meta-analyses of school-based SEL programmes, encompassing 356 research reports of work conducted in the United States and Europe, concluded that they lead to benefits for participating students on a range of behavioural, attitudinal, emotional, and academic outcomes. Positive outcomes are evident both immediately after the intervention and during various follow-up periods (Mahoney et al., 2018, p. 22). This review included Durlak et al.'s seminal meta-analysis, that found an 11 percentage point difference in academic scores for participants in an SEL programme, compared with control groups (Durlak et al., 2011, p. 9). Education programmes incorporating SEL have been shown to play a crucial role in mitigating the negative effects of exposure to conflict, by building intrapersonal and interpersonal skills that are necessary for managing emotions and building healthy relationships (Gould et al., 2013, p. 2). Taking a longer term perspective, Heckman and Kautz demonstrated the role that 'soft skills' – defined as 'personality traits, goals, motivations, and preferences' – play in positive life outcomes such as greater work productivity and earnings, and general wellbeing (Heckman & Kautz, 2012, p. 451).

Almost all published literature on the assessment of social and emotional learning comes from well-resourced contexts. There is a small body of largely grey literature produced by international NGOs, mainly from programmes designed to provide psychosocial support in crisis settings. For example, the Norwegian Refugee Council's Better Learning Programme in Palestine employs a whole school approach, integrating coping techniques into daily teaching and learning for learners affected by conflict. A mixed methods evaluation found positive results, including on children's learning and in their home environment (Shah, 2017, pp. 4–5). However, the case for more and better evidence about the academic, social and emotional learning needs and outcomes of the most vulnerable children, and the success of programme delivery, has been clearly stated (Johnstone & Costa, 2020, p. 3).

Most tools currently available depend on administration by external enumerators. In contrast, the importance of formative, teacher-led assessment, has been highlighted. The World Bank recommends that 'if assessment systems are nascent, priority should be given to fostering classroom assessment', from which countries can develop relatively quick, sample-based, low-

cost national assessments (World Bank Group, 2018, p. 95). The Social and Emotional Competency Parent and Teacher Rating Scale, a classroom-based, teacher-administered tool developed by RTI International in Mtwara Region, southern Tanzania, was the basis for the current tool. The process was part of a research programme to develop assessments of social and emotional competencies, acknowledged as under-represented in existing testing batteries (RTI International, 2018, p. 7).

The study during which the current tool was adapted and validated fills a gap in existing research, in its focus on teachers' experience of teaching and assessment approaches within competency-based curricula. This is relevant to the growing number of competency-based curricula worldwide. There is potential for further piloting and use of the teacher-led social and emotional competency assessment tool, and its integration into competency-based assessment rubrics in Kenya and beyond.

Measure

Part 1: Overview of the measure

What measure are you testing?

Social and Emotional Competency Assessment tool, a teacher-administered tool that measures four of the seven competencies of the Kenya Competency Based Curriculum: Self-efficacy, Communication and collaboration, Critical thinking and problem solving, and Learning to learn

For what purposes is the measure intended to be used?

Formative assessment by teachers, of these skills in individual learners in their classes.

How does the measure assess the focal skills, outcomes, or constructs?

Teacher observation and assessment of learners according to a three-point scale, at a specific timepoint.

Part 2: Measure evidence base

Teacher-led measurement of social and emotional learning is useful both formatively for tracking individual students' progress, and to inform policy and practice to improve learning (Johnstone & Costa, 2020, p. 12). This perspective on assessment is particularly relevant to curricula that promote active learning and a reflective approach by teachers. Hattie, basing his writing on extensive meta-analyses of empirical studies, emphasises that teachers should continually evaluate their impact on students' learning, based on formative evaluation and the belief that all children can change (Hattie & Zierer, 2018, p. xv). This focus on teacher reflexivity makes the connection with action research. A call for collaborative action based on action research, states that 'What is needed is help—technically referred to by educators as scaffolding—to develop learners' capacity for linking experience with sense making, and reflection to action', where 'learners' are teachers as well as students. Given that people are embodied, emotional and

relational creatures, social and emotional skills play an essential role in new ways of creating knowledge, that can be potentially ‘transformative’ (Bradbury et al., 2019, p. 6). It is important that investment in the measurement of these skills remains focused on learners – teachers and their pupils – and that the assessment process does not become bureaucratised, or an unreasonable burden or cause of stress.

In this context, the SECA tool offers scope for teacher-led, formative assessment of skills that can feasibly be built into the teaching day providing evidence of teacher perspectives on measuring social and emotional learning, and a tested

Part 3: Adaptation, development and assembly

Adaptation of the Social and Emotional Competency Rating Scale

The tool used to assess learners’ social and emotional competencies was based on the Social and Emotional Competency Parent and Teacher Rating Scale developed by RTI International in Mtwara Region in the south of Tanzania (see following section). Teachers in the case study school worked with the researcher to adapt the tool over the course of three visits, with exchanges by WhatsApp in between.

Teachers were first asked in pairs to review critically the 23 questions of the original tool (see [Technical Appendix 1](#)), according to the following questions:

- Which KCBC competency or competencies does it measure, if any?
- Is this a good question to use with your school’s pupils? Yes/No
- If yes, does it need to be changed in any way (in English/Kiswahili)?

In this way, the competencies of the KCBC were ‘mapped’ onto the tool. All questions were retained with almost no changes to wording. This was complemented by a researcher review of the tool, adding a few additional competencies for some questions. During workshops with teachers, they discussed further the behaviours associated with the different competencies and a final review of the competencies was conducted, including the accuracy of the translation of the terms into Kiswahili. This led to the final version of the tool with associated competencies, that was used for the two rounds of child assessments for grades 1-3, see [Technical Appendix 2](#).

Two changes were made to the scoring in the revised tool. Firstly, in the RTI tool each question was asked twice for each child: (a) whether the child displayed that behaviour (yes/no); b) whether the child on a 3-point scale, displayed that behaviour less, the same as, or more than other children). This was adapted to one question for each behaviour, integrating the three-point scale:

- 1 – yes, less than other children
- 2 – yes, about the same as other children
- 3 – yes, more than other children

Secondly, in the version of the tool used by the case study school teachers, there was also an option 0 – no, not at all. In practice, 0 was used very rarely in the teachers’ ratings. There was a discussion during the closing workshop of whether a child would ever show *no* sign of a given behaviour. The conclusion was ‘probably not’, and that scoring a 0 would be discouraging for a child. For consistency in the analysis, all 0s were converted to 1, and a three-point scale was retained.

Two questions were negatively scored, adjusted for in statistical data analysis: question 2, ‘Does (name) give up easily when tasks or work seem difficult?’, and question 16, ‘Is (name) slow and unhurried in deciding what to do next?’ This is considered negative in the Kenyan context as teachers want to encourage students to move quickly.

Reflecting on use of the Social and Emotional Competency Assessment

During discussions after the two rounds of use of the tool, teachers reviewed the questions one by one, removing those they considered repetitive, or unlikely to show variation. For example, all children greet their teachers nicely, so this question does not differentiate well. The results of this process are shown in [Technical Appendix 4](#). The reasons for removing questions are recorded in column C. Negative questions were also removed, and the updated tool shared with teachers.

This process addressed teachers’ need for a smaller set of questions that would make easier the assessment of large numbers of learners per class. It also proved a helpful way to gather their reflections on the nature of the tool, and the feasibility of using it. However it was a qualitative process, not taking into account statistical analysis of learners’ assessment results. Factor analysis was subsequently conducted to understand statistically how the questions of the tool measured the competencies of the KCBC (see [Validity](#)). This led to further revision of the tool, and the organization of the questions to reflect four of the seven competencies of the KCBC (see [Technical Appendix 7](#)).

Methods

Context, sample, and procedure

The context and culture in which the measure was tested

The Social and Emotional Competency Assessment tool was adapted from the Social and Emotional Competency Parent and Teacher Rating Scale developed by RTI International in Mtwara Region, southern Tanzania. The process was part of a research programme to develop assessments of social and emotional competencies, acknowledged as under-represented in existing testing batteries (RTI International, 2018, p. 7).

The teacher rating scale was selected for adaptation during the thesis research, given its applicability for the competencies of the KCBC, and the similarity in contexts between Mtwara

and Kwale county. Both are rural, coastal regions, poorly serviced, with relatively low levels of formal education and school performance. The research report notes that Mtwara was rated 15th out of 25 regions in primary school leaving examination results in Tanzania in 2013, and presents high rates of family separation and divorce (RTI International, 2018, pp. 8, 15). EMIS data is not publicly available for Kwale county. However, Kenya Certificate of Primary Education results for 2018 were given at the school as 186.42 (personal communication, Teachers Service Commission), compared with a median score nationally of over 250 out of 500 for the same year (Pulse Live Kenya, 2021). High levels of domestic violence and family separation in the case study school community were reported in interviews conducted as part of the qualitative methods used in the study.

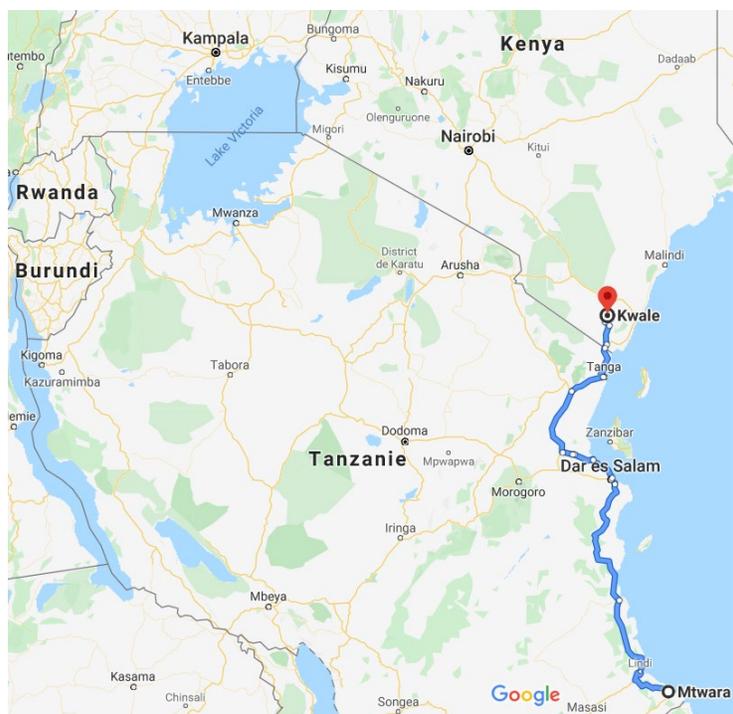


Figure 2.1: Geographical location of the case study school in relation to Mtwara

The RTI tool was developed in two parts. Firstly, a qualitative study identified competencies considered important for children’s school success, and 5-10 contextually relevant behaviours exemplifying each competency, through focus group discussions and interviews with early grade students (grades 2 and 3), parents and teachers. These results were used to generate questions reflecting each of 13 competencies identified. The second phase involved using the questionnaire, after initial piloting, with the parents and teachers of 513 randomly selected grade 1 and 2 pupils (49% girls) from 25 primary schools. Exploratory factor analysis was used to streamline the questionnaire, resulting in a final tool consisting of 23 questions arranged according to the traits of social awareness, curiosity, obedience and sociability. The Mtwara study

research report (henceforth referred to as the 'Mtwara study') recommended that the assessment tool could be used by teachers to track children's social and emotional learning skills in the classroom (RTI International, 2018, p. 4). The research study leading to the current tool, provided an opportunity to adapt the scale for a different but comparable context, and pilot its use by early grade primary teachers.

Sample

A total of 187 children (47% girls) participated in the social and emotional learning assessment. Teachers used a social and emotional competency rating scale to assess the skills of 165 students in round 1 and 187 students in round 2. Given the very large Grade 1 class of 115 learners, the Grade 1 teacher selected randomly, using the class register, about 75% of the children in his class for the assessment. This still gave the highest number of children for a class group, of 84 children, 45% girls. The grade 3 teacher randomly selected in a similar way, just over half his class, for round 1. All Grade 3 children were assessed in round 2.

Data collection

The tool was transferred to an excel spreadsheet to facilitate its use by teachers in assessing learners (see [Technical Appendix 2](#)). The spreadsheet could be filtered by competency, to facilitate the identification of the behaviours assessed for a particular competency. However only the grade 3 teacher was comfortable using the one school laptop, and there is no evidence that the teachers used the tool in this way during the study period.

Screenshots of the tool filtered for the competency of focus were shared with teachers as part of individual feedback on their reflective diaries, to highlight behaviours they could support to help learners acquire that competency. The tool was filtered by the two competencies selected by teachers as their areas of focus: Communication and collaboration and Critical thinking and problem solving (see [Technical Appendix 3](#)). This process showed that teachers considered all 23 questions in the tool reflected at least one if not both of these competencies. This is an important demonstration of the interconnectedness of competencies highlighted above. This was further illustrated in practice in teachers' reflections on their action research.

Recording assessment results

Teachers of grades 1, 2 and 3 completed the tool for children in their class (see [Sample](#), above, for details of selected children in grades 1 and 3) in July 2019, following the researcher visit that month (end of term 2), and in October 2019 (end of term 3). They reported in October that they made the assessment over a few days, focusing on a few children at a time. They entered the assessments by hand on the excel sheet printed for their class, then stuck the sheets onto a large sheet of manila paper in order to take a photograph of the results to send to the researcher by WhatsApp, see below:

[Technical Appendix 6](#) shows which competency was selected for each question. Column D records the judgments made to select which competency should be associated with each question, informed by those sources.

Confirmatory factor analysis was conducted to confirm the extent to which, based on teacher and parent understanding of those competencies, a certain group of questions assessed a pre-defined latent trait, or competency of the KCBC (questions 21-3 were removed, as explained below). This led to four scales, reflecting the competencies of Self-efficacy, Communication and collaboration, Critical thinking and problem solving, and Learning to learn as shown in [Table 2](#). Factor loadings in this table suggest that we can be reasonably confident that each set of questions works together well to measure the competency of focus. The questions for self-efficacy worked together most strongly, with an eigen value¹ of over 2 for both rounds of assessment, and Cronbach's alpha coefficient² of between 0.77 and 0.82. The other three scales had eigen values of over or close to 1, and alphas of between 0.5 and over 0.7. All four scales can be considered to display acceptable validity and reliability.

The value of a mixed methods approach was demonstrated through the process of tool adaptation and analysis, as statistical data analysis was used to complement teachers' qualitative understanding of how the tool functioned in their classrooms, parents' perceptions of the competencies, and the expectations of the Kenya BECF. The resulting updated tool, based on [Technical Appendix 5](#), provides a statistically validated and tested assessment tool for social and emotional learning, incorporating the experience and understanding of teachers and parents. The tool could be further piloted and adapted within the Kenyan Competency Based Curriculum.

Concurrent calibration to assess change over time

Concurrent calibration was conducted in order to calculate the change in learners' scores from round 1 to round 2, based on a preset mean for round 1. This technique creates effectively a larger sample size, and is appropriate for use with IRT models (von Davier & von Davier, 2007). It means the two tests can be scaled together to put them on a common metric, allowing direct comparisons over time. The two rounds of social and emotional learning assessment were combined as though they were one round of assessment, by appending the scores for round 2, beneath those of round 1 (reshaping the data 'long'). This created a total of 350 scores (n=165 for round 1 and n=185 for round 2) for each item (question). IRT RSM was conducted on the n=350 dataset for each competency, to predict a score for each of the 'learners' (actually each

¹ A factor which has an eigenvalue of 1 or more, explains more variance than a single observed variable – or question.

² An alpha coefficient of between 0.75 and 1 is sometimes cited as reflecting good reliability (Coolican, 2009, p. 194). However as the calculation depends on the number of items squared, a smaller number of items on a scale reduces the alpha (Field, 2009, p. 675). Each scale in the social and emotional assessment contained only five questions, so an alpha value of 0.5 or above was considered acceptable.

result represented ‘half’ of a learner who was assessed in both rounds, ie one of their two scores). Column C of [Technical Appendix 8](#) shows the k-density charts for the larger dataset. The scores are seen to be more evenly distributed, reflecting the larger sample size.

Using this ‘long’ dataset, the mean for round 1 for each competency scale was mathematically set at 500, and new ‘IRT’ scores generated accordingly. The data was then reshaped back to ‘wide’, identifying the new IRT scores as round 1 and round 2. The mean for the new round 2 scores was calculated and compared with the mean of 500 for round 1, to show the change in the level of these competencies between round 1 and round 2.

Results

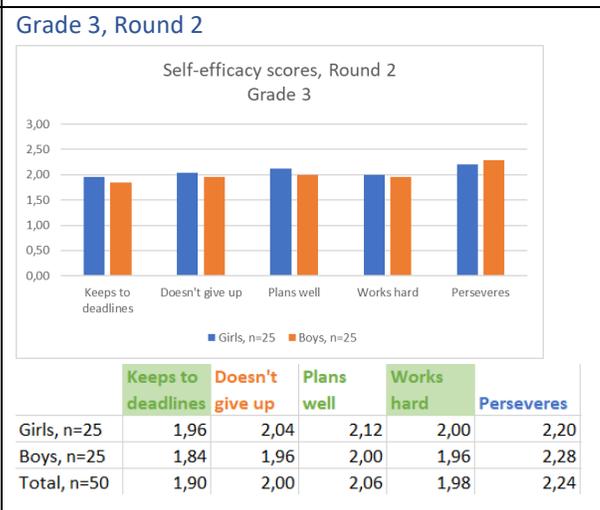
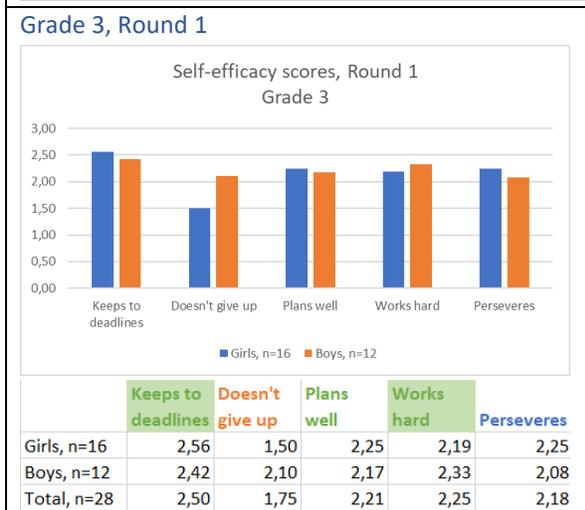
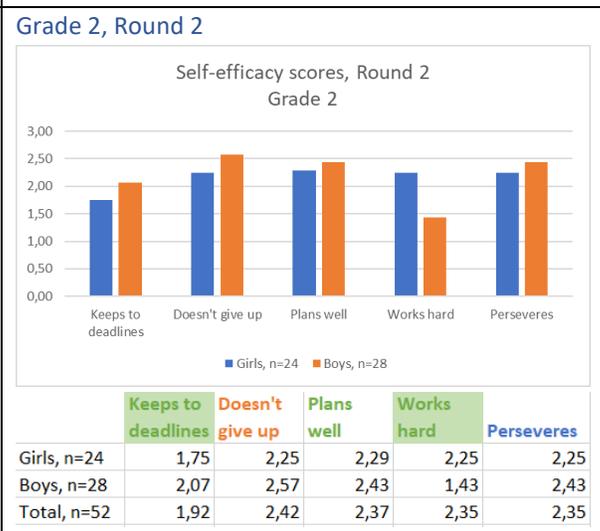
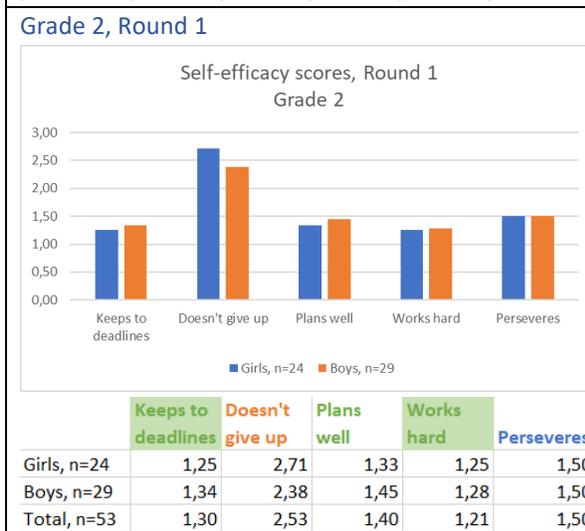
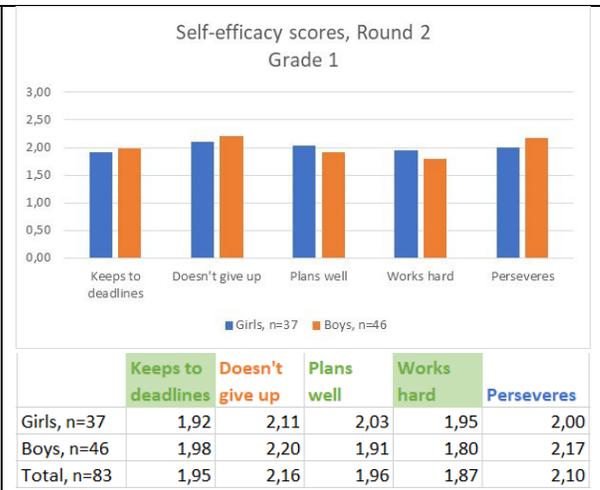
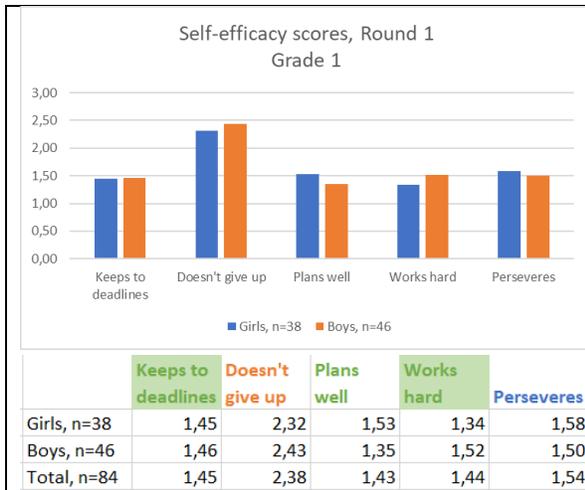
Descriptive

