



The **LEGO** Foundation

Partners in Play Project (P3)

Baseline Report

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This report was produced for Right to Play (RTP) as part of its Baseline Evaluation of the Partners in Play (P3) Learning through Play (LtP) Project implemented in Ghana.

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For any questions related to the Baseline Evaluation, please contact:

Professor Kwame Akyeampong (Principal Investigator)
Centre for the Study of Global Development
Faculty of Wellbeing, Education and Language Studies (WELS)
School of Education, Childhood, Youth and Sport
The Open University | Stuart Hall Building | Level 3 | Walton Hall
Milton Keynes | MK7 6AA

Acronyms and Abbreviations

ANOVA	Analysis of Variance
CPD	Continuous Professional Development
CoTT	Continuum of Teacher Training
DEO	District Education Officials
DL	Differentiated Learning
DTST	District Teacher Support Team
GALOP	Ghana Accountability for Learning Outcomes Project
GREAT	Gender Responsive Education and Transformation
GR-CoTT	Gender-Responsive Continuum of Teacher Training
ISELA	International Socio Emotional Learning Assessment
MEL	Monitoring Evaluation and Learning
MOE	Ministry of Education
NTC	National Teaching Council (Ghana)
OU	Open University
PBL	Play Based Learning
PTA	Parent Teacher Association
LtP	Learning through Play
RTP	Right to Play
SES	Socio Emotional Skills
SD	Standard Deviation

SMC	School Management Committee
TARL	Teaching at the Right Level
TOC	Theory of Change
UNICEF	United Nations Children’s Fund

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Executive Summary

The Ghana Partners in Play Project (P3) is a 4-Year and 6-month project (2019-2024), funded by The LEGO Foundation and implemented by Right To Play (RTP) Ghana, in partnership with the Ministry of Education and its agencies and community-based organisations. The project aims to introduce play-based learning defined as *“an experiential, participatory and guided approach, which enhances the teaching and learning process and allow girls and boys organise and make sense of the world as they actively engage with their peers and leaders in educational games and activities.”* (RTP Gender Responsive Play-Based Learning Year 1 Trainer Manual p 9.) The expectation is that play-based learning will empower Ghanaian children to become creative, engaged, and lifelong learners.

Ultimately, the project aims to improve the quality of education for Ghanaian girls and boys aged 4-12 through a scalable and replicable Learning through Play (LtP) model¹ by improving the capacity of the Ghanaian education sector to integrate LtP in the school curriculum and instructional practice.

The Evaluation Team designed a comprehensive baseline evaluation to provide an information base against which to measure the impact of the P3 project when it ends. The Project’s performance monitoring framework (PMF) (appendix 1) has key indicators linked to the project objectives and implementation plan. The results of this baseline evaluation offers insights for planning changes, monitor and evaluate future performance.

Purpose of the Baseline Report

Primarily, we designed the baseline to provide information on teachers and headteachers knowledge, attitudes and practice regarding the role of play in learning, caregivers’ knowledge, and attitudes to play, and the readiness of the education system to support the integration of learning through play in basic education. It was also to assess the current status of children’s socioemotional skills and how learning through play can help to improve these skills.

Overview of Evaluation Approach

The baseline adopted a quasi-experimental design with a longitudinal cohort tracking to assess impact at the end of the project. This design would help to understand how Ghanaian children, teachers and caregivers who have benefitted from the intervention improve their knowledge, attitudes, and practices in relation to play-based learning

The evaluation design provided data project indicators and to serve as comparison with endline data that would be collected in 2024. To collect and analyse data for each indicator we reviewed and defined all the RTP indicators, added some indicators of our own, and used the main baseline evaluation questions to design the evaluation. Survey and classroom observation items were aggregated under sub-themes or task to generate data for indicators and analysis.

It was not possible to use the baseline to provide data for some of the indicators and we therefore omitted these in the evaluation. For example, it dropout rate, net enrolment etc. are data that are best collected administratively through a Monitoring and Evaluation project design, rather than through the baseline study.

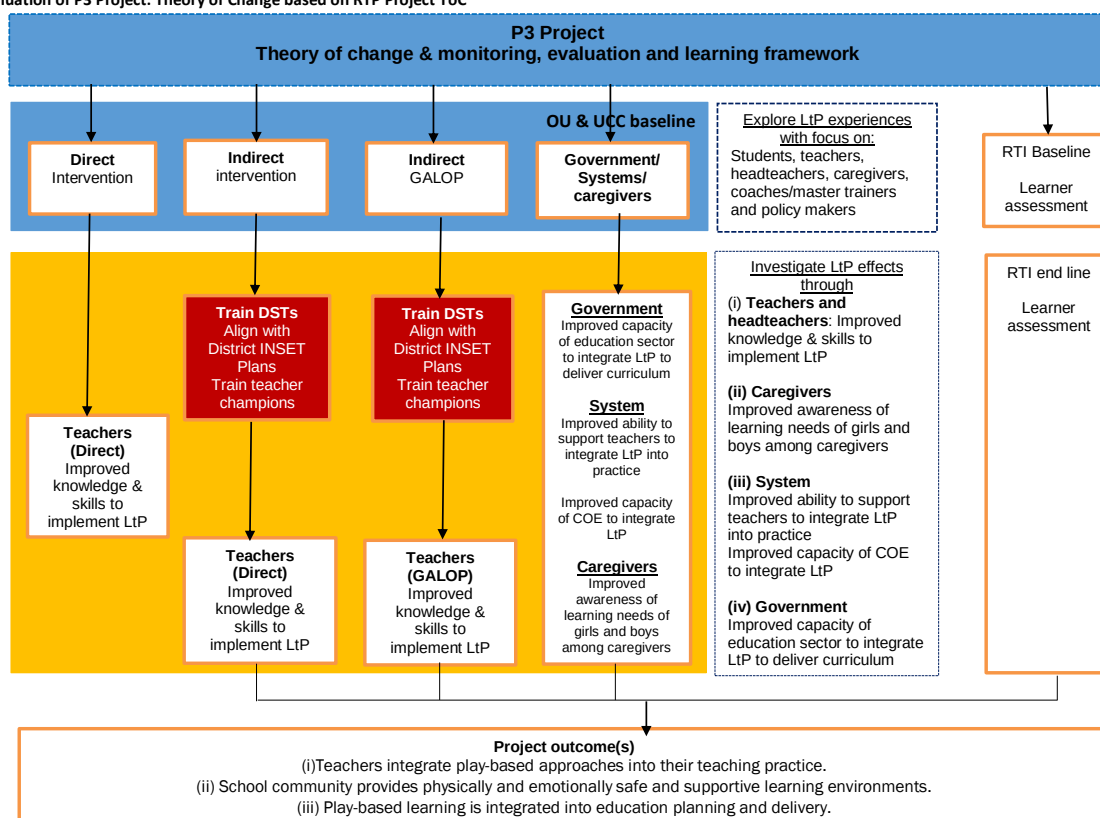
The overarching question of the baseline evaluation is:

¹ Learning through Play (LtP) and Play Based Learning (PBL) is used interchangeably in this report

- What do the findings indicate about the areas and issues that the P3 learning through play project should focus attention on to enhance the effectiveness of its implementation and achieve its objectives?

Figure 1 shows the P3 Project Theory of Change (TOC) which informed the evaluation design. It provides the starting point upon which to assess the project outcomes and impact. The expectation is that through the direct and indirect project interventions teachers and headteachers would improve their learning through play knowledge, attitudes and practices; caregivers would also improve their knowledge and attitudes, particularly become more aware and supportive of using play to support learning for both girls and boys; there will be improved support to teachers to integrate LtP into their classroom practice; finally at national and district level the importance of using learning through play to improve basic education would be enhanced.

Figure 1: Evaluation of P3 Project: Theory of Change based on RTP Project ToC



Baseline Study Sample and Instruments

Out of a target of 7200 respondents we were able to collect data for 5559 respondents representing about 77% of the target sample: headteachers about 90%; teachers, 83%, caregivers 68% and children 81%. Caregiver sample was the lowest but similar caregiver studies in Ghana have achieved similar response rate. For example, Wolf & McCoy, 2017 reported 64% caregiver response rate in their study. All of our achieved sample sizes are high enough to detect statistically significant effects if they exist in the population of interest.

Table below shows the total sample sizes for each group surveyed through quantitative methods in the three treatment and control groups.

Survey Baseline Sample Achieved

Group	Target	Actual	Difference	% achieved
Headteachers	300	269 (M 205; F: 64)	31	89.6%
Teacher	1500	1248 (M: 555; F: 693)	252	83.2%
Caregiver	2700	1844 (M: 846; F: 998)	856	68.2%
Child	2700	2198 (M: 1014; F: 1184)	502	81.4%
Total	7200	5559	1641	77.2%

Overall, we achieved high enough sample sizes for each group to detect effects if they exist in the population of interest – that is correctly reject the null hypothesis when we should.

Qualitative data formed an integral part of the baseline evaluation. Due to Covid 19 restrictions it was difficult to access and interview some of our targeted qualitative sample e.g., Ministry of Education, Ghana Education Service officials. Nevertheless, we were able to interview as many relevant groups as possible (children, caregivers, district circuit supervisors) for the baseline. The total sample achieved for the qualitative data was 95.

Qualitative Data Sample

Headteacher	Teacher (P1&3)	Caregiver (P1&3)	Child (P1&3)	District Officials	ITE Providers	SISO	EC Coordinator
4	28	17	16	17	2	10	1

We developed relevant instruments for each Baseline sample as shown below

Instruments

Teachers	Survey
	Classroom observation
Children	Child Survey and ISELA
Caregivers	Surveys
Systems	Interviews
Teachers, Children & caregivers	Case Studies
Headteachers (HTs)	Survey and interviews

Literature

Play-Based Learning

Different terms, for example, “playful learning”, “play-based learning”, “learning through play” and “pedagogical play” (McInnes, 2019; Dzamesi & Van Heerden 2020; Edwards & Cutter-Mackenzie 2013), are used to describe the interrelation between play and learning and how that interrelation can enable children reach specific curriculum goals.

Play-based learning involves planning and selecting from possible approaches ranging between child-initiated and teacher-directed activities (Edwards & Cutter-Mackenzie, 2013). Play-based learning exists along a continuum: free play, which gives children room for exploration and discovery with little constraints. However, to maximize learning, there is general consensus that play requires adult support in setting up the environment and providing meaningful and relevant scaffolding. So, along the continuum of play-based learning is guided play, which is a form of child-directed play with adult

support (Weisberg and Zosh, 2018). Games are another form of play-based learning and includes physical games such as hiding, throwing, and catching, and more intellectual games such as card, board, and computer games. Fostering a sense of play in the learning process, however, requires a balance of initiative in the child-adult relationship where adults provide the needed support (e.g., prepared environment and scaffolding) and children experience agency (Zosh et al., 2017).

The effective play-based learning (PBL) teaching approaches detailed in the Ghana-based P3 project include evaluating classroom activities holistically, i.e., in terms not only of teacher action but of student response, the source of the activity – i.e., whether it is student or teacher-led, the materials used to promote learning, the focus of the activity, the engagement of the class and the general climate. Play activities suggested in P3 project include, • Songs or energisers • games with rules • physical play • using objects as representations • symbolic play (RTP P3 Monitoring Plan Document) These approaches define play-based learning (PBL) as including games, songs, and roleplay. However, there are also pedagogies which are clearly wider than play-specific activities, and which would be seen in classrooms and lessons which are not particularly focused on play. These include: • interactive group activities (e.g., games, group work, think-pair-share learning, role plays, demonstrations, songs, rhymes) • play-based, experiential learning • teacher-formed small groups to undertake group-relevant tasks • teacher-created space for discussion (Reflect-Connect-Apply) • good behaviour management • positive communication from teacher to students. In designing the baseline instruments, we tried to ensure that these areas are represented in the kinds of questions and tasks used.

Research on Play

Research on children's play suggests that children benefit through play by constructing competencies in their cognitive, social, and emotional learning. In terms of cognitive functions, play has been linked to literacy and numeracy development, problem solving, creativity and divergent thinking. In addition to the cognitive skills, children need social and emotional skills to learn to live and work with people of diverse backgrounds and for different purposes. This competence has often been termed life skills. Research suggests that play provides the rich experiences children need to learn social skills, become sensitive to the needs of others, manage their emotions, learn self-control, and learn to share space and ideas with others (Isenberg & Quisenberry, 2002).

Research also suggests that the relationship between teachers' stated beliefs about play-based learning and their classroom practices is important. Teachers typically acknowledge the value of play in children's development and learning, possibly as a result of their academic and professional development but often fail to demonstrate this in their practices (e.g., Ranz-Smith, 2007; Sandberg & Heden, 2011). For the baseline study, it was important to understand whether this also pertains to the Ghanaian context.

For the baseline we investigated caregivers' views of play and education for any possible gendered expectations. These included gendered expectations of both children's and adults' roles related to play. Building on the available research about caregivers' knowledge, attitudes and practices relating to play, we gathered data on: caregivers' beliefs about play and learning at home and at school, caregivers' attitudes towards the relative value of different types of play such as games, physical play, imaginative play, indigenous play; parenting behaviours, including spousal involvement in play and learning activities and the freedom and choice given to children; children's current engagement in play and learning when at home, involvement with other family members, places to play and resources available for play.

Key Findings – Direct Intervention

The study provided baseline indicators for teachers, headteachers, caregivers and children in the Direct Intervention sample only (see appendix 1). The findings are summarised in this section.

Teachers

Teacher survey items focused on • teachers' own understanding of play, • teachers' attitudes to play in the classroom and in school • teacher's understandings of play and its learning value and gender perspectives on play.

The survey aimed to establish the current levels of teacher's awareness, knowledge, and skills to facilitate children's learning through play. Research suggests that play is useful for developing literacy numeracy, and problem-solving skills, creativity and divergent thinking skills. In the survey we were interested in how much teachers linked play to these areas.

1. Most teachers said they knew about the importance of using play to support the development of children's academic, artistic and athletic skills and holistic development – a high proportion of them scored equal to or above the mean – Academic skills: 69% male and 61% female (mean: 17.46 based on a 20-point scale); Artistic skills – 89% male and 85% female (mean: 8.15 on a 10-point scale; Athletic skills – 94% male; 91% female (mean: 4.14 on a 5-point scale). However, knowledge of play to foster development of socioemotional skills was lower (34.4 out of 40-point scale) – 55% male and 49% female.
2. Most teachers had a stronger belief in direct instruction than in play-based learning activities to promote learning. Average score was -15.70 out of a +34 to – 70-point scale. (Male: -15.91; female: -15.61) which suggested given a range of instructional approaches teachers were inclined to choose direct instruction² over play-based approaches. Only 44% male and 47% female scored above the average.
3. Male teachers achieved a higher score in knowledge of the importance of socioemotional skills for children's overall development than female teachers – 63% and 55% respectively. Also, a higher proportion of males (70%) belief that socioemotional skills are best developed or supported through play-based learning than female teachers (52%).
4. When teachers were asked whether the best way to help pupils learn in their school was mainly through *play/active learning*, *direct instruction*, or through a combination of the two, about 50% and 40% of male and female teachers respectively favoured a combination of play and direct instruction. Only 38% male teachers and 50% female teachers favoured only play/active learning as the best way for pupils to learn in their school.
5. However, most teachers believe that play is generally important for learning – 95% male and 98% female teachers: similarly, for traditional games 96% male and female felt they were important and for sporting activities 92% male and 96% female said these were important for learning. Most teachers are in favour of taking time to play with children at home – 91% male and 92% female. However, only 71% for male teachers and 68% for female teachers were able to state 3 or more skills that could be developed through general play which suggests that although they view various forms of play as important for learning, many were not as knowledgeable when it came to the wide range of skills that learning through play could foster.

² A negative score or lower is a higher indication of belief in direct instruction relative to active-based learning

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6. Most teachers said they had not received formal training in how to promote the development of children's socioemotional skills. Only about 49% male and 44% female indicated they had either through in-service or pre-service training.
 7. About 76% male and 74% female teachers said they felt confident to use play in their lessons. However, only 52% male and 57% self-reported using play activities in their lessons. From lesson observation of Grade 1 and Grade 3 classes it was revealed that only 23% male and 34% female actually used play as part of their lesson, and just about half use manipulatives (52% male and 52% female).
 8. Overall, teachers' knowledge about the importance of using play to promote learning is high; however, it would appear that because many had not received training the proportion who actually used it in their lessons was relatively low.

Headteachers

Headteachers are expected to support teachers to deliver the school curriculum. Their beliefs and attitudes towards the use of play in learning is therefore important if they are to encourage teachers to integrate play in their teaching.

The following are the key findings with respect to headteachers,

1. Most headteachers are of the view that play can be used to develop *academic, artistic and athletic* skills. For academic skills 73% male and 82% female achieved a score equal to or above the mean of 17.77 out of a total 20-point scale assessing their knowledge of play and the development of academic skills; For artistic skills 92% male and 76% female teachers achieved a score equal to or above the mean of 8.17 out of a 10-point scale; and for athletic skills 98% male and 88% female achieved a score equal to or above 4.16 out of a 5-point scale. However, the percentage who scored equal to or above the mean on the use of play to develop socioemotional skills was lower – 57% male and 65% female (average score of 34.64 out of a 40-point scale).
2. Just like teachers, overall, headteachers preferred the use of direct instruction to improve learning than using active/play-based approaches. Only 47% male and 41% female scored above the average of -13.30 out of a +34 to – 70-point scale. (Male: -12.90; female: -14.35)
3. On the importance of developing socioemotional skills only about 53% of male headteachers and 65% of female teachers achieved a score equal to or above the mean of 39.98.
4. About 47% male and female headteachers believe that a combination of play-based instruction and direct instruction was the best way to promote school-based learning. About 45% and 53% male and female headteachers said using only play was the best approach.
5. All headteachers (100%) believe play is important for promoting learning in school. Nearly all belief traditional games (96% male, 100% female) and sporting activities (92% male and 100% female) are important for learning. Most believe that caregivers should spend time to play with their children and that playing games at home can help a child's development (98% male and 94% female).
6. However, not many headteachers were able to list many skills children can develop from playing games - only about 55% male and 47% female headteachers were able to mention 5 or more skills.

Caregivers

We were interested in how knowledgeable caregivers were of the importance of play in developing skills in children, whether they thought they had a role in promoting play at home, and whether play was important in school-based learning.

The following are the key findings:

1. Whereas over 90% view play as important for developing artistic and athletic skills, only about 45% male and 56% female caregivers had a higher than average score on the importance of play in developing academic skills. In terms of the importance of play in developing socioemotional skills only 41% male and 46% female caregivers achieved a score above the average.
2. Caregivers were strongly inclined to view direct instruction as more useful for promoting learning in school than using active/play-based learning approaches (-23.81 out of a +34-to--70-point scale). Only about 45% male and 34% female achieved a score above this average.
3. Generally, caregivers value children playing at home – about 79% male and 76% female belief it is important. They valued in particular playing traditional games (90% male and 83% female). However, when asked to list skills children can develop by playing games most could only mention two or more skills (84% male and 74% female).
4. Most caregivers belief it is important that they spend time playing with children (72% male and 79% female), but less than 50% could mention more than one way in which they could play with children (about 47% male and 49%). When they were asked whether they spent time playing with their child only 21% male and 33% female said they did so. However, about 59% male and 48% female said they are able to create opportunities for children themselves to play.
5. Caregivers felt that play had more value in developing social skills than academic skills – social skills (Male 57%; Female 52%); academic Skills (Male 30% Female 28%); better thinking and reasoning abilities - Male 30% and Female 32%); Solving Problems - Male 19% Female 19%. This shows a low opinion on using play for play-based cognitive development even though they still think using play in school environments is of better value than using it in the home environment (Male 86% and Female 83%).
6. About half of caregivers said it is better to use direct instruction to help children learn in school (Male 50% and Female 50%) than using play or activity-based approaches (Male 11% and Female 18%). Only about a third (male 37% and female 30%) felt it was better to combine play and direct instruction.

Child – International Socio Emotional Learning Assessment (ISELA)

We used the socio-emotional domains in the ISELA for children in P1 and P3 to assess children's social and emotional skills. We combined a number of indicator scores to measure children's level in the following life skills - relationships; *stress management*; *empathy*, *perseverance* and *conflict resolution* based on a 100-point scale. On this scale, a score closer to 100 is a strong indication of life skills.

The following are two key findings:

1. Children performed poorly on *stress management* (18.52 out of a 100-point scale (male: 18.84; female: 18.24) with only about 50% male and 49% female of children in grade 1 scoring above the average. About 61% male and 63% female children in grade 3 scored above this low average. For *relationships* the average score is 57.4%; *empathy* – 46.6%; *perseverance* – 45.2% and *conflict resolution* 44 %.
2. We calculated a total ISELA score and used this as our measure of ‘life skills’. The score indicated that children in Grades 1 and 3 have low life skills. The average score is 39.89% (male: 41.36%; female: 38.59%). For grade 1, the total average is 46% for male children and 38% for female children. For grade 3, this is 60% male and 55% female.

Child Survey

We used a child survey to measure how children viewed their learning environment and their teachers use of play to promote learning. We measured their perception of the learning environment in terms of classroom safety and aggressive behaviour. On the scoring scale the higher the score the more negative the child’s perception.

1. The average score was 22.86 out of a 100-point scale - (male: 23.79; female: 22.02) which means children perceive their learning environment to be generally safe. However, a breakdown of scores showed that only about 47% of children in both grade 1 and 3 scored better than this average. From the qualitative data, we found that corporal punishment (canning) in the classroom was a major concern.
2. We asked children’s views on teacher care and monitoring, encouraging autonomy, creating conducive interaction. Based on achieved a non-zero score. Over 90% achieved a non-zero score for each of these dimensions which suggests that children perceive their teachers to be able to create a good environment for learning.
3. However, children did not think teacher’s ability to facilitate learning through play was high - on average 57% of children in grade 1 and 60% in grade 3 felt that teachers were using play well for their learning. This is consistent with the classroom-based observation data in Direct schools where the use of play-based approaches in the instructional process was relatively low.

Findings from comparing intervention groups

We also collected data across four groups – schools classified as Direct intervention schools where RTP would be working directly to improve play-based learning, Indirect schools, where RTP input would be channelled through support to districts to train teachers in schools RTP is not targeting directly, and Ghana Accountability Learning Programme (GALOP) schools and schools which served as our ‘control’ because they were outside the three groups of schools.

It is important to point out that Control and GALOP schools could still have benefitted from other NGO or government interventions in the past, including previous RTP intervention programmes. Therefore, it is possible for all the types of schools prior to the current RTP intervention to have received some inputs to improve teachers’ pedagogical practice including play or activity-based instruction and learning.

The following are the main findings:

Teachers and Headteachers

1. Generally, across all the groups, teachers and headteachers consistently rated the value of guided play higher than direct instruction, and consistently rated games lower in terms of their learning value and contribution to the development of children's socioemotional wellbeing and skills. Free play is considered to have the least value for learning academic concepts. Also, direct and Indirect school teachers' and head teachers' rating of play-based learning was lower than teachers in GALOP schools. Guided play is often viewed as play that is purposely structured to teach an idea, concept or skill. This may explain why teachers often rated it higher than direct 'teacher-centred' instruction.
2. Headteachers and teachers all point to the need to improve structures for delivering play-based learning in schools including provision of teaching and learning materials (TLMs).

Children

1. Generally, more boys than girls performed caring duties at home. This is particularly high in the North (Direct Schools Girls: 84.7% and Control: 87.9%). Even in Accra, where this was much lower about 51% of girls compared to 28.8% of boys performed caring duties at home.
2. Also, girls in the North did more household chores than boys (Control – Boys:72.3%; Girls: 93.9%; Direct- Boys:64.5% and Girls: 89.6%). Generally, girls in all regions reported spending more time on chores than boys.
3. Children in the North do more farm work, engage in cattle keeping or other family business, with boys doing more of these than girls (Direct – Boys: 74.1%; Girls:66.8%). Similarly, more boys than girls said they engaged in business activities in Volta, whereas in Accra more girls said they engaged in family business than boys.
4. Generally, children belief the best opportunities for learning is at school - averaging over 90% in Volta and North and higher than in Accra. Opportunities to study outside of school time is lower especially for boys and girls in Control schools in the North (56.1% boys and 58.3% girls) and relatively higher for children in Direct schools (72.2% boys and 73.9% girls)
5. Grade 3 children said they spend their time On a typical weekday about 79% and 97% of grade 3 children said they were able to see their plays and play respectively. By region, about 89% of boys and 90% of girls in Accra, 94% of boys and 91% of girls in Volta and 90% boys and 88% girls in North reported spending a typical day playing or seeing friends respectively. This means play and meeting with friend is a big part of their home life.
6. In terms of engaging in sporting activities there are striking differences between girls in both control and direct schools in Accra (86.6%: boys and 67.3%: girls) ;(Control – Boys:80.0% and Girls:48.3%). Generally, girls are less likely to engage in sporting activities than boys in all regions.
7. Children appear to lack conflict resolution skills and self-concept. Their stress management score was the lowest compared to other socioemotional skills measured - at under 30%, but higher among children in Direct schools than in Control schools. It suggests that most children are likely to find managing stress difficult.
8. Child gender is significantly, but negatively associated with all physical activities and two cognitive-stimulating activities (*craft and board games*) - girls reported having lower preference for these games than boys.

