Schools2030 Global Research Partner Report

The effect of common attributes of Design Thinking and Play-based teaching approaches on raising holistic learning outcomes at primary school level in Tanzania

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RESEARCH DISSEMINATION BRIEF

PROJECT SUMMARY

The rarity of evidence on the effects of learner-centred pedagogical practices in raising holistic foundational learning outcomes in resource-constrained settings in the Global South is concerning. Very few students report that their teachers use active instructional techniques in the classroom to encourage engagement and build academic knowledge (USAID, 2016). Research on learning in the Global South focuses on testing top-down strategies with top-down measures. For instance, Jukes and colleagues (2018) found that most SEL competency frameworks and measures are developed elsewhere and do not fit the local perspectives, cultural values, and stakeholder aspirations in the Global South. As countries adopt competency-based curricula and work towards strengthening their education systems, we must examine how pedagogical practices in the classroom meet the needs of a 21st-century student expected to acquire key holistic foundational learning skills at the primary school level.

This research focused on two learner-centred pedagogical practices: human-centred design (HCD), and play-based learning (PBL).

Human-centred design in the context of Schools2030 is a process led by educators and school leaders which allows them to design and test innovative classroom solutions to address learning gaps identified through data and reflection, with the aim of improving students' holistic learning outcomes. This process is adaptable to the cultural contexts, resource constraints and opportunities of each school or setting implementing HCD.

Play-based learning (PBL) is learning through different types of play that are selected for a purpose or learning goal. PBL has many of the same fundamental features of play, but it is also different because it is intentionally used for learning. Play-based learning helps children to make sense of their learning and the world around them by using play and playful environments that match children's levels of development and the learning goals.

The objectives of our research were to:
  (i)   contribute to the discourse and knowledge base on what pedagogical strategies work to promote holistic skills acquisition at the primary school level by exploring elements within the innovative teaching practices of play-based learning and human-centred design

(ii)   work with local education stakeholders to co-create an assessment of context-relevant SEL skills that could be prioritised by the education system.

In line with these objectives, our research sought to address the following questions.

(i)   How does the state of pedagogical practices in the study area in Tanzania fit with the key elements of play-based learning and human-centred design?

(ii)   What is the status of holistic learning outcomes (i.e., early grade literacy skills and SEL skills) among grade four children in the study districts? Do differences in pedagogical practice explain any variability in average holistic learning outcomes?

(iii)   How do children's holistic learning skills differ based on sex, age, and learning differences (i.e., attention and memory issues)? Do differences in pedagogical practice explain any variability in disaggregated holistic learning outcomes?

Teachers in Serengeti co-developing context-relevant SEL domains

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METHODS

Drawing on a pragmatic and inclusive research philosophy, our team adopted a grounded theory ethnography approach (Battersby, 1981, Pidgeon & Henwood, 1996, Charmaz, 2006) to bridge the research-to-practice gap. In line with this research philosophy, the team embarked on a co-creation process of developing a context-relevant SEL competencies assessment tool by engaging local education stakeholders (i.e., students, teachers, and parents/caregivers) in a qualitative data collection. This data collection focused on their lived experience and local perceptions of the social and emotional competencies that are valued in their communities.

We also conducted a review of the pedagogical literature (Mechelen et al., 2019; Taylor & Boyer, 2020; Panke, 2019; Rusmann & Ejsing-Duun, 2021) to consider the contextual realities of Tanzanian schools. This helped inform the development of a pedagogical observation tool to assess teaching practice in the study area in relation to the core elements of the two learner-centred pedagogical strategies.

Validity and reliability tests of the two new tools (one to assess SEL skills; and the pedagogical observation tool) indicated strong psychometric proprieties for measuring the co-created skills and teaching strategies. The reading assessment used in this study was adapted from the Tanzanian Ministry of Education, Science and Technology's (MoEST) national Early Grade Reading Assessment (EGRA), adjusted to match the Grade 4 curriculum.

We adopted a cross-sectional design with mixed-method data collection with 800 Grade 4 students and 20 teachers in 40 schools across four districts in Tanzania – Serengeti, Tarime, Temeke and Lindi. The study adopted a two-stage cluster sampling of school students and school teachers. We were unable to conduct an impact evaluation through a longitudinal study (due to programming timing, enrolment constraints, and delay in securing ethics approval). We employed an after-design comparison of results with a set of schools that were not implementing any of the learner-centred pedagogies in this research. Schools within the districts with similar characteristics in terms of infrastructure, teacher-pupil ratio and geography who were not using any of the two learner-centred pedagogies were randomly selected as comparison schools for this research.