The ‘raw’ scores out of 3 were summarised for the 20 questions of the social and emotional competency assessment. The results by question were grouped according to the four competencies of the reorganised tool, disaggregated by grade and gender, for rounds 1 and 2 (see [Figure 1](#)). The scores were intentionally not converted to percentages, as the scale is designed to show where learners are in relation to each other, rather than an absolute score: teachers assessed whether the learner displayed each behaviour less than, about the same as, or more than other learners. The total ‘raw’ scores (out of 15 for each group of 5 questions per competency) disaggregated by grade and gender, were also summarised for presentation to teachers ([Figure 2](#)). These descriptive results were presented in charts and tables for teachers easily to visualise the results for their classes, to make the results of the social and emotional competency assessment more accessible.

The importance of presenting the data in this way is that teachers would be able to generate similar data and graphs themselves, by hand or in excel. In this way they could visualise the progression of learners on specific behaviours, and use that to inform their teaching (Hattie & Zierer, 2018, p. xv). Even though no statistically significant differences were found between girls and boys, the small differences seen in the results could lead teachers to reflect on and if necessary address relevant issues in the classroom.

Figure 1: Results of Social and Emotional Competency Teacher Rating Scale assessment by grade

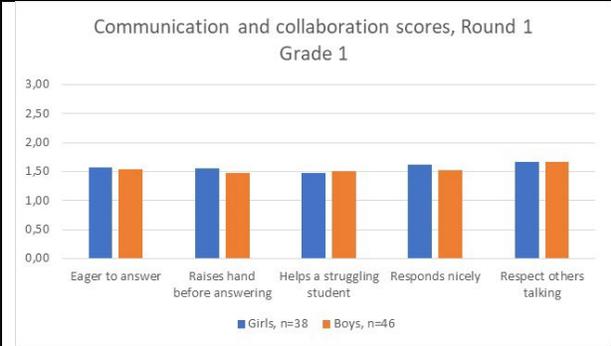
Self-efficacy	
Grade 1, Round 1	Grade 1, Round 2



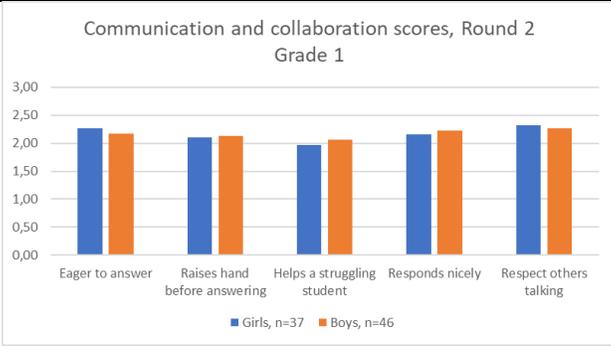
Communication and collaboration

Grade 1, Round 1

Grade 1, Round 2

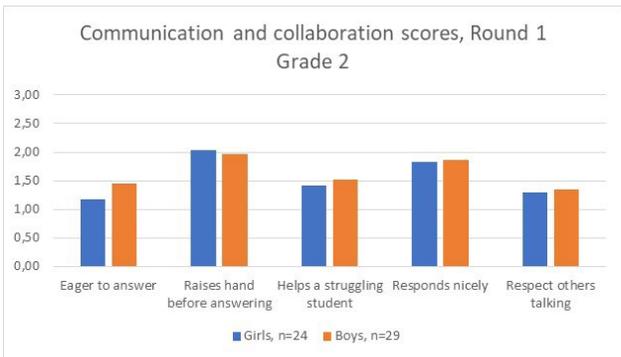


	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=38	1,57	1,55	1,47	1,61	1,66
Boys, n=46	1,54	1,48	1,50	1,52	1,67
Total, n=84	1,56	1,51	1,49	1,56	1,67



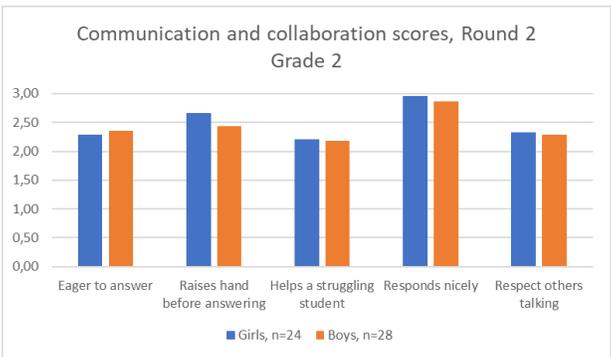
	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=37	2,27	2,11	1,97	2,16	2,32
Boys, n=46	2,17	2,13	2,07	2,22	2,26
Total, n=83	2,21	2,12	2,02	2,19	2,29

Grade 2, Round 1



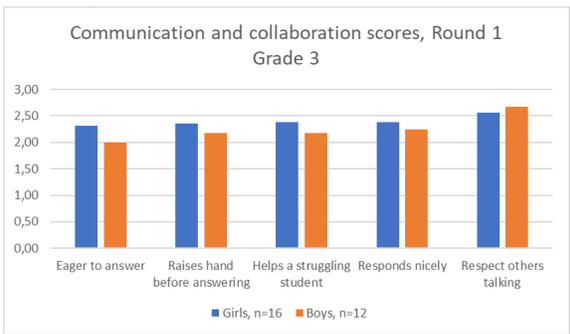
	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=24	1,17	2,04	1,42	1,83	1,29
Boys, n=29	1,45	1,97	1,52	1,86	1,34
Total, n=53	1,32	2,00	1,47	1,85	1,32

Grade 2, Round 2



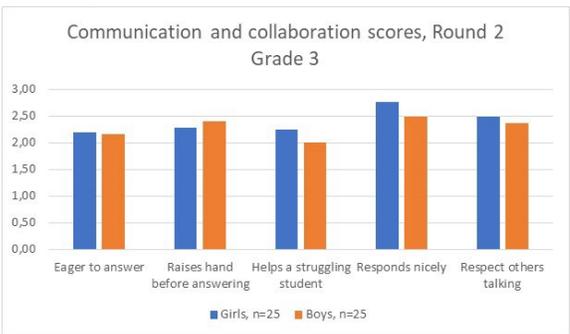
	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=24	2,29	2,67	2,21	2,96	2,33
Boys, n=28	2,36	2,43	2,18	2,86	2,29
Total, n=52	2,33	2,54	2,19	2,90	2,31

Grade 3, Round 1



	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=16	2,31	2,36	2,38	2,38	2,56
Boys, n=12	2,00	2,17	2,17	2,25	2,67
Total, n=28	2,18	2,86	2,85	2,32	2,61

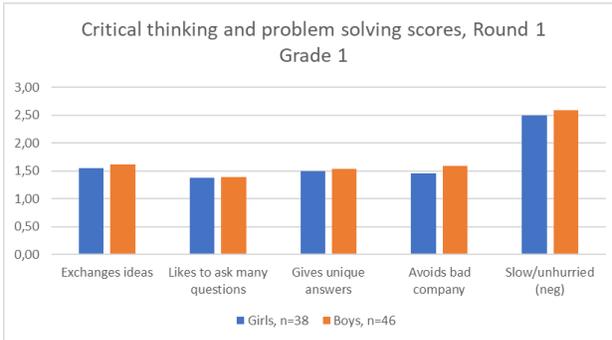
Grade 3, Round 2



	Eager to answer	Raises hand before answering	Helps a struggling student	Responds nicely	Respect others talking
Girls, n=25	2,20	2,28	2,24	2,76	2,48
Boys, n=25	2,16	2,40	2,00	2,48	2,36
Total, n=50	2,18	2,34	2,12	2,62	2,42

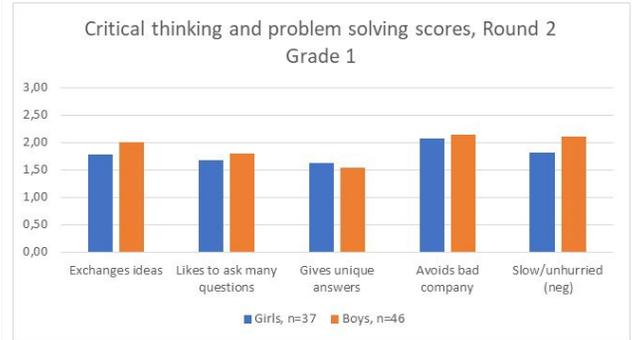
Critical thinking and problem solving

Grade 1, Round 1



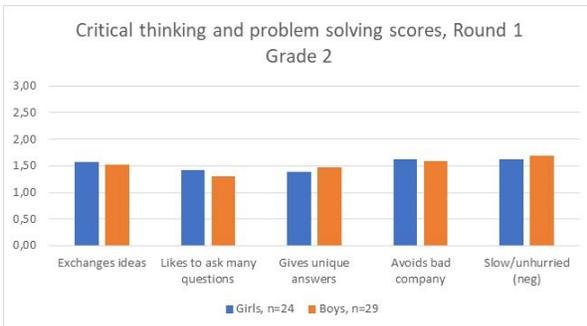
	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=38	1,55	1,37	1,50	1,45	2,50
Boys, n=46	1,61	1,39	1,54	1,59	2,59
Total, n=84	1,58	1,38	1,52	1,52	2,55

Grade 1, Round 2



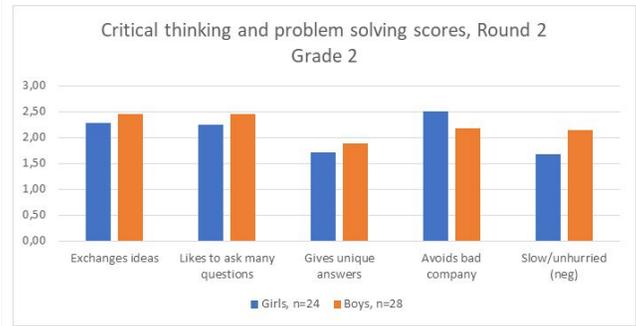
	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=37	1,78	1,68	1,62	2,08	1,81
Boys, n=46	2,00	1,80	1,54	2,15	2,11
Total, n=83	1,90	1,75	1,57	2,12	1,98

Grade 2, Round 1



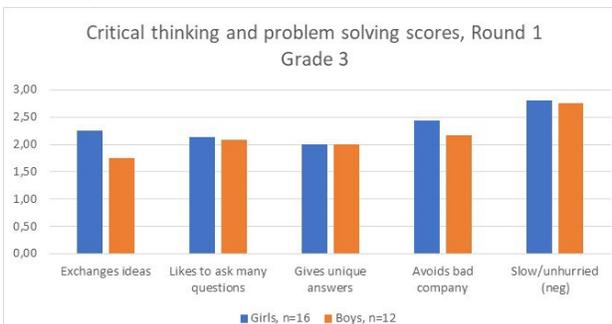
	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=24	1,58	1,42	1,38	1,63	1,63
Boys, n=29	1,52	1,31	1,48	1,59	1,69
Total, n=53	1,55	1,36	1,43	1,60	1,66

Grade 2, Round 2



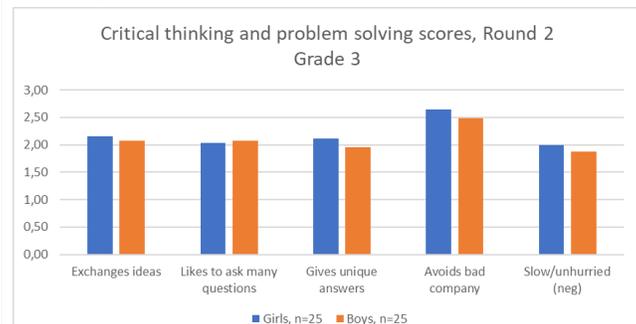
	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=24	2,29	2,25	1,71	2,50	1,67
Boys, n=28	2,46	2,46	1,89	2,17	2,14
Total, n=52	2,38	2,37	1,81	2,32	1,92

Grade 3, Round 1



	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=16	2,25	2,15	2,00	2,40	2,80
Boys, n=12	1,75	2,10	2,00	2,20	2,75

Grade 3, Round 2



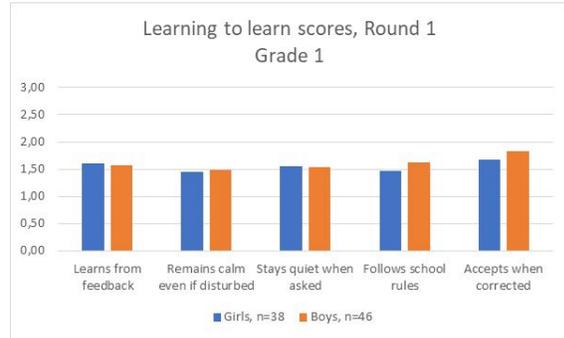
	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=25	2,15	2,05	2,15	2,60	2,00
Boys, n=25	2,10	2,10	2,00	2,50	1,90

	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=16	2,25	2,13	2	2,44	2,81
Boys, n=12	1,75	2,08	2,00	2,17	2,75
Total, n=28	2,03	2,11	2,00	2,32	2,79

	Exchanges ideas	Likes to ask many questions	Gives unique answers	Avoids bad company	Slow/unhurried (neg)
Girls, n=25	2,16	2,04	2,12	2,64	2,00
Boys, n=25	2,08	2,08	1,96	2,48	1,88
Total, n=50	2,12	2,06	2,04	2,56	1,94

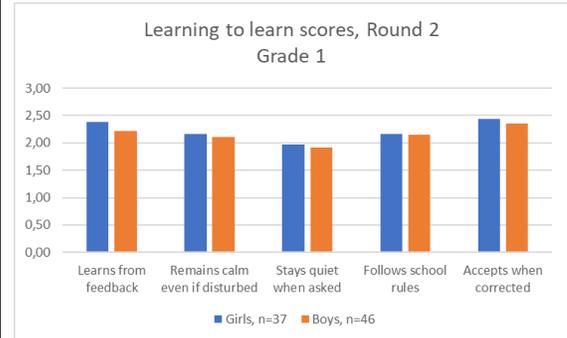
Learning to learn

Grade 1, Round 1



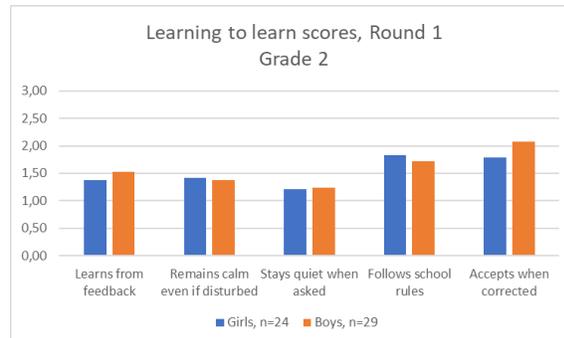
	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=38	1,61	1,45	1,55	1,47	1,68
Boys, n=46	1,57	1,48	1,54	1,63	1,83
Total, n=84	1,58	1,46	1,55	1,56	1,76

Grade 1, Round 2



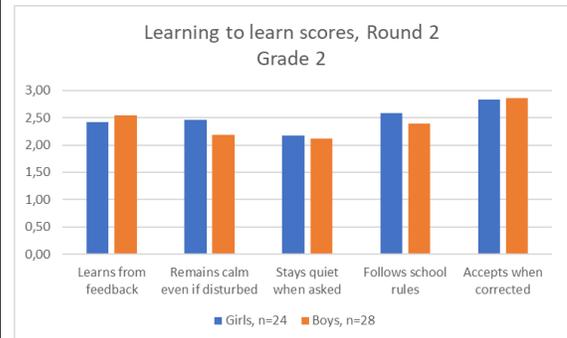
	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=37	2,38	2,16	1,97	2,16	2,43
Boys, n=46	2,22	2,11	1,92	2,15	2,35
Total, n=83	2,29	2,13	1,95	2,16	2,39

Grade 2, Round 1



	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=24	1,38	1,42	1,21	1,83	1,79
Boys, n=29	1,52	1,38	1,24	1,72	2,07
Total, n=53	1,45	1,40	1,23	1,77	1,94

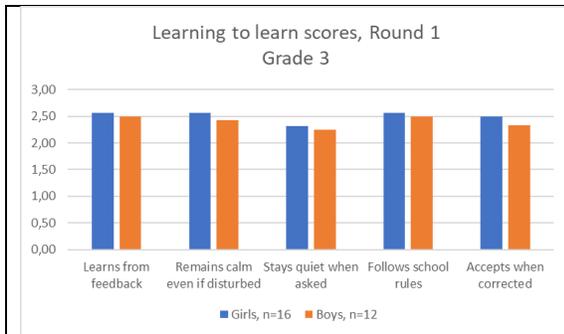
Grade 2, Round 2



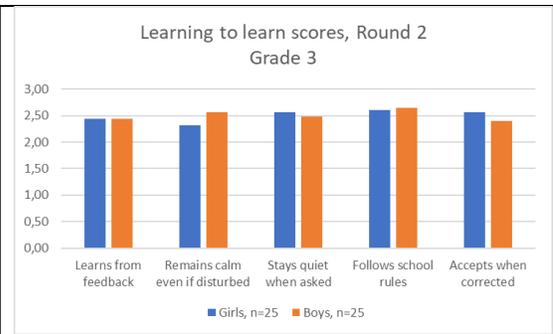
	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=24	2,42	2,46	2,17	2,58	2,83
Boys, n=28	2,54	2,18	2,12	2,39	2,86
Total, n=52	2,48	2,30	2,14	2,48	2,85