-
9. Child gender is positively and significantly associated with *singing songs and local games*. Girls reported having higher preference for these activities than boys.
 10. We find negative associations between household risk, stress management, empathy, self-concept and total ISELA scores, indicating that children with higher household risk had lower ISELA scores. In contrast, household risk was positively associated with perseverance, suggesting that children who reported higher household risks had higher scores on the perseverance task.
 11. Boys have higher odds of reporting caregiver engaging in projects/activities with them. Girls have lower odds of reporting caregiver engaging in sports/active play with them
 12. Children in class **3 have higher odds** of reporting caregiver engaging with them in cognitive-stimulating activities (read book, told story, boardgame/puzzle), discussions and remote learning via radio.
 13. We asked children whether they played more now compared to time before COVID-19 pandemic. The results suggest that children's play activity had decreased with girls affected more than boys, particularly girls in Direct schools in Accra. (North – Boys:57.5%; Girls: 50%) (Volta – Boys:85.7%; Girls:61.7%) and Greater Accra - (Boys: 86.6%; Girls: 67.3%).

System level and education officials

1. Although Directors of Education and Education supervisors believe that through the support of the RTP project they can deliver effective training, they also see the lack of consistent provision of financial resources by government as a major barrier to sustaining any improvements that may result from the intervention.

Caregivers/parents

1. About 50% of caregivers have no education. It is highest in the North - Direct: 80.0%; Control:75.3%. This has implications for their ability to support their children learn at home especially with homework.
2. About 75% of households earn about \$139 a month which translates to about \$4.6 a day. In effect, most household earnings were above the poverty line of \$1 a day.
3. The household wealth index indicates that the poorest caregivers are in the North and relatively richer households are in Accra with Volta in between. Caregivers also spend a little over 7 hours a day working.

Recommendations

Teachers and Headteachers

1. A conscious effort should be made by the P3 project to improve teachers' commitment to using play-based activities to develop academic concepts. This is clearly not seen as effective for developing academic skills. Project documents suggest there are good examples of play activities

for developing literacy and numeracy concepts or skills. This should feature strongly in the training of teachers to use play-based activities to develop academic skills. As teachers see the value of such activities in developing literacy and numeracy skills, they are more likely to increase its use in the instructional process.

2. Teachers tended to hold stronger beliefs in didactic/direct instruction than play-based activities to promote or support children's learning in school. This suggests the need to purposely show teachers how play-based instructional activities could be increasingly made an integral part of their teaching as they are shown its value in developing basic academic concepts.
3. Teachers appreciated the importance of developing children's socioemotional skills. However, they also admit not making the development of socioemotional skills a priority area in their own teaching and a goal in their interaction with students. The project should provide teachers with concrete examples of how play-based learning activities can facilitate socioemotional skills, and support Colleges of Education to strengthen this area in the teacher education curriculum.
4. Guided play is viewed as a play activity aimed at developing understanding in a subject or area of learning. This strong belief can be used by the project to raise the profile of play-based learning to counteract the characterisation of play held by some as simply serving as icebreakers during the teaching and learning process. This should be in addition to promoting pedagogies that use play to promote experiential learning, to develop basic negotiation, conflict resolution skills and to manage stress.

Caregivers

1. The P3 project should promote culturally responsive play strategies for caregivers to engage with children to enhance their life skills. First, by making caregivers more aware of the importance of life skills in a child's development. Second, show them which local activities and games they can use in their homes and communities to develop life skills schools are fostering through play-based learning.
2. Many caregivers are illiterate or semi-illiterate - about 52% reported no formal education and only about 35% had received either primary or junior high school education. Due to the high levels of illiteracy, more use should be made of audio and visual images to communicate the importance of play-based learning activities in the development of children's cognitive learning and socioemotional skills. Using workshops to provide examples of experiential play-based learning could improve their appreciation of its value to learning. Promoting caregiver involvement approaches can increase children's play-based learning.

Validation Workshops

After the study, we presented findings to a sample of district education officials, circuit supervisors, teachers and caregivers from the three study regions (Accra, North and Volta). Below is a summary of their views after hearing the findings.

Teachers

- ☐ Teachers see play as a means of arousing interest or use them more as icebreakers than directly to meet objectives of a lesson.
- ☐ Teachers are of the view that play cannot help them to achieve the curriculum goals

-
- ❑ Resources are not always available for PBL. The specific concerns are the lack of classroom space (although some play-based learning can be organised outside the classroom) and adequate teaching and learning materials.
 - ❑ There was a strong sense that the project should do more to move knowledge acquired at the training centre to the school and classroom level. This reflects the view that cascading training is not being effective.
 - ❑ Cascade training in its journey gets reduced - 5 days becomes 2 days then eventually 1 day. As a result, teachers do not get the full training required.
 - ❑ Links to play in the curriculum are not always obvious and PBL needs to produce improvements in learning to improve adoption.
 - ❑ There is loss of contact hours due to numerous interventions so there is not much time to put into practice many of the play-based knowledge and skills

Headteachers

- ❑ Most headteachers lack knowledge of the play-based learning concept and therefore are not able to provide the kind of professional leadership to support teachers in using play-based learning activities.
- ❑ Most headteachers are of the view that teachers use play as energizers or icebreakers in their teaching and not as envisaged by the project.
- ❑ Headteachers are not doing their mandatory lesson observation to understand how to support teachers to promote play-based learning. The view is that they often use one or two play-based activities to reach conclusion that it is being used satisfactorily by teachers.
- ❑ There is a strong view that headteachers should be a key target of the project to ensure teachers receive their support to implement new ideas and skills from PBL workshops.

Caregivers

- ❑ View play as a mainly recreational activity with limited learning value. They complain that their children are not learning when they hear that teachers are using play in teaching.
- ❑ Teachers who use traditional games in teaching are sometimes ridiculed and called names - e.g., 'pilolo training', 'oware training'. Community pressure against PBL is due to lack of understanding of the concept.

System

- ❑ There is no fidelity of implementation in the cascading at the district levels
- ❑ Ownership of the programme is a challenge – the perception is that the project is externally owned can undermine local commitment and sustainability.
- ❑ There is the danger that the P3 project will be seen as another NGO programme. This weakens local ownership and long-term commitment.
- ❑ PBL should be made part of the curriculum of the Teacher Training colleges so teachers become better prepared to implement it in their classrooms

RTP Ghana Country Office should use the main findings of this baseline to review the LtP program especially the implementation strategy for areas that need revision or strengthening.

The project should increase emphasis on how teachers can use play-based learning to enhance socioemotional wellbeing of children. Teachers should be given training in how to make this explicit objective in their lessons and introduce assessments that measure its development.

Although the findings suggest that generally the learning environment is positive especially teachers support and encouragement to students, caning is still prevalent and strongly disliked by students. The project needs more attention on this issue and teachers trained to adopt positive incentives to

reward or encourage participation. This is particularly important for building children's self-confidence and socioemotional wellbeing. The project should use its Monitoring and Evaluation plan to track progress in teachers classroom management skills and children's participation in learning.

RTP should consider extending its programme to the Colleges of Education focusing especially on changes or improvements in the curriculum to improve teachers capacity to promote children's socioemotional wellbeing and skills. The project could also include support to teacher education programmes to include action research on the use of play-based learning to enhance socioemotional development and in particular stress management.

The baseline team was unable to observe RTP training in action as a result of the constraints/challenges imposed by the COVID-19 pandemic, and therefore is unable to evaluate how it is introduced to teachers. The training for Direct Intervention schools should focus on areas that this baseline has highlighted as needing much attention.

Background to Project

1.1. Project Context and Target Beneficiary Groups

The Partners in Play Project (P3) is a 4-Year and 6-month project (2019-2024), funded by The LEGO Foundation and is implemented by Right To Play (RTP), in partnership with the Ministry of Education and its agencies and community-based organisations. At the heart of project is the play-based learning approach which is defined by RTP as *“an experiential, participatory and guided approach, which enhances the teaching and learning process and allow girls and boys organise and make sense of the world as they actively engage with their peers and leaders in educational games and activities”* RTP Gender Responsive Play-Based Learning Year 1 Trainer Manual p 9. By fostering play-based learning approaches the expectation is that children will be empowered to become creative, engaged, and lifelong learners.

The project has also been designed to support the Ministry of Education (MOE) and Ghana Education Service (GES) to address the challenges related to teaching quality, schools support and management, and institutional capacity to supervise and monitor the curriculum implementation process. It has also been designed so that it aligns with and supports the implementation of the 5-year Ghana Accountability for Learning Outcomes Project (GALOP) targeting 10,000 poorly performing public primary schools, which represents approximately a quarter of all basic schools³. GALOP is intended to improve the quality of low performing basic education schools and strengthen education sector accountability.

The overarching goal of the P3 project is to improve the quality of education for Ghanaian girls and boys aged 4-12 through a scalable and replicable Learning through Play (LtP) model. To achieve this, improving the capacity of the Ghanaian education sector to integrate LtP to deliver the curriculum is seen as an important step. Crucially, this places teachers at the centre of the P3 project, hence the importance the project attaches to improving the efficiency of teacher support systems, strengthening capacity in the community and among caregivers to sustain the expected changes to teaching and learning that will be introduced through the project.

Although the expectation is that learner’s learning will improve as a result of teachers’ introducing play-based and learner-centred activities to deliver better quality instruction, it is important to gain a baseline understanding of attitudes to play-based learning and current teaching practices in primary schools.

1.2. Baseline Evaluation and Start of Project Implementation

Typically, baseline evaluations are conducted before the start of an intervention, but it is also not uncommon for them to start after the project starts.

Due to circumstances beyond the control of the evaluation team, some of which Covid 19 related, this baseline started during the early stages of the P3 project implementation. Given the closeness to the project start period we did not expect sizeable effects if any.

³ 39,737 Public basic schools

14,932 public Primary schools

Source: Medium Term Expenditure Framework MTEF for 2018 -2021

1.3. Project Activities prior to Baseline Evaluation

Due to the impact of covid 19 restrictions the team was unable to start fieldwork before some early intervention activities had started. However, these activities may not have led to significant changes that could significantly compromise the data as baseline. For example, teacher's classroom practices would require much more intervention effort for changes to show. For clarity on the specific initial workshops that took place before the baseline data collection (April to July 2021), the RTP Ghana office provided a report on activities it had initiated from March to May 2021. These are:

1.3.1. Learning through Play Foundational Training for Teachers.

Participants for this training included teachers from KG1 to P6 from RTP's Direct intervention districts. This training focused on basic foundations and covered key topics such as, using structured games for promoting generic competencies and the application of the Reflect-Connect-Apply (RCA) methodology. The Training also included theoretical understanding of and practical application in core topics and for developing play-based learning (PBL) competencies. It reached 843 (372M/471F) teachers as shown in table 1. About 57% of the teachers who received this training were from the Northern Region.

Table 1: RTP Foundational Training for Teachers in Accra, North and Volta Region

	2020 ANNUAL			
	Central/Greater Accra	Northern	Volta	Total
Male	33	355	83	471
Female	149	124	99	372
Total	182	479	182	843

Source: RTP Workshop Data 2021

1.3.2. Leadership Training for Headteachers and District Teacher Support Teams (DTSTs)

This training was designed to build the capacity of headteachers and DTSTs on effective school leadership skills and how to promote conducive environments for teachers, parents (caregivers), and children to participate in school management systems. It used various Play-Based Learning (PBL) and Active Learning Methodologies to showcase the RCA Methodology. In addition, theories related to play, play pedagogies and alignment of play to education curriculum were also presented. The workshop was also used to introduce the tools, activities, methodologies and approaches used as part of the Gender Responsive Continuum of Teacher Training (CoTT). It reached in total 100 Direct intervention participants across the regions. Again, the majority of those trained (60%) were from the Northern region (table 2)

Table 2: RTP Leadership Training for Headteachers & DTSTs in Accra, North and Volta Region

	2021 ANNUAL			
	Greater Accra	Northern	Volta	Total
Head Teachers				
Male	8	56	15	79
Female	12	4	5	21
Total	20	60	20	100

Source: RTP Workshop Data 2021

1.3.3. School Management and Leadership Training for PTA/SMC Executives

This reached 251 participants (see table 3). This training was designed to build the capacity of PTA/SMC on effective school leadership skills and addressed the following objectives:

- Explore and have understanding of the Partners in Play project outcomes
- Establish a common understanding and alignment of activities to support school efforts to improve learning outcome
- Define and Learn about Play-based learning and link play to support and develop core competencies of boys and girls
- Participate in a play-based learning demonstration for promoting core competencies
- Explain the different roles of a Parent Teacher Association, School Management Committee and Head teachers
- Share strategies for supporting school improvement
- Explain the meaning of community participation and review the community participation cycle (problem analysis, design and planning, implementation, monitoring, and evaluation)
- Identify how PTA sub-committees assist with participation cycle
- Describe ways in which PTAs can promote effective community engagement
- Identify the different styles of leadership and how successful school leadership can bring change and improve the lives of children and adults

Table 3: School Management and Leadership Training in Accra, North and Volta

PTA/SMC	2021 ANNUAL			
	Greater Accra	Northern	Volta	Total
Male	27	106	36	169
Female	20	49	13	82
Total	47	155	49	251

Source: RTP Workshop Data 2021

1.3.4 Ghana Accountability for Learning Outcomes Project (GALOP) Training

Another intervention that was ongoing before the baseline study started was the GALOP Differentiated Learning (DL) programme. Five-day training programmes from November to December 2020 had been organised for teachers in GALOP schools including GALOP schools in the three project regions.

The programmes sought to embed teacher-led differentiated learning within the existing government structure. The programme focused on equipping teachers with the requisite knowledge and skills to support Basic Two to Basic Six learners to acquire basic literacy and numeracy skills so they could catch up with the regular curriculum. Teachers were trained to use activity-based instruction to teach at the right level (TARL) of the child. It is important to also note the P3 project's role in informing the development of TARL materials and training. The project also supported the integration of the LtP approach including RCA in the teachers training materials and a session on LtP was integrated into the national level TOT training facilitated by P3 trainers.

GALOP schools and teachers were included in the teacher survey. However, the sample of GALOP schools excluded GALOP schools that were part of the RTP Direct project

1.4. Target Area and Reach

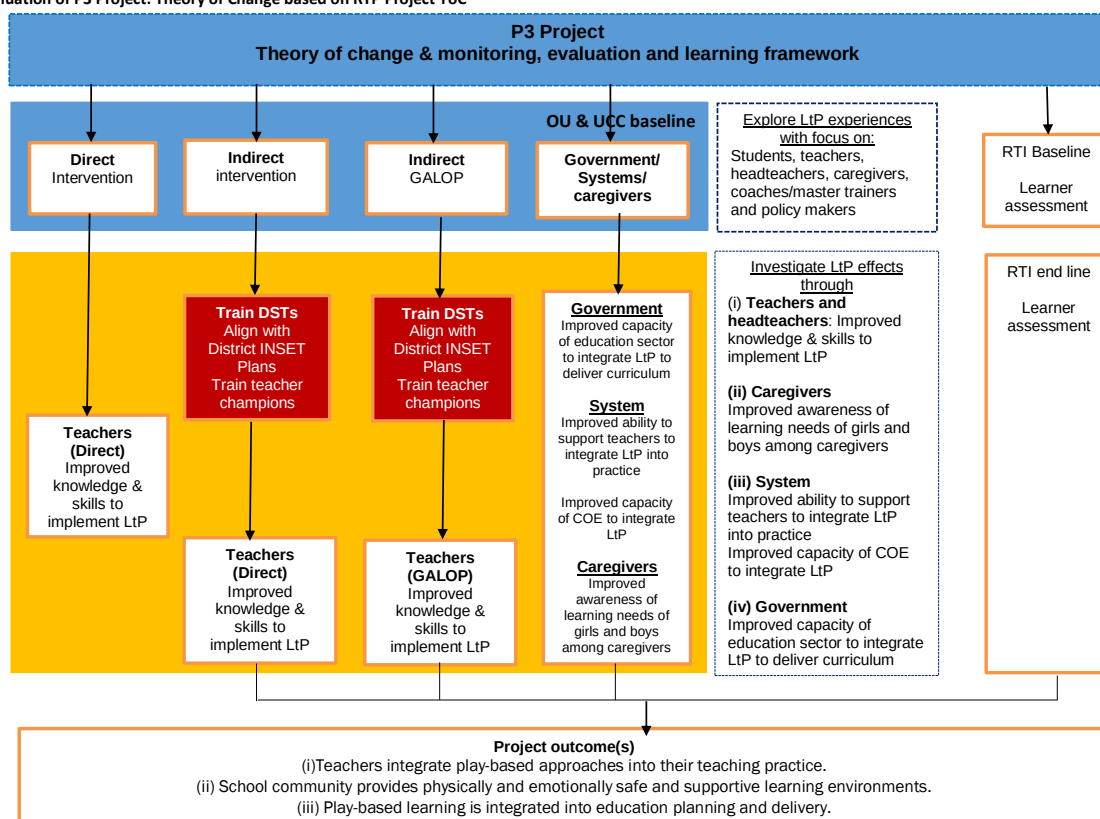
The P3 project is intended to reach 689,920 children, representing three levels of intervention in three regions (Accra Region, Northern Region, Volta Region):

- 32,000 children (14,720 F); from 100 schools that will receive direct and intense RTP support (includes training of 800 teachers)
- 81,920 children (37,683); from 257 schools that will receive support from district support teams (RTP project staff will train district teams and provide support in the training, coaching, and mentoring of additional 2,048 teachers)
- 576,000 children (264,960 F) from 1800 schools, part of the GALOP project (Ghana Accountability for Learning Outcomes Project) that will receive support from district support teams. District support teams will train, coach and mentor 14,400 GALOP teachers⁴.
- An additional 2.55M children in Ghana will benefit from LtP over the next four years as part of the RTP's involvement in the GALOP initiative. This refers specifically to the integration of LtP into the national in-service training framework. This intervention/phase is not covered by this baseline evaluation.

1.5. Theory of Change

Figure 1 shows the P3 Project Theory of Change (TOC) which informed the evaluation design.

Figure 1: Evaluation of P3 Project: Theory of Change based on RTP Project ToC



To drive systemic improvements in learning and over the long term, RTP intervention inputs from system to teachers have to be aligned. This will mean teachers receive in-service training and school

⁴ District support teams will be trained by National Master Trainers and RTP trainers using the training framework to be developed by National level GALOP working group on INSET

level support to shift the balance of their practice from teacher-centred didactic instructional approaches more towards play-based and learner-centred instructional approaches to improve children’s foundation skills, life skills and socio-emotional wellbeing.

Figure 2 illustrates the logic chain of transformation - from system level to child’s level where improvements in learning and socio-emotional level will be achieved through play-based model of teaching and learning.

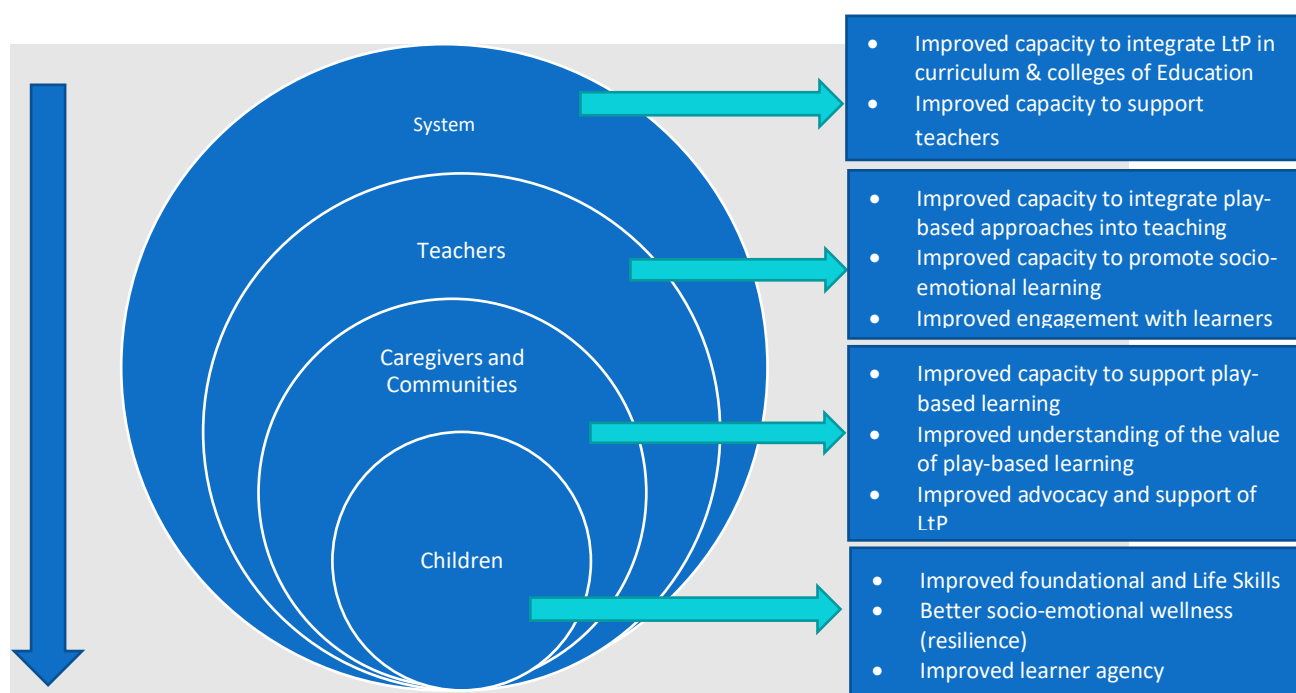


Figure 2: RTP Logic Chain of Transformation

Methodology

2.1. Evaluation Framework

This section summarises the methodological approach the team adopted to generate baseline data in response to the P3 project and baseline questions.

2.1.1. Evaluation Approach and Background Literature

The baseline adopted a quasi-experimental design with a longitudinal cohort tracking to assess impact at the end of the project. The main objective was to understand how children, teachers and caregivers who have benefitted from the intervention improve their knowledge, attitudes, and practices as a result of the introduction of play-based learning in Ghanaian public schools.

The evaluation design provided starting point indicators for the P3 project and enable a robust end line and impact evaluation to be carried out when the project ends in 2024. To collect and analyse data for each indicator satisfactorily we reviewed and defined all the RTP indicators, added some indicators of our own, and used the main baseline evaluation questions to design the evaluation approach. Survey and classroom observation items were aggregated under sub-themes or task to generate data for indicators and analysis.

We reviewed the play-based learning literature to identify issues relevant to the Ghanaian context and inform design of instruments and analysis framework.

What is Play-Based Learning?

Different terms, for example, “playful learning”, “play-based learning”, “learning through play” and “pedagogical play” (McInnes, 2019; Dzamesi & Van Heerden 2020; Edwards & Cutter-Mackenzie 2013), are used to describe the interrelation between play and learning with a focus on enabling children to reach specific curriculum goals.

Play-based learning involves planning and selecting from possible approaches ranging between child-initiated and teacher-directed activities (Edwards & Cutter-Mackenzie, 2013). Play-based learning exists along a continuum: free play, which gives children room for exploration and discovery with little constraints. However, to maximize learning, play requires adult support in setting up the environment and providing meaningful and relevant scaffolding. So, along the continuum is guided play, which is a form of child-directed play with adult support (Weisberg and Zosh, 2018). The third is games, which includes physical games such as hiding, throwing, and catching, and more intellectual games such as card, board, and computer games. Fostering a sense of play in the learning process, however, requires a balance of initiative in the child-adult relationship where adults provide the needed support (e.g., prepared environment and scaffolding) and children experience agency (Zosh et al., 2017).

The effective play-based learning (PBL) teaching approaches detailed in the Ghana-based P3 project include evaluating classroom activities holistically, i.e., in terms not only of teacher action but of student response, the source of the activity – i.e., whether student or teacher-led, the materials used, the focus of the activity, the engagement of the class and the general climate. Play activities suggested in P3 project include, • Songs or energisers • games with rules • physical play • using objects as representations • symbolic play (RTP P3 Monitoring Plan Document)

These approaches help to define play-based learning (PBL) as including games, songs, and roleplay. However, there are also pedagogies which are clearly wider than play-specific, and which would be seen in classrooms and lessons which are not particularly focused on play. These include: • interactive group activities (e.g., games, group work, think-pair-share learning, role plays, demonstrations, songs, rhymes) • play-based, experiential learning • teacher-formed small groups to undertake group- relevant tasks • teacher-created space for discussion (Reflect-Connect-Apply) • good behaviour management • positive communication from teacher to students.