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KEY FINDINGS
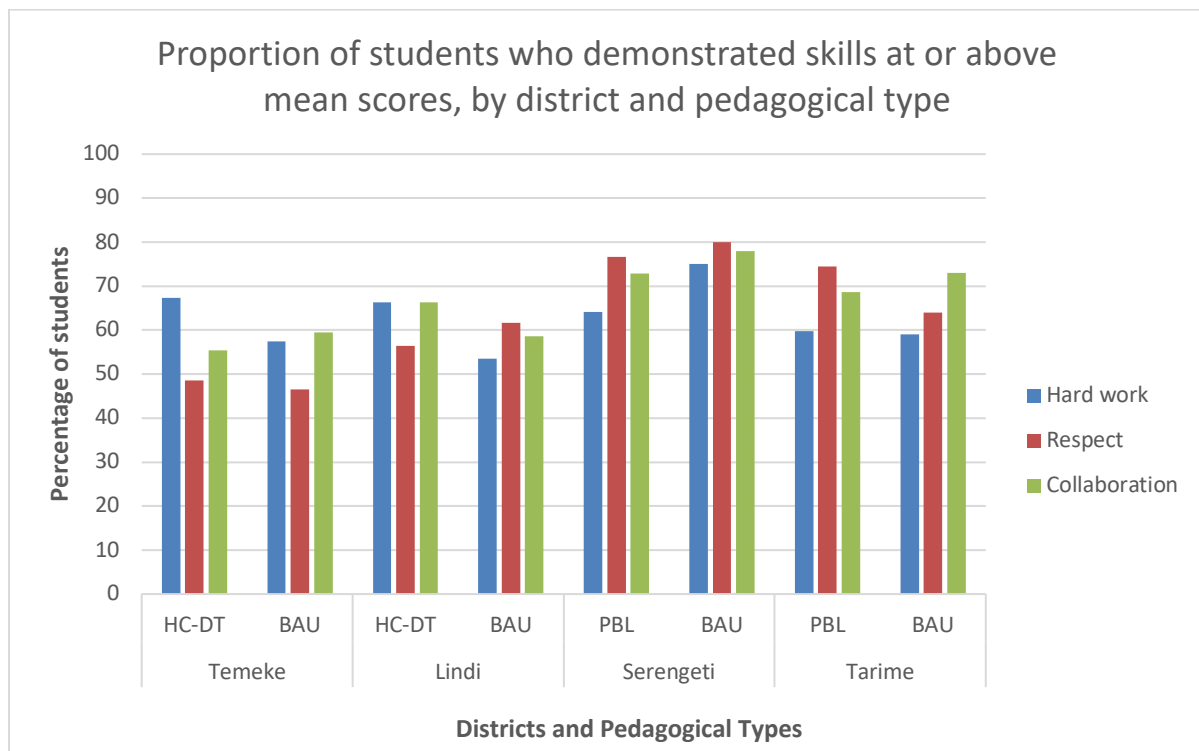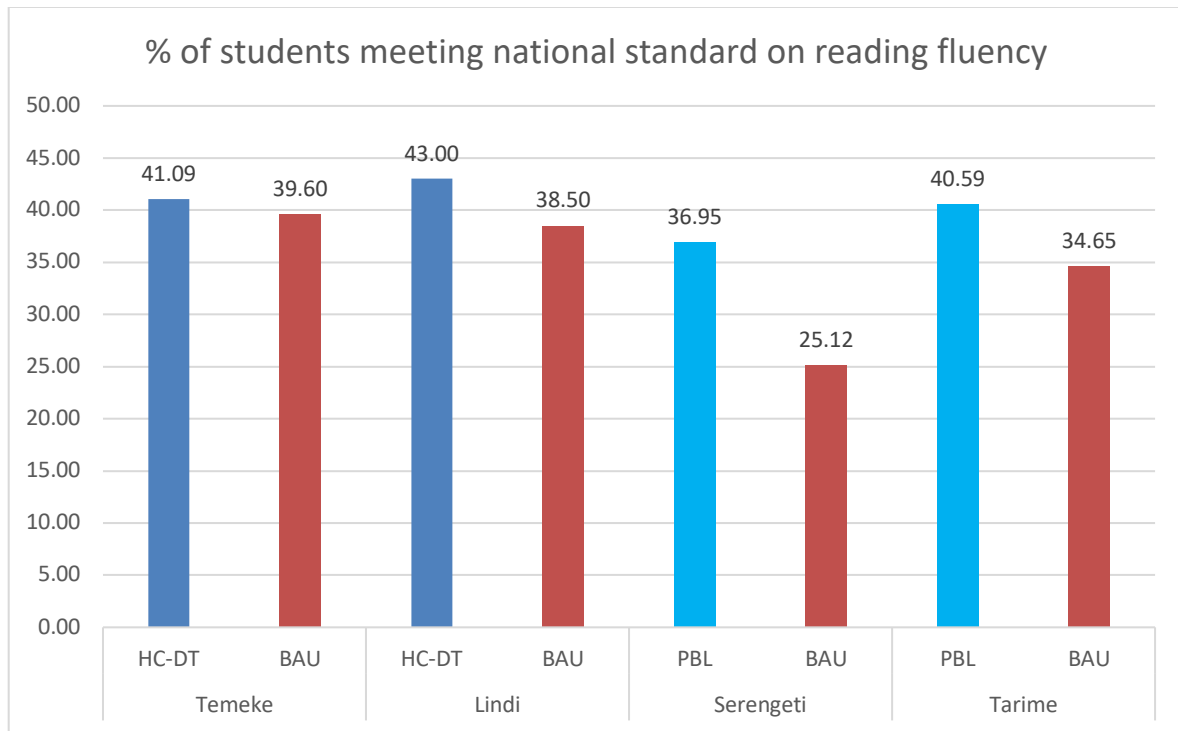
State of Pedagogical Practices
The pedagogical practices in the study area showed variability in the implementation of learner-centred pedagogies like play-based learning (PBL) and human-centred design (HCD). Teachers in schools with exposure to these pedagogies generally displayed better practices in these areas compared to 'business-as-usual' schools. For instance, teachers in PBL and HCD schools frequently acknowledged student effort, maintained a friendly tone during lessons, created a positive learning climate, and supported students' efforts for deeper learning through exploration, which are crucial aspects of these learner-centred pedagogies. However, teaching practices that support student agency in the learning process and connect learning content to students' personal experiences or promote peer-to-peer social connections amongst students were generally underutilised. It is widely accepted that such innovative strategies (Parker, Thomsen & Berry, 2022) enrich the learning process and enhance students' acquisition of holistic skills (i.e., literacy/numeracy, and socio-emotional).