Grade 3, Round 1

Grade 3, Round 2



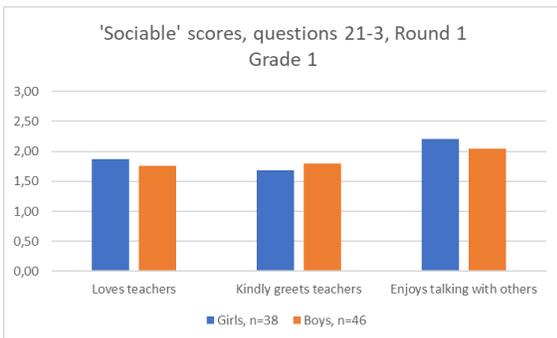
	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=16	2,56	2,56	2,31	2,56	2,50
Boys, n=12	2,50	2,42	2,25	2,50	2,33
Total, n=28	2,54	2,50	2,29	2,54	2,43



	Learns from feedback	Remains calm even if disturbed	Stays quiet when asked	Follows school rules	Accepts when corrected
Girls, n=25	2,44	2,32	2,56	2,60	2,56
Boys, n=25	2,44	2,56	2,48	2,64	2,40
Total, n=50	2,44	2,44	2,52	2,62	2,48

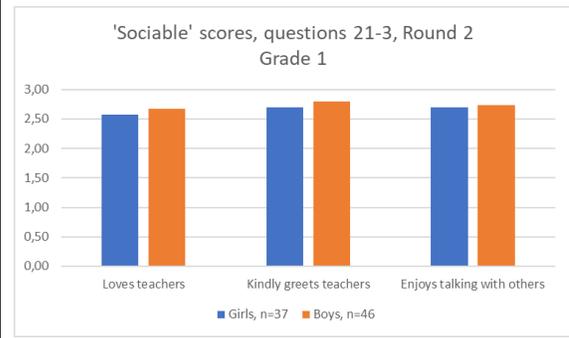
'Sociable'

Grade 1, Round 1



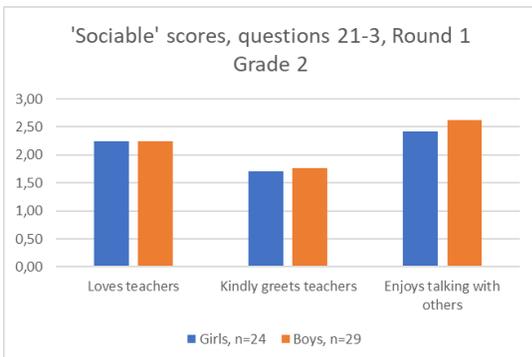
	Loves teachers	Kindly greets teachers	Enjoys talking with others
Girls, n=38	1,87	1,68	2,21
Boys, n=46	1,76	1,80	2,04
Total, n=84	1,81	1,75	2,12

Grade 1, Round 2



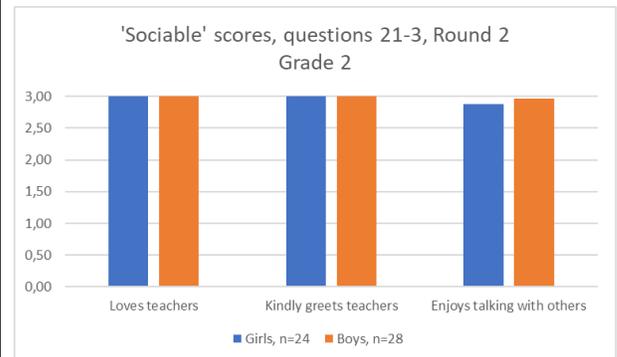
	Loves teachers	Kindly greets teachers	Enjoys talking with others
Girls, n=37	2,57	2,70	2,70
Boys, n=46	2,67	2,80	2,74
Total, n=84	2,63	2,76	2,72

Grade 2, Round 1



	Loves teachers	Kindly greets teachers	Enjoys talking with others
Girls, n=24	2,25	1,71	2,42
Boys, n=29	2,24	1,76	2,62
Total, n=53	2,25	1,74	2,53

Grade 2, Round 2



	Loves teachers	Kindly greets teachers	Enjoys talking with others
Girls, n=24	3,00	3,00	2,88
Boys, n=28	3,00	3,00	2,96
Total, n=52	3,00	3,00	2,92

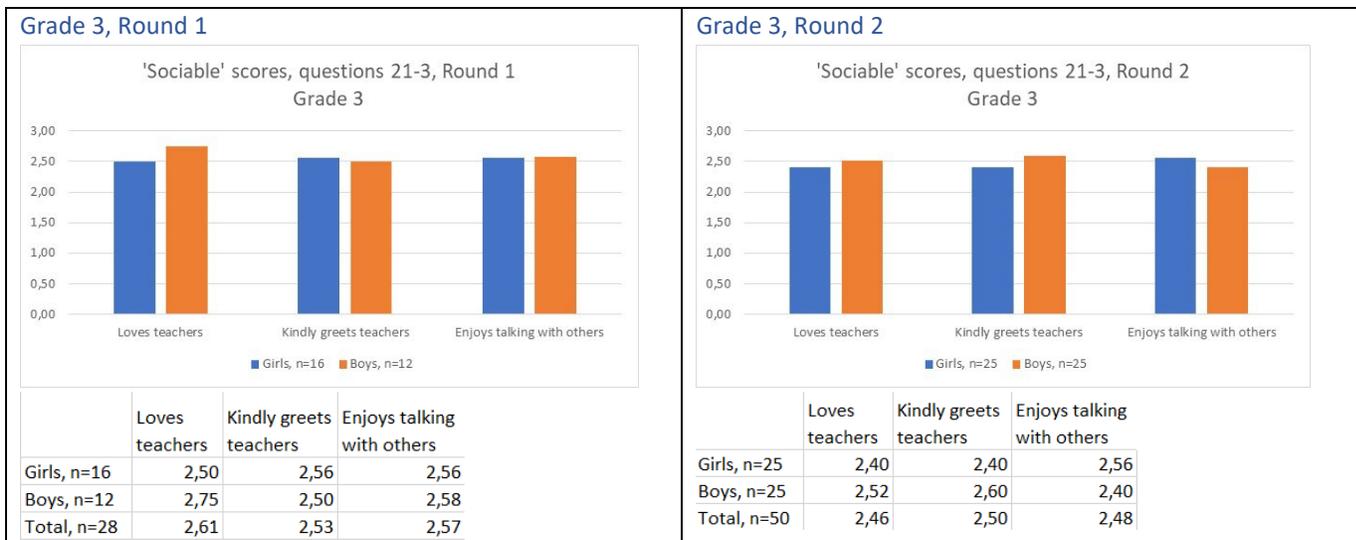
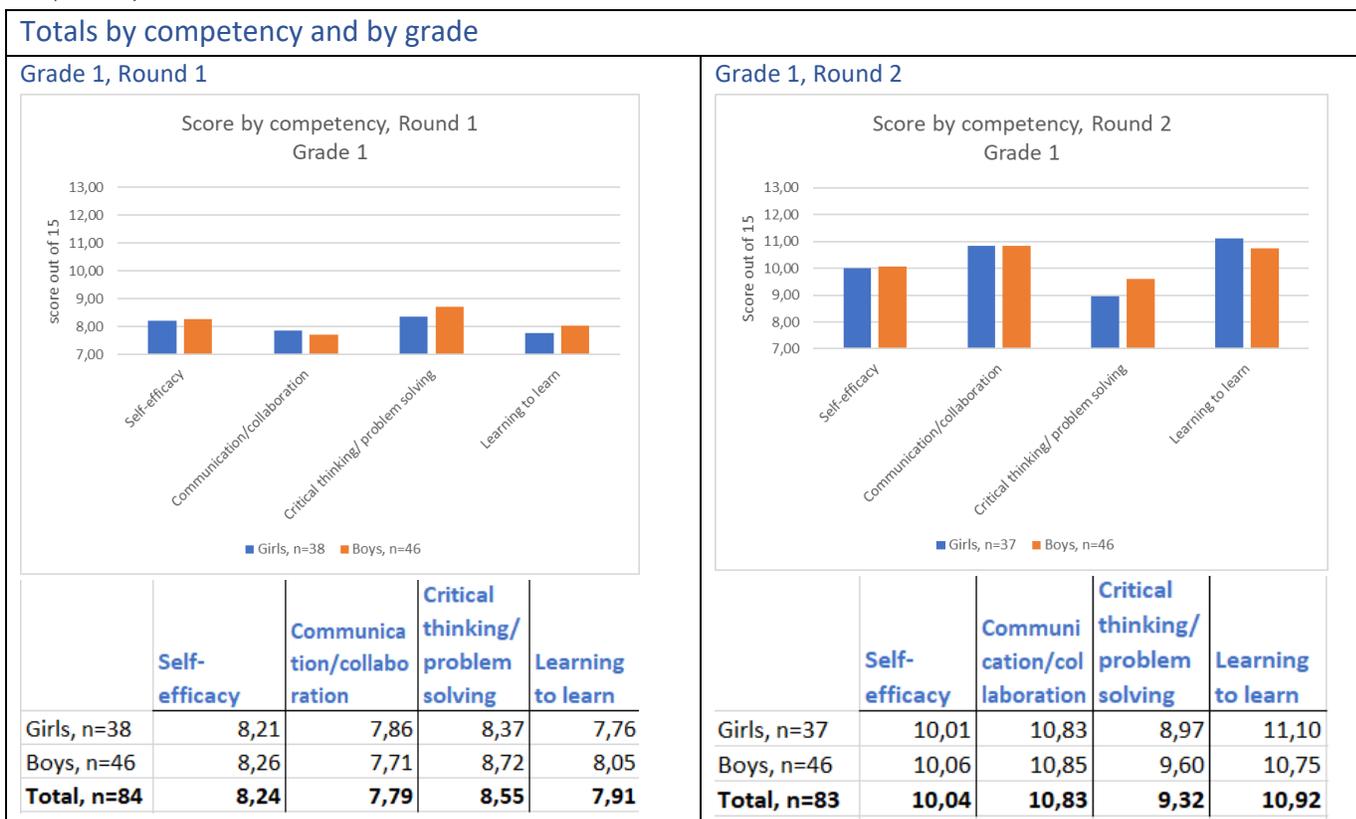
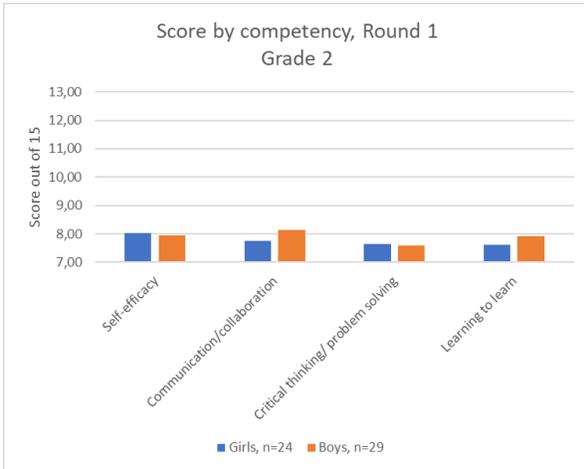


Figure 2: Results of Social and Emotional Competency Teacher Rating Scale assessment: Total by competency

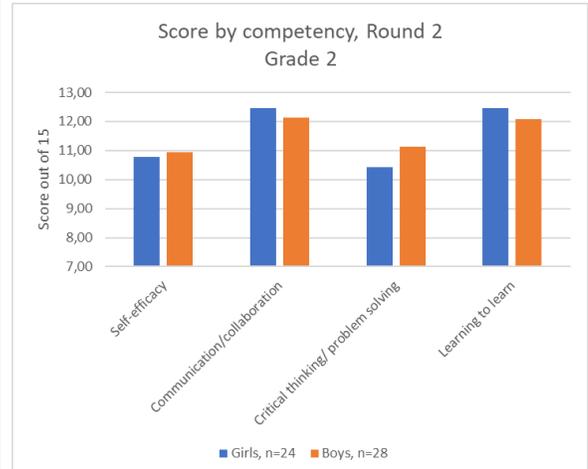


Grade 2, Round 1



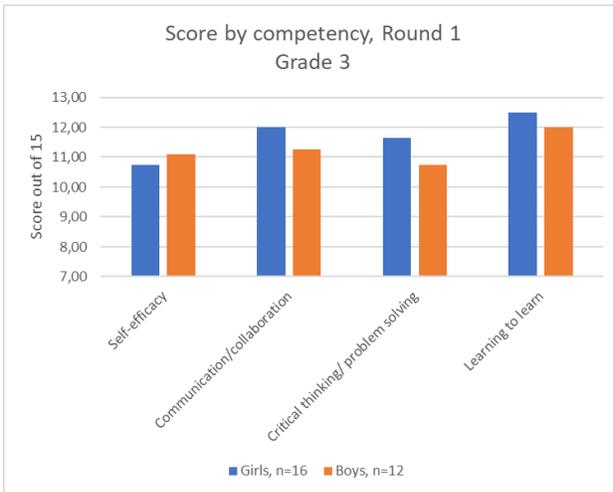
	Self-efficacy	Communication/collaboration	Critical thinking/problem solving	Learning to learn
Girls, n=24	8,04	7,75	7,64	7,63
Boys, n=29	7,95	8,14	7,59	7,93
Total, n=53	7,94	7,96	7,60	7,79

Grade 2, Round 2



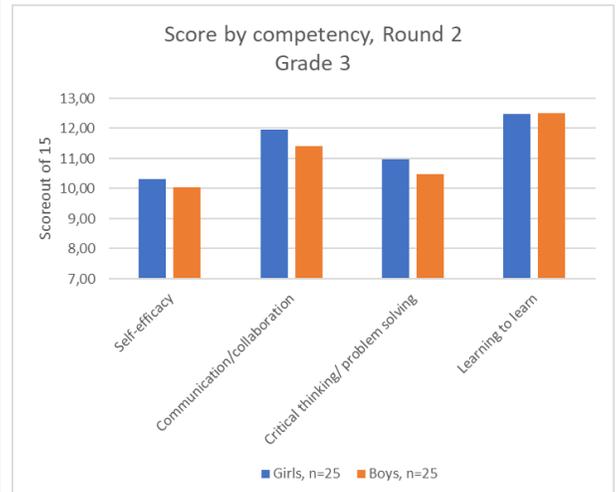
	Self-efficacy	Communication/collaboration	Critical thinking/problem solving	Learning to learn
Girls, n=24	10,79	12,46	10,42	12,46
Boys, n=28	10,93	12,12	11,12	12,09
Total, n=52	11,41	12,27	10,80	12,25

Grade 3, Round 1



	Self-efficacy	Communication/collaboration	Critical thinking/problem solving	Learning to learn
Girls, n=16	10,75	11,99	11,63	12,49
Boys, n=12	11,10	11,26	10,75	12,00
Total, n=28	10,89	12,82	11,25	12,30

Grade 3, Round 2



	Self-efficacy	Communication/collaboration	Critical thinking/problem solving	Learning to learn
Girls, n=25	10,32	11,96	10,96	12,48
Boys, n=25	10,04	11,40	10,48	12,52
Total, n=50	10,18	11,68	10,72	12,50

Validity

Factor analysis to explore content validity

Factor analysis was used to identify and explore the underlying dimensions that explain the relationships between the variables – the different questions – of the SECA tool. Taking into account the traits that the Mtwara study tool was designed to assess, factor analysis³ identifies the questions that appear best to assess the competencies according to this assessment. This in turn allows us to clarify which behaviours are most important for developing the competencies of interest. This responds to the recommendation made by the developers of the RTI Mtwara tool, for further investigation of the social and emotional competencies that help children succeed in school in subsistence-agricultural communities.

Which behaviours are most important for developing the competencies?

According to results of the use of the scale during the study, the most important behaviours for achieving the four assessed KCBC competencies are: hard work, the ability to organise work, and perseverance (grouped under Self-efficacy); the ability to ask and give original answers to questions, to respect and help others (under Communication and collaboration and Critical thinking and problem solving); and the capacity to stay calm and filter out distractions, respect rules and accept feedback (under Learning to learn). Each of these sets of behaviours is explored in more detail here, based on analysis of how the scales worked together in this assessment.

Self-efficacy

Self-efficacy was assessed in the updated tool by questions relating to the ability to plan and meet deadlines, perseverance, and hard work. This set of five questions worked together particularly well (see [Technical Appendix 8](#)), suggesting that the scale for measuring self-efficacy is stronger compared with the other scales. Keeping to deadlines (question 1) and working hard (question 4) were the strongest questions for explaining variability, closely followed by the other three questions in this set, covering planning work (question 3) – closely related to keeping to deadlines – and perseverance in the face of difficulty (questions 2 and 7). It is notable that four of the five questions in this scale were also prioritised by teachers during the review of the tool after the two assessments (see [Technical Appendix 4](#)); they did not prioritise question 2 as it was considered to repeat question 7. Teachers can therefore be said to ‘agree’ with factor analysis in their estimation of the importance of these attributes.

All the behaviours reflected in these questions are ‘complex’ skills of executive function and effortful control, that teachers can model and help learners acquire through their classroom

³ [Technical Appendix 7](#) shows the factor loadings for the questions in each scale of the tool, identifying which behaviours are the most important for developing the four competencies assessed. By comparing the KCBC competencies associated with each question, with the traits in the RTI Mtwara tool (see [Technical Appendix 2](#)) with which they were identified, we can ‘translate’ the questions of the RTI tool for the competencies of the KCBC.

practice. A positive and stimulating learning environment encourages hard work, and, as highlighted by teachers, the enjoyment of school activities. Within this environment, teachers can guide pupils in the planning of tasks, which helps them to meet deadlines and supports also the competency of Learning to learn. Teacher sensitivity builds perseverance, closely related to confidence, which underpins other competencies. The inter-connectedness of the process of building the competencies is thus demonstrated.

All five questions are found amongst nine in the ‘conscientiousness’ trait of the Mtwara tool. This suggests that self-efficacy as interpreted for the KCBC reflects a substantial element of ‘conscientiousness’ as understood by communities in northern Tanzania. In Mtwara the trait was named by the researchers to describe a group of characteristics highlighted by study participants, which included self-directed, careful and persistent (RTI International, 2018, p. 2). All of these characteristics align closely with self-efficacy.

Communication and collaboration

In the Communication and collaboration scale, the ‘strongest’ questions in predicting this trait asked about learners being happy to be the first to answer a question in class (question 5), respecting others when they are talking (question 19) and helping a struggling student (question 9). This suggests that the most important skill for teachers to build in learners, in relation to building the competency of communication and collaboration is the ability and motivation to answer questions. This is strongly related to confidence, as observed by teachers in their qualitative feedback. Encouraging pupils to help each other, and ensuring respect for those speaking, both support the development of self-confidence, along with a spirit of collaboration. All of these areas are supported in a supportive, respectful learning environment.

Questions about raising their hand before speaking (question 6) and responding politely to questions (question 17) were relatively less important in explaining this competency. Classroom observations were consistent with this, showing that these are behaviours well developed in most children, so do not distinguish well between them. Teachers prioritised these questions in their selection during the closing workshop, over being eager to answer first in class. The reason given for this, however, was that question 10, whether a learner likes to exchange ideas with others (grouped with critical thinking and problem-solving in factor analysis) was the best way to assess a learner’s eagerness to participate, compared with wanting to be the first to answer a question. It was not that they considered unimportant the concept of participation, which is reflected in both questions. The interconnectedness between competencies is illustrated here: the ability to exchange ideas – implying being eager to answer questions – supports both Communication and collaboration and Critical thinking and problem-solving. Teachers reported themselves that if they can provide learners with opportunities to exchange ideas – in carefully constructed group work activities for example – and then support them to do so, they will enhance the development of both competencies.