Research on Play

Research on children’s play suggests that children benefit through play by constructing competencies in their cognitive, social, and emotional aspects. In terms of cognitive functions, play has been linked to literacy and numeracy development, problem solving, creativity and divergent thinking. In addition to the cognitive skills, children need social and emotional skills to learn to live and work with people of diverse backgrounds and for different purposes. This competence has often been termed life skills. Research suggests that play provides the rich experiences children need to learn social skills, become sensitive to the needs of others, manage their emotions, learn self-control, and learn to share space and ideas with others (Isenberg & Quinsberry, 2002).

Research also suggests that the relationship between teachers’ stated beliefs about play-based learning and their classroom practices is important. Teachers typically acknowledge the value of play in children’s development and learning, possibly as a result of their academic and professional development but often fail to demonstrate this in their practices (e.g., Ranz-Smith, 2007; Sandberg & Heden, 2011). For the baseline study, it was important to understand whether this also pertains to the Ghanaian context.

For the baseline we investigated caregivers' views of play and education according to any possible gendered expectations. These included gendered expectations of both children's and adults' roles related to play. Building on the available research about caregivers' knowledge, attitudes and practices relating to play, we gathered data on: caregivers' beliefs about play and learning at home and at school, caregivers' attitudes towards the relative value of different types of play such as games, physical play, imaginative play, indigenous play; parenting behaviours, including spousal involvement in play and learning activities and the freedom and choice given to children; children's current engagement in play and learning when at home, involvement with other family members, places to play and resources available for play.

2.1.2. Broader Evaluation Questions

The evaluation was designed to provide comprehensive starting points for the P3 project which would enable a robust end line and impact evaluation to be carried out when the project ends in 2024. For the baseline we wanted address this basic question: What do the findings indicate about the areas and issues that the P3 learning through play project should focus attention on to enhance the effectiveness of its implementation and achieve its objectives?

2.1.3. Specific Evaluation Questions

Our evaluation addressed specific questions that informed the evaluation framework and the development of evaluation tools⁵:

1. What are the *current levels* of children's life skills proficiency in the Direct Intervention schools?
2. What are the *current levels* of teacher's awareness, knowledge, and skills to facilitate learning through play in their learning environment with their children in intervention and control schools?
3. What is the *level of awareness* among parents and caregivers on learning through play approaches and the gender-specific learning needs of girls and boys?

2.1.4. Teacher Evaluation Questions

The evaluation team noted that for teachers the baseline study data collection tools need to include:

- What are teachers' own understanding of the definitions of play, based on RtP definitions and contextualised for Ghana
- What are teacher's understandings of the relationship between play and learning/learning outcomes, including via the lenses of gender and disability
- What are the current levels of teachers' awareness, knowledge, and skills in the use of play as part of their instructional practice?
- What do teachers understand about social and emotional learning? To what extent does play feature in social and emotional learning in their classroom practice?
- What value do teachers place on local community games and sports in learning?

2.1.5. Headteacher Evaluation Questions

The literature review of previous research on the role of headteachers in enabling change in schools reveals the guidance and support of the headteacher is key to embedding specific change (Addae-

⁵ Current levels are provided for entry into RTP's Performance Monitoring Framework (PMF)

Kyeremeh, 2014, 2020)⁶. Headteachers are important agents in fostering pedagogical change at the classroom level. For the headteachers we were interested in addressing the following questions:

- What are the understandings of the relationship between play and learning/learning outcomes, including via the lenses of gender?
- What is their relationship between play and school-based learning?
- What are the current levels of headteachers' awareness, knowledge, and skills in the use of play as part of instructional practice?
- What do the headteachers understand about social and emotional learning?

2.1.6. Caregivers

The basic question underpinning the caregiver baseline evaluation as set out by RTP Monitoring and Evaluation of Learning plan is: What is the current level of engagement of caregivers in creating an enabling environment for LTP pedagogy implementation?

For caregivers we were particularly interested in addressing the following questions:

- What is their knowledge of the importance of holistic skills development in their children?
- What is their knowledge of Learning through Play principles and facilitation methodologies and how these contribute to skills development?
- What is their knowledge of their own role as well as that of other adults and children in learning through play?

For the caregivers we were particularly interested in how they perceived and valued physical play, sport, games, and imaginative play and their gendered expectations for play and learning, as these were identified as important in RTP's indicators and previous research (Casey and Burruss, 2010; Kabay, Wolf & Yoshikawa, 2017; Wolf and Peele, 2019)⁷. Demographic questions were developed in line with the UNICEF MICS instrument to gather information about the distal factors that may influence caregivers' knowledge, attitudes and behaviour, particularly gender of caregiver and child, caregivers' level of education.

2.1.7. Child Survey

Concerning the children's social and emotional assessment, we used the socio-emotional domains in the ISELA for children in P1 and P3. With regards to the social and emotional learning, we covered the skills indicated in RTP documents. In the child survey, we included items on time use, school attendance/reasons for missing school, caregiver engagement, children's play preferences (how much children want to do each play-based activity in school) and actual estimation of how often the activities are done at school. Also, the gap between children's play preference and activities at

⁶ Addae-Kyeremeh, E. (2020) The role of networking in supporting headteacher professional development and practice in Ghana. EdD thesis The Open University, UK

Addae-Kyeremeh, E. (2014) 'Professional development spaces: an exploratory study of headteachers perspectives in Ghana', paper presented at the 3rd AFTRA Teaching and Learning in Africa Conference, Accra, Ghana, 11–13 June.

⁷ Casey, Joanna and Burruss, Rachele (2010) 'Social Expectations and Children's Play Places in Northern Ghana', *Ethnoarchaeology*, 2(1), pp. 49–72. doi: 10.1179/eth.2010.2.1.49

Kabay, S., Wolf, S., and Yoshikawa, H. (2017) "'So that his mind will open": Parental perceptions of early childhood education in urbanizing Ghana', *International journal of educational development*, 57, pp. 44–53. doi: 10.1016/j.ijedudev.2017.08.013

Wolf, S. and Peele, M. (2019) Changing trajectories of learning and development: experimental evidence from the Quality Preschool for Ghana interventions. *Journal of the British Academy*, 8(s2), 71–102 DOI <https://doi.org/10.5871/jba/008s2.071>

school gave us insights into how much change is required to improve the use of play-based activities in classrooms.

2.1.8. District Officials

Key informant interviews with district officials addressed following questions:

- What is the level of awareness and perspective (district officials) about the use of play as an approach to improve learning?
- What is the capacity of district administration to support teachers to integrate LtP approaches into their teaching practice? In what ways can this be best achieved?

2.1.9. Teachers Classroom Practice

To evaluate teacher's classroom practice, we adapted the World Bank's TEACH instrument for the classroom observation. This instrument is able to capture the quality of teaching practices and how teachers address learners' socioemotional and cognitive skills.

The quality of teaching practice is organised into three primary areas: classroom culture, instruction, and socioemotional skills. These areas correspond to elements which point to key teaching behaviours. The behaviours are characterised as 1-2 = low; 3 = medium and 4-5 high based on the evidence collected during the observation. For the analysis we reclassified the scoring as follows: 0 - 1 = low; 2 - 3 = medium and 4-5 high. This was to ensure that teaching practices or teacher behaviours that were not observed or very limited could be represented in the low scoring range i.e., 0-1.

To contextualise the TEACH observation instrument, the team included items and themes from a Ghana Education Service classroom observation framework. It referenced and ensured complementarity with the RTP's GREAT classroom observation instrument. Our instrument covers all the areas in the GREAT classroom observation instrument. The difference between the two is only in the wording and structure. To ensure reliability of the scores from the observation instrument, two enumerators were used to observe each lesson.

Classroom observation definition of measures

1	CLASSROOM CULTURE: The teacher creates a culture that is conducive to learning. We focused on the extent to which teachers create: (i) a supportive learning environment by treating all students respectfully, consistently using positive language, responding to students' needs, and both challenging gender stereotypes and not exhibiting gender bias in the classroom; and (ii) positive behavioral expectations by setting clear behavioral expectations, acknowledging positive student behavior, and effectively redirecting misbehavior.
2	INSTRUCTION: Our focus was on how teachers deepen student understanding and encourages critical thinking and analysis. We were interested in the extent to which the teacher: (i) facilitates the lesson by explicitly articulating lesson objectives that are aligned to the learning activity, clearly explaining content, and connecting the learning activity to other content knowledge or students' daily lives; (ii) checks for understanding by using questions, prompts, or other strategies to determine students' level of understanding, by monitoring students during group and independent work, and by adjusting teaching to the level of students; (iii) gives feedback by providing specific comments or prompts to help

	clarify students' misunderstandings or identify their successes; and (iv) encourages students to think critically by asking open-ended questions and providing students with thinking tasks that require them to actively analyze content. We were also interested in how students exhibit critical thinking ability by asking open-ended questions.
3	SOCIOEMOTIONAL SKILLS: Here we were interested in how teachers encourage students to succeed in learning. We explored this through how teachers' (i) instill autonomy by providing students with opportunities to make choices and take on meaningful roles in the classroom, volunteer to participate in classroom activities; (ii) promotes perseverance by acknowledging students' efforts, by having a positive attitude toward students' challenges by framing failure and frustrations as part of the learning process; and (iii) fosters social and collaborative skills by encouraging collaboration through peer interaction and by promoting interpersonal skills, such as perspective taking, empathizing, emotion regulation, and social problem solving. We looked for how students exhibit social and collaborative skills by collaborating with one another through peer interaction.

Source: Adapted from World Bank TEACH Observation Manual

2.2. Sampling Framework

2.2.1. Sampling Approach

Initially our sampling approach and sample size estimation assumed that samples will be drawn from the total population of public schools in the three regions. However, following meetings with the RTP Accra team we developed a better understanding of how schools directly targeted by the RTP P3 project were selected in the 7 districts in 3 regions, and how additional schools were selected for indirect intervention and GALOP schools. This understanding prompted us to revise our sampling approach. It also came to light that some Direct intervention schools were already part of the government's GALOP schools. Our sampling approach, therefore, ensured the selection of sufficient number of schools in each of the intervention arms. A detailed list of all schools and how they were selected is described in the Inception Report of the Baseline Study.

Classroom observation was conducted in Direct and Control School classrooms (P1 and P3) in the seven project districts. For the teacher survey (Direct/Indirect/GALOP), we administered questionnaires to teachers in five intervention classrooms: KG2, P1, P3, P4 and P6. We also surveyed all headteachers from all the groups including the control group.

Using simple random sampling we selected 9 children each from class 1 and 3. Their caregivers automatically became our caregiver sample.

2.2.2. Sample Size Estimation

We estimated our sample size based on parameters from previously reported interventions conducted in Ghana (Wolf et. al., 2019). We calculated our samples based on a power analysis to achieve an 80% power and 5% level of significance over and above the control group and an intraclass correlation (ICC) between 0.10 and 0.15 for comparing interventions. Our samples have 80% chance of detecting an effect that might exist in the target population and sufficient to detect minimal effect sizes between 0.1 and 0.3 and allow for attrition increasing to 20%. However, we anticipated that it might happen that household surveys in some cases might be slightly lower, which was the case for our caregiver sample. What is important in this case is to ensure that at endline the achieved caregiver sample does not reduce considerably.

2.2.3. Selecting Additional Districts

We selected four additional districts on top of the seven project districts because we did not find enough schools in the RTP 7 districts that could be used for GALOP and/or Control school samples. Thus, we covered 11 districts for the baseline evaluation instead of the original seven project districts proposed in our technical tender. Using a comprehensive list of all public primary schools in the study districts, we were able to select the respective schools for the study.

2.2.4. Sample Sizes Achieved

Table 4 below shows the total sample sizes for each group surveyed through quantitative methods in the three treatment and control groups.

Table 4: Survey Baseline Sample Achieved

Group	Target	Actual	Difference	% achieved
Headteachers	300	269 (M 205; F: 64)	31	89.6%
Teacher	1500	1248 (M: 555; F: 693)	252	83.2%
Caregiver	2700	1844 (M: 846; F: 998)	856	68.2%
Child	2700	2198 (M: 1014; F: 1184)	502	81.4%
Total	7200	5559	1641	77.2%

Overall, we achieved high enough sample sizes for each group to detect effects if they exist in the population of interest – that is correctly reject the null hypothesis when we should.

The caregivers of 1844 children were reached, representing 68.2% response rate. Studies with caregivers in Ghana (e.g., Wolf & McCoy, 2017) have reported similar response rate (64%). Based on Roscoe's (1975) recommendation that sample sizes larger than 30 and less than 500 ($30 < n < 500$) are appropriate for most studies we concluded that our caregiver sample (827 for Control and 1017 for Direct) is a reasonable sample size.

Table 5 shows the groups interviewed for the baseline. The total sample achieved for the qualitative data was 95.

Table 5: Qualitative Data Sample

Headteacher	Teacher (P1&3)	Caregiver (P1&3)	Child (P1&3)	District Officials	ITE Providers	SISO	EC Coordinator
4	28	17	16	17	2	10	1

2.3. Data Analysis

2.3.1. Analysis Approach

The range of survey data collected enabled the team to provide baseline data for each of the RTP indicators for teachers, (headteachers) children (life skills), and caregivers/parents. For the surveys and ISELA assessments we were able to produce the following analysis: average composite scores for sub-tasks (ISELA) and themes (for the teachers, caregiver, and classroom observation tool), produce descriptive analysis of outcomes in Stata (i.e., frequencies, means, group differences on scales), and ANOVA.

2.3.2. Classroom Observation Scores

Group differences on classroom practice scores were examined using independent t-test. We further examined treatment and regional differences using ANOVA.

2.3.3. Group Differences on Scales: Teachers and Headteachers

To determine the differences among groups (i.e. Direct RTP, Indirect, Galop and Control) on each of the different scales (e.g. attitude towards education, learning beliefs, play and learning beliefs), we carried out a one-way analysis of variance (ANOVA) for each scale as the dependent variable (e.g. each groups score on attitude towards education) and with the group responding to the scales (e.g. teachers), which has four groups (Direct RTP, Indirect, Galop and Control) as the independent variable. Any statistically significant difference among groups was determined using post hoc tests to determine which specific groups are significantly different. The same analysis was repeated for the headteacher group across the four treatment arms.

2.3.4. Group Differences on Scales: Caregivers/Parents

We used independent t-test to examine the differences between parents/caregivers (Direct RTP and Control) scores on each of the different scales. We also examined treatment and regional differences using ANOVA.

2.3.5. Mean Differences between Perceptions and Child Socioemotional Outcomes

For the child survey, we estimated regression analyses for children's perceived class climate, their report on caregiver engagement and children's play preferences. We also examined group differences on the ISELA using ANOVA.

2.3.6. Qualitative Data Analysis

All the qualitative data from interviews and documents was analysed using a thematic analytic approach under the various themes and sub-themes of the study. We used triangulation techniques to interrogate the qualitative data to develop understanding of the perspectives and experiences of teachers, headteachers, caregivers and district officials on the role of learning through play in school improvement. Crucially, the qualitative data analysis provided insights into barriers and opportunities that are likely to impact on the long-term sustainability of RTPs learning through play model in Ghanaian schools.

2.4. Data Collection

2.4.1. Enumerator Training

We organized a three-day seminar to conceptualize play-based approaches in the Ghanaian context for the purpose of developing the survey instruments. We recognized that collecting child data especially the ISELA requires sociocultural awareness and linguistic skills to ensure that children understand the questions and tasks and can appropriately. After development, all instruments were piloted before using them for training enumerators.

The training employed presentations, discussions, questions and answers designed to ensure enumerators understood:

- the persons from whom the data are to be collected (e.g., which teachers, children and caregivers)

- how to sample children and caregivers (e.g., simple random sampling of children stratified by gender)
- procedures for administering each of the instruments and adhering to each item instruction to avoid influencing responses
- how to go about gaining informed consent from all participants, including children. Enumerators were provided training on safeguarding

Also, as part of the training, the selected control schools were verified with the help of the district education officers to ensure these were schools not directly or indirectly targeted by the project.

2.4.2. Fieldwork

Baseline survey activities were conducted from April to June 2021. Through the baseline, the research evaluation team visited treatment and control schools and surrounding communities from three regions namely Northern Region, Volta, and Greater Accra.

2.4.3. Data Management and Ethics

All Enumerators were given a day's training on how to use an Android enabled software (Survey Monkey and ProQuestion) on 65 programmed tablets to collect data using the offline mode.

After four days of data collection, all tablets were sent to the Regional Coordinator for data collected to be uploaded on the software system after connecting to the internet. The data was subsequently downloaded into Ms Excel file. This process enabled our IT team to quality control all the data coming linked to Enumerator IDs. Data that had issues were scrutinised and Enumerator concerned were called for clarification. This process ensured robust quality control and timely intervention to address data collection or entry errors. This process was overseen by the country team and the IT team at the Institute of Education, University of Cape Coast.

We used personal identifiers to ensure that all participants personal data is anonymised and securely stored. We briefed enumerators on channels of communication if they become aware that a child is at risk - what to do/ who to tell. Where appropriate, (e.g., with young children or children with disabilities or parents/caregivers who are non-literate), we will provide alternative methods – e.g., verbal, or pictorial methods - of obtaining or withdrawing consent. The evaluation team signed up to the commitments stipulated in RTP's Child Safeguarding Policy and the Ghana Education Service code of conduct.

Before commencing data collection, including piloting, we applied for and secured ethical approval from the Open University's Human Research Ethics Committee (HREC) and UCC's Institutional review Board. To receive ethical approval from both Boards we submitted the baseline proposal for review and indicated how we intended to address the following sets of criteria: ▪ Are all permissions secure? ▪ Are all possible support measures in place? ▪ Who will ensure that there are no negative effects on participants before, during and after they take part? ▪ How can we be sure that participants really want to participate? ▪ How do we incentivise children's participation?

2.5. Limitations

There were several limitations that the baseline study team acknowledges:

1. Due to the size of the data collection and the constraints imposed on tracking caregivers, teachers and headteachers fieldwork took much longer than anticipated. This meant that we were not able to reach nearly all respondents, particularly caregivers. The mopping up exercise which took an additional two weeks helped to increase the sample sizes to levels that ensured

we could carry out robust analysis. However, what this means is that at endline evaluation measures have to be put in place to ensure that sampling size is not reduced any further.

2. The team went to great lengths to ensure robust sampling for the evaluation. However, we became aware prior to and during the field work that some of RTP's earlier interventions may still be having influence in what teachers and schools do irrespective of whether they are control, Direct, Indirect or GALOP schools. An example is the Gender-Responsive Education and Transformation (GREAT) Project implemented by RTP Ghana. We took steps to ensure that control, Indirect and GALOP schools were not receiving or about to receive direct RTP intervention under the current project.
3. In addition, as stated earlier, some RTP activities had started prior to the baseline study so it is possible that some respondents in the Direct sample had received some project input. For example, we were able to verify that some schools in selected control and GREAT intervention schools from Keta and Angloga had received training from Right to Play at some point. We replaced them with schools from Ketu South.
4. The baseline survey was conducted during the COVID 19 pandemic which meant the fieldwork team had to take extra precaution to comply with government of Ghana COVID protocols. This also meant that the OU team, with the exception of the Principal Investigator who spent 4 months in Ghana during this period, were unable to travel to work directly with their counterpart qualitative field researchers and observe RTP training workshops as originally intended. We resorted to training qualitative researchers remotely via Zoom and met regularly to be appraised on qualitative field research activities. We also had to purchase masks for use by all enumerators and everyone who was interviewed. The concerns about COVID is likely to have impacted on the eventual sample size for the groups targeted especially Caregivers.
5. Although we made the effort to visit communities and schools in remote areas, especially in the Volta and Northern regions, there were instances where some had to be replaced or abandoned after repeated attempts to visit and interview caregivers or children proved futile due to repeated absences. For the endline, we plan to spend a lot more time to identify schools and communities which are easy to access. We also plan to extend future data collection period to undertake repeated visits to remote communities, but this will have implications on field research costs.
6. Interviewing some Ghanaian children who are very young and in poor communities comes with challenges not often faced when collecting data from older children in more urban settings. Our training emphasised the need to create an atmosphere where children did not feel intimidated and could respond candidly. During the pilot phase we found that it was sometimes better to reduce the range of possible responses on a Likert type scale to a dichotomous yes or no scale for children. This made for easy administration of the survey but also meant that in some cases our analysis could not detect the possible wider variations that might exist with responses.

Findings⁸

3.1. Classroom Observation

The effective play-based learning (PBL) teaching approaches detailed in the RTP P3 project includes evaluating classroom activities holistically, not only teacher action but also student response, the source of the activity – whether these are student or teacher-led, the materials used, the focus of the activity, the engagement of the class, the general climate, and the use of guided play and integrated pedagogies. Play activities, suggested including, songs or energisers, games with rules, physical play, using objects as representations and symbolic play (RTP P3 Monitoring Plan Document).

3.1.1. Overview of findings

Our classroom observation focused on grades 1 and 3 based on teacher's lessons in three domains: *classroom culture; Instruction and socioemotional skills*. Scoring was based on the following criteria: 0-1: not observed or low 2-3: limited to medium; and 4-5: high to very high.

Table 6. Means, mean differences and distribution of scores of teacher classroom practice (N = 217)

					Distribution of scores					
	Control	Direct	t-stat	p-value	Control	Direct	Control	Direct	Control	Direct
	Mean (SD)	Mean (SD)			0 – 1	0 – 1	2 – 3	2 – 3	4 – 5	4 – 5
Culture										
Lesson preparation	1.54 (1.65)	2.94 (1.44)	-6.58	0.00***	52%	18%	27%	30%	21%	52%
Supportive environment	3.57 (0.56)	3.62 (0.67)	-0.58	0.55	0%	1%	40%	32%	60%	67%
Instruction										
Lesson facilitation	2.87 (0.86)	3.32 (0.78)	-3.95	0.00***	7%	2%	63%	48%	30%	50%
Checks for understanding	2.97 (0.94)	3.19 (0.82)	-1.82	0.07	9%	3%	60%	52%	31%	45%
Feedback	3.29 (0.87)	3.40 (0.77)	-0.97	0.33	3%	1%	43%	41%	54%	58%
Critical thinking	2.92 (1.05)	3.14 (0.76)	-1.83	0.06	10%	3%	53%	57%	37%	40%
Socioemotional										
Autonomy	2.86 (0.87)	3.11 (0.85)	-2.15	0.03*	3%	2%	71%	58%	26%	40%
Perseverance	3.27 (0.84)	3.46 (0.72)	-1.80	0.07	3%	1%	52%	43%	45%	56%
Social and collaborative skills	2.14 (1.2)	3.03 (1.07)	-5.57	0.00***	29%	10%	55%	45%	16%	45%
Play and active learning	1.59 (1.17)	2.75 (1.06)	-7.61	0.00***	49%	16%	45%	56%	6%	28%

***p < .001 *p < .05

⁸ The findings section is based on analysis comparing the data from Direct/Indirect/GALOP/Control groups. Comprehensive Baseline indicators required for the Direct Intervention ONLY are reported separately in appendix and summarised in the executive summary of this report.

Compared with teachers in control classrooms significant differences were found in relation to: Lesson preparation & facilitation; autonomy; social & collaborative skills; play & active learning. It is also striking that 52% of grades 1 and 3 teachers in Direct schools produced high to very high lesson plans. Generally, over 60% of teachers in both school types were able to create a supportive learning environment, slightly higher for teachers in Direct schools but the differences in the distribution of scores were not statistically significant.

3.2. Comparing Lesson Observation Results

In order to determine differences across regions we examined how teachers performed in the three domains (i.e., classroom culture, instruction and socioemotional learning). This was to show how teachers in direct and control schools compare by region and identify specific domains where difference might exist.

Regression analysis on teachers' classroom practice scores

We used a regression model with teachers scores in each domain observed as the dependent variable and the treatment variable as the independent variable, controlling for region, grade taught (P1 and P3), subject taught (English and Mathematics), gender of teacher, age of teacher, highest education and professional qualification as well as years of experience as a teacher. Regression results are shown in table 7

- The results showed that teachers in Direct schools achieved higher scores on all domains, except, supportive environment and providing feedback. The associations were strongly significant for six of the domains – lesson preparation, lesson facilitation, check for understanding, supporting autonomy, social skills and play and active learning, and marginally significant for supporting critical thinking and perseverance.
- Among the control variables, teacher gender was marginally associated with checking for understanding - female teachers facilitated children's understanding better than male teachers.
- Teacher age was negatively and significantly associated with social skills and play - older teachers achieved lower scores on these domains than younger teachers. Similarly, teacher professional qualification was negatively and significantly associated with their scores on supporting children's autonomy. We find that higher teachers' professional qualification is associated with lower scores on supporting children's autonomy.
- Finally, teachers' years of experience was positively and significantly associated with teachers' scores on supporting children's autonomy and play and marginally associated with social skills scores. This suggests that teachers with more years of work experience had higher scores in facilitating these domains than those with lower years of experience.