Holistic Learning Outcomes
We found differences in literacy and socio-emotional learning (SEL) skills among Grade 4 children across the districts. These differences were evident when comparing schools with pedagogical exposure to PBL and HCD against those without such exposure. We found a statistically significant correlation between learner-centred pedagogical approaches and foundational holistic learning skills (i.e., literacy and SEL) development of all students including students with self-reported learning differences (i.e., attention and memory difficulties). Except for Serengeti PBL schools, learner-centred pedagogical exposure schools in all four districts had a higher proportion of students meeting the national reading fluency benchmark than in 'business-as-usual' schools. However, while an impressive proportion of students (74.8%) met the national reading fluency standard of 50 words per minute, less than 1% were able to meet the reading comprehension benchmark. This slow progress in transitioning from reading to comprehending what is read highlights the need for any pedagogy that aims to improve students' literacy skills to strengthen the focus on teaching reading comprehension skills in addition to phonics and fluency.

In the area of socio-emotional learning skills (SEL skills) students receiving learner-centred pedagogies (i.e., HCD or PBL), had higher average SEL scores compared to average scores of those who are not receiving such pedagogy (i.e., business-as-usual schools) in all the fours districts.

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% of students meeting national standard on reading fluency

District	Pedagogy	Value
Temeke	HC-DT	41.09
Temeke	BAU	39.60
Lindi	HC-DT	43.00
Lindi	BAU	38.50
Serengeti	PBL	36.95
Serengeti	BAU	25.12
Tarime	PBL	40.59
Tarime	BAU	34.65

Proportion of students who demonstrated skills at or above mean scores, by district and pedagogical type

Percentage of students

Legend: Hard work, Respect, Collaboration

Districts and Pedagogical Types: Temeke (HC-DT, BAU), Lindi (HC-DT, BAU), Serengeti (PBL, BAU), Tarime (PBL, BAU)

Differences in Learning Skills Based on Sex, Age, and Learning Differences

The research found that female students read more fluently compared to male students, but this does not reflect in their ability to comprehend reading passages better than male students, as some male readers performed slightly higher on the comprehension

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test than their female counterparts. However, there was no sex-disaggregated difference in the level of context-specific SEL skills (i.e., hard work, respect, and collaboration). We also found that right age enrolment mattered for children's achievement in literacy skills later on, as students who entered primary school at the right age or at an early age performed better in all three tested literacy skills than those who enrolled at a late age. Even though the study did not find any significant difference in the total SEL scores of students based on age, individual skill analysis showed that over-aged children performed lower in the hard work and collaboration SEL domains relative to their peers with grade-appropriate age.