The questions grouped under Communication and collaboration fell between Conscientiousness (being first to answer a question, raising hand before speaking and helping a struggling student), and Obedient (answering nicely and respecting others who are speaking) in the Mtwara tool. The 'conscientiousness' questions could be described as the participatory, 'social' aspects of this trait, compared with internal motivation and hard work, which in the KCBC are reflected in Self-efficacy. Further, in the RTI analysis, these 'Obedient' questions were considered to reflect 'social responsibility', more valued by parents than by teachers in the Mtwara study (RTI International, 2018, p. 3). In the revised tool, however, they reflect attributes that facilitate the core competency of Communication and collaboration; they appear to explain less variability as they are already well developed in learners. This suggests that competency-based curricula have the potential to bridge the gap between 'school' and 'community' valued competencies. This fits well with the emphasis on parental and caregiver involvement in the KCBC, and should support ongoing efforts to bring the school and community closer together.

Critical thinking and problem solving

The strongest predictors of this competency according to the analysis were the ability to ask questions (question 11), give unique responses (question 12) and exchange ideas (question 10). Teachers had prioritised the questions about giving unique responses and exchanging ideas, demonstrating coincidence of teachers' judgments with the results of factor analysis. For learners to display these behaviours, the classroom context needs to provide opportunity for, and encouragement of, free expression in different forms. One element of this is productive, collaborative group work, emphasising the connection with communication and collaboration. Teachers can also work on allowing learners more time and space in which to find answers and speak for themselves.

The question in this scale about 'avoiding bad company' (question 15) had been prioritised by teachers, but was not consistently a strong predictor in the analysis. Teachers' understanding of 'avoiding bad company' was not discussed during the workshop. This is a subjective and culturally specific concept, which needs further probing to confirm or otherwise its use in future. The question of whether a learner is slow and unhurried in deciding what to do next (question 16), was the least helpful in predicting this competency. This question was positive in the Mtwara context, but teachers in the case study school were clear that in their context there is an expectation that someone performing well will act quickly. This cultural difference, combined with the low factor loading, suggests that this question may best be dropped in future.

The three questions in the 'curious' trait in the RTI tool – exchanging ideas, asking many questions and giving unique responses – overlap with the strongest questions in the Critical thinking and problem-solving questions. This reflects the critical role curiosity plays in the ability to think critically and find solutions, which seems to be common across the two contexts. The weaker

questions, avoiding bad company and being slow and unhurried (positively) come under the 'obedient' trait in the Mtwara tool. The notion of 'obedience' was most highly rated by parents in Mtwara (RTI International, 2018, p. 40), but as noted above, both of these questions appear to be culturally specific and need further investigation for Kenya.

Learning to learn

The strongest questions for assessing the competency of Learning to learn, according to the scale used in the study, asked about learners' ability to stay calm even when disturbed by others (question 13), and the ability to stay quiet when asked (question 14). Question 13 was also prioritised by teachers at the end of the action research, which they saw as covering the same ground as question 14. These are examples of 'simple' skills for effortful control (attention control as in question 13) and executive function (response inhibition as in question 14), indicating the importance of focusing on the 'building blocks' of higher order skills in supporting the development of competencies. Questions about complying with school rules (question 18) and willingness to hear and learn from feedback (question 8), were also strong questions in explaining variability, and coincided with teachers' prioritisation. On the other hand, a complementary question about easily accepting correction of mistakes or behaviour (question 20) – seen by teachers as 'covered' in question 8 – was poorly predictive.

These findings again highlight the critical importance of a supportive learning environment for the cultivation of these behaviours. In particular, teacher sensitivity in conveying constructive criticism, is essential. It is an area on which teachers should continue to focus, complementing other competencies, specifically the confidence required for self-efficacy.

Four out of five of the questions in the Learning to learn competency questions fell into the Obedient trait in the Mtwara tool (the fifth, found under 'conscientiousness', is question 8, about learning from feedback, which pairs with question 20 about accepting correction). The report on the Mtwara study suggested that 'obedience' reflects the high value placed on 'social responsibility' as opposed to individualistic competencies such as curiosity, self-direction, and self-belief, which tend to favour learning at school (RTI International, 2018, p. 2). According to the analysis for this study, the 'obedience' questions grouped with Learning to learn – filtering out distractions, respecting instructions and school rules, and the willingness to accept feedback – strongly support the development of that competency, and therefore school learning within the KCBC. The other questions under the Obedient trait – avoiding bad company, being slow and unhurried, responding nicely and respecting when others are talking – are found under Communication and collaboration and Critical thinking and problem-solving (see below). They contribute relatively less to the assessment of those competencies, but this could be because as socially prioritised in the context, they are already well developed. This suggests that the notion of 'social responsibility' contains skills that support school learning in the context of the KCBC,

again pointing to the potential this holds for bridging the gap between the community and the school.

Note on curiosity and self-confidence

Many of the behaviours assessed by the tool contribute to curiosity and self-confidence. One of the Mtwara study’s conclusions was that children from rural areas were less likely to be curious and self-confident, which could limit their active engagement in the classroom (RTI International, 2018, p. 4). The analysis of this study suggests that the interconnectedness of competencies means that effective teaching of the KCBC can help overcome this. Strong modelling by the teacher of respect and encouragement, allowing learners time and space to ask and answer questions, and providing constructive feedback, were shown to be key factors in supporting learners to develop the competencies of the KCBC, including curiosity and self-confidence. In such a positive, stimulating learning environment, a teacher can also support planning skills, effective group work and the ability to focus on a task despite distractions. Given the interconnectedness of competencies, a learner-centred teaching approach in line with reflective, action research principles, enables teachers to facilitate progress on all competencies in a complementary way.

Reliability

Overall, strong internal consistency was demonstrated in assessment of reliability. [Table 2](#) shows that the questions for self-efficacy worked together most strongly, with an eigen value⁴ of over 2 for both rounds of assessment, and Cronbach’s alpha coefficient⁵ of between 0.77 and 0.82. The other three scales had eigen values of over or close to 1, and alphas of between 0.5 and over 0.7.

	Round 1, n=165		Round 2, n=187	
<i>Trait/competency</i>	Eigenvalue factor 1	Scale reliability coefficient	Eigenvalue factor 1	Scale reliability coefficient
Self-efficacy	2.00251	0.7680	2.30565	0.8197

⁴ A factor which has an eigenvalue of 1 or more, explains more variance than a single observed variable – or question.

⁵ An alpha coefficient of between 0.75 and 1 is sometimes cited as reflecting good reliability (Coolican, 2009, p. 194). However as the calculation depends on the number of items squared, a smaller number of items on a scale reduces the alpha (Field, 2009, p. 675). Each scale in the social and emotional assessment contained only five questions, so an alpha value of 0.5 or above was considered acceptable.

Communication and collaboration	1.33520	0.6540	1.11513	0.5708
Critical thinking and problem solving	1.00751	0.5660	1.22865	0.5720
Learning to Learn	1.59130	0.7059	0.89395	0.4966

Table 2: Four scales for assessment of KCBC Competencies

An item response theory (IRT) model was used in STATA16, to explore further how each individual question of the scales relates to the competency being measured, and how the group of items relates to this latent trait. IRT models are often used in the study of cognitive and personality traits, making IRT an appropriate choice for this study (StataCorp LLC, 2019, p. 1). The social and emotional rating scale consists of ordinal variables, so a Rating Scale Model (RSM) was chosen.

An IRT model predicts the probability of a particular response on a given item (question), represented by an Item Characteristic Curve. The probability of a higher score on the scale is a function of the level of the latent trait (denoted by theta) – a child’s level of self-efficacy, for example – and the properties of the item. The IRT model estimates the properties of ‘difficulty’ and discrimination for the items on a scale designed to measure a particular latent trait. The difficulty parameter describes the relationship between ability and the probability of a particular response. The discrimination parameter assesses how likely, for a given difficulty estimate, two students with distinct abilities would get different predicted probabilities of a higher score on that question (StataCorp LLC, 2019, pp. 3–5).

The purported advantage of using IRT RSM, and the reason for choosing this method, is that when the model fits the data (apart from measurement error), the parameter estimates are invariant. This means that the ability estimates for individual learners are not dependent on the specific questions of the assessment, and the item parameter estimates do not depend on the group of questions in which they are found (StataCorp LLC, 2019, p. 6). In other words, the ranking of children according to this scale should be the same if another were used. Accordingly, the scales are not relative to the specific context and could be used elsewhere. This claim needs to be treated with caution given the influence of context discussed above. Nevertheless, IRT scores provide greater confidence in the extent to which the assessment results reflect the levels of KCBC competencies in the learners assessed, than a simple comparison of the total scores for each child on the assessment.

To assess the fit of the data to the model, IRT RSM was used to predict the latent trait – theta – for the groups of questions associated with each competency, see [Table 2](#). On questions 21-3, all children scored either 2 or 3. This lack of variability meant these questions could not be included in the IRT RSM model, so they were removed. During the closing workshop, teachers had noted that questions 21 and 22 were not useful as ‘all children do that’ – ie ‘love’ their teachers and greet them politely. Teachers selected question 23 as a ‘good’ question, as they saw the enjoyment of interacting with others as critical to the competencies of the curriculum. In the study assessment however, all children scored relatively highly on this behaviour, so the question did not discriminate well. All three of these questions fell within the ‘sociable’ domain of the RTI tool. This reflects the finding of that study that in rural contexts, cultural values contribute to a strong expectation of ‘sociable-ness’, apparently reinforcing learners’ display of it. The current research suggests that as a result, these questions do not differentiate effectively, and should be dropped from the tool.

IRT RSM was used on the four groups of questions shown in [Technical Appendix 8](#), to predict a score for each learner on each of the four competencies at two timepoints (July and October 2019). K-density charts were generated for each competency at each time point. Columns A and B of [Technical Appendix 8](#) show normal distributions of the results, though with some skewing towards lower results for Self-efficacy and Communication and collaboration in round 1.

Note on teachers’ involvement

The three teachers who participated in the study were strongly motivated by the training offered, and the potential the tool held to support them in meeting the expectations of the KCBC. The training was an opportunity for them to explore and understand better the meaning of the competencies of the new curriculum. At that time, they had received very little support to implement the new curriculum, and one or two days of didactic training which included no teaching practice. Given the small group, the training sessions took the form of discussion seminars, allowing for much sharing of experience and clarification of concepts.

Teachers were using the assessment tool for the first time, with little preparatory discussion of criteria for scoring. There was potential for subjectivity, probably explaining differences in the level of scores between the three grades – see [Summary of results](#). The Grade 1 and 2 teachers generally scored higher than the Grade 3 teacher. Teachers recommended at the end of the action research process that an updated tool would rate learners on a four-point scale, in line with other KCBC assessments: below, approaching, meeting and exceeding expectations. Further discussion and consensus on the ‘expectations’ for each competency is needed, to provide a stronger basis for reliability between different teachers using the tool.

When disaggregated by grade, progress in the development of competencies was uneven between grade levels. This can be attributed to differences in the age of pupils, in teacher

interpretation of scoring criteria, and the small sample size. These issues could be addressed through further piloting.

There was no control group, so it was not possible to assess the differences in validity and reliability of the tool when used by teachers who had participated in the training and those who had not.

Other psychometric analyses

Regression of the progress in each competency with each other and gender

The following partial correlation tables show the results when the calculated difference in the IRT between rounds 1 and 2 for each competency (Difference IRT: *competency*), was regressed with the three other competencies and with gender. Significant correlations between competencies were found in most cases, but gender did not make a significant difference in any case.

Number of observations = 187
Adj R-squared = 0.3660

Difference IRT self-efficacy	Coefficient	Standard Error	t	p> t
Difference IRT comm/collab	.4672183	.0905618	5.16	0.000
Difference IRT crit thinking/prob solving	.5865525	.0993934	5.90	0.000
Difference IRT learning to learn	-.2089288	.1203364	-1.74	0.004
Gender	5.217621	16.74379	0.31	0.756
_cons	16.30928	18.37604	0.89	0.376

Table 3: Self-efficacy regressed with the other competencies and gender

Significant correlations were found between self-efficacy and Communication and collaboration ($p < 0.001$), and Critical thinking and problem solving ($p < 0.001$) and Learning to learn ($p < 0.05$).

Number of observations = 187
Adj R-squared = 0.3148

Difference IRT comm/collaboration	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	.2730745	.0529306	5.16	0.000
Difference IRT crit thinking/prob solving	.0568159	.0828318	0.69	0.494
Difference IRT learning to learn	.3041762	.0899745	3.38	0.001
Gender	-3.872787	12.80092	-0.30	0.763
_cons	61.66271	13.31636	4.63	0.000

Table 4: Communication and collaboration regressed with the other competencies and gender

Significant correlations were found between Communication and collaboration and self-efficacy ($p < 0.001$), and learning to learn ($p < 0.05$).

Number of observations = 187
 Adj R-squared = 0.5467

Difference IRT crit thinking/prob solving	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	.2738301	.0464015	5.90	0.000
Difference IRT learning to learn	.648769	.0675253	9.61	0.000
Difference IRT comm/collaboration	.0453819	.0661622	0.69	0.494
Gender	21.35328	11.33345	1.88	0.061
_cons	-51.05949	12.00008	-4.25	0.000

Table 5: Critical thinking and problem solving regressed with the other competencies and gender

Significant correlations were found between Critical thinking and problem solving and Self-efficacy ($p < 0.001$) and Learning to learn ($p < 0.001$).

Number of observations = 187
 Adj R-squared = 0.4632

Difference IRT learning to learn	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	-0.779828	.0449156	0.084	0.004
Difference IRT comm/collaboration	.1942514	.0574591	3.38	0.001
Difference IRT crit thinking/prob solving	.5186999	.0539874	9.61	0.000
Gender	-.18.99999	10.13483	-1.87	0.062
_cons	78.65894	9.622294	8.17	0.000

Table 6: Learning to learn regressed with the other competencies and gender

Significant correlations were found between Learning to learn and Self-efficacy ($p < 0.05$), Communication and collaboration ($p < 0.05$) and Critical thinking and problem solving.

Discussion

Summary of results

Progression in social and emotional skills between round 1 and round 2

The findings on the use of the social and emotional competency assessment show substantial progress in Grade 1-3 learners' demonstration of the four competencies measured, between two time points three months apart. This implies that tangible results can be achieved through relatively limited input to teachers, enabling them better to understand the nature of the competencies, and to structure their practice through an action research approach. Given the interconnection between competencies, a focus on developing learner behaviours that contribute to one competency, also enhances the acquisition of other competencies.

The study contributed to the debate around the extent to which community norms that encourage conformity through a sense of 'social responsibility' and 'obedient' behaviours – for example: answering nicely; respecting instructions, school rules and others who are speaking;

and the willingness to accept feedback – might disadvantage learners from rural areas in a school setting. Factor analysis used to group questions from the Mtwara tool according to four competencies of the KCBC, showed that these behaviours help explain much of the variance in scales to assess Communication and collaboration and Learning to learn. This suggests that competency-based curricula have the potential to bridge the gap between ‘school’ and ‘community’ valued behaviours. This fits well with the emphasis in the KCBC on parental and caregiver engagement, and should support ongoing efforts to bring the school and community closer together.

The reorganisation of the RTI Mtwara tool, based on factor analysis of the results of social and emotional competency assessment conducted during the study, helps respond to the identified need for measurement tools for these skills, particularly ones adapted for poorly resourced settings (Jukes & et al, 2018, p. 182). The updated, validated tool, groups assessment questions according to four of the seven KCBC competencies. This makes it easier for teachers to use the instrument, allowing them to assess one competency at a time, focusing on five questions or behaviours. The updated version of the tool, with supporting documentation, will be proposed to education authorities and teachers for piloting and potential adoption within the KCBC assessment structure.

In response to the call by Jukes et al for research to ‘help understand which social and emotional competencies are most predictive of academic success’ (Jukes & et al, 2018, p. 182), this exploratory study suggests that Self-efficacy⁶ has the biggest impact on reading and mathematics scores. Communication and collaboration⁷ and Critical thinking and problem solving⁸ also show significant correlations with at least one of the three academic assessments. Correlations do not prove causality, but the statistically significant associations are strongly indicative. We can conclude that building children’s ability to organise their work, their perseverance, confidence to ask and answer questions, and capacity to work with others, has a significant impact on their scores in English and Kiswahili reading, and mathematics. These conclusions are supported by qualitative evidence from teachers. Wherever possible, ongoing work with teachers should prioritise teacher-led assessments as the point of comparison with social and emotional learning assessment, in preference to external one-off evaluations such as EGRA and EGMA.

Concurrent calibration was used to calculate the progression of learners on the social and emotional learning assessment between rounds 1 and 2 of data collection. [Table 7](#) and [Figure 3](#) shows the overall progress of the three grade groups combined on the four competencies

⁶Assessed in questions about keeping to deadlines, working hard, perseverance and the ability to plan work.

⁷ Particularly questions about being eager to answer questions, raising your hand before speaking and helping another student who is struggling.

⁸ Particularly questions about exchanging ideas, liking to ask many questions and giving unique answers.

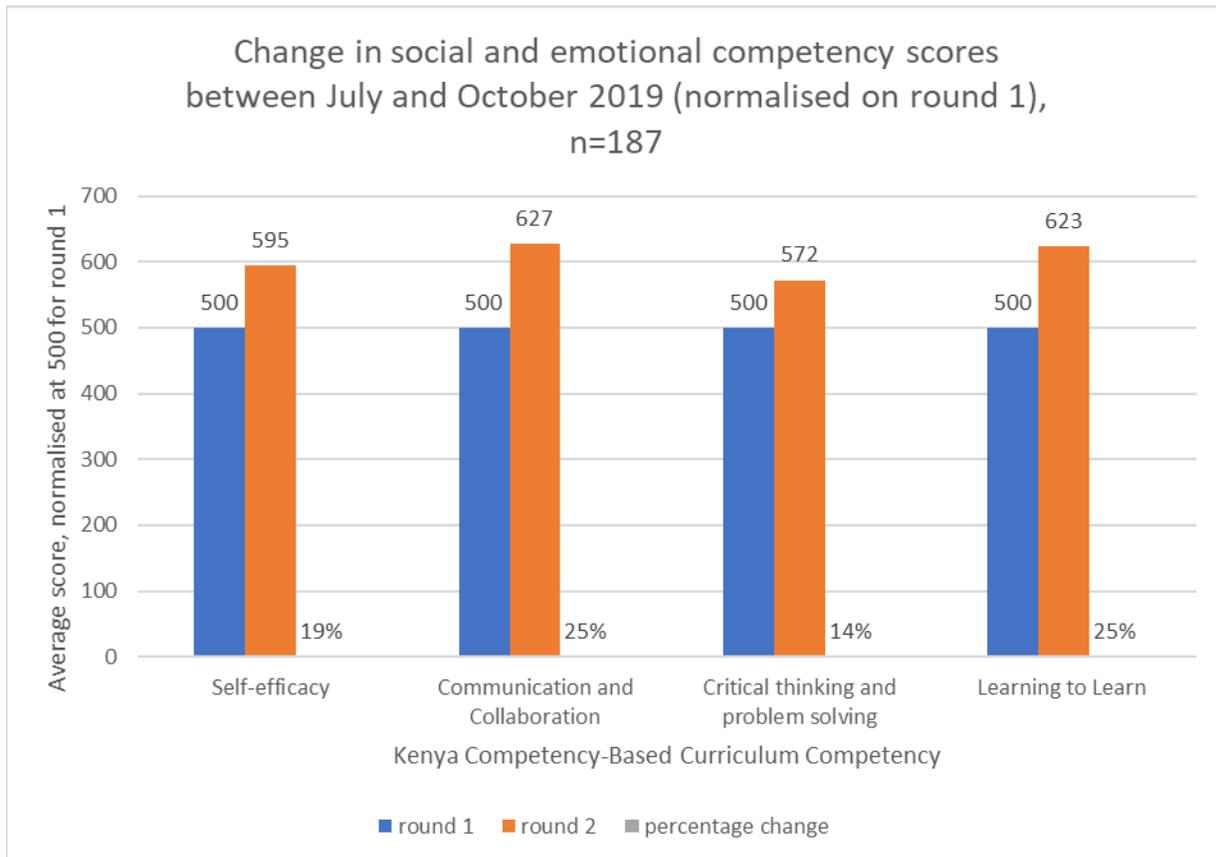
assessed. The greatest change was in Communication and collaboration and Learning to learn, which both showed a 25% increase in scores, with standard deviations of 1.27 and 1.23 respectively. Self-efficacy scores are seen to have increased by 19% overall, and Critical thinking and problem-solving by 14%. All differences were found to be significant at the 1% level.

n=187

Competency	Mean all grades		percentage change	Pr(T > t)
	round 1	round 2		
Self-efficacy	500	594,99	19%	0.0000
Communication and Collaboration	500	627,08	25%	0.0000
Critical thinking and problem solving	500	572,02	14%	0.0000
Learning to Learn	500	623,14	25%	0.0000

Table 7: Social and emotional competency assessment: Progression between round 1 and round 2 according to normalised round 1 mean

Figure 3 Social and emotional competency assessment: Progression between round 1 and round 2 according to normalised round 1 mean



These overall results show encouraging progress between rounds. The greatest increase in Communication and collaboration is particularly important, as one of the competencies of focus.