Table 7: Regression analysis on teachers' classroom practice (Direct and Control only)

	Lesson Preparation	Supportive environment	Lesson facilitation	Check for understanding	Feedback	Critical thinking	Autonomy	Perseverance	Social skills	Play and active learning
Treatment (Direct)	.43** (.22)	.04 (.09)	.28** (.12)	.15* (.12)	.09 (.12)	.12 ^a (.13)	.15* (.12)	.13 ^a (.11)	.37** (.16)	.47** (.16)
Region										
Volta	.10 (.34)	-.13 (.13)	.07 (.18)	-.00 (.19)	-.01 (.18)	-.02 (.20)	-.07 (.18)	-.08 (.17)	.14 (.25)	.00 (.24)
North	-.03 (.32)	-.05 (.13)	.02 (.17)	.06 (.18)	.07 (.17)	.01 (.19)	-.13 (.18)	-.04 (.16)	.09 (.24)	-.04 (.23)
Teacher's grade (Grade 3)	.01 (.21)	-.10 (.09)	.00 (.11)	.03 (.12)	-.01 (.11)	.05 (.12)	.00 (.12)	-.06 (.11)	.00 (.16)	-.04 (.15)
Subject taught (Math)	.00 (.22)	-.09 (.08)	.01 (.11)	-.01 (.12)	.04 (.11)	.09 (.13)	-.01 (.12)	-.07 (.11)	-.07 (.16)	.00 (.15)
Gender (Female)	.03 (.25)	.03 (.10)	.00 (.14)	.14 ^a (.14)	.11 (.14)	.06 (.15)	.06 (.14)	.06 (.13)	.06 (.19)	.05 (.18)
Teacher Age	-.07 (.19)	.07 (.08)	-.13 (.10)	-.01 (.11)	.01 (.10)	.00 (.11)	-.10 (.10)	-.02 (.09)	-.19* (.14)	-.18* (.13)
Education	.05 (.09)	-.04 (.03)	.07 (.04)	.06 (.05)	.05 (.04)	-.00 (.05)	-.00 (.05)	.00 (.04)	.05 (.06)	-.02 (.06)
Experience as teacher	-.03 (.10)	.07 (.04)	.18 ^a (.05)	.06 (.06)	.05 (.04)	-.02 (.06)	.20* (.05)	.12 (.05)	.18 ^a (.07)	.25** (.07)
Professional qualification	.01 (.19)	-.04 (.08)	-.11 (.10)	-.03 (.11)	-.05 (.10)	-.06 (.11)	-.17* (.10)	-.07 (.10)	-.07 (.14)	-.06 (.14)

Standard errors in bracket

** $p < .01$, * $p < .05$, ^a $p < .10$

3.2.1. Teachers' Lesson Preparation

Teacher's lesson preparation was measured using their prepared lesson plan. Lesson plan is the sub-domain of lesson preparation and measured the quality of teachers' lesson plans based on three sub-domains:

- Teacher states core points which clarify main skills/concepts related to pupils' readiness/daily life
- Teacher states clear and appropriate SMART objectives (knowledge, understanding, application, process skills and attitudes)
- Teacher states appropriate TLMs which are related to current or previous lesson/topic/daily life and pupils' readiness

We calculated the average score based on the five-point score for each of the three sub-domains. The average scores represent the quality of teachers lesson plans.

Teachers in direct schools across the three regions produced better quality lesson plans than those in control schools (i.e., achieved higher average scores compared with teachers in control schools). The differences were statistically significant and with the distribution of scores in the higher band range for Direct teachers than it is for Control teachers.

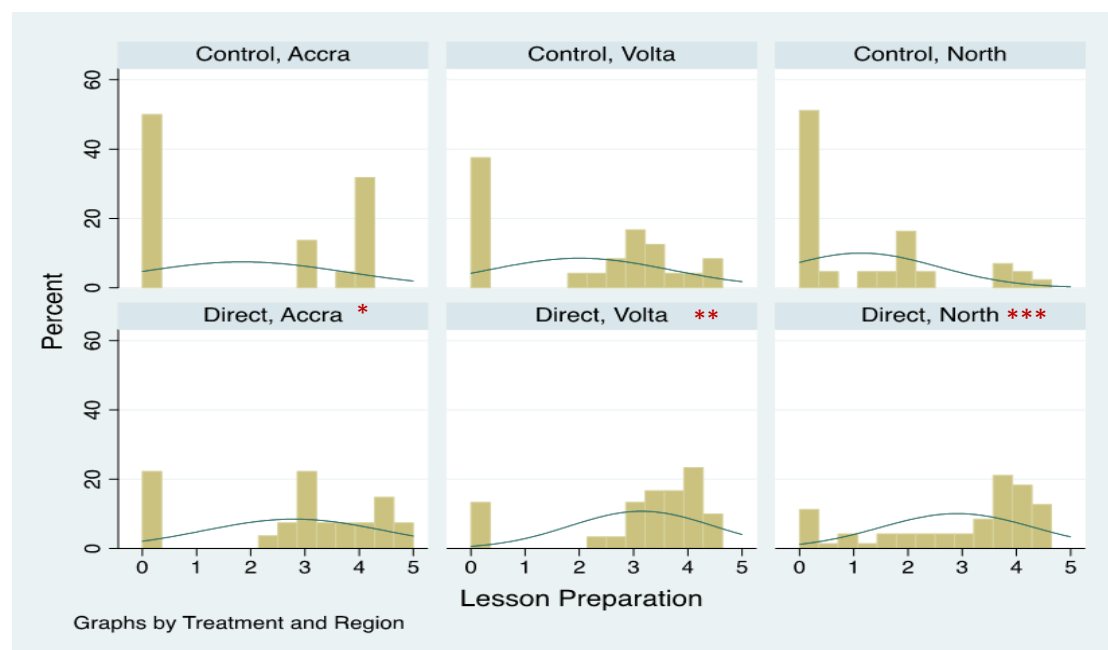


Figure 3. Average lesson preparation scores by treatment status and region

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. *** $p < .001$ ** $p < .01$

3.2.2. Classroom Culture

For classroom culture, we focused on how teachers created a supportive learning environment (e.g., treating children with respect and using positive language). The results showed no meaningful differences between the average scores of teachers in direct and control schools across the three regions. Generally, the distribution of scores across groups are similar although teachers in Direct school classrooms scored in the middle of the distribution.

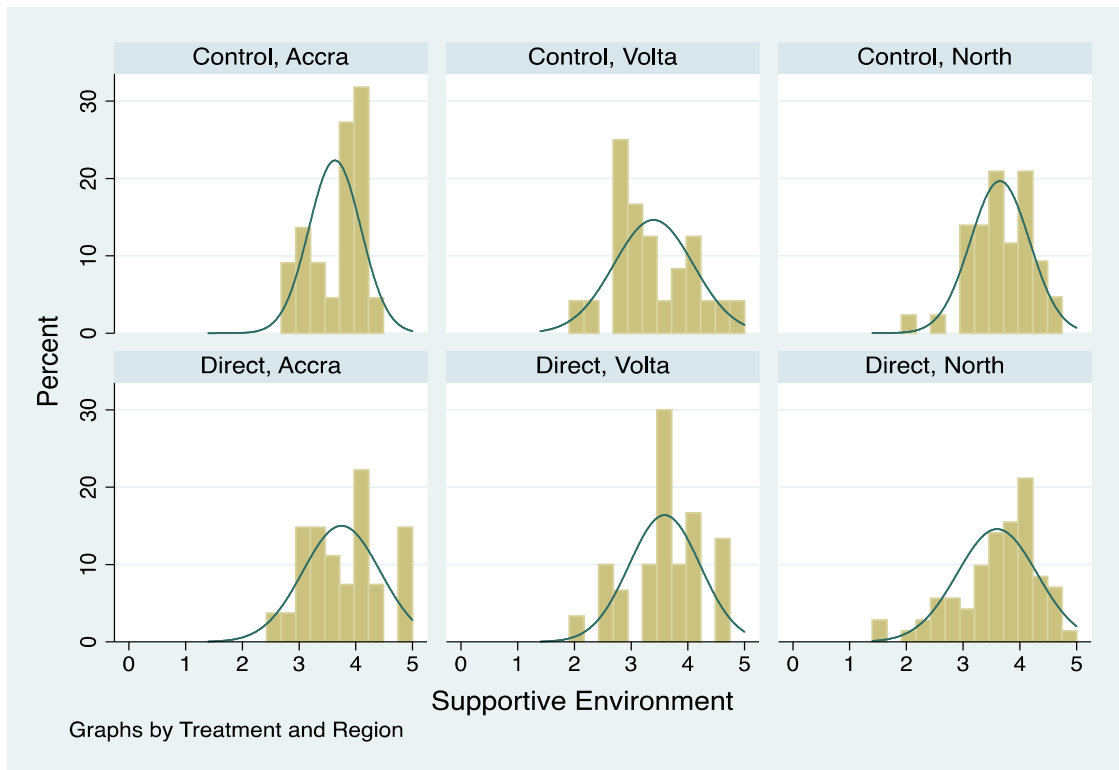


Figure 4: Supportive Classroom Environment

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

3.2.3. Instruction

We assessed instructional quality under four domains: lesson facilitation, checking for understanding, feedback and critical thinking.

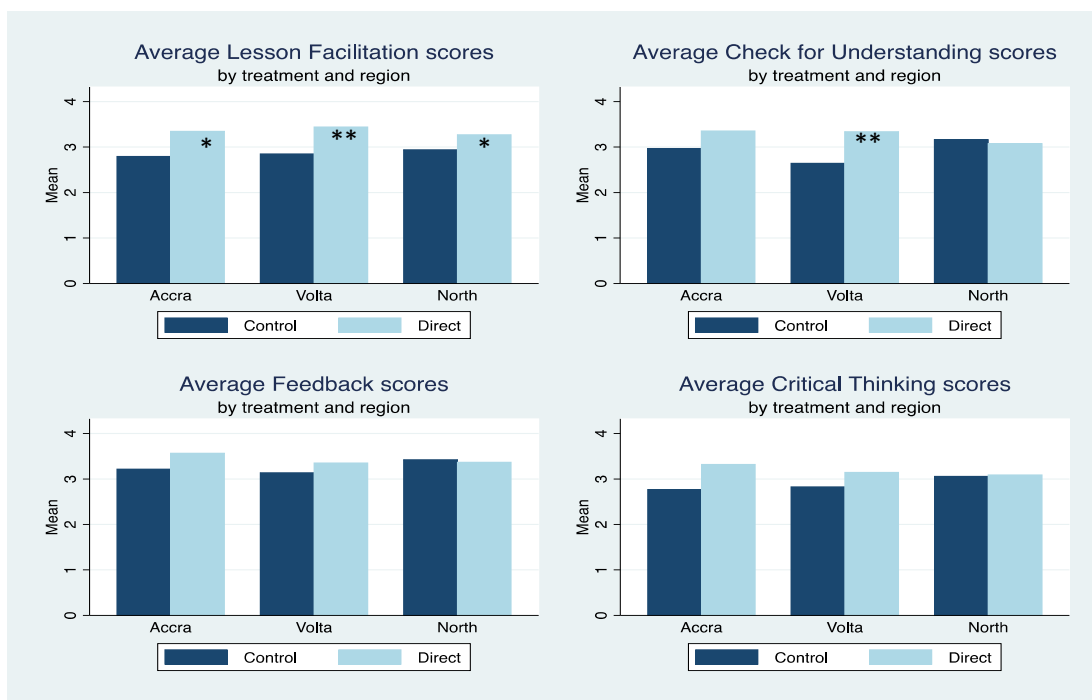


Figure 5: Average scores for instruction domains by treatment status and region

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

$**p < .01$ $*p < .05$

The average scores in the instruction domains differed mainly for lesson facilitation where teachers in the direct schools across the three regions were better at facilitating lessons than teachers in control schools. We found significant differences between direct and control schools in Accra and Volta regions in two domain areas – checks for understanding (Volta) & critical thinking (Greater Accra). On feedback, there is clearly very little difference between direct and control schoolteachers across the three regions

3.2.4. Active Play and Active Learning

We also measured how much active play or active learning was occurring in the classrooms of Direct and Control school teachers. Some of this active learning involved children engaged in play activities. The results are displayed in figure 6.

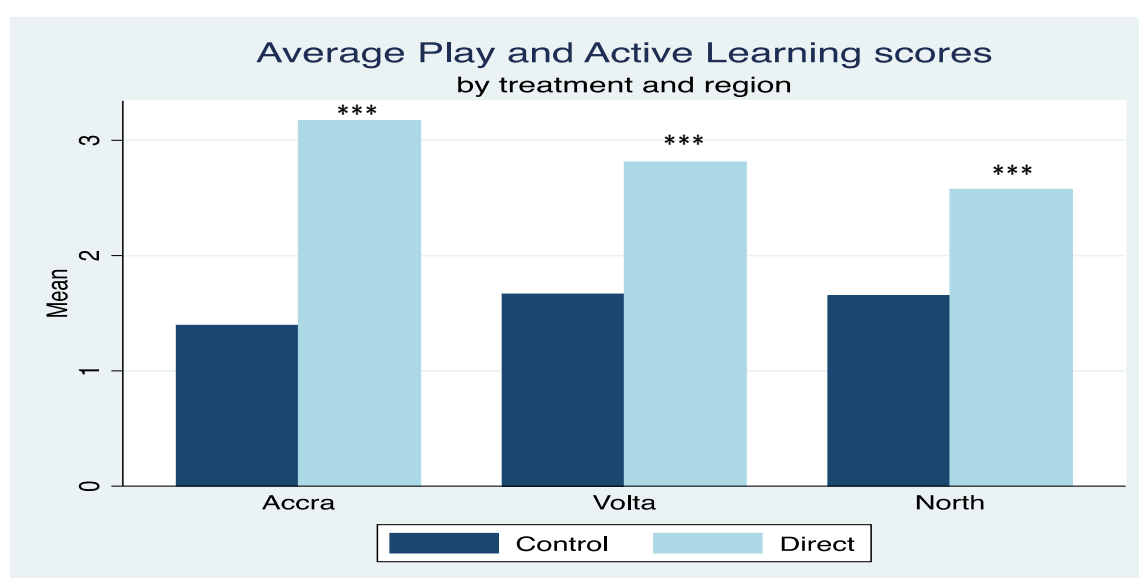


Figure 6. Average scores for play-based activities by treatment status and region

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. $***p < .001$

Compared with the control group, teachers in direct schools across the three regions achieved higher average scores in active play and active learning activities. The differences are statistically significant although the scores are low meaning play-based activities are not used as much in teachers lessons in both direct and control schools. In effect whether or not intended in teachers lesson plans, the amount of play-based activities used in lessons are quite low.

3.2.5. Promoting socioemotional skills

The quality of teachers' support of children's socioemotional skills was assessed based on three domains: **autonomy, perseverance and social and collaborative skills**. In assessing autonomy, we looked for teachers who encouraged students to make choices in their learning or volunteered answers or contribution to lesson without prompting from the teacher. For perseverance, we looked for how much teachers' encouraged students to keep trying especially for those who were struggling. Finally, for social and collaborative skills our focus was on how well teachers encouraged

collaboration among peers rather than simply focus on a few bright students as reference for others to observe or emulate.

Figure 7 below is a comparison of each domain by treatment status and region. The average scores in the socioemotional skills showed striking significant differences between control and direct schools for social skills and autonomy. *For social skills*, teachers in direct schools across the three regions demonstrated better promotion of social skills and autonomy than teachers in control schools particularly in Accra.

For autonomy, direct schoolteachers in Accra and Volta promoted better learner autonomy than teachers in control schools. Teachers in Control schools in the North were better at promoting autonomy than teachers in Direct schools although the difference is not significant.

Consistently, teachers in direct schools promoted perseverance better than those in control schools although this was marginal. So, overall, we see that teachers in Direct schools are better than teachers in control schools in promoting socioemotional skills.

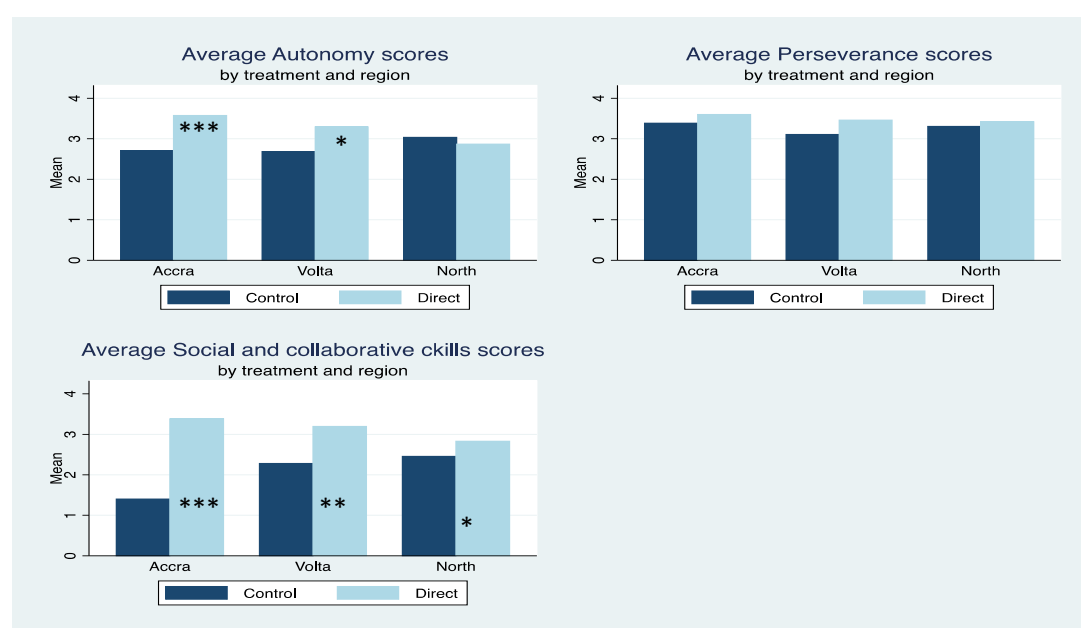


Figure 7. Average scores for socioemotional domains by treatment status and region

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

*** $p < .001$ ** $p < .01$ * $p = .05$

3.2.6. Summary

Overall, our analysis of classroom practices shows that teachers in Direct Schools are much better at utilising play and active learning activities than teachers in control schools although the level of use is low. Also, teachers in Direct schools were better at preparing and facilitating their lessons than teachers in control schools. Teachers in direct schools in Accra (more urban than Volta and North) were much better promoting critical thinking and checking for understanding than teachers in control schools. However generally most teachers in Direct and Control schools were operating at an average level of competence for all classroom domains with Direct schools slightly better than Control Schools.

The subgroup analysis showed that female teachers facilitated children's understanding better than male teachers. We find that higher teachers' professional qualification is associated with lower

scores on supporting children's autonomy. Teachers with more teaching experience were more able to support children's autonomy in learning and play-based learning.

4.1. Teachers

This section focuses on the teacher survey results based on Direct, Indirect, GALOP and control samples

4.1.1. Teacher Characteristics

We conducted an omnibus multivariate analysis of variance (MANOVA) to assess whether teacher characteristics differ significantly across treatment groups. We found there were differences in relation to the teacher's gender, age, educational and professional qualifications and years of experience (see appendix 2).

Generally, most teachers in Accra schools are male. In the Volta Region, there are more female teachers in GALOP and Indirect schools – 60.5% and 68.7% respectively. Also, in the North, teachers are predominantly female (Direct=72.8%); (GALOP=75.7%); (Indirect=72.3%). Noting these differences are important for what kind of gender-sensitive activities it aims to promote in each region and how to ensure that teacher gender does not bias choices in gender-based activities in classrooms.

Most teachers (over 90%) across groups and region have at least a Diploma or BEd. Degree professional qualification

4.1.2. Computing Learning Beliefs Scores

The Learning Beliefs scale consisted of two groups of items: 10 items that represent *active/play-based learning* and 16 items that represent *direct instruction*.

The process of computing a total score for each participant followed three steps.

Step 1: Each item was assigned a score of 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree or 5 = strongly agree, to reflect the extent to which a participant disagreed or agreed with the item.

Step 2: We created a total sub score for each group of items (active learning and direct instruction) by adding the score for the individual items in each group.

Step 3: To arrive at a total score, a scoring system was developed so that high scores indicate a high belief in active learning. To do this, the sub score of the items that represent *direct instruction* was subtracted from the sub score of the items that represent *active/play-based learning*.

For example, a person with a uniformly very high belief about active learning would strongly agree with all active learning statements ($10 \times 5 = 50$) and strongly disagree with all direct instruction statements ($1 \times 16 = 16$), creating a score of ($50 - 16 = +34$). At the other extreme, a person who has a uniformly very low belief about active/play-based learning would strongly disagree with all active learning statements ($10 \times 1 = 10$) and strongly agree with all direct instruction statements ($16 \times 5 = 80$), creating a summary score of ($10 - 80 = -70$). Thus, individual total scores on the scale could range from +34 to -70, based on the extent to which participants agreed or disagreed with the two groups of items on the scale, with higher scores indicating a high belief in active/play-based learning.

4.1.3. Comparing Teachers' Learning Beliefs

We conducted a two-way ANOVA to compare teachers' learning beliefs across treatment and region. We further explored the effects of treatment using the 'Direct group' as the reference category, comparing the Direct group with the other three groups – Control vs. Direct, GALOP vs. Direct, and Indirect vs Direct.

Simple main effects showed differences across treatment ($F(3) = 5.45, p < .01$) and region ($F(2) = 6.16, p < .01$) and interaction between treatment and region ($F(6) = 3.69, p < .01$).

Overall, total scale scores for teachers ranged between +18 to -43. Note that scores closer to zero indicate a stronger belief in active learning. Interestingly, the average (mean) scores for teachers across all treatments were below zero (see Figure 9 below). We find that generally, GALOP teachers have a stronger belief in active learning than other groups. Significant differences were registered by teachers in the North for GALOP and Direct School teachers.

The results suggest that teachers' beliefs about teaching leans *less* much more towards active instruction across all the groups. Shifting this belief will be key to ensuring sustainable change in classroom practice towards more active learning instructional approaches in which play is an active component.

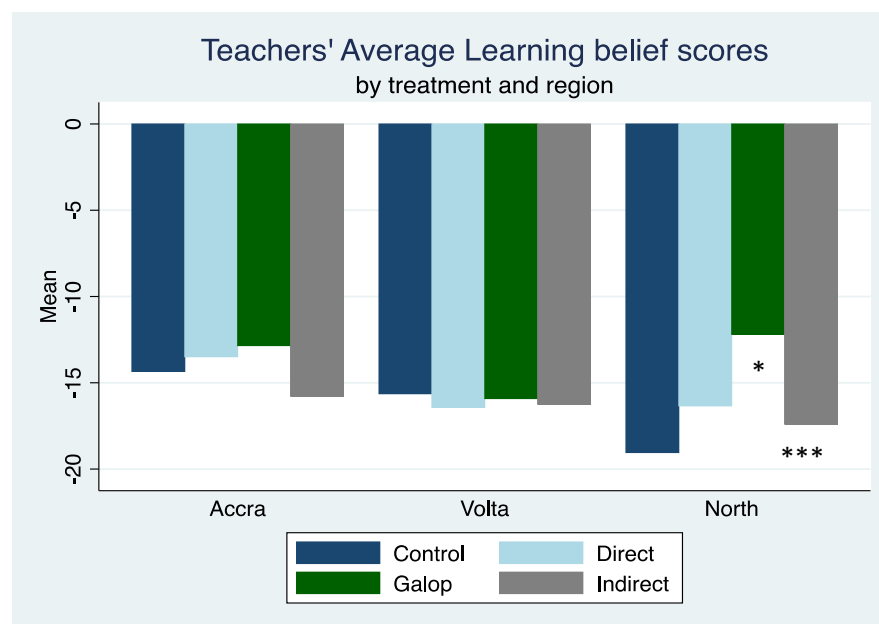


Figure 8: Teachers' Average Learning Belief Scores

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

*** $p < .001$ * $p < .05$

Appendix 3 disaggregates the learning belief scores and confirms that generally teachers hold a stronger belief in direct instruction than in active learning approaches. We also find that differences in preferences between active learning and direct instruction are significant across the three regions, which suggests that this is widespread in the general population of teachers. Preference for direct instruction averaged about 50% whilst for active learning this is about 35%. We also analysed the data by gender and found no differences irrespective of region and treatment group (see Appendix 4).

4.1.4. Computing Play and Learning Beliefs Scores

Informed by the literature on play, we created categories underlying the play and learning beliefs scale used in the survey. Out of the 19 items, we created nine categories of activities: **active play** (comprised 4 items: jumping, running, climbing and sports); **creative play** (comprised 4 items: Colouring, drawing and painting, doing craft arts, using manipulative and collecting leaves and stones); **music and dance** (consisted of 2 items: singing rhymes and singing and dancing); **electronic play** (consisted of three items: engaging in video games, sitting watching videos and using electronic devices that say words); **dramatic play** (comprised 2 items: acting out a story and dress up/role-play); **reading** (consisted of 1 item: reading a book); **storytelling and narrative** (consisted of 1 item: listening to stories or telling stories); **traditional play** (consisted of 1 item local games, such as ampe and oware); and **board games** (comprised 1 item: games, such as ludo, scrabble and chess). In creating total scores, we summed the individual items of categories with more than one item. This theoretical scale reduction was done for both “Playfulness” and “Learning value” ratings.