It is instructive to note that student's situations with a learning difficulty/difference did not disadvantage them in terms of performance in the assessed holistic skills acquisition. There was no statistical difference in the performance of students in the literacy and SEL skills with respect to their learning difficulty/difference status. One can say that the two learner-centred pedagogies of play-based learning, and human-centred design being implemented across the four districts are creating enabling and positive learning climates for all students to excel irrespective of certain disabilities or learning differences. It is therefore important for education stakeholders in these districts to continuously provide the necessary resources for teachers and school leaders to engage and support all students in the learning process equitably.

However, it must be noted that where differences in skill levels were observed based on the three equity variables (i.e., sex, age, or learning differences), the study did not conclusively establish whether the practice of PBL and HCD pedagogies significantly influenced these differences. The cross-sectional nature of the study limits its ability to establish causality or the direction of these relationships.

Teacher Characteristics and Classroom Climate

Most teachers that we observed had relatively low educational qualifications, with a significant proportion holding only a certificate in education. Training in learner-centred pedagogies was not uniformly distributed, with 100% of teachers in PBL schools in Serengeti and Tarime having received training, while only 20% of teachers in HCD schools in Temeke and Lindi had received similar training. Classroom climate observations revealed a lack of print materials in most classrooms, limited practices to acknowledge student effort, and limited effort in maintaining a friendly tone. These are essential for a positive learning environment.

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Contextually defined and relevant socio-emotional learning skills

Local education stakeholders and children identified over 10 SEL skills they cherished and valued. However, it was observed that the priority given to these skills varied between stakeholder groups (i.e., parents/caregivers, teachers, local education officials, and children), and by location (i.e. urban, peri-urban, and rural). An elaborated process of consolidating, ranking, and testing produced three key domains *(i.e., hard work, respect, and collaboration)* as the SEL skills that stakeholders prioritised for children in this educational context in Tanzania.

RECOMMENDATIONS

Based on the findings from the research, here are five recommendations for donors and wider education policy and practice in Tanzania:

1. **Expand Learner-Centred Pedagogy Training**: For Schools2030, training on HCD should be swift for all teachers in Temeke and Lindi, and these should be earlier in the academic year to allow for classroom application with students in a way that can shift their holistic skills upwards by the time of Grade 4 completion. For the wider education community, this research has partly shown that learner-centred teaching strategies have promising prospects in improving literacy and SEL outcomes for all children irrespective of their learning differences/difficulties. We suggest exploring enhancing the use of PBL and HCD practices in Tanzania to promote student agency, deeper learning through exploration, experimentation, and problem-solving. As we work towards improving and strengthening education systems to be inclusive and effective for equitable outcomes, further research on learner-centred pedagogies should be explored.

2. **Focus on Reading Comprehension**: While the innovative, learner-centred pedagogies seem to deliver well on the pre-reading skills and fluency in the context of Tanzania, more effort is needed in devising ways to improve reading comprehension skills alongside phonics and fluency in literacy. For Schools2030, as children and teachers engage in design ideation for school-level innovations, it will be important to monitor where the innovations are implemented and how they support children's acquisition of comprehension skills.

3. **Strengthen Print-Rich Environments**: Invest in resources to make classrooms more print-rich, fostering a more conducive learning environment. Teachers and educators should consider incorporating

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visually appealing displays, relevant educational posters, and student work to enhance the overall learning atmosphere in the classroom. It will be important for the education community to consider this as one of the 'good buys' in quality education programming as there is a good body of evidence supporting the relevance of print-rich learning environments and their effect on learning, especially at the primary school level (Akyeampong et al., 2023)

4. **Contextualised SEL Skills Development**: Tailor SEL programmes to align with locally valued skills, while considering different stakeholder perspectives. The wider education system should be structured to empower children of all abilities and create a holistic individual who has academic knowledge as well as social skills to excel in society. This will mean that the current system of judging teacher performance based solely on students' test scores should be expanded to consider whether the learning process engages students, connects curriculum content to students' personal and social experiences, and fosters the development of essential SEL competencies and societal values.

Results from the study were disseminated to stakeholders across the regions studied.

A cross-section of stakeholders at the dissemination event for Temeke District.

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A cross-section of stakeholders at a dissemination event in Serengeti District.