When the results are broken down by grade, however, the picture is nuanced, illustrated in Figures 4, 5, 6 and the corresponding Tables 8, 9 and 10. There is relatively less improvement in Grade 1 (see [Figure 4](#), [Table 8](#)) than in Grade 2. Nevertheless, the difference between round 1 and round 2 is still significant at the 1% level across all competencies. There is a positive difference in Grade 1 of 28% for Communication and collaboration – a competency of focus for this teacher – and of 19% and 25% for Self-efficacy and Learning to learn respectively. For Critical thinking and problem solving there was an 8% improvement. The large class and young age of the learners, some of whom had only just started school in July, needs to be taken into account in comparing these results with Grade 2.

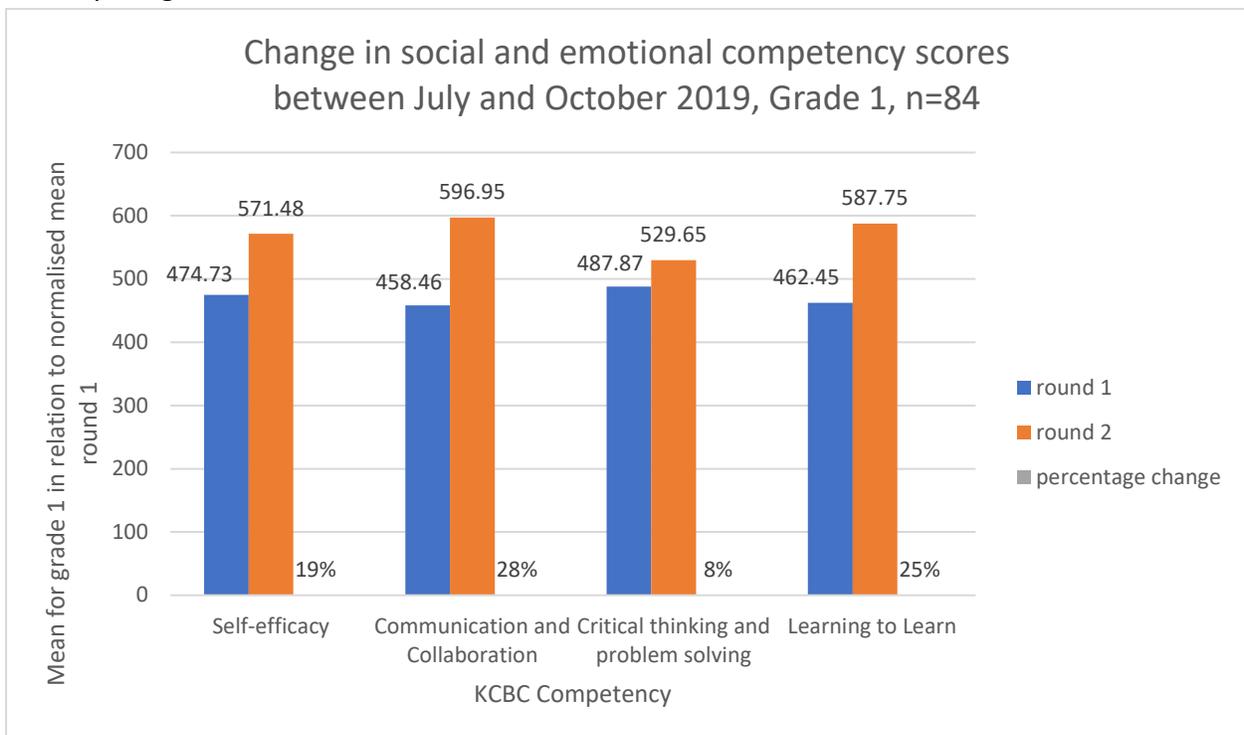


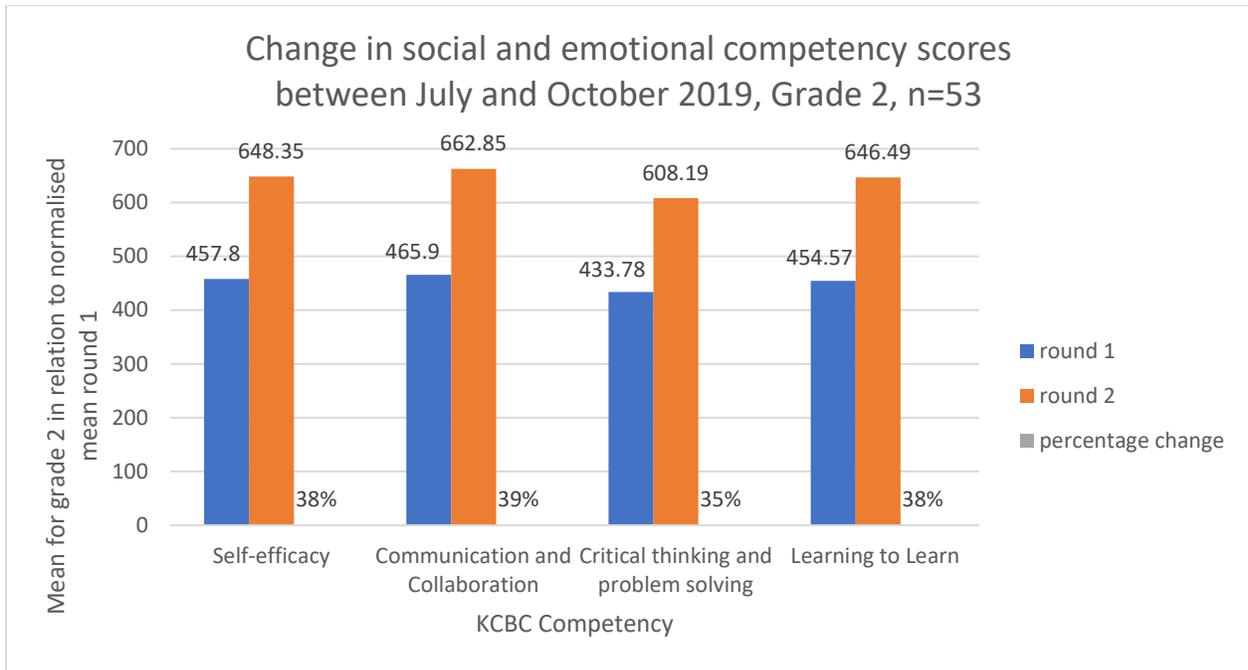
Figure 4: Change in social and emotional competency scores between round 1 and round 2, Grade 1

Grade 1, n=84	mean score		percentage change	Pr(T > t)
Competency	round 1	round 2		
Self-efficacy	474,73	571,48	19%	0.0000
Communication and Collaboration	458,46	596,95	28%	0.0000
Critical thinking and problem solving	487,87	529,65	8%	0.0000
Learning to Learn	462,45	587,75	25%	0.0000

Table 8: Change in social and emotional competency scores between round 1 and round 2

The overall improvement was greatest in Grade 2, with improvements in scores of between 35% and 39% across all competencies. All differences were found to be significant at the 1% level, as shown in [Figure 5](#) and [9](#):

Figure 5: Change in social and emotional competency scores between round 1 and round 2, Grade 2



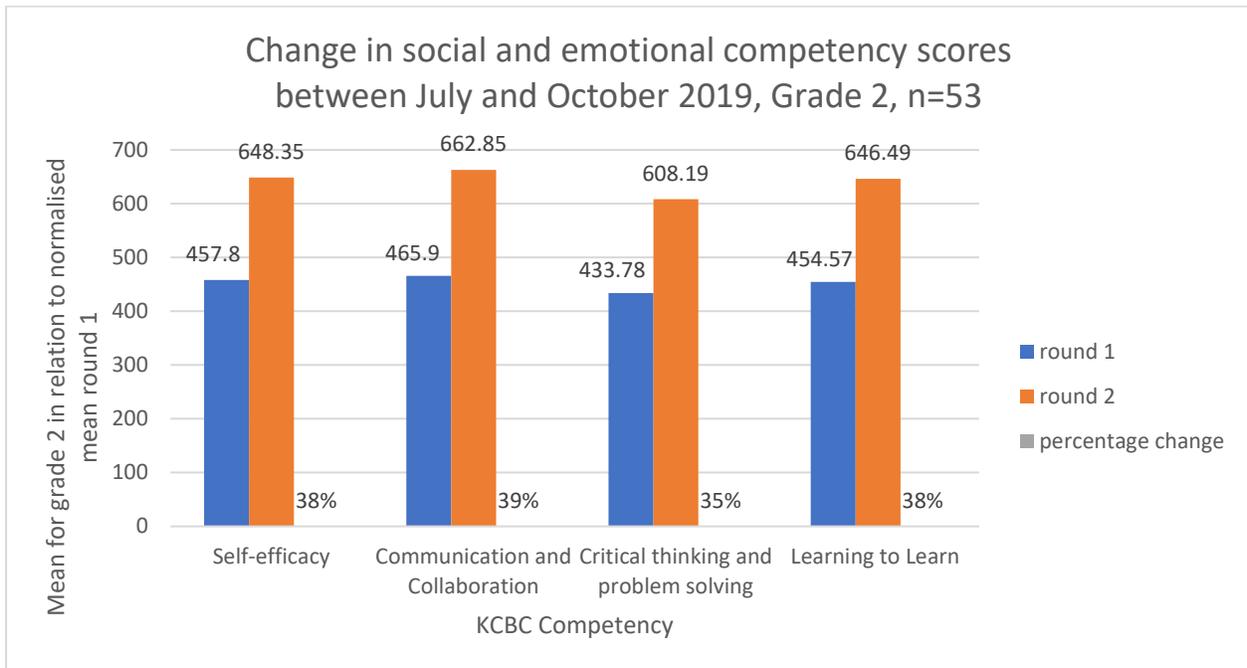
Grade 2, n=53		mean score		percentage change	Pr(T > t)
Competency	round 1	round 2			
Self-efficacy	457,8	648,35	38%	0.0000	
Communication and Collaboration	465,9	662,85	39%	0.0000	
Critical thinking and problem solving	433,78	608,19	35%	0.0000	
Learning to Learn	454,57	646,49	38%	0.0000	

Table 9: Change in social and emotional competency scores between round 1 and round 2, Grade 2

For Grade 3 ([Figure 6](#), [Table 10](#)), we see relatively little progression, particularly for Critical thinking and problem solving (3%), and even a negative value for Self-efficacy (-2%). On the other hand the difference of 7% is significant for Communication and collaboration, the competency of focus for this teacher, and for Learning to learn (9%). The fact that children are older could help explain less progress for this class. The competencies can be expected to develop with age and progress through the education system, and the results show Grade 3 learners starting from

between 87 and 111 points above the standardised mean of 500 according to the competency (see [Table 10](#)). The smaller sample size in round 1 for this group of children also affects levels of significance.

Figure 6: Change in social and emotional competency scores between round 1 and round 2, Grade 3



Competency	mean score		percentage change	Pr(T > t)
	round 1	round 2		
Self-efficacy	587,19	577,94	-2%	0.6692
Communication and Collaboration	605,93	639,78	7%	0.0160
Critical thinking and problem solving	590,56	604,88	3%	0.6938
Learning to Learn	611,23	657,83	9%	0.0000

Table 10: Change in social and emotional competency scores between round 1 and round 2, Grade 3

The big differences between grades can be attributed to the pilot use of the tool, and points to the need for further work to establish stronger criteria for scoring. On the other hand, the overall progression during the short period between rounds 1 and 2, suggests that all four competencies are malleable over a relatively short time. Teachers were focusing on developing learners' skills in two competencies in particular, but progression is seen in all four competencies, highlighting again the interconnection between them. It is not possible to estimate the extent to which the results would remain stable over time.

The calculated difference in the IRT between rounds 1 and 2 for each competency, was used to regress the competencies with each other and with gender (see [Technical Appendix 9](#)). Self-efficacy correlated significantly ($p < 0.001$) with Communication and collaboration and Critical thinking and problem solving. Communication and collaboration correlated significantly ($p < 0.001$) with Self-efficacy and Learning to learn. Learning to learn correlated significantly ($p < 0.001$) with Communication and collaboration and Critical thinking and problem solving. This demonstrates clearly the interconnectedness of the competencies, and reinforces the teachers' experience. Gender was not found to be significant in any of the regressions. This is important, as it suggests that in the estimation of their teachers, girls and boys are performing similarly across the competencies.

Limitations

The biggest challenge faced in adapting and piloting the Social and Emotional Competency Assessment was that the researcher was not present in Kenya. Face to face contact with the teachers was limited to four study visits during the period of data collection, supported by frequent WhatsApp communication between visits. As a result, it was difficult to provide the support to teachers that would have made their piloting of the tool easier for them, and have allowed easier feedback and mutual learning.

Recommendations for revision/use

It is recommended that in Kenya, Education authorities consider incorporating the validated Social and Emotional Competency tool for four of the KCBC competencies (see [Technical Appendix 7](#)) into the set of assessment tools proposed by the KCBC.

In Kenya and in other contexts where competency-based curricula are used, it is recommended that the current version of the Social and Emotional Competency tool be used, in the form updated based on the analysis conducted during the study, with larger study populations to allow more scope for statistical analysis. The precise questions in each scale would need to be reviewed and as necessary adapted, as with teachers in the current study. This can be the basis for further piloting and refinement of the tool, in collaboration with university and teacher training institute partners. Universities and teacher training institutions could be engaged in the discussion and sharing of results, and in integrating learning into ongoing practice.

Teacher-led assessments of academic outcomes can be used as the point of comparison with social and emotional competencies. Where possible, digital data collection and processing by teachers should be explored. For example, guidance on using excel for data entry and simple analysis, could be included in pre-service and in-service teacher training.

For teachers to use effectively the Social and Emotional Competency Assessment tool, their training and ongoing support should provide explicit and systematic support on the nature and interconnectedness of social and emotional competencies, that takes account of the specific context of teaching practice. It is important to demonstrate how 'building blocks' of simple skills lead to higher order competencies. Discussions should start with teachers' own experience of their emotions, particularly stress, emphasising the centrality of social and emotional learning in psychosocial wellbeing. The critical importance of relationships, between teachers and learners, and in their families and the wider community, should be the guiding principle throughout. This has been highlighted particularly in the context of the COVID-19 pandemic, but is always fundamental.

Technical Appendices

1. *Social and Emotional Competency Teacher Rating Scale: As used, questions and associated competencies reviewed and adjusted*

Final version, 21 July 2019: note to teachers who used the tool

This tool is adapted from the Tanzania Social and Emotional Competency Parent and Teacher Rating Scale, a streamlined questionnaire (Annex A of the file in the dropbox [here](#)) for the **assessment of social and emotional competencies** by parents and teachers, developed by RTI for Tusome Pamoja. The tool was designed to be used to evaluate pre-primary and primary programs in Tanzania and can be used by teachers to track children’s social and emotional learning skills in the classroom.

The RTI tool is being contextualised by teachers in the case study school as part of the action research process. Note that in the current version of the tool, there are fewer questions reflecting the following KCBC competencies:

- Empathy/open-mindedness
- Creativity and imagination
- Critical thinking and problem solving

Communication and collaboration will be the focus of the action research questions for grades 1 and 3, Critical thinking and problem solving will be the focus of action research questions for grade 2. The questions that reflect these tools were reviewed, and adjusted as indicated below, during discussions on 21 July 2019 at the case study school.

Teachers in grades 1-3 will use the tool for their classes in July 2019, and in October 2019 (at the end of this action research process). Please note any changes or additional questions that you think should be made to the tool.

NOTE: The competencies noted in *italics* are used by the values based education (VBE) project personal qualities and competencies. Notes from our discussions on 20 July are underlined.