4.1.5. Teachers’ Play and Learning Beliefs

Teachers’ play and learning beliefs compares teachers’ playfulness ratings with and how they rate the learning value of play. Appendix 5 shows the results of the analysis on teachers’ play and learning beliefs.

Generally, we note a consistent pattern across teachers’ on how teachers rate *active play, music and dance, dramatic play and traditional games*. We found that ratings of teachers in the North were statistically different. Mostly, teachers in Control, GALOP and Indirect teachers rated play and its learning value higher than teachers in Direct schools which means they viewed these play activities as having a higher learning value than teachers in Direct schools.

On ratings scores for *creative play, storytelling and reading, electronic play and board games*, again we find differences mainly in the North, where teachers in Control, GALOP and Indirect had higher average scores compared with teachers in Direct schools.

Generally, *storytelling and reading* is not viewed as a playful activity - as a form of playfulness both receive lower rating; but its learning value is generally rated highly. What this means is that teachers across the groups view storytelling and reading as less playful activities but rate their learning value as high. This could mean that teachers are unlikely to use playful activities to promote storytelling and reading.

4.1.6. Teachers’ views on the best ways children develop knowledge and skills

We theoretically categorised the best ways in which children can develop knowledge and skills into three groups: acquire *academic concepts* (numbers, shapes, science concepts, addition, subtraction, patterns and sequencing as well as measurement), develop *communication skills* (speaking, reading, writing and listening) and develop *socioemotional skills* (self-control, following directions, building relationships, solving problems, independence, getting along with friends, expressing emotions, taking turns, resolving conflicts and persistence).

Academic concepts

Generally, all teachers view **free play** as the *least* appropriate for children to learn academic concepts but view **guided play** as better. They consistently differed in their views on learning numbers, shapes, science concepts and addition through guided play, direct instruction and games.

Table 7⁹: Significant differences in academic skills: numbers, shapes, science concepts and addition

	Numbers		
	Guided Play	Direct Instruction	Games
Direct	58.3%	15.1%	22.9%
Indirect	53.5%	14.8%	25.9%
Galop	66.9%	7.8%	19.4%
Control	52.5%	26.3%	14.5%
$X^2(3, 1248)$	16.91	41.25	13.23
P value	< 0.01	<0.001	<0.05
	Shapes		
	Guided Play	Direct Instruction	Games
Direct	45.1%	23.8%	24.8%
Indirect	38.4%	16.2%	34.8%
Galop	57.6%	11.9%	18.5%
Control	44.4%	31.9%	11.8%
$X^2(3, 1248)$	25.19	44.25	49.04
P value	<0.001	<0.001	<0.001
	Science Concepts		
	Guided Play	Direct Instruction	Games
Direct	50.2%	31.4%	13.5%
Indirect	50.5%	24.2%	17.9%
Galop	62.4%	16.7%	13.5%
Control	49.2%	34.3%	7.1%
$X^2(3, 1248)$	15.36	30.51	15.56
P value	<0.01	<0.001	<0.01
	Addition		
	Guided Play	Direct Instruction	Games
Direct	47.9%	24.1%	21.9
Indirect	39.4%	17.9%	38.7
Galop	52.8%	13.4%	27.8
Control	49.2%	31.3%	13.1
$X^2(3, 1248)$	12.01	33.56	54.40
P value	<0.05	<0.001	< 0.01

Teachers in GALOP schools rate the use of guided play as more appropriate for children to learn numbers, shapes, addition, and science concepts and in comparison, view direct instruction as the least appropriate for learning these concepts. Teachers in Indirect school's rate games as the most appropriate for children to learn numbers, shapes, addition, and science concepts (table 7)

Teachers in GALOP schools view guided play as the most appropriate for children to learn subtraction, patterns and sequencing and measurement (table 8). After guided play, games are viewed as the appropriate but teachers in control schools view games as the least appropriate for learning patterns and sequencing. Differences in the views about using guided play, direct instruction and games for learning measurement are significant. Again, teachers in Galop schools view guided play as the most appropriate for children to learn measurement and see direct instruction and games as the least appropriate in comparison to the other groups.

⁹ We report only significant results

Table 8: Academic Skills: subtraction, patterns and sequencing and measurement

	Subtraction		
	Guided Play	Direct Instruction	Games
Direct	49.4%	25.4%	22.6%
Indirect	42.8%	20.5%	33.7%
Galop	59.4%	11.3%	23.3%
Control	50.8%	33.0%	11.5%
$\chi^2 (3, 1248)$	17.80	45.15	39.56
P value	< 0.01	<0.01	<0.01
	Patterns and Sequencing		
	Guided Play	Games	
Direct	44.2%	19.8%	
Indirect	49.1%	21.6%	
Galop	47.8%	21.2%	
Control	60.6%	9.8%	
$\chi^2 (3, 1248)$	18.38	18.97	
P value	< 0.01	<0.01	
	Measurement		
	Guided Play	Direct Instruction	Games
Direct	56.4%	27.3%	11.6%
Indirect	52.8%	25.3%	17.5%
Galop	63.6%	15.2%	13.1%
Control	47.5%	39.4%	6.7%
$\chi^2 (3, 1248)$	17.53	47.62	16.41
P value	< 0.01	<0.001	< 0.01

Communication Skills

Generally, teachers view *guided play* as the most appropriate for children to develop communication skills than other approaches. Teachers in GALOP schools rate guided play more highly than other groups. Teachers in Indirect schools (35.7%) are less likely to view *guided play* as well suited for teaching speaking skills compared with those in GALOP (53.1%), Control (46.8%) and Direct (42.3%). On the other hand, Teachers in GALOP schools (12.5%) were less likely to view direct instruction as appropriate for developing speaking skills than teachers in Control (23.9%), Direct (21%) and Indirect (25.6%) schools

Teachers in GALOP schools (71.9%) were more likely to view guided play as well suited for teaching reading and less likely to view direct instruction for developing reading skill compared to those in Control (52.5%), Direct (56.7%) and Indirect (55.2%). GALOP schoolteachers (68.6%) were also more likely to view guided play as well suited for teaching writing than those in Control (49.8%), Direct (53.2%) and Indirect (56.9%). Free play is viewed the least appropriate for developing writing skills with the differences between groups statistically significant.

Table 9: Communication Skills – speaking, reading and writing

	Speaking		
	Guided Play	Direct Instruction	
Direct	42.3%	21%	
Indirect	35.7%	25.6%	
Galop	53.1%	12.5%	
Control	46.8%	23.9%	
$\chi^2 (3, 1248)$	20.66	19.91	
P value	< 0.01	p < .01	

	Reading		
	Guided Play	Direct Instruction	
Direct	56.7%	27.9%	
Indirect	55.2%	31.6%	
Galop	71.9%	14.0%	
Control	52.5%	37.0%	
$\chi^2(3, 1248)$	30.77	46.86	
P value	$p < .001$	$p < .001$	
	Writing		
	Guided Play	Direct Instruction	Free Play
Direct	53.2%	33.9%	6.3%
Indirect	56.9%	26.6%	11.8%
Galop	68.6%	12.5%	11.6%
Control	49.8%	40.7%	4.7%
$\chi^2(3, 1248)$	26.56	69.29	15.59
P value	$p < .001$	$p < .001$	$p < .01$

The results suggest that guided play is generally valued more highly for developing speaking, reading and writing skills than direct instruction. Galop teachers were more in favour of guided play than direct instruction to develop communication skills.

4.1.7. Teachers' attitudes towards holistic education

We conducted a two-way ANOVA to compare teachers' attitude towards holistic education across treatment and region. For each category, there were no differences among treatment groups across regions as figure 9 below shows. Generally, teachers expressed strong and positive attitudes towards these skills

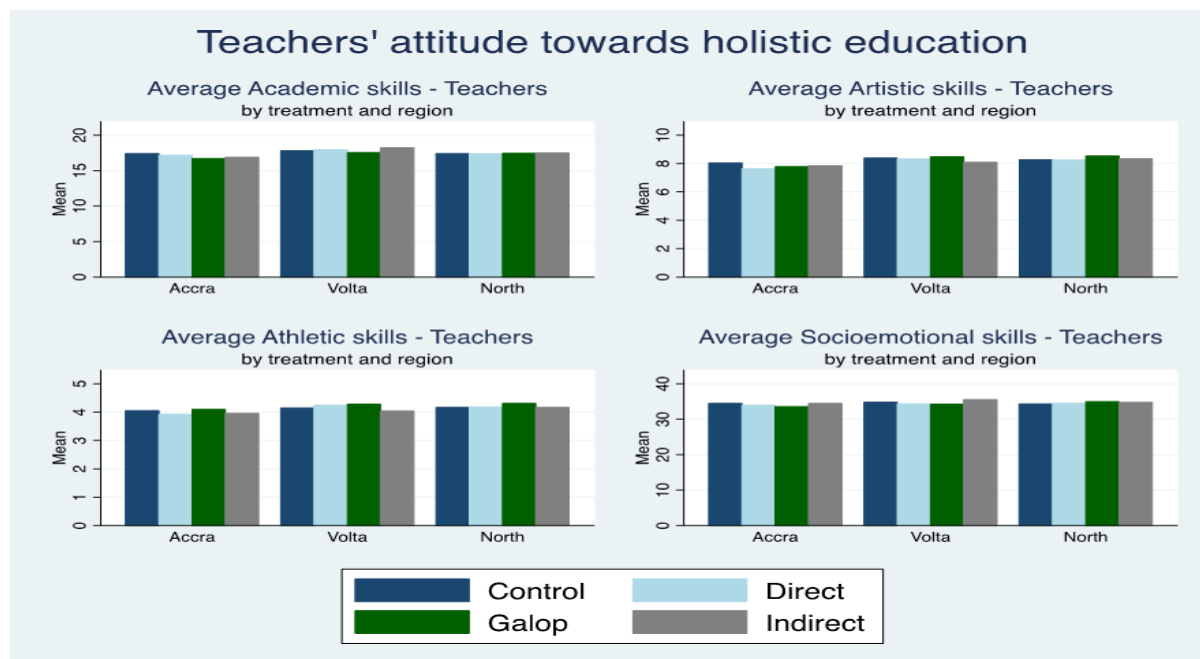


Figure 9: Teachers attitudes towards holistic education

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

4.1.8. Teachers' perspectives on socioemotional skills

Most teachers reported that they have heard of the term 'socioemotional skills' and its importance for children, and that the skills could be taught in class. However, when asked to indicate how it ranks in relation to other teaching priorities this came up as low as shown in figure 10¹⁰.

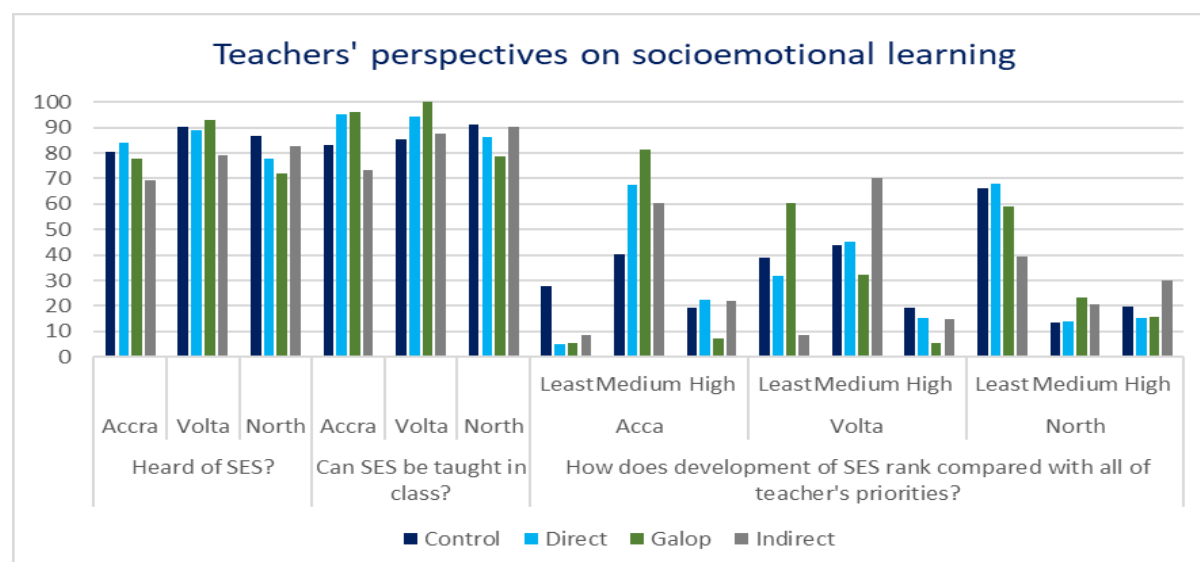


Figure 10: Teachers' perspectives on socioemotional learning

4.1.9. Training to support the development of children's socioemotional learning

Most teachers said they had not received training to support the development of children's socioemotional learning. This was high for teachers in Indirect and Control schools followed by Direct and Galop teachers. (see figure 11).

In Accra and Volta regions, most teachers across treatment groups, except GALOP, reported that they had not received training. In the North, majority of teachers across all treatments reported no training suggesting that this is a bigger issue there than in Accra and Volta regions.

Most teachers in Accra (about 60% - 75%) across all treatments were unsure they had received training in how to use play to support development of socioemotional skills. In contrast, teachers in Volta, about 55% in Direct schools were unsure compared with Control (40%), GALOP (20%) and Indirect (40%).

The results suggest that most teachers have not received the necessary training for developing children's socioemotional learning but are also unsure it can be developed or supported through play-based learning (except in the North). It means training has to focus on how to change this belief if teachers are to use play-based learning to promote socioemotional learning.

¹⁰ See Appendix 7 and 8 for a breakdown on the teachers' responses by gender, teacher grade and professional qualification

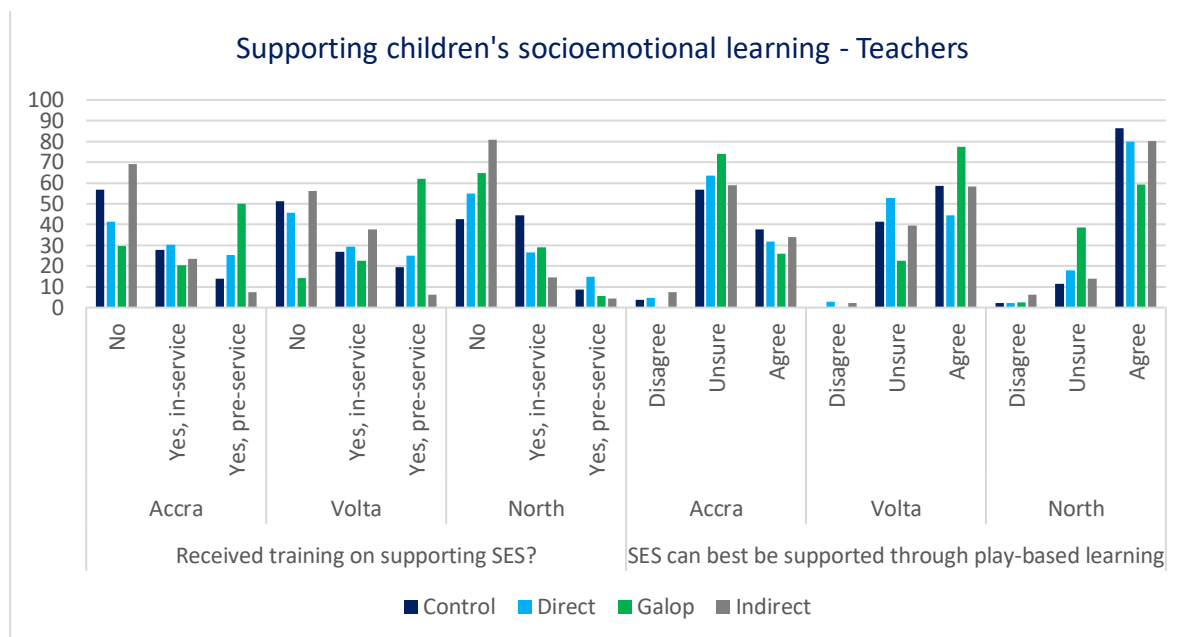


Figure 11. Supporting children's socioemotional learning

Regression analysis on teachers' perspectives on socioemotional skills

We estimated two different logistic regression models with teachers responses on 'heard of SES' and 'Can SES be taught in class?' as the dependent variables and the treatment variable as the independent variable, controlling for region, grade taught, gender of teacher, age of teacher, highest education and professional as well as years of experience as a teacher.

The results (shown in appendix 9) revealed that compared with the Control group, teachers in Direct schools ($\beta = .66$, $SE = .15$, $p < .10$) and Galop schools ($\beta = .48$, $SE = .11$, $p < .01$) are more likely to have heard of the term 'socioemotional skills'.

Also, being in Volta is positively and marginally associated with having heard of SES ($\beta = 1.66$, $SE = .49$, $p < .10$), suggesting that teachers in Volta are more likely to have heard of the term 'socioemotional skills' than those in Accra.

Similarly, teachers in grade 3 are more likely to have heard of the term compared with teachers in KG2 ($\beta = .58$, $SE = .14$, $p < .05$). Further, female teachers are more likely to have heard of the term than male teachers ($\beta = .54$, $SE = .10$, $p < .01$).

Teachers with higher professional qualification are more likely to have heard of socioemotional skills than those with lower qualification ($\beta = 1.42$, $SE = .17$, $p < .01$).

Regarding whether SES can be taught in class, we did not observe any differences by the independent variable (treatment group) and teacher characteristics. Results are shown in appendix 9.

We also estimated a regression model with teachers' perceived priority of SES as dependent variable and the treatment variable as the independent variable, controlling for all variables as in the above. The results showed that teachers in Indirect schools indicated SES had high priority than those in Control ($\beta = .18$, $SE = .06$, $p < .001$). Among the control variables, only region was significantly associated with perceived priority of SES. And teachers in Volta ($\beta = -.16$, $SE = .07$, $p < .001$) and North ($\beta = -.28$, $SE = .06$, $p < .001$) indicated SES had lower priority compared with those in Accra.

These results are important in the sense that a strategy to improve teachers belief and use of play to improve socioemotional learning has to be differentiated and targeted especially towards teachers with lower professional qualification, in lower grades, and especially in the Volta region.

4.1.10. Teachers perceived preparedness to use play-based learning

We asked teachers how well prepared they were to use play to support the socioemotional needs of children, prepare the classroom for play-based learning, provide different activities to different needs, implement positive, and use non-violent disciplines when required. Based on the responses we performed a regression analysis of their perceived preparedness to use play in the classroom (see appendix 10 & 11) for the results.

The main findings from the regression analysis are that:

- Teachers in Direct schools (versus Control) have **higher odds** of reporting being well prepared to set up the classroom space, facilitate playful experiences and promote activities that build children's socioemotional development.
- Teachers in Galop schools (versus Control) **have higher odds** of reporting being well prepared on all items
- Teachers in Indirect schools (versus Control) **have lower odds** of reporting being well prepared to plan activities based on children's interest and provide activities to meet different needs of children.
- No gender differences are observed
- Teachers in class 4 (versus KG2) **have lower odds** of reporting being well prepared to plan activities to meet holistic developmental needs of children – a finding which suggest that teachers in higher primary grades are less prepared to provide a more holistic learning experience for students
- Teachers in Volta (versus Accra) **have higher odds** of reporting being well prepared to plan holistic activities and set up the classroom space for play
- Teachers in North (versus Accra) **have higher odds** of reporting being well prepared to set up the classroom space for play. In contrast, they **have lower odds** of reporting being well prepared to adopt and develop games using a curriculum framework.

4.1.11. Teachers' views on classroom discipline and management

We asked teachers about classroom discipline and how they managed children's behaviour. The results are shown in tables 10, 11, and 12.

Table 10: Classroom discipline - Percent of teachers who sometimes punish negative behaviours and poor performance

	Accra				Volta				North			
	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %
Punish negative behaviours with caning?	31.9	47.6	48.1	50.0	58.5	52.7	16.9	77.0	38.5	50.5	16.1	55.2
Punish children for poor performance in schoolwork?	5.5	20.6	20.3	19.1	43.9	27.7	12.6	43.75	20.1	40.7	23.3	30.3

Table 11: Percent of teachers who sometimes/often report bad behaviours to caregivers

	Accra				Volta				North			
	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %
Sometimes	50.0	53.9	53.7	29.4	56.1	59.7	85.9	39.5	50.0	59.2	54.2	50.2
Often	47.2	42.8	38.8	64.7	29.2	33.3	7.0	52.0	35.8	24.4	40.0	38.6

Table 12: Percent of teachers who often reward positive behaviour with incentives (e.g., stickers)

Accra				Volta				North			
Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %
44.4	60.3	40.7	75.0	43.9	51.3	64.7	68.7	24.4	51.0	72.8	41.9

- The results reveal that generally a high proportion of teachers use the cane to punish negative behaviours and poor performance. However, its incidence is lower in Galop schools in North (16.1%), Volta (16.9%) compared to Direct (Accra: 47.6%) (Volta:52.7%); and (North:50.5%)
- Punishing children for poor performance is quite high except in Control schools in Accra. It is highest in the North (Direct) and Accra (Control)
- Generally, teachers often report bad behaviour to caregivers.
- Rewarding positive behaviour with incentives is generally not high among teachers except by teachers in Indirect schools in Accra (75.0%); and Galop (72.8%).

4.1.12. Teachers' perspectives on play-based learning at school

We asked teachers to tell us their views on play-based learning at school. The responses are shown in appendix 12. Generally, teachers highly rate the importance of play in children's learning (over 90%) and that boys and girls should have the same play opportunities (on average above 90%). However, only about a third said they use play in the lessons on a regular basis across all groups.

Generally, teachers view play as having value in helping to develop children's social skills more than their academic skills, but generally a higher proportion of them believe play can help develop children's thinking and reasoning ability skills (appendix 12).

Interestingly, play was not rated highly to help with children's ability to solve problems, express emotional feelings and improve children's academic performance. (appendix 12). Teachers valued traditional games but rarely use such games in their lessons – Direct schools in Accra, Volta and North: 39.3%,32.3% and 38.2% respectively (appendix 13).

4.1.13. Teachers' qualitative insights on play and learning

Perspectives on the purposes of play

From the qualitative interviews we found that teachers felt the purpose of play is primarily a means for children to dispense of their energy and produce enjoyment and happiness. As one teacher put it: *"Play simply means creating fun among pupils. Any activity that bring amusement and fun"* or as another put it: *"any activity that bring excitement to pupils"*

Teachers do also see play as creating opportunity for children to become more expressive and show autonomy: *"any activity pupils do of their own will without compulsion" ... an activity that raises the*

interest to bring out an innate potentiality of the child". They also see it as able to make learning fun and easier.

Perspectives on gender in play

For some teachers, play is useful in the classroom regardless of the gender of the child. However, they saw differences when play is organised outside the classroom – in other words, play takes on a gendered role when it occurs outside the classroom: *"To me some kinds of play are meant for girls while others are for boys, for example, ampe is for girls, football for boys while oware is for both boys and girls"*. Some dominant games for boys are football and "police and the thieves", while girls play ampe, tomato and Monday-Monday among others.

"Play is not the same for boys and girls. When play involves vigorous activities, girls think it must be for the boys. For instance, some girls think football is for the boys. Boys normally stay away from ampe which they think it is for the girls". These appear to reflect cultural perspectives and influences on gender and play.

Differences of play for KG and upper primary

For many teachers, outdoor play generates the same level of enjoyment for both boys and girls and regardless of grade level. However, they see differences in the level and type of engagement in play. KG pupils are seen as needing longer periods of free play compared to upper primary children who teachers believe enjoy play when it is more organised and competitive.

What constitutes good quality learning

Teachers consider that good quality learning involves good use of teaching and learning materials, pupils' active involvement in lessons, pupils' ability to apply the knowledge they have acquired to new situations, creating good and conducive classroom learning environment and learners' participation in group activities. They also view the use of activities such as play, and good feedback from pupils during the lessons as equally important. Teachers, however, feel that the lack of teaching resources and large class sizes threatens their ability to help children experience good quality learning.

Play and learning

Teachers view play as having value in helping children improve social and life skills through activities that promote turn-taking, teamwork, and critical thinking. They cited examples of play in lessons including "hide and seek" and "pilolo" which they said could be used in teaching science topics such as living and non-living things, and 'pick and act' for English lessons. Some examples teachers gave include

*"... **pick and act** to teach alphabet recognition in KG or B1. For instance, in groups, a pupil picks a letter from the alphabet and acts by scribbling the letter in the air while other group members try to guess the name of the letter." "Another game is called '**I am searching for my friend**' which can be used in teaching verbs, synonyms or antonyms. In this, pupils look for other pupils with similar word cards or pictures similar to what they have too."*

Teachers explain that some outdoor play are highly relevant to the classroom. For example, they point out that children can learn leadership skills from playing ampe, football and through these games develop self-confidence, alertness, self-control, teamwork, listening skill and tolerance:

"In football, the pupils learn skills such as teamwork, being alert, tolerance, listening to others and keeping timing. These skills are needed to succeed in classroom activities and in life skills." "Pilolo teaches perseverance and ability to complete tasks individually"

They also cited examples where play can be used outside the classroom to teach basic concepts - *“If you want to teach letter sounds or phonics using **catch the ball**, it would be more appropriate to do that outside the classroom.”*

Generally, teachers believed that children were learning if they could summarise the main points of a lesson or apply knowledge. Others said they looked for ‘positive’ facial expressions to know whether children had understood a lesson whilst others relied more on teacher assessments. Repeatedly, play was constructed as a way to generate competition among learners, facilitate role play, and create opportunities for students enter into group discussions.

CPD and supporting sustainable change in schools

CPD occupied a high value in the continued improvement of teachers classroom practice. The use of subject experts and experienced teachers with expertise in subject content area were considered to be the best way to improve their practice.

Teachers suggested that long term sustainable change in teaching was possible with increased frequency in visits by resource persons. Others felt teachers needed resource materials to improve their practice - *“individual teachers must have resource packs related to the content matter in the forms of videos and other online resources for easy accessibility to teachers especially during lesson preparation.”*

Teachers also affirmed that school-based Professional Learning Communities (PLC) were starting to emerge in schools, and that this development should be strengthened to improve quality education. They felt that for play to be embedded across all the curriculum of basic education some materials need to be readily available for teachers to access, including footballs, skipping ropes, oware, ludo, manila cards, laptops and projectors for playing videos. They suggested creating resource centres for cluster of schools’ teachers to borrow such resources for teaching.

4.2. Headteachers

4.2.1. Characteristics

We conducted an omnibus multivariate analysis of variance (MANOVA) to assess whether headteacher characteristics differed significantly among treatments groups. Overall, there were no meaningful differences across the four treatment arms for headteacher characteristics (omnibus $F(3) = 1.60, p = .06$) (see table 13). Thus, we interpret the difference for headteacher age as occurring by chance.

Table 13: Headteacher Characteristics

	N	Control (n = 63)	Direct (n = 68)	Galop (n = 71)	Indirect (n = 67)	<i>F</i> statistics	<i>p</i> value
Characteristics		Mean or %	Mean or %	Mean or %	Mean or %		
Gender						1.20	.309
Female	64	31.7%	25.0%	19.7%	19.4%		
Male	205	68.3%	75.0%	80.3%	80.6%		
Headteacher Age						2.65	.049*
20 – 30	86	20.6%	33.8%	36.6%	35.8%		
31 – 40	118	44.4%	41.2%	49.3%	40.3%		
41 – 50	64	34.9%	25.0%	12.7	23.9%		
51 – 60	1	-	-	1.4%	-		
Highest Education						2.16	.093

SHS	28	4.7%	19.1%	7.0%	10.5%		
O Level	10	7.9%	2.9%	-	4.55		
A Level	2	-	2.9%	-	-		
Diploma	16	7.9%	1.5%	2.8%	11.9%		
Degree	177	61.9%	57.4%	76.1%	67.2%		
PGDE	1	-	-	1.4%	-		
Masters	35	17.5%	16.2%	12.7%	5.9%		
Professional Qualification						2.26	.082
None	14	7.9%	8.8%	4.2%	-		
Certificate A	21	15.9%	7.4%	5.6%	2.9%		
Diploma	28	12.7%	7.4%	7.0%	14.9%		
B.Ed.	100	50.8%	66.2%	71.8%	77.5%		
M.Ed.	25	11.15	10.3%	11.3%	4.55		
MPhil	1	1.6%	-	-	-		
Years as a headteacher		3.58 (6-10yrs)	3.9	3.90	3.61	0.94	.421
Years as a headteacher in current school		2.56 (1-5yrs)	2.7	2.87	2.63	1.13	.336

The majority of the headteachers are male. A very small number of the headteachers in Direct schools had an SHS certificate as their highest education qualification. This issue of headteachers with SHS certificate as their highest education qualification came up for discussion at the validation workshops organised at the end of the study. Generally, it was felt that could be an incidence of misreporting and that it was unlikely that a basic school headteacher's highest educational qualification was a secondary education certificate. Direct school headteachers also possessed the least degree qualification compared to the other groups (Direct – 57.4%; Galop – 76.1%; Indirect – 67.2% and Control – 61.9%). Most headteachers had either a B.Ed. or M.Ed. professional qualification.

4.2.2. Comparing headteachers' learning belief

Overall, total scale scores for headteachers ranged between +16 to -36. Interestingly, the average (mean) scores for headteachers across all treatments were below zero (see Figure 12 below) suggesting that headteachers tended to favour direct instruction.

We conducted a one-way ANOVA to compare headteachers' learning beliefs across treatment. Simple main effects showed differences across treatment ($F(3) = 5.14, p < .01$). We explored the effect of treatment using the 'Direct group' as the reference category, comparing the Direct group with the other three groups – Control vs. Direct, Galop vs. Direct, and Indirect vs. Direct. Overall, we found no meaningful differences between the Direct group and all other treatments.

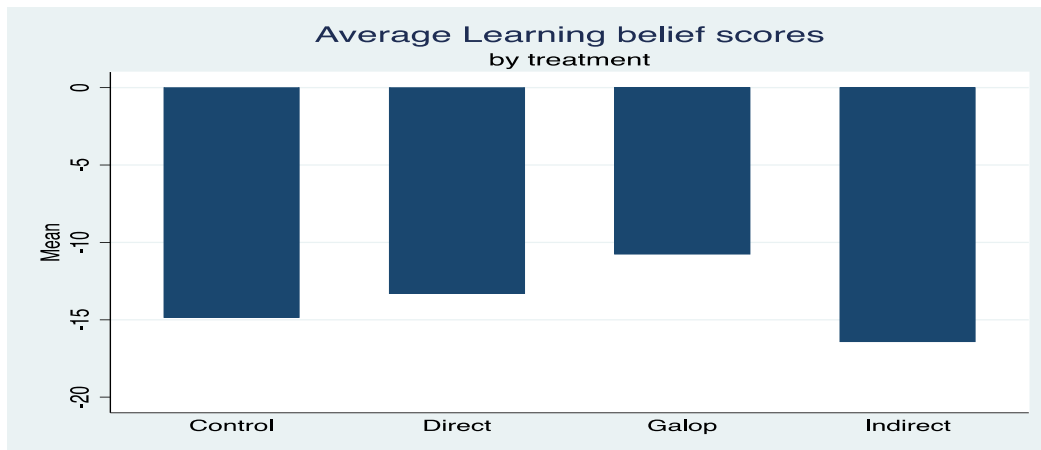


Figure 12: Average learning belief scores

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

Table 14 below disaggregates the learning belief scores and shows that headteachers had a stronger preference for direct instruction compared with active learning approaches. Direct instruction preferences were about 50% and active learning preferences about 35% on average.

Table 14: Means and standard deviations of headteachers' learning beliefs score (subdomains and overall scores) (N = 269)

	Control	Direct	Galop	Indirect			
	M(SD)	M(SD)	M(SD)	M(SD)	Min - Max	F - statistics	p-value
Active learning	36.47 (5.40)	34.91 (5.06)	36.94 (4.64)	33.14 (4.60)	23 – 49	8.20	0.000
Direct instruction	51.33 (6.95)	48.22 (6.96)	47.70 (7.07)	49.56 (6.17)	31 – 73	3.74	0.012
Overall learning belief score	-14.85 (8.17)	-13.30 (8.78)	-10.76 (9.76)	-16.41 (8.44)	-36 – 16	5.14	0.002

Regression analysis on headteachers' total learning beliefs

We used a regression model with headteachers' total learning belief scores as the dependent variable and the treatment variable as the independent variable, controlling for region, gender of headteacher, age of headteacher, highest education and professional qualification as well as years of headteacher in role.

The results showed that being in Galop school was strongly and positively associated with learning belief scores ($\beta = .17$, $SE = 1.52$, $p < .05$), suggesting that headteachers in Galop schools learning beliefs were more towards active learning than those in the other groups. Also, being in Volta and North were negatively associated with learning beliefs ($\beta = -.24$, $SE = 1.81$, $p < .01$; $\beta = -.20$, $SE = 1.68$, $p < .05$, respectively). This indicates that the learning beliefs of headteachers in Volta and North were much more towards direct instruction than those in Accra. Additionally, headteachers' age was significantly and negatively associated with learning belief scores ($\beta = -.15$, $SE = .81$, $p < .05$). This suggests that older headteachers' learning beliefs were more towards direct instruction than younger ones. We did not observe differences by any other characteristics.

4.2.3. Comparing Headteachers' Play and Learning Beliefs

For each of the play categories created, we conducted a one-way ANOVA to compare headteachers' play and learning beliefs across treatment. We further explored the effects of treatment using the 'Direct group' as the reference category, comparing the Direct group with the other three groups – Control vs. Direct, Galop vs. Direct, and Indirect vs Direct. Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

In general, when compared with headteachers in Direct schools, those in Control and GALOP schools view a wide array of children's activities as more playful and attributed significantly higher learning value to these activities. A breakdown of the result of each category is provided in table 15 below.

Scores for Active and Creative Play were the highest in terms of the view of them as a form of play. These were also viewed as having a stronger relationship with learning. From the results, we see that headteachers do not view music, dance, and dramatic play as strongly related to learning compared to their views on active and creative Play. Similarly, storytelling and reading are not viewed strongly as a form of play and corresponding low value for learning.

Table 15: Means and standard deviations of headteachers' play and learning beliefs score (N = 269)

	Control	Direct	Galop	Indirect		
	M(SD)	M(SD)	M(SD)	M(SD)	<i>F</i> - statistics	<i>p</i> -value
Active Play						
Form of Play	18.12 (2.30)	16.32 (2.06)	17.61 (2.92)	17.13 (2.19)	6.75	0.000
Related to learning	17.66 (2.19)	16.45 (1.93)	17.73 (2.3)	17.0 (2.01)	5.49	0.001
Creative Play						
Form of Play	17.49 (2.74)	16.11 (2.67)	17.76 (3.20)	16.06 (3.72)	5.59	0.001
Related to learning	18.68 (1.65)	17.97 (1.69)	18.87 (1.60)	18.07 (1.65)	4.96	0.002
Music and dance						
Form of Play	9.41 (0.96)	8.52 (1.04)	9.32 (0.87)	8.86 (1.12)	11.29	0.000
Related to learning	9.53 (0.75)	8.95 (0.87)	9.45 (0.80)	9.29 (0.79)	6.73	0.000
Dramatic Play						
Form of Play	9.42 (0.99)	8.73 (1.12)	9.39 (0.91)	8.86 (1.24)	7.38	0.000
Related to learning	9.52 (0.87)	8.95 (1.07)	9.40 (0.82)	9.02 (1.04)	5.62	0.001
Electronic Play						
Form of Play	12.39 (2.14)	11.30 (1.86)	12.70 (2.30)	11.20 (1.98)	8.99	0.000
Related to learning	13.69 (1.38)	12.82 (1.22)	13.94 (1.18)	12.88 (1.55)	12.29	0.000
Storytelling and Reading						
Form of Play	7.87 (2.1)	6.95 (2.1)	8.39 (1.9)	7.02 (2.06)	7.64	0.000
Related to learning	9.46 (0.94)	9.19 (1.06)	9.32 (1.09)	9.01 (0.99)	2.24	0.084
Traditional Play						
Form of Play	4.77 (0.41)	4.48 (0.55)	4.80 (0.40)	4.59 (0.57)	6.30	0.000
Related to learning	4.55 (0.69)	4.48 (0.58)	4.81 (0.38)	4.61 (0.49)	4.75	0.003
Board games						
Form of Play	4.77 (0.41)	4.25 (0.69)	4.77 (0.42)	4.46 (0.78)	12.26	0.000
Related to learning	4.65 (0.57)	4.39 (0.57)	4.76 (0.42)	4.59 (0.49)	5.91	0.001

4.2.4. Headteachers views on ways children learn

Academic subjects

The results of the analysis of headteachers' views on ways children learn are shown in appendix 15. Generally, majority of headteachers believe guided play is the best way children learn academic concepts. However, notable differences were found in relation to the use of games and direct instruction (see Table 16). Headteachers in Control schools rated games as the least appropriate for teaching shapes, addition and patterns. Also, headteachers in Direct and Indirect schools rated free play as least appropriate for teaching patterns. Headteachers in Galop schools rated direct instruction as the least appropriate way of teaching measurement.

Table 16. Academic concepts – shapes, addition and measurement

	Shapes	Addition	Measurement
	Games	Games	Direct instruction
Direct	27.9%	33.8%	33.8%
Indirect	29.9%	40.3%	35.8%
Galop	21.4%	38.6%	10.0%
Control	7.9%	14.3%	28.8%
$\chi^2(3, 268)$	11.07	12.68	15.00
P value	<0.05	< 0.05	<0.01
Patterns and sequencing			
	Games	Free play	
Direct	35.3%	1.5%	
Indirect	31.3%	2.3%	
Galop	21.4%	11.1%	
Control	11.1%	17.1%	
$\chi^2(3, 268)$	12.24	14.64	
P value	<0.05	<0.01	

Communication skills

In terms of developing communication skills, (*speaking, reading, writing and listening skills*), headteachers' views across the groups were similar. Again, headteachers thought highly of the use of guided play activities in teaching communication skills. However, for speaking, headteachers in GALOP and Control schools rated guided play more highly than those in Direct and Indirect.

Headteachers in GALOP schools rated direct instruction as the least appropriate for teaching reading than the other groups but rated free play highly in teaching writing compared to the other groups.

Table 17. Significant differences in approaches to developing communication skills – speaking, reading and writing

	Speaking	Reading	Writing
	Guided Play	Direct Instruction	Free play
Direct	30.8%	23.5%	5.9%
Indirect	29.9%	23.9%	9.0%
Galop	52.9%	8.6%	20.0%
Control	49.2%	38.1%	4.8%
$\chi^2(3, 268)$	12.16	16.31	10.99
P value	<0.05	< 0.01	<0.05

Socioemotional skills

In terms of learning to follow directions, headteachers in GALOP schools were less likely to view direct instruction as appropriate for achieving this than those in other groups and were more likely to view the use of games to achieve this as better.

In terms of getting along with friends, headteachers in Control schools were more likely to consider guided play as the appropriate compared with other groups. For games, more headteachers in GALOP schools rated its use in teaching children to get along with friends. In contrast, headteachers in GALOP schools were less likely to consider free play as appropriate. With regards to expression of emotions, more headteachers in GALOP schools rated games as suitable.

Table 18. Significant differences in approaches for developing socioemotional skills¹¹

	Following directions		
	Direct instruction	Games	
Direct	36.8%	13.3%	
Indirect	58.2%	10.5%	
Galop	24.3%	24.3%	
Control	41.3%	3.2%	
$X^2(3, 268)$	16.81	13.60	
P value	<0.01	< 0.05	
	Getting along with friends		
	Guided Play	Games	Free play
Direct	17.6%	27.9%	42.6%
Indirect	16.4%	34.3%	44.8%
Galop	24.3%	51.4%	18.6%
Control	39.7%	17.5%	39.7%
$X^2(3, 268)$	12.02	18.41	13.11
P value	<0.05	<0.01	<0.05
	Expression of emotions		
	Games		
Direct	26.5%		
Indirect	19.4%		
Galop	44.3%		
Control	22.2%		
$X^2(3, 268)$	12.02		
P value <0.05			

4.2.5. Headteacher attitudes to holistic education

Generally, headteacher had positively high attitudes to holistic education. The differences to the four main components of holistic education (academic, artistic, athletic and socioemotional skills) were not significantly different as shown in table 19.

¹¹ We report on only the statistically significant results

Table: 19: Headteachers' attitude towards holistic education (N = 268)

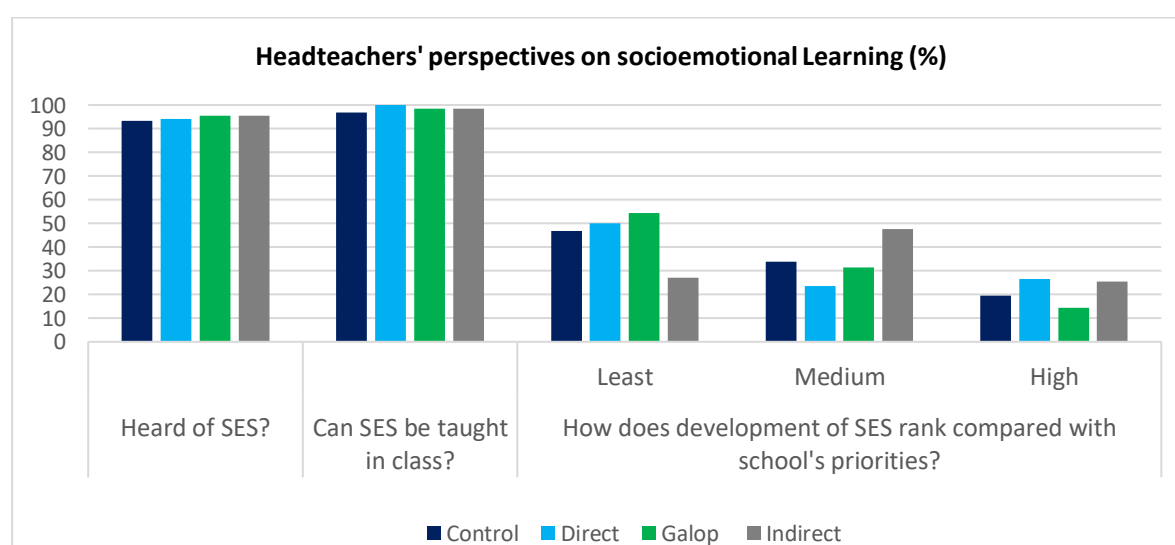
	Control	Direct	GALOP	Indirect			
	M(SD)	M(SD)	M(SD)	M(SD)	Min - Max	F - statistics	p-value
Academic skills	18.11 (1.93)	17.77 (1.58)	17.42 (1.64)	17.76 (1.59)	10 – 20	1.80	0.147
Artistic skills	8.47 (1.34)	8.17 (0.84)	8.47 (0.94)	8.16 (1.06)	3 – 10	1.83	0.142
Athletic skills	4.38 (0.70)	4.16 (0.53)	4.25 (0.47)	4.23 (0.52)	2 – 5	1.69	0.169
Socioemotional skills	35.15 (3.30)	34.64 (3.07)	34.87 (3.18)	34.97 (2.76)	27 – 40	0.31	0.817

4.2.6. Headteachers' perspectives on socioemotional skills learning (SES)

Almost all headteachers have heard of socioemotional skills, think they should be taught in the class, but when asked to rank supporting children's SES in relation to all school's priorities, majority of headteachers in Control, Direct and Galop ranked it the Least. (see figure 13 below).

4.2.7. Headteachers' perspectives on their role in play and barriers to play-based learning

In terms of their role in supporting the use of play in learning, headteachers generally placed providing teaching and learning materials (TLMs) and learning resources for teachers as their topmost priority [Control (88.9%), Direct (72.1%), Galop (85.9%) and Indirect (79.1%)] followed by promoting the use of play: Control (69.8), Direct (70.6%), Galop (64.8%) and Indirect (62.7%). Next were creating a safe environment, supporting teachers in their training and least of all educating caregivers/community about the importance of play: Control (31.8%); Direct (41.2%); Galop (33.8%) and Indirect (35.5%). All headteachers rated *structural barriers* (i.e., infrastructure and facilities) as the highest threat to schools adopting play in learning – Control (79.4%); Direct (73.5%); Galop (74.7%) and Indirect (88.1%)

**Figure 13. Headteachers' perspectives on socioemotional learning**

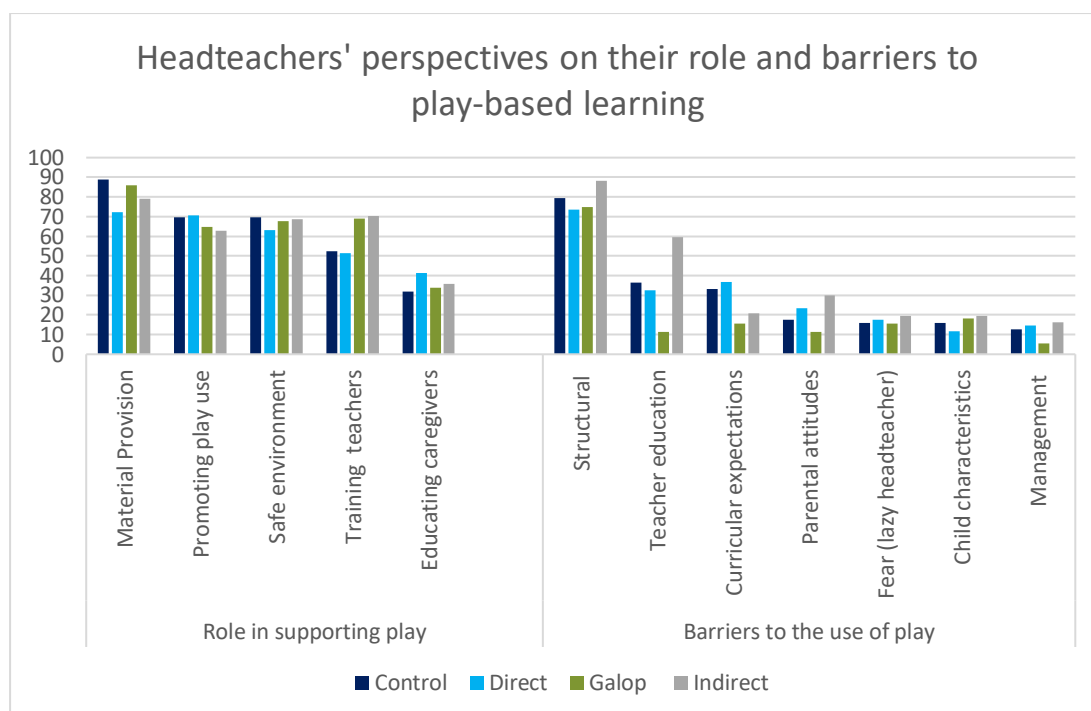


Figure 14. Headteachers' perspectives on their role in play and barriers to play-based learning

4.2.8. Headteachers' views on sporting activities in schools

When asked where children in their school usually engage in sporting activities, unsurprisingly the majority indicated 'during physical education (PE) time. (See results in appendix 16). Sports is rarely included as part of a lesson - Control (6.5%); Direct (19.1%), Galop (20.6%) and Indirect (6.2%). However, the vast majority rated highly sporting activities as important for children. Headteachers' in Direct schools ranked it the highest among those who ranked it the least compared with other school priorities.

4.2.9. Headteachers' Qualitative Insights on Play and Learning

On the purposes of play

Generally, for the headteachers, play seen as an emotional activity where it can be used to deal with emotions or create joyful experiences - "... make them happy, joyful and excited." Others see it as important for developing social and emotional skills - "it also brings togetherness and socialisation. It helps the pupils to socialize." Play is sometimes viewed as an icebreaker - "For instance, after a mathematics class, where some pupils may have understood the concept while others found it difficult, a play can be used to help the pupils to be freed from any tension they might have experienced and help them to flow into the next lesson." It suggests that play has a lesser role in promoting academic skills – a view which is consistent with the survey results.

On gender and play

Some headteachers make no distinction between play that boys and girls can engage in in the classroom for learning but see differences when used outside the classroom: "When a teacher is teaching in the classroom, they play together. Play means the same for both boys and girls. It is when

they come out to play during the break time that is when the gender issue comes in. That is where you see the boys and the girls playing far apart”.

“I could see the girls play more than the boys. Girls seemed more involved in play than the boys. Last week, I took time to observe the pupils as they played and there were more girls in communal plays as compared to the boys.”

On different types, patterns and attitudes to play between KG and B6?

Some take the broad view that play, in terms of its importance and its purpose, is the same for all classes, but then the difference emerges at the KG level where play is used for longer periods in a way that cannot be done at upper primary levels: though pupils in both KG and B6 engage in play, KG pupils seem to enjoy longer periods of play as compared to the B6 pupils. Related to this, one headteacher made the point that play among KG children is usually under teacher guidance and supervision, while play in B6 (upper primary) is a more independent and pupil-oriented activity that needs little or no supervision from the teacher.

On different kinds of play

Organised games is mentioned by all the headteachers interviewed. Football was named by almost all the headteachers, with some debate as to whether it is suitable for boys and not girls. Outdoor play also included games such as ‘frozen bin bag’, ‘I am not alone’ and ‘group numbers’. Local games played include for example ludo, *oware*, *ampe*, *anto wakyere*, *me maame awo bebre*, *tumatu*, *chaskale*, *pilolo*. Headteachers also mentioned generic forms of play including singing, dancing and (pretend) cooking

On play and learning

Generally, the headteachers see play as having most value in developing psychomotor and socioemotional skills. Others cited examples of play that relate to specific classroom-based learning – including the use of songs and board games to develop concepts. As one headteacher put it: a class teacher [can use play] to reinforce the concept of multiplication with the play ‘**me maame awo bebre**’, and practice this both at school and home. Another example given was **double double**. Here a teacher calls out a number and ask a pupil to double the number - “this play creates excitement at the same time as pupils practise simple multiplication and numerals.”