	Question	Which KCBC competency or competencies does it measure, if any?	Answer
	Trait: Conscientiousness		
1	1a Is (child’s name) mindful of deadlines that are set and good about meeting them? Je (jina) hujali muda na kumaliza kazi katika muda uliopangwa?	Critical thinking and problem solving Self-efficacy <u>Meeting deadlines requires some critical thinking and problem solving, but we agreed it is not a very strong indicator of this competency.</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don’t know/Refuse888

2	<p>2a Does (name) give up easily when tasks or work seem difficult? Je (jina) hukata tamaa kirahisi kuendelea kufanyia kazi au mazoezi yanayokuwa magumu kwake?</p>	<p>Critical thinking and problem-solving Self-efficacy</p> <p><u>This is negative – please enter the number that answers the question correctly, and I will change round the results on the computer afterwards</u></p>	<p>Hapana / No 0</p> <p>Ndiyo / Yes, less than other children 1</p> <p>Ndiyo / Yes, about the same as other children 2</p> <p>Ndiyo / Yes, more than other children 3</p> <p>Hajui/Hajajibu / Don't know/Refuse888</p>
3	<p>3a Does (name) often plan his/her tasks well? Je (jina) hupangilia kazi zake vizuri?</p>	<p>Learning to learn Self-efficacy <i>Self-awareness and resilience</i> Critical thinking and problem solving (<u>added 20 July</u>)</p>	<p>Hapana / No 0</p> <p>Ndiyo / Yes, less than other children 1</p> <p>Ndiyo / Yes, about the same as other children 2</p> <p>Ndiyo / Yes, more than other children 3</p> <p>Hajui/Hajajibu / Don't know/Refuse888</p>
4	<p>4a Is (name) hardworking? Je (jina) hufanya kazi kwa juhudi?</p>	<p>Learning to learn Self-efficacy Critical thinking and problem-solving</p>	<p>Hapana / No 0</p> <p>Ndiyo / Yes, less than other children 1</p> <p>Ndiyo / Yes, about the same as other children 2</p> <p>Ndiyo / Yes, more than other children 3</p> <p>Hajui/Hajajibu / Don't know/Refuse888</p>
5	<p>5a Is (name) happy to give the first answer to a question in class? Je (jina) hupenda kuwa wa kwanza kujibu darasani?</p>	<p>Self-efficacy Open-mindedness Communication and collaboration</p> <p><u>It was agreed to keep the word 'happy' – if a child is not enjoying learning so is happy to answer questions,</u></p>	<p>Hapana / No 0</p> <p>Ndiyo / Yes, less than other children 1</p> <p>Ndiyo / Yes, about the same as other children 2</p> <p>Ndiyo / Yes, more than other children 3</p> <p>Hajui/Hajajibu / Don't know/Refuse888</p>

		<u>the teacher needs to find out why.</u>	
6	6a Does (name) raise his/her hand before responding to a question in class? Je (jina) hunyoosha mkono anapotaka kujibu swali darasani?	Communication and collaboration Self-efficacy (<i>Open-mindedness and empathy</i>)	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
7	7a If (name) cannot do something, do they try again? Je (jina) hujaribu tena anaposhindwa na jambo fulani?	Self-efficacy Learning to learn Communication and collaboration Critical thinking and problem-solving <i>Taking responsibility</i>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
8	8a Is (name) eager to hear and learn from feedback s/he is given? Je (jina) huonesha hamu ya kujifunza kutoka kwenye mrejesho anaopewa?	Learning to learn Respect for diversity Relationship building Communication and collaboration	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student? Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?	Communication and collaboration Empathy and openmindedness Citizenship <i>Taking responsibility</i> <u>Critical thinking and problem solving</u> <u>Learning to learn</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888

Trait : Curious (Mdadisi)			
10	1a Does (name) exchange his/her ideas with teachers? Je (jina) hubadilishana mawazo na walimu?	Communication and collaboration <i>Relationship building</i>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
11	2a Does (name) like to ask many questions? Je (jina) hupenda kuuliza maswali mengi?	Empathy and open-mindedness Learning to learn Communication and collaboration Creativity and imagination Self-efficacy Critical thinking and problem-solving	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
12	3a Does (name) give unique responses that go beyond those of other children? Je (jina) hutoa majibu ya kina tofauti na yaliyozoeleka na wenzake?	Creativity and imagination Critical thinking and problem solving Self-efficacy	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
Trait/Construct: Obedient (Mtii)			
13	1a Is (name) calm at school even when disturbed/irritated by others? Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?	Self-efficacy Learning to learn <u>Communication and collaboration</u> <u>Critical thinking and problem solving</u> <u>We agreed that if a person is calm that means they are</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888

		<u>able to reason properly, so this reflects critical thinking and problem solving</u>	
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk? Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?	Self-efficacy Learning to learn Communication and collaboration	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
15	3a Does (name) avoid bad company? Je (jina) hujiepusha na makundi mabaya?	Self-efficacy Citizenship Critical thinking and problem-solving	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
16	4a Is (name) slow and unhurried in deciding what to do next? Je (jina) huwa mtaratibu katika kufanya maamuzi ya kitu kifuatacho?	Critical thinking and problem-solving Self-efficacy (negative) <u>The discussion confirmed this is negative, as teachers want to encourage children to move more quickly. Please enter the number that answers the question correctly, and I will change round the results on the computer afterwards</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
17	5a Does (name) respond nicely/politely when asked a question?	Communication and collaboration Learning to learn	Hapana / No 0 Ndiyo / Yes, less than other children 1

	Je (jina) hujibu vizuri na kwa upole?		Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
18	6a Does (name) follow and fulfil school rules as required? Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?	Self-efficacy Citizenship Learning to learn Communication and collaboration	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
19	7a Does (name) respect when others are talking? Je (jina) heshimu wengine wanapozungumza?	Learning to learn Communication and collaboration <u>We agreed to change 'care' to 'respect'</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
20	8a Does (name) easily accept when you correct his/her mistakes or poor behaviour? Je (jina) hukubali kirahisi unapomrekebisha makosa yake au tabia zisizokubalika?	Self-efficacy Learning to learn <u>Commucation and Collaboration</u>	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
	Trait/Construct: Sociable (Mchangamfu)		
21	1a Does (name) love his/her teachers?	Communication and collaboration	Hapana / No 0

	Je (jina) hupenda au waalimu?	Learning to learn Relationship building <u>Teachers agreed that 'love' (just the heart) is important, as it shows the affection and openness that mean that children are happy at school</u>	Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
22	2a Does (name) kindly greet teachers? Je (jina) husalimia vizuri walimu?	Communication and collaboration Self-efficacy Citizenship	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888
23	3a Does (name) enjoy talking with others? Je (jina) hufurahia kuongea na wenzake?	Communication and collaboration Citizenship	Hapana / No 0 Ndiyo / Yes, less than other children 1 Ndiyo / Yes, about the same as other children 2 Ndiyo / Yes, more than other children 3 Hajui/Hajajibu / Don't know/Refuse888

2. *Social and Emotional Competency Teacher Rating Scale as used for teacher assessments and showing competencies associated by teachers, and competencies associated based on factor analysis*

Tool 7: Social and Emotional Competency Teacher Rating Scale

Competencies revised 21 July 2019, Case study school

- Hapana / No 0
 Ndiyo / Yes, less than other children 1
 Ndiyo / Yes, about the same as other children 2
 Ndiyo / Yes, more than other children 3
 Hajui/Hajajibu / Don't know/Refuse888

Question no	Column A: Question	Column B: Competency associated by teachers	Column C: Competency with which grouped based on factor analysis	Column D: Kiswahili
	Trait: Conscientiousness			
1	1a Is (child's name) mindful of deadlines that are set and good about meeting them?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hujali muda nakumaliza kazi katika muda uliopangwa?
1	1a Is (child's name) mindful of deadlines that are set and good about meeting them?	Self-efficacy	Self-efficacy	Je (jina) hujali muda nakumaliza kazi katika muda uliopangwa?
2	2a Does (name) give up easily when tasks or work seem difficult? (<i>negative</i>)	Critical thinking and problem-solving	Self-efficacy	Je (jina) hukata tamaa kirahisi kuendelea kufanyia kazi au mazoezi yanayokuwa magumu kwake?
2	2a Does (name) give up easily when tasks or work seem difficult?	Self-efficacy	Self-efficacy	Je (jina) hukata tamaa kirahisi kuendelea kufanyia kazi au

			mazoezi yanayokuwa magumu kwake?	
3	3a Does (name) often plan his/her tasks well?	Learning to learn	Self-efficacy	Je (jina) hupangilia kazi zake vizuri?
3	3a Does (name) often plan his/her tasks well?	Self-efficacy	Self-efficacy	Je (jina) hupangilia kazi zake vizuri?
3	3a Does (name) often plan his/her tasks well?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hupangilia kazi zake vizuri?
4	4a Is (name) hardworking?	Learning to learn	Self-efficacy	Je (jina) hufanya kazi kwa juhudi?
4	4a Is (name) hardworking?	Self-efficacy	Self-efficacy	Je (jina) hufanya kazi kwa juhudi?
4	4a Is (name) hardworking?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hufanya kazi kwa juhudi?
5	5a Is (name) happy to give the first answer to a question in class?	Self-efficacy	Communication and collaboration	Je (jina) hupenda kuwa wa kwanza kujibu darasani?
5	5a Is (name) happy to give the first answer to a question in class?	Communication and collaboration	Communication and collaboration	Je (jina) hupenda kuwa wa kwanza kujibu darasani?
6	6a Does (name) raise his/her hand before responding to a question in class?	Communication and collaboration	Communication and collaboration	Je (jina) hunyoosha mkono anapotaka kujibu swali darasani?
6	6a Does (name) raise his/her hand before responding to a question in class?	Self-efficacy	Communication and collaboration	Je (jina) hunyoosha mkono anapotaka kujibu swali darasani?
7	7a If (name) cannot do something, do they try again?	Self-efficacy	Self-efficacy	Je (jina) hujaribu tena anaposhindwa na jambo fulani?

7	7a If (name) cannot do something, do they try again?	Learning to learn	Self-efficacy	Je (jina) hujaribu tena anaposhindwa na jambo fulani?
7	7a If (name) cannot do something, do they try again?	Communication and collaboration	Self-efficacy	Je (jina) hujaribu tena anaposhindwa na jambo fulani?
7	7a If (name) cannot do something, do they try again?	Critical thinking and problem-solving		
8	8a Is (name) eager to hear and learn from feedback s/he is given?	Learning to learn	Learning to learn	Je (jina) huonesha hamu ya kujifunza kutoka kwenye
8	8a Is (name) eager to hear and learn from feedback s/he is given?	Communication and collaboration	Learning to learn	Je (jina) huonesha hamu ya kujifunza kutoka kwenye
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Communication and collaboration	Communication and collaboration	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Citizenship		
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Critical thinking and problem-solving		
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Learning to learn	Communication and collaboration	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?
	Trait : Curious (Mdadisi)			Mdadisi
10	1a Does (name) exchange his/her ideas with teachers <u>and other children</u> ?	Communication and collaboration	Critical thinking and problem solving	Je (jina) hubadilishana mawazo na walimu?
10	1a Does (name) exchange his/her ideas with teachers?	Critical thinking and problem-solving		

11	2a Does (name) like to ask many questions?	Learning to learn	Critical thinking and problem solving	Je (jina) hupenda kuuliza maswali mengi?
11	2a Does (name) like to ask many questions?	Communication and collaboration	Critical thinking and problem solving	Je (jina) hupenda kuuliza maswali mengi?
11	2a Does (name) like to ask many questions?	Creativity and imagination		
11	2a Does (name) like to ask many questions?	Self-efficacy		
11	2a Does (name) like to ask many questions?	Critical thinking and problem-solving		
12	3a Does (name) give unique responses that go beyond those of other children?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hutoa majibu ya kina tofauti na yaliyozoeleka na wenzake?
12	3a Does (name) give unique responses that go beyond those of other children?	Self-efficacy	Critical thinking and problem solving	Je (jina) hutoa majibu ya kina tofauti na yaliyozoeleka na wenzake?
	Trait: Obedient (Mtii)			Mtii
13	1a Is (name) calm at school even when disturbed/irritated by others?	Self-efficacy	Learning to learn	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?
13	1a Is (name) calm at school even when disturbed/irritated by others?	Learning to learn	Learning to learn	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?
13	1a Is (name) calm at school even when disturbed/irritated by others?	Critical thinking and problem-solving	Learning to learn	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?
13	1a Is (name) calm at school even when disturbed/irritated by others?	Communication and collaboration		
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Self-efficacy	Learning to learn	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?

14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Learning to learn	Learning to learn	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Communication and collaboration	Learning to learn	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?
15	3a Does (name) avoid bad company?	Self-efficacy	Critical thinking and problem solving	Je (jina) hujiepusha na makundi mabaya?
15	3a Does (name) avoid bad company?	Citizenship	Critical thinking and problem solving	Je (jina) hujiepusha na makundi mabaya?
15	3a Does (name) avoid bad company?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hujiepusha na makundi mabaya?
16	4a Is (name) slow and unhurried in deciding what to do next? (<i>negative</i>)	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) huwa mtaratibu katika kufanya maamuzi ya kitu kifuatacho?
16	4a Is (name) slow and unhurried in deciding what to do next? (<i>negative</i>)	Self-efficacy	Critical thinking and problem solving	Je (jina) huwa mtaratibu katika kufanya maamuzi ya kitu kifuatacho?
17	5a Does (name) responds nicely/politely when asked a question?	Communication and collaboration	Communication and collaboration	Je (jina) hujibu vizuri na kwa upole?
17	5a Does (name) responds nicely/politely when asked a question?	Learning to learn	Communication and collaboration	Je (jina) hujibu vizuri na kwa upole?
18	6a Does (name) follow and fulfill school rules as required?	Self-efficacy	Learning to learn	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?
18	6a Does (name) follow and fulfill school rules as required?	Citizenship	Learning to learn	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?

18	6a Does (name) follow and fulfill school rules as required?	Learning to learn	Learning to learn	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?
18	6a Does (name) follow and fulfill school rules as required?	Communication and collaboration	Learning to learn	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?
19	7a Does (name) care when others are talking?	Learning to learn	Communication and collaboration	Je (jina) hujali wengine wanapozungumza?
19	7a Does (name) care when others are talking?	Communication and collaboration	Communication and collaboration	Je (jina) hujali wengine wanapozungumza?
20	8a Does (name) easily accept when you correct his/her mistakes or poor behavior?	Self-efficacy	Learning to learn	Je (jina) hukubali kirahisi unapomrekebisha makosa yake au tabia zisizokubalika?
20	8a Does (name) easily accept when you correct his/her mistakes or poor behavior?	Learning to learn	Learning to learn	Je (jina) hukubali kirahisi unapomrekebisha makosa yake au tabia zisizokubalika?
20	8a Does (name) easily accept when you correct his/her mistakes or poor behavior?	Communication and collaboration	Learning to learn	
	Trait: Sociable (Mchangamfu)			Mchangamfu
21	1a Does name love his/her teachers?	Communication and collaboration		Je (jina) hupenda au waalimu?
21	1a Does name love his/her teachers?	Learning to learn		Je (jina) hupenda au waalimu?
22	2a Does (name) kindly greet teachers?	Communication and collaboration		Je (jina) husalimia vizuri walimu?
22	2a Does (name) kindly greet teachers?	Self-efficacy		Je (jina) husalimia vizuri walimu?
22	2a Does (name) kindly greet teachers?	Citizenship		Je (jina) husalimia vizuri walimu?

23	3a Does (name) enjoy talking with others?	Communication and collaboration		Je (jina) hufurahia kuongea na wenzake?
23	3a Does (name) enjoy talking with others?	Citizenship		Je (jina) hufurahia kuongea na wenzake?

3. *Social and Emotional Competency Teacher Rating Scale as used by teachers, filtered by Communication and Collaboration and Critical Thinking and problem solving*

Tool 7: Social and Emotional Competency Teacher Rating Scale

Competencies revised 21 July 2019, Case study school

- Hapana / No 0
 Ndiyo / Yes, less than other children 1
 Ndiyo / Yes, about the same as other children 2
 Ndiyo / Yes, more than other children 3
 Hajui/Hajajibu / Don't know/Refuse888

Column A: Question	Column B: Competency associated by teachers	Column C: Competency with which grouped based on factor analysis	Column D: Kiswahili
Trait: Conscientiousness			
1 1a Is (child's name) mindful of deadlines that are set and good about meeting them?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hujali muda nakumaliza kazi katika muda uliopangwa?
2 2a Does (name) give up easily when tasks or work seem difficult? (<i>negative</i>)	Critical thinking and problem-solving	Self-efficacy	Je (jina) hukata tamaa kirahisi kuendelea kufanyia kazi au mazoezi yanayokuwa magumu kwake?
3 3a Does (name) often plan his/her tasks well?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hupangilia kazi zake vizuri?
4 4a Is (name) hardworking?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hufanya kazi kwa juhudi?
5 5a Is (name) happy to give the first answer to a question in class?	Communication and collaboration	Communication and collaboration	Je (jina) hupenda kuwa wa kwanza kujibu darasani?
6 6a Does (name) raise his/her hand before responding to a question in class?	Communication and collaboration	Communication and collaboration	Je (jina) hunyoosha mkono anapotaka kujibu swali darasani?
7 7a If (name) cannot do something, do they try again?	Communication and collaboration	Self-efficacy	Je (jina) hujaribu tena anaposhindwa na jambo fulani?

7	7a If (name) cannot do something, do they try again?	Critical thinking and problem-solving	Self-efficacy	Je (jina) hujaribu tena anaposhindwa na jambo fulani?
8	8a Is (name) eager to hear and learn from feedback s/he is given?	Communication and collaboration	Learning to learn	Je (jina) huonesha hamu ya kujifunza kutoka kwenye
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Communication and collaboration	Communication and collaboration	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Critical thinking and problem-solving	Communication and collaboration	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?
	Trait : Curious (Mdadisi)			Mdadisi
10	1a Does (name) exchange his/her ideas with teachers?	Communication and collaboration	Critical thinking and problem solving	Je (jina) hubadilishana mawazo na walimu?
10	1a Does (name) exchange his/her ideas with teachers?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hubadilishana mawazo na walimu?
11	2a Does (name) like to ask many questions?	Communication and collaboration	Critical thinking and problem solving	Je (jina) hupenda kuuliza maswali mengi?
11	2a Does (name) like to ask many questions?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hupenda kuuliza maswali mengi?
12	3a Does (name) give unique responses that go beyond those of other children?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hutoa majibu ya kina tofauti na yaliyozoeleka na wenzake?
	Trait: Obedient (Mtii)			Mtii
13	1a Is (name) calm at school even when disturbed/irritated by others?	Critical thinking and problem-solving	Learning to learn	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?
13	1a Is (name) calm at school even when disturbed/irritated by others?	Communication and collaboration	Learning to learn	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Communication and collaboration	Learning to learn	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?
15	3a Does (name) avoid bad company?	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) hujiepusha na makundi mabaya?

16	4a Is (name) slow and unhurried in deciding what to do next? (<i>negative</i>)	Critical thinking and problem-solving	Critical thinking and problem solving	Je (jina) huwa mtaratibu katika kufanya maamuzi ya kitu kifuatacho?
17	5a Does (name) responds nicely/politely when asked a question?	Communication and collaboration	Communication and collaboration	Je (jina) hujibu vizuri na kwa upole?
18	6a Does (name) follow and fulfill school rules as required?	Communication and collaboration	Learning to learn	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?
19	7a Does (name) care when others are talking?	Communication and collaboration	Communication and collaboration	Je (jina) hujali wengine wanapozungumza?
20	8a Does (name) easily accept when you correct his/her mistakes or poor behavior?	Communication and collaboration	Learning to learn	
	Trait: Sociable (Mchangamfu)			Mchangamfu
21	1a Does name love his/her teachers?	Communication and collaboration		Je (jina) hupenda au waalimu?
22	2a Does (name) kindly greet teachers?	Communication and collaboration		Je (jina) husalimia vizuri walimu?
23	3a Does (name) enjoy talking with others?	Communication and collaboration		Je (jina) hufurahia kuongea na wenzake?