Other games headteachers were able to cite included: ‘pig in the middle’, ‘block busters’, ‘spell your name’. Headteachers felt these games could be used to teach language and mathematical concepts in basic school classes. Only one headteacher mentioned using play to assess students’ performance:

“I usually advise the class teachers to replace some of the class assessment and evaluation with play activities. I once told a teacher that an evaluation can take a form of play and this can be recorded as a video and saved as evidence of work during school or class inspection of a teacher’s work.”

Some saw learning activities at KG as having more play activities as compared to upper primary: “*The level of absorption of academic activities is lower for KG-B3 pupils as compared to the B6 pupils. This means that there should be more play activities at the lower classes as compared to the upper classes. Play must be blended into the lessons of pupils in B6 as and when it is needed.*”

Generally, headteachers felt that certain curriculum requirements do not lend themselves to the use of play. These were requirements that focused on knowledge acquisition much more than problem-solving or creative thinking. Others said in their experience some teachers struggle with matching play to an appropriate classroom instructional activity.

On sustaining changes in teaching in the classroom

Headteachers were strongly of the view that the integral practices of monitoring, supervision and lesson observation are crucial to proposed improvements to teaching practices, such as those being introduced by RTP, can be carried out and sustained.

They also indicated that investing in the creation of professional learning communities (PLC) will be an important strategy to consolidate change. Explaining further, one headteacher gave this example: *“In service training sessions are organised based on needs assessment and we arrange for a teacher who is well versed in the area of concern to do a lesson presentation while other observe.”* Another: *“we have PLC every Wednesday so I encourage my teachers to bring on board their ideas and challenges so that as professionals we can share ideas and help one another. At other times other resource persons are invited to educate staff on other general issues related to the work.”*

5.1 Child

5.1.1 Child Characteristics

The children's age are on average similar for control and direct schools with children in the Volta and North slightly older. Few children speak English at home (N=190) with the proportion of children higher in control schools and in Accra and the North. In terms of household assets, households in the North have unsurprisingly more motorbikes and bicycles as these would be the predominant means of transport for many households in the North. Televisions and telephones are also quite common. (see table 20)

Table 20: Child characteristics and household assets

		Accra		Volta		North	
	N	Control	Direct	Control	Direct	Control	Direct
Characteristics		Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %
Child Gender							
Boy	1014	43.6%	46.8%	44.6%	46.5%	46.2%	46.9%
Girl	1184	56.4%	53.2%	55.4%	53.5%	53.8%	53.0%
Child Grade							
Basic 1	1114	51.1%	51.7%	52.2%	49.6%	51.2%	49.9%
Basic 3	1084	48.9%	48.3%	47.8%	50.4%	48.8%	50.1%
English at home	190	37.4%	16.8%	10.0%	4.7%	22.6%	8.4%
Child Age	1735	8.62	8.91	9.52	9.14	9.11	9.18
Household Assets (% of Yes)							
Electricity	1964	10.0%	9.6%	10.7%	10.5%	20.4%	38.5%
Tin Roof	1722	12.8%	11.6%	12.7%	10.5%	15.6%	36.6%
Indoor bathroom/toilet	1094	8.0%	7.1%	7.4%	7.0%	19.2%	51.1%
Television	1644	11.1%	10.2%	8.8%	8.0%	21.7%	39.9%
Telephone	2116	10.4%	9.2%	11.3%	11.2%	18.2%	39.5%
Refrigerator	721	18.3%	16.7%	10.1%	10.4%	22.7%	21.6%
Motorbike	1155	3.2%	2.3%	9.0%	4.4%	29.7%	51.3%
Bicycle	1328	5.1%	3.2%	4.2%	5.2%	24.7%	57.3%
Computer	239	12.5%	12.9%	11.7%	6.6%	21.3%	34.7%
Car	244	20.9%	21.3%	8.6%	9.8%	20.9%	18.4%

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5.1.2 Classroom Climate

The child survey provided insights into the classroom environment from the perspective of the child. (see Figure 15).

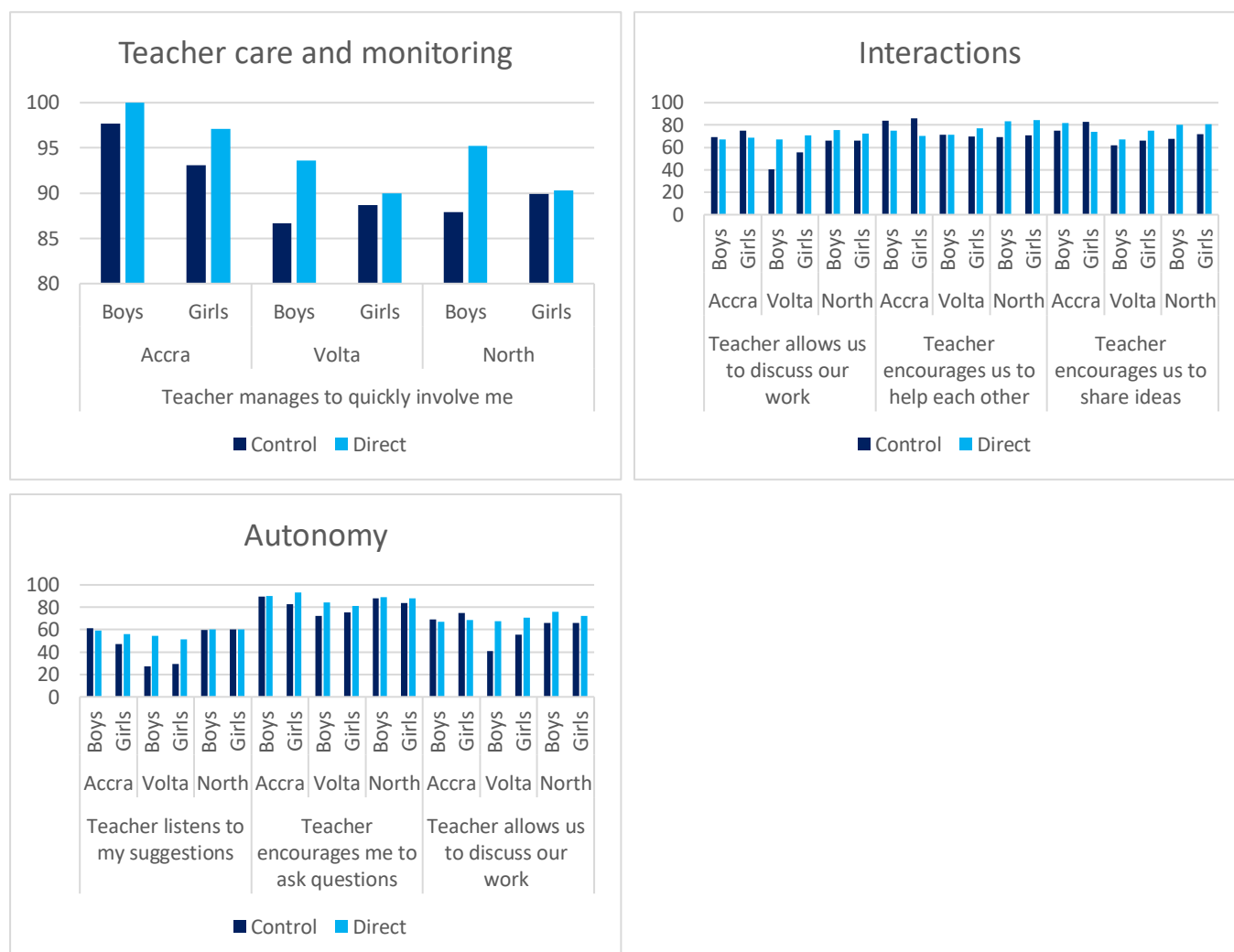


Figure 15: Perceived class climate domains (by treatment, region and child gender)

Generally, boys in Direct schools rate the care they receive from teachers in terms of teachers responding quickly to their inattentiveness in class highly than girls in Accra, Volta and North. Generally, boys rating of teacher care is highest in Accra schools. When it comes to teachers listening to children's suggestions and taking them seriously, the percentage of children who say teachers do this is quite low. In Volta Control schools (28.6%), and in both Direct and Control schools in Accra and Volta, approximately 50% of children reported this. However, a high proportion agree that teachers encourage them to ask questions in class.

Regression Analysis

We carried out a logistic regression using each indicator as an outcome variable. The predictors are treatment, child gender, child class and region. The results of the analysis are shown in appendix 17.

The following emerged as the key findings:

- Children in Direct schools **have higher odds** of perceiving class teacher as demonstrating care, supporting autonomy and interaction
- Children's perceived class climate did not differ between boys and girls for all items
- Children in class 3 **have higher odds** of perceiving teachers as supporting their autonomy
- A child in Volta (versus Greater Accra) **has lower odds** of perceiving teacher as demonstrating high level of care, placing high demands and supporting autonomy and interaction
- A child in North (versus Greater Accra) **has lower odds** of perceiving teacher as demonstrating high level of care.

5.1.3 Caregiver Engagement

We were interested in children's own assessment of caregiver engagement more generally and in terms of different activities. We included this because the literature emphasises that caregiver engagement in play is important to support, extend and show the value of play to the child.

The results are shown in tables 21 and 22

Table 21: Children's report on primary caregiver

		Accra		Volta		North	
		Control	Direct	Control	Direct	Control	Direct
	n	%	%	%	%	%	%
Mother	1151	77.4	75.6	55.6	60.5	51.7	36.7
Father	694	11.2	7.8	14.1	12.7	35.7	53.3
Grandmother/father	193	9.0	10.0	54.0	46.0	33.0	41.0
Aunt	59	2.4	2.4	3.1	4.8	1.8	2.4
Sister	26	2.4	2.9	1.9	1.8	0.6	0.2
Brother	23	1.4	1.4	0.7	0.7	1.6	0.6
Uncle	24	-	0.9	1.1	0.7	1.6	1.1
Both mother and father	10	-	8.0	2	-	-	-

Table 22: Children's report on caregiver's engagement in different activities

	Accra		Volta		North	
	Control	Direct	Control	Direct	Control	Direct
Cognitive-stimulating activities	%	%	%	%	%	%
Read books with you or encouraged you to read independently	58.3	69.7	67.0	62.4	58.5	58.5
Told you a story	49.0	57.0	46.2	45.4	57.7	57.0
Done activities like arts and crafts	30.8	75.1	38.8	48.8	37.5	38.0
Played board games or did puzzles with you	39.2	37.0	25.8	31.9	33.4	18.6
Physical stimulating activities						
Worked on a project like building, making, or fixing something (includes cooking)	49.0	60.9	42.3	57.1	38.1	65.3
Played sports, active games, or exercised together	41.6	77.0	38.4	51.8	44.9	44.7
Discussions						
Discussed with you how to use time	49.0	61.4	45.1	51.8	29.3	22.2
Talked with you about the family/community's history	28.9	45.3	36.0	28.2	24.6	20.0
Discussed plans for future educational or career aspirations with you	61.2	67.8	42.7	45.8	33.6	25.0
Remote learning activities						

Watched teaching on TV together	70.1	70.2	44.3	53.0	50.0	45.8
Listened to teaching on radio together	22.0	44.3	43.1	51.1	29.3	38.0

The results present some important implications for the P3 project.

First, the main primary providers are mothers - in Accra (Control 77.4%; Direct: 75.6%). This drops to 55.6% and 60.5% respectively in Volta. In the North, the father is seen as the main primary caregiver (Control: 35.7%; Direct: 53.3%), but this is likely to be a cultural interpretation of who a caregiver is. Culturally, caregivers may be seen as males, but this is perceived mainly in terms of norms on who is given the role as responsible for a child (e.g., financial) and not necessarily who has close engagement. This has implications for how the project approaches caregiver intervention, who it targets and the culturally appropriate approaches it uses to improve caregiver engagement with children. Although the numbers are low, the data also shows that a small proportion of children have siblings as their primary caregiver.

On caregiver engagement in different activities there are also some striking observations

Cognitive-stimulating activities – Engagement with activities such as arts/crafts, boardgames/puzzles comes out as the lowest, as low as 38% and 18.6% respectively for children in Direct schools in the North. Being told a story is also relatively low across groups. Overall, being encouraged to read or read to is relatively higher than other cognitively stimulating activities.

Physically stimulating activities – This is also relatively low and surprisingly also for engagement with sports, active games or exercise, except for children in Direct schools in Accra (77%).

Discussions - Caregivers in the North rarely engage children in discussions on how to use their time (Control: 29.3%; Direct: 22.2%) or talk to children about the family or community's history (Control: 24.6%; Direct: 20.0%). Although in other regions these levels of engagement are relatively higher, they are still generally quite low as table 22 shows.

Regression Analysis

We carried out a logistic regression analysis of children's reported caregiver engagement using each indicator as outcome variable. Our predictor variables were treatment, child gender, child class and region.

The following emerged as the key findings:

- Children in Direct schools (versus Control) **have higher odds** of reporting caregiver engaging in arts and crafts, project, sports/active game and listened to teaching on radio with them. Children in Control schools (versus Direct) **have lower odds** of reporting caregiver engaging in board games/puzzle with them
- Boys **have higher odds** of reporting caregiver engaging in projects with them. Girls have lower odds of reporting caregiver engaging in sports/active play with them
- Children in class 3 **have higher odds** of reporting caregiver engaging with them in cognitive-stimulating activities (read book, told story, boardgame/puzzle), discussions and remote learning via radio.
- A child in Volta (versus Greater Accra) **has lower odds** of reporting caregiver engagement in cognitive-stimulating activities (storytelling, arts and craft and board game), physical activities (sports or active game), discussion on time use and future educational and career plans and watching teaching on TV. But a child in Volta **has higher odds** of reporting caregiver engagement in listening to teaching via radio. A similar pattern is observed for a child in North (versus Greater Accra)

These findings should be used to provide targeted intervention activities in the different regions.

5.1.4 Child's Play Preferences – how much they like to do activities

The results of the survey on child's play preferences in terms of how much they would like to do these activities are shown in table 23.

Table 23: Percentage scores of children's report on how much they would like to do different activities (N = 2188)

	Control			Direct		
	Not at all	Sometimes	Very Much	Not at all	Sometimes	Very Much
Cognitive-stimulating activities	%	%	%	%	%	%
Colouring, drawing and painting	5.8	52.2	41.9	4.8	51.0	44.0
Craft and arts	22.6	53.8	23.5	23.8	50.0	26.0
Listening to stories or telling stories	7.2	59.9	32.7	7.1	62.3	30.5
Playing board games	25.2	50.7	23.9	30.0	50.6	19.2
Reading a book	5.0	42.8	52.0	4.1	48.7	47.1
Physical activities						
Running games	8.7	58.1	33.0	4.4	57.2	38.3
Singing and dancing	16.0	57.2	26.7	9.7	55.2	35.0
Jumping games	11.3	59.3	29.2	6.6	59.9	33.4
Sporting activities	18.0	49.5	32.4	14.1	44.3	41.4
Climbing games	30.3	57.3	12.3	31.4	47.8	20.6
Other activities						
Using materials (e.g., counters, bottle tops)	8.1	57.4	34.4	12.6	52.6	34.7
Singing songs	16.1	59.4	24.4	10.0	56.0	33.9
Acting out a story	23.1	57.5	19.2	26.2	55.8	17.9
Traditional games	11.2	50.2	38.4	14.0	37.4	48.5
Watching videos	20.2	50.5	29.1	13.1	55.9	30.9

Generally, it shows that when it comes to activities that children would like to do 'very much', reading a book is relatively high compared to other activities (Direct:47.1%; Control:48.7%). Board games, craft and arts, climbing games and 'acting out a story' are the least popular (Direct: 23%; 30%; 31.4% and 26.2% respectively) (Control: 22.6%; 25.2%; 30.3%; 23.1% respectively). We then explored further these preferences through a regression analysis.

The results are reported in appendix 18

Regression Analysis

The following emerged as the key findings:

- Being in Direct school is strongly and positively associated with preference for all physical activities and three of the other activities (*singing songs, local games and watching videos*) and negatively associated with preference for board games. This suggests that children in Direct schools reported having higher preferences for physical and other activities, but lower preference for board games.

- Child gender is significantly, but negatively associated with all physical activities and two cognitive-stimulating activities (*craft and board games*). This suggests that girls reported having lower preference for these games than boys
- Child gender is positively and significantly associated with two other activities (*singing songs and local games*), indicating that girls reported having higher preference for these than boys.
- Child class is negatively associated with most of the activities. In particular, children who are in class 3 reported having lower preference for these games than those in class 1.
- Being in Volta region is positively and significantly associated with six activities (*craft, book reading, running games, climbing games, using materials and watching videos*). This implies that children in Volta have higher preferences for these activities than those in Greater Accra.
- Being in North is negatively associated with three cognitive-stimulating activities, three physical activities and four other activities. This suggest that children in North reported having lower preferences for these games than those in Accra.

These findings could be used to provide targeted intervention activities in the different regions.

5.1.5 Child's Play Preferences – how often they engage in activities at school

We next explored the extent to which children experience their activity preferences at school. The results are shown in table 24.

Table 24: Percentage scores of children's report on how often they do activities at school

	Control			Direct		
	Never	Sometimes	Almost Everyday	Never	Sometimes	Almost Everyday
Cognitive-stimulating activities	%	%	%	%	%	%
Colouring, drawing and painting	4.7	75.1	20.1	4.4	70.7	24.8
Craft and arts	30.5	58.9	10.5	25.9	62.3	11.7
Listening to stories or telling stories	10.7	75.4	13.8	5.7	75.7	18.5
Playing board games	52.1	42.4	5.3	46.6	41.2	12.1
Reading a book	5.1	55.7	39.0	3.7	55.1	41.1
Physical activities						
Running games	13.7	67.2	19.0	4.2	68.1	27.6
Singing and dancing	14.9	71.3	13.7	7.4	68.2	24.3
Jumping games	14.9	65.5	19.4	5.9	68.6	25.3
Sporting activities	17.4	65.9	16.5	12.6	53.4	33.9
Climbing games	50.9	43.4	5.6	41.6	39.4	18.8
Using materials (e.g., counters, bottle tops)	10.1	69.5	20.3	8.3	62.0	29.6
Singing songs	12.6	71.8	15.4	7.1	66.1	26.6
Acting out a story	33.1	59.3	7.4	39.0	52.0	8.8
Traditional games	11.2	60.1	28.5	13.5	45.4	41.0
Watching videos	43.2	48.8	7.9	28.7	56.5	14.6

The results show that craft and arts, playing board games, climbing games, acting out a story and watching videos are rare in their experience (Control: 30.7%; 52.1%; 50.9%; 33.1% and 43.2%

respectively) (Direct: 25.9%; 46.6%; 41.6%; 39.0% and 28.7% respectively). Reading a book is relatively high ('almost daily' Control: 39%; Direct: 41.1%). When this is combined with the results on 'sometimes' it suggests that reading, 'colouring, drawing and painting' and physical activities are the most common activities they experience in school.

Again, we carried out a regression analysis on this play preferences and how often they do them at school (see appendix 19 for table of the results).

Regression Analysis

The following emerged as the key findings:

- Treatment type is significantly and positively associated with all activities, except acting out. This means that children in Direct schools reported frequent engagement in these activities than those in Control schools
- Child gender is significantly and negatively associated with craft/art and all physical activities, except jumping games, suggesting that girls reported engaging less frequently in these activities than boys. In contrast, girls reported engaging frequently in singing songs and local games than boys.
- Child class is negatively associated with colouring, singing and dancing, jumping games, singing songs and local games. This suggests that children in class 3 reported engaging less frequently in these activities than those in class 1.
- In contrast, children in Class 3 reported engaging frequently in three cognitive-stimulating activities (*stories, board games and reading*), and watching videos than those in Class 1.
- Being in Volta region is positively associated with craft/art and negatively associated with songs and watching of videos. This suggests that children in Volta reported engaging frequently in craft and arts than those in Accra. But they also reported engaging less frequently in singing songs and watching videos.
- Being in the North is significantly associated with 11 activities. Ten activities (all physical activities, except sports, two cognitive-stimulating activities and all other activities) are negatively associated. This suggests that children in North reported engaging less frequently with these activities than those in the Accra. In contrast, children in North reported engaging frequently in sports than those in Accra.

These results identify the areas and issues that the P3 project should pay particular attention to in the different regions. For example, in Volta, cognitively stimulating activities (stories, board games and reading), may be ones that the project should tap into but also where these are not familiar activities, approaches to instilling their use should be considered.

5.1.6 Child Labour and opportunity to Learn – Grade 3

In the survey we also explored children in grade 3's activity at household level. The importance of this assessment is in relation to how much time children engage in activities that can promote their cognitive and socioemotional development. We also estimated how much time children spend sleeping in a typical day and carried out a regression analysis on this variable. The results are shown in tables 25 and 26 below:

Table 25: Means and standard deviations of number of hours children spent sleeping in a typical day (N = 1092)

Accra		Volta		North	
Control	Direct	Control	Direct	Control	Direct
9.24 (1.22)	9.51 (0.91)	9.77 (1.16)	9.55 (1.16)	8.75 (1.11)	8.96 (1.58)

Table 26: Regression analysis of number of hours children spent sleeping

Treatment (Direct)	.04 (.07)
Child sex (Female)	.02 (.07)
Region	
Volta	.09 (.12) *
North	-.18 (.10) **

Standard errors in bracket

** $p < .01$, * $p < .05$

Generally, the results show that:

- Children in Volta reported more hours of sleep than those in Accra
- In contrast, children in North reported less hours of sleep than those in Accra

Labour and other opportunities

Table 27 below shows the results of child labour activities and other opportunities that are important for children's socioemotional development and learning.

Table 27: Child Labour and opportunities to learn and develop socioemotional skills

	Accra				Volta				North			
	Control		Direct		Control		Direct		Control		Direct	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
	%	%	%	%	%	%	%	%	%	%	%	%
Taking care of others	64.4	64.5	28.8	51.0	46.1	61.1	49.2	64.7	71.6	87.9	63.8	84.7
Household chores	97.7	100.0	82.2	93.8	88.4	100.0	96.8	98.5	72.3	93.9	64.5	89.6
Work on the farm, cattle keeping or other family business	22.2	32.2	11.1	16.3	53.8	38.8	57.1	42.6	47.9	30.8	74.1	66.8
Work for pay or money	17.7	4.8	8.8	6.1	48.0	29.1	39.6	27.9	31.1	30.8	12.2	22.8
At school	82.2	69.3	73.3	81.6	96.1	93.0	92.0	92.6	93.9	95.9	94.8	93.4
Studying outside of school time	71.1	66.1	77.7	79.5	53.8	63.8	76.1	63.2	56.1	58.3	72.2	73.9
Playing and seeing friends	93.3	79.0	88.8	89.8	86.5	87.5	93.6	91.1	93.9	90.6	89.6	87.5
Engaging in sporting activities	80.0	48.3	86.6	67.3	80.7	55.5	85.7	61.7	84.4	53.6	89.6	62.5
Playing more now compared to time before COVID-19?	26.6	22.5	20.0	12.2	34.6	26.3	58.7	55.8	42.5	40.9	57.4	50.0

-
- Generally, compared to boys a high proportion of girls take care of others. This incidence is particularly high in the North (Direct Schools Girls: 84.7% and Control: 87.9%). Even in Accra, about 51% of girls compared to 28.8% of boys take care of others.
 - Household chores is high for all children across regions and groups. Girls in the North do more household chores compared with boys (Control – Boys:72.3%; Girls: 93.9%; Direct- Boys:64.5% and Girls: 89.6%). While a smaller percentage difference, girls in all regions reported spending more time on chores than boys
 - Generally, children in the North do more work on farm, engage in cattle keeping/other family business, with boys doing more than girls (Direct – Boys: 74.1%; Girls:66.8%). Similarly, boys engage more in these activities in Volta than girls. In Accra it appears to be the inverse.
 - Working for pay or money is relatively high in Volta both control and direct.
 - Generally, the main opportunities to learn is at school averaging over 90% in Volta and North and higher than in Accra. Studying outside of school time is lower especially for boys and girls in Control schools in the North (56.1% boys and 58.3% girls) and relatively higher for children in Direct schools (72.2% boys and 73.9% girls)
 - Opportunities to play and see friends are also generally high (averaging between 79% and 93.7%)
 - When it comes to engaging in sporting activities there are striking differences between girls in both control and direct schools in Accra (86.6%: boys and 67.3%: girls) ;(Control – Boys:80.0% and Girls:48.3%). Generally, girls engage in less sporting activities than boys in all regions.

Finally, we asked the children about their level of play activity before the COVID-19 pandemic. Unsurprisingly, the results indicate that this has decreased substantially. Girls have seen their level of play activity decreased much more than boys, particularly for girls in Direct schools in Accra.