4. *Social and Emotional Competency Assessment updated by teachers, October 2019*

Social and Emotional Competency Assessment Tool: with notes on question selection

Adapted from Tool 7: Social and Emotional Competency Teacher Rating Scale, 19 October 2019

Comparison with previous (21 July 2019) version of the tool in *italics*

NOTE: Questions teachers suggested should be removed from the tool are ~~crossed out~~

Assessment now based on Kenya National Examinations Council rating scale:
 Below expectation (Ndiyo / Yes, less than other children) 1
 Approaching expectation (Ndiyo / Yes, about the same as other children)... 2
 Meeting expectation (Ndiyo / Yes, more than other children).... 3
 Exceeding expectation (not in previous version).... 4
 (Hajui/Hajibu / Don't know/Refuse888)

Competencies revised 21 July 2019,
 Case study school

Former question no	RTI tool question no	New question no	Column A Question	Column B Competency NOTE: Competencies included in the Kenya Competency-Based Curriculum, plus empathy and openmindedness, classified as values, have been mapped to the questions	Column C Explanation for removing questions
			Trait: Conscientiousness		
1	1a	1	1a Is (child's name) mindful of deadlines that are set and good about meeting them?	Critical thinking and problem-solving	
1	1a	1	Je (jina) hujali muda nakumaliza kazi katika muda uliopangwa?	Self-efficacy	
2	2a	-	2a Does (name) give up easily when tasks or work seem difficult?	Critical thinking and problem-solving	<i>Negative, and very similar to question 7</i>
2	2a	-	Je (jina) hukata tamaa kirahisi kuendelea kufanyia kazi au mazoezi yanayokuwa magumu kwake?	Self-efficacy	
3	3a	2	3a Does (name) often plan his/her tasks well?	Learning to learn	
3	3a	2	Je (jina) hupangilia kazi zake vizuri?	Self-efficacy	
3	3a	2	Je (jina) hupangilia kazi zake vizuri?	Critical thinking and problem-solving	

4	4a	3	4a Is (name) hardworking?	Learning to learn	
4	4a	3	Je (jina) hufanya kazi kwa juhudi?	Self-efficacy	
4	4a	3	Je (jina) hufanya kazi kwa juhudi?	Critical thinking and problem-solving	
5	5a	-	5a Is (name) happy to give the first answer to a question in class?	Self-efficacy	<i>All/most children do it, covered in other question/s</i>
5	5a	-	Je (jina) hupenda kuwa wa kwanza kujibu darasani?	Communication and collaboration	
6	6a	-	6a Does (name) raise his/her hand before responding to a question in class?	Communication and collaboration	<i>Most children do it, and covered in questions 17, 18</i>
6	6a	-	Je (jina) hunyoosha mkono anapotaka kujibu swali darasani?	Self-efficacy	
7	7a	4	7a If (name) cannot do something, do they try again?	Self-efficacy	
7	7a	4	Je (jina) hujaribu tena anaposhindwa na jambo fulani?	Learning to learn	
7	7a	4	Je (jina) hujaribu tena anaposhindwa na jambo fulani?	Communication and collaboration	
7	7a	4	Je (jina) hujaribu tena anaposhindwa na jambo fulani?	Critical thinking and problem-solving	
8	8a	5	8a Is (name) eager to hear and learn from feedback s/he is given?	Learning to learn	
8	8a	5	Je (jina) huonesha hamu ya kujifunza kutoka kwenye	Communication and collaboration	
9	9a	6	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Communication and collaboration	
9	9a	6	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?	Critical thinking and problem-solving	
9	9a	6	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?	Learning to learn	
9	9a	6	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?	Empathy and open-mindedness	
9	9a	6	Kama mwanafunzi haelewi masomo, je (jina) hujitolea kumsaidia?	Citizenship	
			Trait : Curious (Mdadisi)		
10	Cu1a	7	1a Does (name) exchange his/her ideas with teachers <u>and other children</u> ?	Communication and collaboration	
10	Cu1a	7	Je (jina) hubadilishana mawazo na walimu?	Critical thinking and problem-solving	
11	Cu1a	-	2a Does (name) like to ask many questions?	Empathy and open-mindedness	<i>Covered in question 10 – Exchange ideas with teachers and other children (added)</i>
11	Cu2a	-	Je (jina) hupenda kuuliza maswali mengi?	Learning to learn	
11	Cu2a	-	Je (jina) hupenda kuuliza maswali mengi?	Communication and collaboration	
11	Cu2a	-	Je (jina) hupenda kuuliza maswali mengi?	Creativity and imagination	

11	Cu2a	-	Je (jina) hupenda kuuliza maswali mengi?	Self-efficacy	
11	Cu2a	-	Je (jina) hupenda kuuliza maswali mengi?	Critical thinking and problem-solving	
12	Cu3a	8	3a Does (name) give unique responses that go beyond those of other children?	Critical thinking and problem-solving	
12	Cu3a	8	Je (jina) hutoa majibu ya kina tofauti na yaliyozoeleka na wenzake?	Self-efficacy	
			Trait/Construct: Obedient (Mtii)		
13	Ob1a	9	1a Is (name) calm at school even when disturbed/irritated by others?	Self-efficacy	
13	Ob1a	9	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?	Learning to learn	
13	Ob1a	9	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?	Communication and collaboration	
13	Ob1a	9	Je (jina) anatulia shuleni hata kama anachokozwa na wenzake ?	Critical thinking and problem-solving	
14	Ob2a	-	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Self-efficacy	Covered in question 13
14	Ob2a	-	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?	Learning to learn	
14	Ob2a	-	Je (jina) anaweza kukaa kimya darasani endapo ataambiwa asiongee?	Communication and collaboration	
15	Ob3a	10	3a Does (name) avoid bad company?	Self-efficacy	
15	Ob3a	10	Je (jina) hujiepusha na makundi mabaya?	Citizenship	
15	Ob3a	10	Je (jina) hujiepusha na makundi mabaya?	Critical thinking and problem-solving	
16	Ob4a	-	4a Is (name) slow and unhurried in deciding what to do next? <i>(negative?)</i>	Critical thinking and problem-solving	Not considered a positive competency
16	Ob4a	-	Je (jina) huwa mtaratibu katika kufanya maamuzi ya kitu kifuatacho?	Self-efficacy	
17	Ob5a	11	5a Does (name) respond nicely/politely when asked a question?	Communication and collaboration	
17	Ob5a	11	Je (jina) hujibu vizuri na kwa upole?	Learning to learn	
18	Ob6a	12	6a Does (name) follow and fulfil school rules as required?	Self-efficacy	
18	Ob6a	12	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?	Citizenship	
18	Ob6a	12	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?	Learning to learn	
18	Ob6a	12	Je (jina) anazifuata na kutekeleza sheria za shule ipasavyo?	Communication and collaboration	
19	Ob7a	-	7a Does (name) care when others are talking?	Learning to learn	Covered in question 9
19	Ob7a	-	Je (jina) hujali wengine wanapozungumza?	Communication and collaboration	

20	Ob8a	-	8a Does (name) easily accept when you correct his/her mistakes or poor behaviour?	Self-efficacy	Covered in question 8
20	Ob8a	-	Je (jina) hukubali kirahisi unapomrekebisha makosa yake au tabia zisizokubalika?	Communication and collaboration	
20	Ob8a	-	Je (jina) hukubali kirahisi unapomrekebisha makosa yake au tabia zisizokubalika?	Learning to learn	
			Trait/Construct: Sociable (Mchangamfu)		
21	So1a	-	1a Does name love his/her teachers?	Communication and collaboration	Considered a weak question – children do what they're told
21	So1a	-	Je (jina) hupenda au waalimu?	Learning to learn	
22	So2a	-	2a Does (name) kindly greet teachers?	Communication and collaboration	All children do it (little variation)
22	So2a	-	Je (jina) husalimia vizuri walimu?	Self-efficacy	
22	So2a	-	Je (jina) husalimia vizuri walimu?	Citizenship	
23	So3a	13	3a Does (name) enjoy talking with others?	Communication and collaboration	
23	So3a	13	Je (jina) hufurahia kuongea na wenzake?	Citizenship	

5. *Revised tool: Questions of the Social and Emotional Competency Assessment Tool showing KCBC competency definitions and teacher and parent interpretations*

SELF-EFFICACY	
<p>DESCRIPTION IN TEACHERS' GUIDE: Self-efficacy is a person's belief about his or her capabilities to perform tasks or assignments that can change and transform his or her life. It determines how the person feels, thinks, behaves and motivates themselves. Self-efficacy has the potential to determine four major processes, namely cognitive, motivational, affective and selection processes.</p> <p>A strong sense of self-efficacy enhances a learner's accomplishment and personal well-being in many ways. Learners with high assurance in their capabilities approach difficult tasks as challenges to be mastered, rather than as threats to be avoided. Self-efficacy fosters intrinsic interest and deep engrossment in activities. Learners set themselves challenging goals and maintain a strong commitment to them (page xiii).</p>	
<p><i>Parent and teacher descriptions:</i></p> <p>Parents emphasised a sense of purpose in life (know what they want and have a plan), and responsibility towards their community, including their parents, making the connection between school and home. Teachers emphasised respect for instructions (homework, chores, school bell), reflecting a similar idea in the school context. In addition, teachers highlighted the importance of speaking out, asking as well as answering questions. They identified with this competency, indicators from the classroom observation tool reflecting a warm relationship with the teacher and other students, including helping another student as appropriate. The ability to consider different view points and come to an independent decision was also associated with this competency.</p> <p>16 of the 23 questions were mapped to self-efficacy. Prioritised questions identified to reflect this competency were consistent with parents' and teachers' descriptions. They cover meeting deadlines, planning tasks, being hardworking, respect for school rules, asking and answering questions, perseverance, 'avoiding bad company', and</p>	<p><i>Questions selected to reflect Self-efficacy:</i></p> <ol style="list-style-type: none"> 1. Is (child's name) mindful of deadlines that are set and good about meeting them? 2. Does (name) give up easily when tasks or work seem difficult? (recoded to reflect negative question – therefore question assesses perseverance) 3. Does (name) often plan his/her tasks well? 4. Is (name) hardworking? 5. If (name) cannot do something, do they try again?

<p>self-management when annoyed. De-prioritised questions were considered to cover the same areas, apart from 'being slow and unhurried in performing a task', which teachers considered to be negative.</p>	
<p>COMMUNICATION AND COLLABORATION</p> <p>DESCRIPTION IN TEACHERS' GUIDE: Communication is the act of transferring information from one place to another, whether vocally, visually or non-verbally. Education at each level should endeavour to enhance the learner's acquisition of effective communication skills through which they can interact and express themselves during the learning process.</p> <p>Collaboration is the process of two or more people or organisations working together to realise shared goals. Collaborative learning is a system in which two or more people cooperate in a learning experience to share and contribute to each member's understanding of a topic, and to complete a given task. Collaborative learning is designed to help learners learn from each other and can be an important aspect of the school curriculum (page xii).</p>	
<p><i>Parent and teacher descriptions:</i></p> <p>Parents highlighted letting someone know if something is not correct, and facilitating communication by providing a phone. They also said taking children to school meant that they had communicated and collaborated. Collaboration was described as an extension of communication.</p> <p>Teachers emphasised various aspects of good participation, including sharing ideas, working together with others including helping those struggling, and the ability to narrate. Indicators associated with this competency from the classroom observation tools, covered asking/answering questions, effective group work activities (mixed ability, problem solving, interactive), student sensitivity and good discussion/free expression. No abusive language, mockery or discrimination (including gender) in the class, combined with warm atmosphere, students looking happy and interested, and their ability</p>	<p><i>Questions selected to reflect Cooperation and Collaboration:</i></p> <ol style="list-style-type: none"> 1. Is (name) happy to give the first answer to a question in class? 2. Does (name) raise his/her hand before responding to a question in class? 3. If a student does not understand or is struggling to learn, does (name) offer to help the student? 4. Does (name) respond nicely/politely when asked a question? 5. Does (name) respect when others are talking? <p>(Does name love his/her teachers?) (Does (name) kindly greet teachers?) (Does (name) enjoy talking with others?)</p> <p>Questions in brackets were not as discriminating as others (all children scored 2 or 3 in the second round), and were not included in</p>

<p>to consider different view points and come to an independent decision were also associated with this competency.</p> <p>15 of the 23 questions were linked to this competency. Prioritised questions associated with this competency can be considered consistent with these descriptions. They covered perseverance, helping another student, exchanging ideas, responding well to feedback, keeping calm even if provoked and responding politely. Other questions related also to asking and answering questions (which teachers considered duplicated sharing ideas), and being polite with teachers.</p>	<p>the final statistical analysis of the tool (item response theory rating scale model).</p>
<p>CRITICAL THINKING AND PROBLEM SOLVING</p> <p>DESCRIPTION IN TEACHERS' GUIDE: Critical thinking and problem solving An important outcome of quality education is teaching learners how to think critically. The British Council (2015) identifies three types of thinking: reasoning, making judgements and problem solving. It is possible for learners to reason in an uncritical way. When learners are empowered with critical thinking, they avoid being subjective, and use logic and evidence to arrive at conclusions. Critical thinking also facilitates exploring new ways of doing things and learner autonomy. Learners learn that for every issue there are multiple perspectives that they can explore, rather than a rigid recall and regurgitation of information. Critical thinking is important for lifelong learning. It helps learners to have an open mind and be ready to listen and appreciate information and opinions that may sometimes conflict with their earlier held beliefs and positions. Critical thinking and problem solving are useful for learners of all ages and in all the subjects and disciplines offered in the basic education curriculum (page xiii).</p>	
<p><i>Parent and teacher descriptions:</i></p> <p>Parents associated critical thinking and problem solving with the ability to help someone in trouble, and to think carefully before deciding what to do, to find a solution. Teachers related the competency to finding solutions to class-based problems including maths and spelling, but also, for example, finding an alternative to glue, and being open-minded.</p> <p>As indicators in classroom practice, teachers identified this competency with learners' attentiveness, freedom of expression and</p>	<p><i>Questions selected to reflect Cooperation and Collaboration:</i></p> <ol style="list-style-type: none"> 1. Does (name) exchange his/her ideas with teachers and other children? 2. Does (name) like to ask many questions? 3. Does (name) give unique responses that go beyond those of other children? 4. Does (name) avoid bad company? 5. Is (name) slow and unhurried in deciding what to do next? (recoded to reflect negative question – therefore question assesses quickness to react)

<p>dealing with real life situations in problem-solving in class, including outdoor activity. Student participation in a range of activities, including the development of class code of conduct, teamwork and decision-making, was also highlighted, and the need to avoid lecture methods and any form of sarcasm or harshness in the class discourse.</p> <p>12 of the 23 questions were associated with this competency. Prioritised questions covered being hardworking, persevering, respecting deadlines, helping other students, sharing ideas and 'avoiding bad company'. Only three of the questions mapped to this competency were de-prioritised; they duplicated the prioritised ones, apart from being slow and unhurried, which teachers considered negative</p>	
<p>LEARNING TO LEARN</p> <p>DESCRIPTION IN TEACHERS' GUIDE: Learning to learn is the ability to pursue and persist in learning, to organise one's own learning by the effective management of time and information, both individually and in groups. This competence includes awareness of one's learning process and needs, identifying available opportunities, and the ability to overcome obstacles in order to learn successfully. This competence means gaining, processing and assimilating new knowledge and skills as well as seeking and making use of guidance. Learning to learn helps learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of contexts. There are four pillars of learning: learning to know, learning to do, learning to be, and learning to live together (page xiv).</p>	
<p><i>Parent and teacher descriptions:</i></p> <p>Parents interpreted 'learning to learn' as passing what has been learned in school, outside. Teachers referred to the ability to think critically, and to explain or retell something learnt. Classroom indicators for the competency included the involvement of learners in summarising the lesson objectives, positive student-teacher interactions, including students expressing themselves freely, their</p>	<p><i>Questions selected to reflect Learning to learn:</i></p> <ol style="list-style-type: none"> 1. Is (name) eager to hear and learn from feedback s/he is given? 2. Is (name) calm at school even when disturbed/irritated by others? 3. Is (name) able to stay quiet in class when s/he is asked not to talk? 4. Does (name) follow and fulfil school rules as required?

sensitivity and empathy for others, open discussion of local context including ethical issues, and respect for a class code of conduct.

Prioritised questions associated with this competency covered planning of tasks, perseverance, hard work, acceptance of feedback, helping a struggling student, answering questions politely, following school rules and keeping calm despite provocation. Deprioritised questions covered the same areas, apart from liking to ask many questions, and loving their teachers, which had been dropped as difficult to assess and not useful.

5. Does (name) **easily accept when you correct** his/her mistakes or poor behaviour?

6. Selection of one competency per question for scale creation

Social and Emotional Competency Assessment Tool:

Draft scale

Adapted from Tool 7: Social and Emotional Competency Teacher Rating Scale, 19 October 2019

Competencies revised 21 July 2019, Case study school

Key

Italics highlight the competency selected for each question

Grey highlights the questions prioritised by teachers in October 2019

A	Column B	Column C	Column D
Study tool qn no	Question	Competency Competencies of the Kenya Competency-Based Curriculum have been mapped to the questions	Judgement
	RTI trait: Conscientious		
1	1a Is (child’s name) mindful of deadlines that are set and good about meeting them?	Critical thinking and problem-solving	In description of self-efficacy, teachers mentioned specifically 'Completes assignments on time eg if given homework they complete it within the time and submit it to the teacher; complete school chores on time'. Basic Education Curriculum Framework (BECF) refers to self-efficacy helping to determine motivational processes, amongst others.
1	1a Is (child’s name) mindful of deadlines that are set and good about meeting them?	<i>Self-efficacy</i>	
2	2a Does (name) give up easily when tasks or work seem difficult?	Critical thinking and problem-solving	Parents mentioned a sense of responsibility, which could be related to perseverance in difficulty.

2	2a Does (name) give up easily when tasks or work seem difficult?	<i>Self-efficacy</i>	BECF includes in the definition of self-efficacy that 'learners with high assurance in their capabilities approach difficult tasks as challenges to be mastered, rather than as threats to be avoided'.
3	3a Does (name) often plan his/her tasks well?	Learning to learn	As for question 1
3	3a Does (name) often plan his/her tasks well?	<i>Self-efficacy</i>	
3	3a Does (name) often plan his/her tasks well?	Critical thinking and problem-solving	
4	4a Is (name) hardworking?	Learning to learn	Teachers referred to motivation of learners reflected for example in 'Responding to a bell ie by running to an assembly ground, running back to class after break time'; parents referred to a sense of responsibility also suggests hard work. BECF describes self-efficacy as fostering 'intrinsic interest and deep engrossment in activities' (page xiii).
4	4a Is (name) hardworking?	<i>Self-efficacy</i>	
4	4a Is (name) hardworking?	Critical thinking and problem-solving	
5	5a Is (name) happy to give the first answer to a question in class?	Self-efficacy	Teachers emphasised participation in class, including sharing ideas. Indicators associated with this competency in the classroom observation tool included asking and answering questions. The BECF defines communication as 'the act of transferring information from one place to another', including vocally, and communications skills as learners' ability to 'express themselves during the learning process' (page xii)
5	5a Is (name) happy to give the first answer to a question in class?	<i>Communication and collaboration</i>	
6	6a Does (name) raise his/her hand before responding to a question in class?	<i>Communication and collaboration</i>	Taking a positive answer to this question to reflect a learner who respects rules for orderly communication in a group, the justification is as for question 5. This could also reflect 'inhibitory control', a 'simple' executive function/control skill (EASEL, Navigating SEL from the inside out, 2017, page 18)
6	6a Does (name) raise his/her hand before responding to a question in class?	Self-efficacy	
7	7a If (name) cannot do something, do they try again?	<i>Self-efficacy</i>	As for question 2
7	7a If (name) cannot do something, do they try again?	Learning to learn	

7	7a If (name) cannot do something, do they try again?	Communication and collaboration	
7	7a If (name) cannot do something, do they try again?	Critical thinking and problem-solving	
8	8a Is (name) eager to hear and learn from feedback s/he is given?	<i>Learning to learn</i>	
8	8a Is (name) eager to hear and learn from feedback s/he is given?	Communication and collaboration	
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	<i>Communication and collaboration</i>	For communication and collaboration, teachers included working together with others, including helping those struggling. Student sensitivity and good discussion/free expression was included amongst indicators from the classroom observation tool associated with this competency. The BECF described collaborative learning as a system in which two or more people cooperate in a learning experience to share and contribute to each member's understanding of a topic, and to complete a given task' (page xii).
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Critical thinking and problem-solving	
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Learning to learn	
9	9a If a student does not understand or is struggling to learn, does (name) offer to help the student?	Citizenship	
	Trait : Curious (Mdadisi)		
10	1a Does (name) exchange his/her ideas with teachers <u>and other children</u> ?	<i>Communication and collaboration</i>	As for question 5.
10	1a Does (name) exchange his/her ideas with teachers <u>and other children</u> ?	Critical thinking and problem-solving	
11	2a Does (name) like to ask many questions?	Learning to learn	Teachers associated this competency with the ability to find solutions to class-based problems, and being open-minded. Indicators in the classroom observation tool included freedom of expression and dealing with real-life situations in problem-solving in class. Asking questions is integral to all of these processes. The BECF includes critical thinking as including the avoidance of 'rigid recall and regurgitation of information', also implying a questioning approach.
11	2a Does (name) like to ask many questions?	Communication and collaboration	

11	2a Does (name) like to ask many questions?	Creativity and imagination	
11	2a Does (name) like to ask many questions?	Self-efficacy	
11	2a Does (name) like to ask many questions?	<i>Critical thinking and problem-solving</i>	
12	3a Does (name) give unique responses that go beyond those of other children?	<i>Critical thinking and problem-solving</i>	As for question 11
12	3a Does (name) give unique responses that go beyond those of other children?	Self-efficacy	
Trait/Construct: Obedient (Mtii)			
13	1a Is (name) calm at school even when disturbed/irritated by others?	Self-efficacy	Classroom indicators for this competency included respect for a class code of conduct. The BECF describes learning to learn as the 'ability to pursue and persist in learning, to organise one's own learning by the effective management of time and information, both individually and in groups', which implies self-control and ability to focus out distractions.
13	1a Is (name) calm at school even when disturbed/irritated by others?	<i>Learning to learn</i>	
13	1a Is (name) calm at school even when disturbed/irritated by others?	Communication and collaboration	
13	1a Is (name) calm at school even when disturbed/irritated by others?	Critical thinking and problem-solving	
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Self-efficacy	As for question 13. This could reflect 'inhibitory control', a 'simple' executive function/control skill (EASEL report, page 18)
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	<i>Learning to learn</i>	
14	2a Is (name) able to stay quiet in class when s/he is asked not to talk?	Communication and collaboration	
15	3a Does (name) avoid bad company?	Self-efficacy	Taking the 'avoidance of bad company' to mean responsible decision-making, parents associated critical thinking and problem solving with the ability to help someone in trouble, and to think carefully before deciding what to do. Teachers identified the competency with dealing with real life situations, and classroom observation indicators included decision-making. The BECF emphasises making judgements and problem-solving and learner autonomy
15	3a Does (name) avoid bad company?	Citizenship	
15	3a Does (name) avoid bad company?	<i>Critical thinking and problem-solving</i>	

16	4a Is (name) slow and unhurried in deciding what to do next? (<i>negative?</i>)	<i>Critical thinking and problem-solving</i>	Teachers associated this question with the ability to react quickly and find a solution, so the justification for its inclusion to reflect this competency is covered by questions 11 and 15. The question implies an approach going beyond school-based activities, and the BECF refers to the importance of this competency for lifelong learning.
16	4a Is (name) slow and unhurried in deciding what to do next? (<i>negative?</i>)	Self-efficacy	
17	5a Does (name) respond nicely/politely when asked a question?	<i>Communication and collaboration</i>	As for question 6.
17	5a Does (name) respond nicely/politely when asked a question?	Learning to learn	
18	6a Does (name) follow and fulfil school rules as required?	Self-efficacy	Classroom indicators for this competency included respect for a class code of conduct. The BECF describes learning to learn as the 'ability to pursue and persist in learning, to organise one's own learning by the effective management of time and information.
18	6a Does (name) follow and fulfil school rules as required?	Citizenship	
18	6a Does (name) follow and fulfil school rules as required?	<i>Learning to learn</i>	
18	6a Does (name) follow and fulfil school rules as required?	Communication and collaboration	
19	7a Does (name) respect when others are talking?	Learning to learn	As for question 6.
19	7a Does (name) respect when others are talking?	<i>Communication and collaboration</i>	
20	8a Does (name) easily accept when you correct his/her mistakes or poor behaviour?	Self-efficacy	Teachers referred to 'positive student-teacher interactions' in describing this competency. The BECF includes 'awareness of ones's learning process and needs, identifying available opportunities' in its description.
20	8a Does (name) easily accept when you correct his/her mistakes or poor behaviour?	Communication and collaboration	
20	8a Does (name) easily accept when you correct his/her mistakes or poor behaviour?	<i>Learning to learn</i>	
	Trait/Construct: Sociable (Mchangamfu)		
21	1a Does name love his/her teachers?	<i>Communication and collaboration</i>	

21	1a Does name love his/her teachers?	Learning to learn	Parents indicated that 'taking children to school meant that they communicated and collaborated', suggesting that they see this skill built by teachers. Teachers referred to good participation, while classroom observation indicators included children looking happy and interested. The BECF refers to learners' ability to 'interact and express themselves during the learning process'
22	2a Does (name) kindly greet teachers?	<i>Communication and collaboration</i>	As for question 21
22	2a Does (name) kindly greet teachers?	Self-efficacy	
22	2a Does (name) kindly greet teachers?	Citizenship	
23	3a Does (name) enjoy talking with others?	<i>Communication and collaboration</i>	Teachers emphasised participation in class, including sharing ideas. Enjoyment of this skill will be motivational. The BECF defines communication as 'the act of transferring information from one place to another', including vocally, and communications skills as learners' ability to 'express themselves during the learning process' (page xii)
23	3a Does (name) enjoy talking with others?	Citizenship	

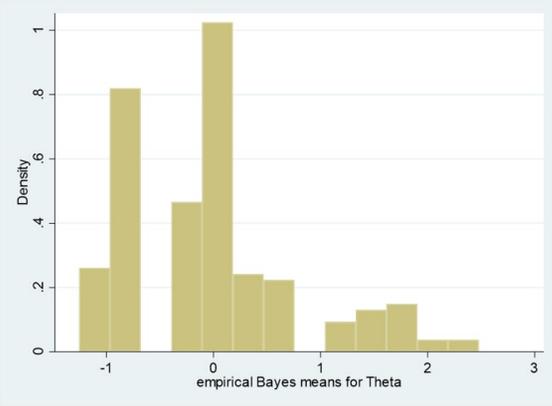
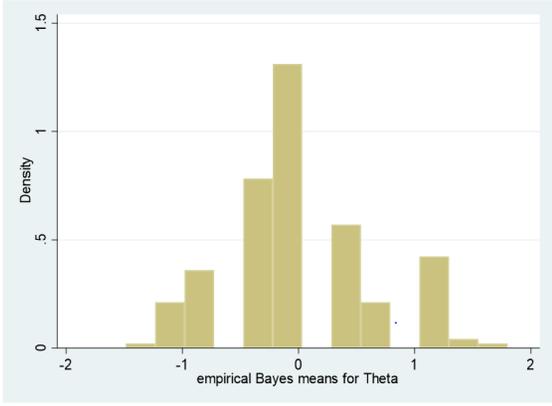
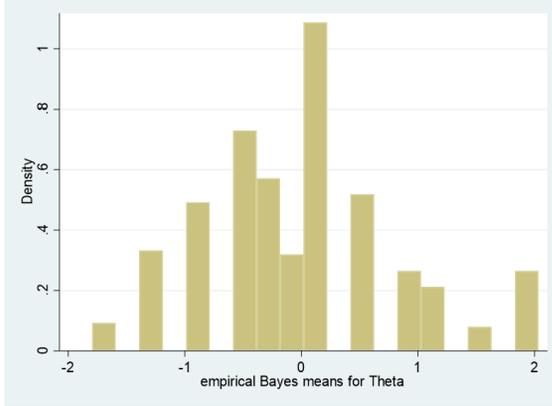
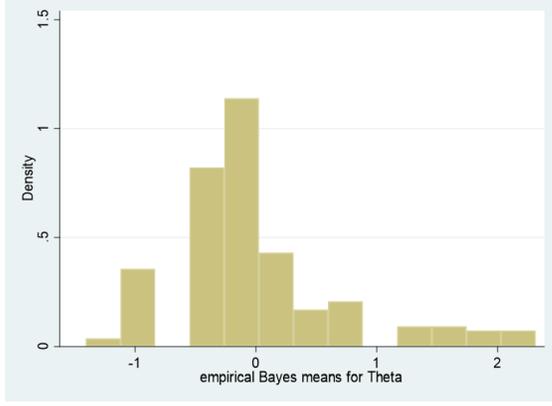
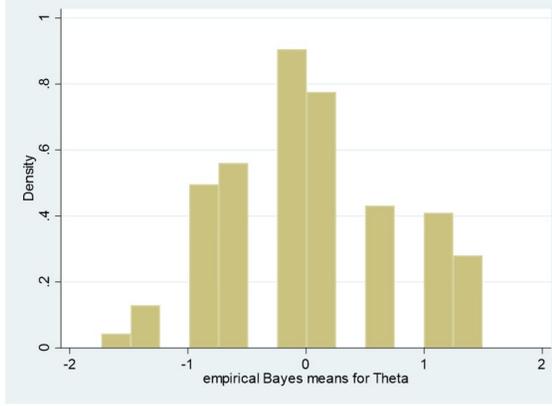
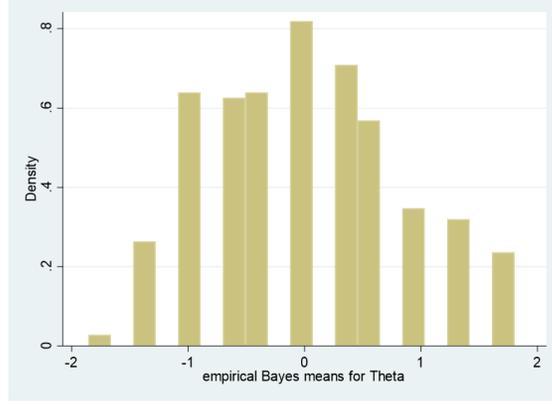
7. Most useful questions for assessing the competencies

		Round 1	Round 2
Competency	Question <i>Questions shaded in grey were selected by teachers as priority in closing workshop</i>	Factor loading	Factor loading
Self-efficacy	1 Is (child's name) mindful of deadlines that are set and good about meeting them?	0.7691	0.6916
	2 Does (name) give up easily when tasks or work seem difficult? (corrected for negative scoring)	0.4265	0.6353
	3 Does (name) often plan his/her tasks well?	0.6258	0.6454
	4 Is (name) hardworking?	0.7249	0.7156
	7 If (name) cannot do something, do they try again?	0.5585	0.7036
Communication and collaboration	5 Is (name) happy to give the first answer to a question in class?	0.6180	0.6331
	6 Does (name) raise his/her hand before responding to a question in class?	0.4120	0.4459
	9 If a student does not understand or is struggling to learn, does (name) offer to help the student?	0.4803	0.6111
	17 Does (name) respond nicely/politely when asked a question?	0.4779	0.3165
	19 Does (name) respect when others are talking?	0.5696	0.2046
Critical thinking and problem solving	10 Does (name) exchange his/her ideas with teachers and other children?	0.4591	0.6509
	11 Does (name) like to ask many questions?	0.4280	0.6523
	12 Does (name) give unique responses that go beyond those of other children?	0.4120	0.5207
	15 Does (name) avoid bad company?	0.5655	0.1102
	16 Is (name) slow and unhurried in deciding what to do next? (corrected for negative scoring)	0.3521	0.3101
Learning to Learn	8 Is (name) eager to hear and learn from feedback s/he is given?	0.6012	0.1388
	13 Is (name) calm at school even when disturbed/irritated by others?	0.6253	0.5343
	14 Is (name) able to stay quiet in class when s/he is asked not to talk?	0.5862	0.3935
	18 Does (name) follow and fulfil school rules as required?	0.5560	0.5561
	20 Does (name) easily accept when you correct his/her mistakes or poor behaviour?	0.4314	0.3537

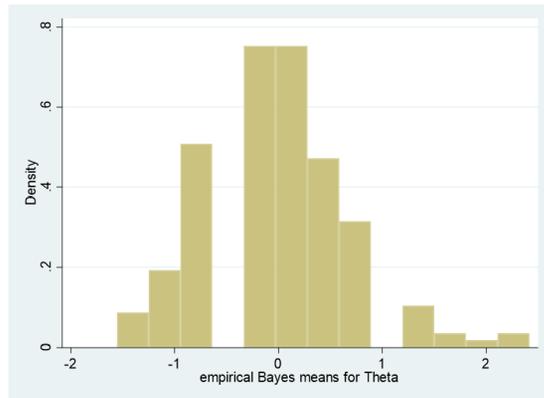
The table shows factor loadings⁹ for questions of the four scales, based on factor analysis of the results in rounds 1 and 2. A factor loading of 0.4 or over was considered a 'good' question (Salkind, 2010, p. 482). Almost all questions had a factor loading of 0.4 or above, and most had a factor loading of 0.6 or above in at least one round.

⁹ Factor 'loadings' express the relationship of each variable (question) to the underlying factor (competency), showing how much each question contributes to the overall score on the scale. (Field, 2009, pp. 630–631).

8. K-density plots for predicted competency scores, rounds 1 and 2

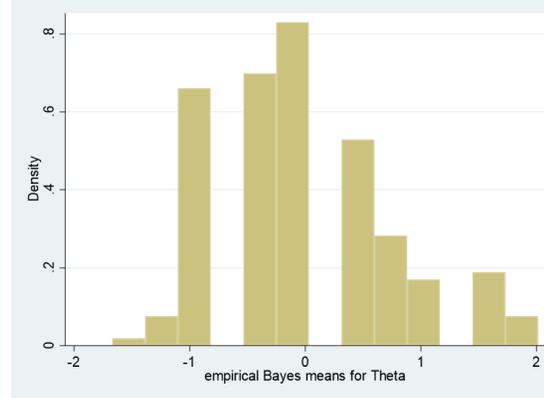
Column A	Column B	Column C
Self-efficacy Round 1	Self-efficacy Round 2	Self-efficacy Concurrent calibration
 <p data-bbox="216 802 485 821"><i>K-density plot, Self-efficacy round 1. N=165</i></p>	 <p data-bbox="831 802 1100 821"><i>K-density plot, Self-efficacy round 2. N=185</i></p>	 <p data-bbox="1440 802 1835 821"><i>K-density plot, Self-efficacy, with concurrent calibration. N=350</i></p>
Communication and collaboration Round 1	Communication and collaboration Round 2	Communication and collaboration Concurrent calibration
 <p data-bbox="216 1334 625 1354"><i>K-density plot, Communication and collaboration, round 1. N=165</i></p>	 <p data-bbox="831 1334 1245 1354"><i>K-density plot, Communication and collaboration, round 2. N=185</i></p>	 <p data-bbox="1440 1334 1976 1354"><i>K-density plot, Communication and collaboration, with concurrent calibration. N=350</i></p>

Critical thinking and problem-solving
Round 1



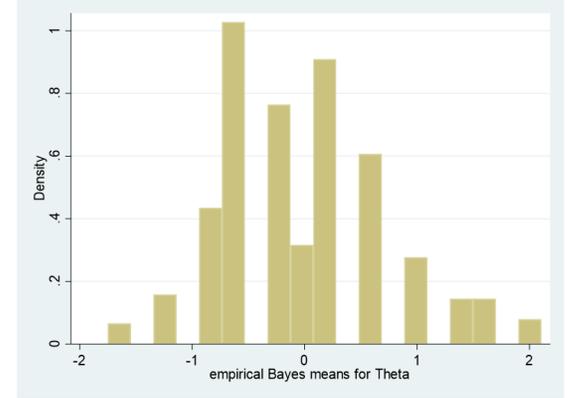
K-density plot, Critical thinking and problem-solving, round 1. N=165

Critical thinking and problem-solving
Round 2



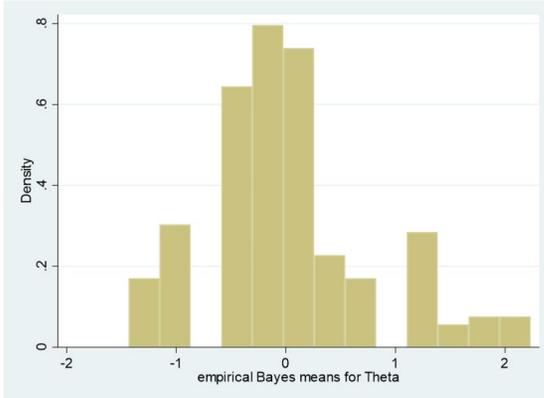
K-density plot, Critical thinking and problem-solving, round 2. N=185

Critical thinking and problem-solving
Concurrent calibration



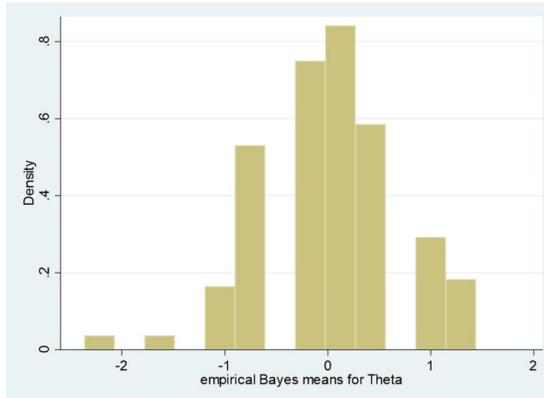
K-density plot, Critical thinking and problem-solving, with concurrent calibration. N=350

Learning to learn
Round 1



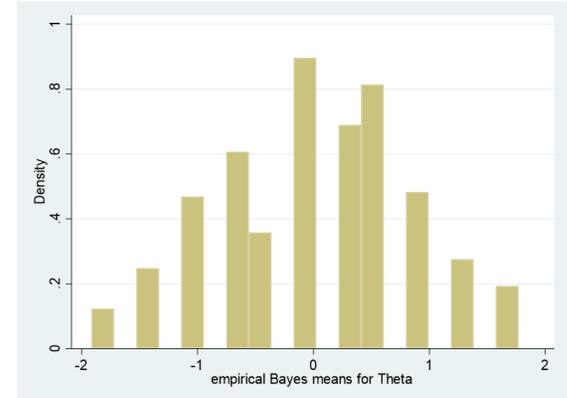
K-density plot, Learning to learn, round 1. N=165

Learning to learn
Round 2



K-density plot, Learning to learn, round 2. N=185

Learning to learn
Concurrent calibration



K-density plot, Learning to learn, with concurrent calibration. N=350

9. Regression of the progress in each competency with each other and gender

The following partial correlation tables show the results when the calculated difference in the IRT between rounds 1 and 2 for each competency (Difference IRT: *competency*), was regressed with the three other competencies and with gender, showing significant correlations in most cases.

Self-efficacy regressed with the other competencies and gender

Number of observations = 187
Adj R-squared = 0.3660

Difference IRT self-efficacy	Coefficient	Standard Error	t	p> t
Difference IRT comm/collab	.4672183	.0905618	5.16	0.000
Difference IRT crit thinking/prob solving	.5865525	.0993934	5.90	0.000
Difference IRT learning to learn	-.2089288	.1203364	-1.74	0.004
Gender	5.217621	16.74379	0.31	0.756
_cons	16.30928	18.37604	0.89	0.376

Significant correlations were found between self-efficacy and Communication and collaboration ($p < 0.001$), and Critical thinking and problem solving ($p < 0.001$) and Learning to learn ($p < 0.05$).

Communication and collaboration regressed with the other competencies and gender

Number of observations = 187
Adj R-squared = 0.3148

Difference IRT comm/collaboration	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	.2730745	.0529306	5.16	0.000
Difference IRT crit thinking/prob solving	.0568159	.0828318	0.69	0.494
Difference IRT learning to learn	.3041762	.0899745	3.38	0.001
Gender	-3.872787	12.80092	-0.30	0.763
_cons	61.66271	13.31636	4.63	0.000

Significant correlations were found between Communication and collaboration and self-efficacy ($p < 0.001$), and learning to learn ($p < 0.05$).

Critical thinking and problem solving regressed with the other competencies and gender

Number of observations = 187

Adj R-squared = 0.5467

Difference IRT crit thinking/prob solving	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	.2738301	.0464015	5.90	0.000
Difference IRT learning to learn	.648769	.0675253	9.61	0.000
Difference IRT comm/collaboration	.0453819	.0661622	0.69	0.494
Gender	21.35328	11.33345	1.88	0.061
_cons	-51.05949	12.00008	-4.25	0.000

Significant correlations were found between Critical thinking and problem solving and Self-efficacy ($p < 0.001$) and Learning to learn ($p < 0.001$).

Learning to learn regressed with the other competencies and gender

Number of observations = 187

Adj R-squared = 0.4632

Difference IRT learning to learn	Coefficient	Standard Error	t	p> t
Difference IRT self-efficacy	-0.779828	.0449156	0.084	0.004
Difference IRT comm/collaboration	.1942514	.0574591	3.38	0.001
Difference IRT crit thinking/prob solving	.5186999	.0539874	9.61	0.000
Gender	-.18.99999	10.13483	-1.87	0.062
_cons	78.65894	9.622294	8.17	0.000

Significant correlations were found between Learning to learn and Self-efficacy ($p < 0.05$), Communication and collaboration ($p < 0.05$) and Critical thinking and problem solving.

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