5.2 Child - International Social and Emotional Learning Assessment (ISELA)

5.2.1 ISELA Domains

To assess children's social and emotional learning (SEL), we used the socio-emotional domains in the ISELA for children in P1 and P3. This also covered the skills indicated in RTP documents. The following are the domains covered by the ISELA developed for the baseline evaluation

Relationships: This domain helps illustrate children's social network and whether they seek support from their networks when faced with problems.

Stress management: This domain is also referred to as coping and focuses on how children consciously use their personal skills and social networks to mitigate stressful situations.

Empathy: This domain assesses children's ability to understand other people's emotions and respond appropriately.

Perseverance: This assesses children's ability to remain on a task despite the difficulty.

Conflict resolution: Assesses children's ability to handle conflict situations in non-hostile manner

Self-concept: Assesses children's ability to understand and express preferences and thoughts.

Learning environment: Assesses the conduciveness of the child's environment (i.e., school)

For the analysis, we calculated a composite score that represents children's average performance on each domain.

5.2.2 Average ISELA scores

Figure 16 below presents the overall average ISELA scores

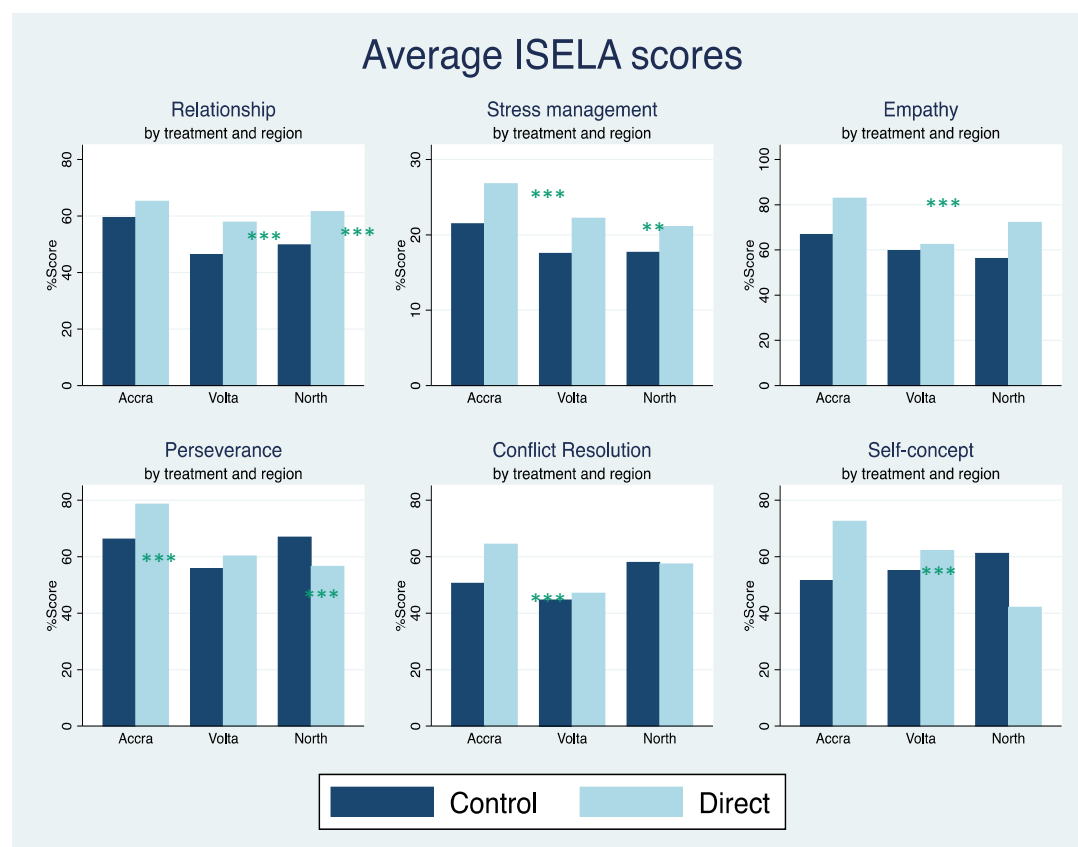


Figure 16. Average ISELA scores

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

*** $p < .001$ ** $p < .01$

The main emerging findings are:

- Overall, children had low degrees of stress management (< 30% correct) compared to the other domains. However, children in Direct schools across the three regions had higher degrees of stress management compared to those in Control schools.
- Children in Direct schools across the three regions reported higher access to social networks when in need of help but only those in Volta and North differed in the scores compared to Control
- Children in Direct schools in Accra and North showed more empathy than those in Control schools
- While children in Direct schools in Accra demonstrated high degrees of perseverance, those in Control schools in the North showed high levels of perseverance. A similar pattern is observed for the self-concept

5.2.3 ISELA – Gender

Figure 17 shows the ISELA scores disaggregated by gender

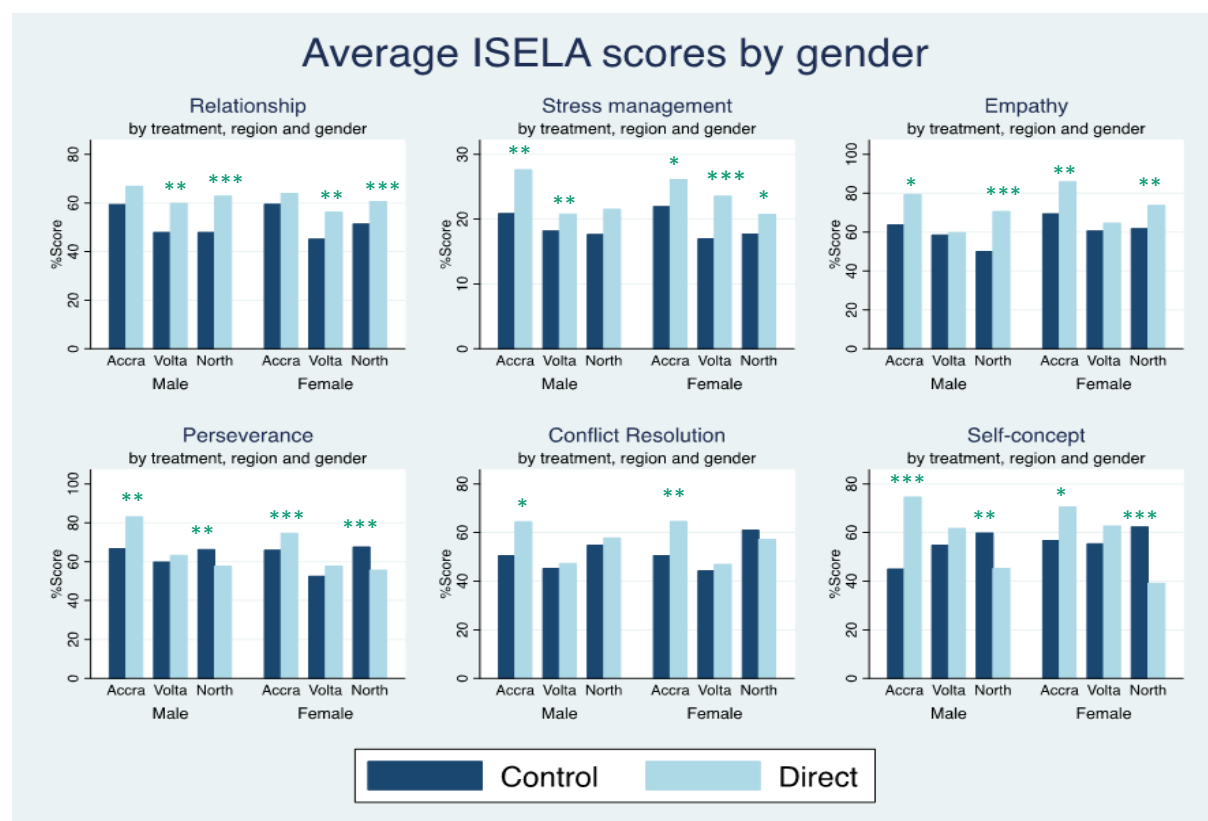


Figure 17. ISELA scores by gender

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. *** $p < .001$ ** $p < .01$ * $p < .05$

The following are key findings in relation to the ISELA domains

Relationship:

- Scores for boys and girls in Accra did not differ between Direct and Control. In Volta and North, boys and girls in Direct schools reported higher use and access to social networks.

Stress management:

- Boys in Accra identified more coping strategies for dealing with stress than girls. In Volta, girls identified more coping strategies than boys.

Empathy:

- Differences are noted for boys and girls in Direct schools in Accra and North.
- Girls in Direct schools in Accra showed more empathy than boys.

Perseverance:

- Boys and girls in Direct schools in Accra had higher scores on perseverance. Scores were higher for boys than girls
- In contrast, boys and girls in Control schools in North had higher scores.

Conflict resolution:

- Scores differed for boys and girls in Direct schools in Accra only

Self-concept:

- While both boys and girls in Direct schools in Accra had higher scores than those in Control, boys demonstrated a higher ability to express preferences and thoughts than girls.
- In the North, boys and girls in Control schools had higher scores compared with those in Direct schools.

5.2.4 Learning Environment

Figure 18 shows the learning environment scores disaggregated by treatment, region and gender

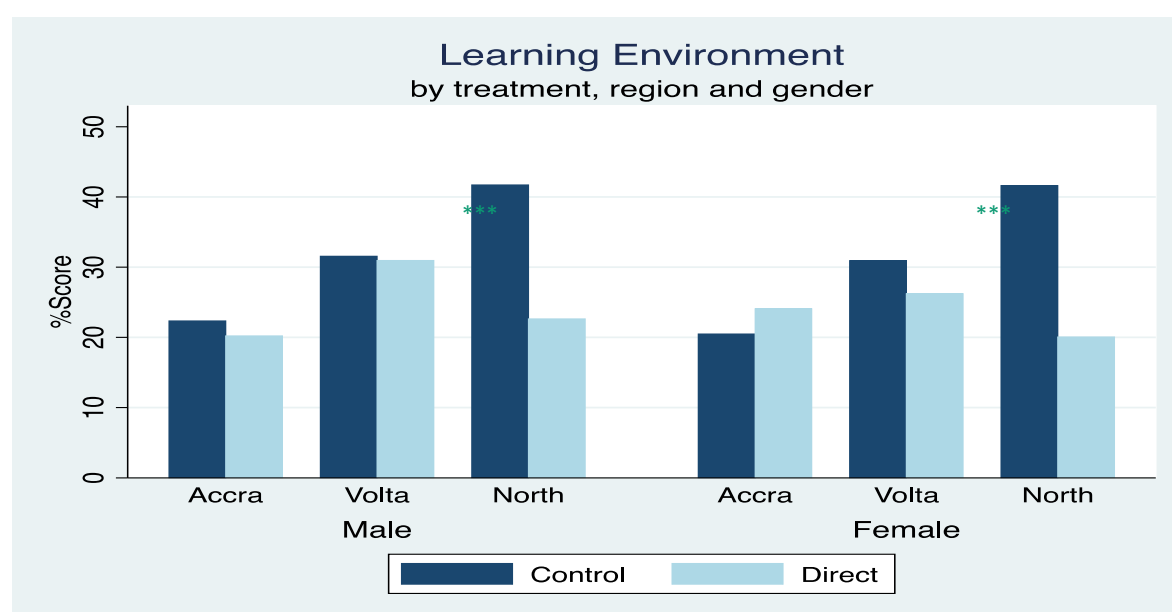


Figure 18. Learning environment scores

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. ***p < .001

The key findings are:

- When compared with Control, scores for boys in Accra are lower and higher for girls – although not statistically significant.
- Boys and girls in Control schools in the North reported higher frequency of negative experiences and the frequency differs significantly by approximately 20%.

Relationship between cumulative learning environment risk and ISELA

We calculated a cumulative learning environment risk index that captures children's reported presence of risk in the learning environment in a cumulative manner. To create the index, each learning environment item is dichotomised so that the presence of risk equals one and no risk equals zero, and the binary indicators were summed to create a single risk score.

On average, children in Control and Direct schools reported 3.30 ($SD = 2.95$) and 2.26 ($SD = 2.47$) risks, respectively. The cumulative learning environment risk index had small positive correlations with perseverance ($r = .15, p < .001$) and self-concept ($r = .11, p < .001$) and negative correlation with empathy ($r = -.08, p < .001$).

We further estimated a regression using the scores on each ISELA domain as the dependent variable and the cumulative learning environment risk as the independent variable, controlling for treatment type, child class (P1 and P3), age and gender.

The results revealed the same pattern observed in the correlation analysis. However, among the control variables, children in Direct schools had higher scores on all domains (including total ISELA scores), except perseverance and self-concept where children in Control schools scored higher.

Child class was positively and significant associated with all domains, except conflict resolution, with children in grade 3 scoring higher than those in grade 1.

Similarly, child age was positively and significantly associated with self-concept and total ISELA scores and marginally associated with relationship, empathy, and perseverance, suggesting that older children had more of these qualities than younger ones.

The pattern observed for child class and age is not surprising given that children's socioemotional skills scores tend to increase with age.

Finally, child gender was negatively and marginally associated with perseverance and total ISELA scores, with boys scoring higher than girls.

Table 28: Regression analysis on learning environment risk and ISELA

	Relationship	Stress management	Empathy	Perseverance	Conflict resolution	Self-concept	Total ISELA
Learning environment risk	.04 (.28)	-.01 (0)	-.06** (0)	.13** (0)	0 (0)	.05* (0)	.02 (0)
Treatment	.16** (1.58)	.13** (.02)	.09** (.02)	-.08** (.02)	.06** (.02)	-.15** (.02)	.07** (.02)
Child class (Grade 3)	.12** (1.86)	.09** (.02)	.10** (.02)	.15 ** (.02)	.04 (.02)	.09** (.02)	.12** (.02)
Gender (Female)	-.03 (1.54)	0 (.02)	0 (.02)	-.04 † (.02)	-.01 (.02)	-.02 (.02)	-.04 † (.02)
Child Age	.05 † (.48)	.04 (0)	.05† (0)	.05 † (0)	.04 (.01)	.06* (.01)	.06* (.01)

Standard errors in bracket

** $p < .01$, * $p < .05$, † $p < .10$

5.2.5 Risk Factors

We examined the risk factors from the child's perspective in order to ascertain how they perceived threats from their home environments. The results are shown in table 29

Table 29: Child's reported experience of risk factors by treatment and region (N=2196)

	Accra		Volta		North	
	Control %	Direct %	Control %	Direct %	Control %	Direct %
Have you ever had to work to get money?	12.8	16.5	31.3	26.1	33.9	20.1
Have you ever had to miss school more than 5 days	7.5	18.5	14.4	14.4	10.2	4.8
Have you ever had to leave home because it was not safe?	6.6	7.8	8.8	7.0	12.6	6.4
Have you ever lived in a community where you did not feel safe?	10.2	11.2	13.6	10.9	23.6	5.4
Have you ever lived in a home where people shout or yell at each other?	36.4	30.7	44.9	38.2	54.0	33.3
Have you ever lived in a home where people push, slap or throw something?	27.5	35.1	38.9	41.8	49.7	31.9
Have you ever gone hungry because there was not enough food to eat?	25.3	27.3	26.5	35.5	37.5	21.1
Has anyone in your family been away from home for more than six months?	12.8	17.5	22.0	21.4	33.4	17.9

Although a low number, more children indicated they have missed school in Direct Schools in Accra (Direct: 18.5%; Control: 7.5%). The incidence of missing school is lowest among children in Direct schools in the North (Control: 10.2%; Direct: 4.8%).

It is surprising that many young children say they have ever had to work for money – highest in Volta (Control: 31.3%; Direct: 26.1%)

A relatively high proportion of children across the three regions appear to be living in unsafe environments or not getting enough food to eat. About 50% and 32% Control and Direct respectively in North admit to experiencing unsafe environments. The figures are also high in Volta – 38.9% Control and 41.8% Direct.

The context of the home is key to children's socioemotional development. This is likely to impact children's socioemotional development and unlikely to give children confidence in approaching parents/caregivers to help them address personal social and emotional challenges.

Relationship between cumulative household risk and ISELA

Like the learning environment risk and ISELA analysis, we calculated a cumulative household risk index that captures children's reported presence of risk in the home/community in a cumulative manner using four questions:

- Have you ever had to leave home because it was not safe?"
- Have you ever lived in an area or a town where you did not feel safe?"
- Have you ever lived in a home where people shout or yell at each other?"
- Have you ever lived in a home where people push, slap, or throw something at each other?"

On average, children in Control and Direct schools reported 1.15 ($SD = 1.20$) and 0.82 ($SD = 1.02$) household risks, respectively.

The cumulative household risk index had small positive correlation with perseverance ($r = .11, p < .001$) and negative correlation with stress management ($r = -.07, p < .01$), empathy ($r = -.07, p < .01$) and conflict resolution ($r = -.04, p < .05$).

We further estimated a regression using the scores on each ISELA domain as the dependent variable and the cumulative household risk as the independent variable, controlling for treatment type, child class (P1 and P3), age and gender.

The results showed negative associations between household risk, stress management, empathy, self-concept and total ISELA scores, **indicating that children with higher household risk had lower ISELA scores.**

In contrast, household risk was positively associated with perseverance, **suggesting that children who reported higher household risks had higher scores on the perseverance task.**

Regarding the control variables, the analyses revealed a similar pattern observed in the learning environment risk and ISELA regression model.

Table 30: Regression analysis on cumulative household risk and ISELA

	Relationship	Stress management	Empathy	Perseverance	Conflict resolution	Self-concept	Total ISELA
Household risk	.00 (.68)	-.05* (.01)	-.09*** (.01)	.06** (.00)	-.03 (.01)	-.04* (.01)	-.04† (.01)
Treatment	.15*** (1.56)	.13** (.02)	.09*** (.02)	-.10*** (.02)	.06* (.02)	-.17*** (.02)	.06** (.02)
Child class (Grade 3)	.12*** (1.86)	.09** (.02)	.10*** (.02)	.15 *** (.02)	.04 (.02)	.09** (.02)	.11*** (.02)
Gender (Female)	-.03 (1.54)	.00 (.02)	.00 (.02)	-.04 † (.02)	-.01 (.02)	-.03 (.02)	-.04 † (.02)
Child Age	.05* (.48)	.04 (.00)	.05† (.00)	.05* (.00)	.04 (.01)	.07* (.00)	.07* (.00)

Standard errors in bracket

*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

Relationship between how often children engage in play and ISELA

Using the child play preferences scale, we calculated a 'play engagement' index that captures how often children engaged in playful activities in a cumulative manner. To create the index, each item is dichotomised so that not participating in the play activity equals zero and participating sometimes/always equals one, and the binary indicators were added to create a single engagement in play score.

On average, children in Control and Direct reported 9.54 ($SD = 4.81$) and 11.78 ($SD = 3.80$) playful engagement, respectively.

The engagement in play index had small positive correlations with relationship ($r = .17, p < .001$), stress management ($r = .05, p < .05$), empathy ($r = .13, p < .001$), perseverance ($r = .13, p < .001$), conflict resolution ($r = .11, p < .001$) and total ISELA score ($r = .10, p < .001$); and small negative relationship with self-concept ($r = -.05, p < .05$).

5.2.6 Children's qualitative Insights

On school, learning and play

All children interviewed said that they liked their school offering various reasons ranging from interesting teaching activities to meeting and playing with their friends and school meals. What they all said they disliked about school was caning. They felt play had learning value but unsurprisingly were not always sure what this was. A few mentioned that play enabled them to learn how to work with other children and develop some basic literacy and numeracy skills – e.g., learning to add. Some of the uncertainty may reflect how some teachers use play as 'fun' activities or icebreakers, rendering it difficult for children to associate it with what and how they are learning. Although using play to generate interest and fun has value using them also intentionally to develop specific competencies and skills is also worth making explicit so children increasingly understand its importance to classroom-based learning. Striking a balance between the different uses of play seems important.

On Gender influences on play

Most children agreed that boys and girls could play together with some suggesting that this enhances mutual learning. However, there was still a sense that some games are more suitable for one gender than the other (e.g., football for boys and 'ampe' and 'skipping' for girls). The sense that both boys and girls benefit from playful learning was seen as when such play is organised in the context of learning in classrooms. For example, children mentioned games such as pilolo and ludo which could be used to learn letters and how they sound.

There was also a sense that contact games that require vigorous participation was more suited for boys than girls.

On the availability of games and toys at home and school

At home, some children said they had toys, a skipping rope or a ball to play with but others played with household objects such as tins - *"We tie ropes around our legs and one person jumps in and out of it. It is called Monday."* Some children mentioned that they had to bring a football to school, or there was nothing at school to play with, so they kicked a bottle - *"I play with my friends by kicking around empty bottles because they are no footballs in the school."*

Games and toys at home	Games and toys at school
ludo	word - word
palm kernel	ludo
football	football
ampe	ampe
oware	oware
zama	pele
toy cars	zama
tins/ pretend cooking	running
singing	bambam bamba rika
drumming	jorda
skipping rope	skipping rope
dolls	Monday
counters	batman and spiderman
word and letter cards	hide and seek
	anto wakyere
	Pilolo; wonya
	mepe kwan ako

On receiving support with homework

Most children reported asking their mothers and siblings for help with their homework. Often older siblings or relatives were asked for help if mothers could not read. A few said they had home tutors.

"My aunty helps me because she can read"

"I usually do my schoolwork alone at home. When I find them challenging, I seek assistance from a teacher who helps in the house in the evenings."

"I usually show it to my mother for assistance. Sometimes she directs me to my sister to help me."

Fathers were mentioned by fewer of the children as sources of academic support or rarely played with children. Children explained that this was because they were usually at work. However, the fact that children had options for support to learn at home is positive but also shows a good level of interest from caregivers about their learning and how they can be assisted.

On themselves as learners

Most said they always want to go to school and not miss out on any learning opportunities. They had support and encouragement from parents and grandparents to attend school. However, some pointed to school and personal factors that discouraged them from attending regularly:

"When the lessons being presented in the classroom are not interesting and seem challenging to me, I lie to my parents that I am sick to enable me stay away from school." "I sometimes absent myself from school when my mother doesn't have enough money on her."

On achievements, goals and strategies for improvement

All children said that their friends, teachers, or family knew about these strengths either from watching them work and play. In turn, they received feedback from teacher assessment and scores in class or conversation with friends and family. The children did not suggest that there were regular conversations about their strengths and goals within school or that there was sharing of these between schools and families.

Areas where they wished to improve included speaking English, Maths, reading, writing, singing, calculations, science etc., They stressed keenness to persevere and "keep trying" until they could perfect skills. They were able to identify positive feedback from teachers and peers and its importance:

"I think it would be bad to finish school and would not be able to deal with calculation issues. This would be quite disgraceful." "I have difficulty with producing good handwriting. My class teacher has advised that I should take my time to write so as to improve on it." "My friends tell me my drawings are horrible. Sometimes as I try to erase, I end up tearing the book. My class teachers always ask me to try on a new page so as to improve on my drawings."

They recognised negative feedback when it was given but some said it affected their confidence.

On relationships and asking for support

When asked about who they would go to for help with a problem or if they didn't understand at school most children said that they would ask their teacher for help. However, a few said they would prefer to ask friends who might know the answer. They were concerned about being in trouble for getting something wrong.

"I usually ask my class teacher to explain things I do not understand. If you write the wrong answers, you may receive punishment for that. Madam has said that one wrong goes for two canes."

At home, the children said that they would ask parents, siblings or friends for help if they had a problem. They were confident about asking for help and pointed to a range of supportive relationships

- *"At home I talk to my mother because I feel comfortable. At school I talk to my friend because I trust them"*

Generally, they claimed they were happy with where they sat in class and were confident to ask their teachers move them to a different seat if necessary. But a few of them gave instances where they wanted to change seat but had not asked their teacher suggesting that this confidence is not widely shared. It appears that child agency is mixed and that whilst some were confident in expressing their needs or choice others felt less confident to do so - *"I can play with everyone- because my teacher said I should"*.

Children felt comfortable playing with their friends and recognised behaviour that they were uncomfortable with as these narratives suggest:

"I want to play with everyone in my class. If I get maltreated, I report to my madam and move along with mates again." *"Though I want to play everyone in class, I don't want friends who want to steal from me or get angry easily during play."* *"I play with everyone except some boys who are usually violent during play."*

We asked children how they will respond to situations where their friends did not want to share a toy or game. Their responses suggested strong agentic behaviour: *"I will first plead with my friend to share with me. If he refuses, I will ask other friends who have it. If both attempts fail, I will acquire one from my savings later."* *"Well, if I plead with my friend and she refuses, then I will also refuse to share with her the next time I also have something she may like."*

Summary

Children were knowledgeable about the role games played in their everyday lives and knew about games or play activities that teachers used to improve their learning. They could identify games that were meant to help with counting and recognition of letters of the alphabet, but also games that they enjoyed purely for fun.

Children's choices and sense of who can play some games are gendered although there was not a strong sense that the ability to achieve learning goals is gendered. There was a strong sense that their families wanted them to attend school. Some children, however, found the school learning environment difficult.

The social aspects of play with siblings and peers are important and enable children to develop good relationships, including friends they can confide in. However, adult's active role in play is rarely mentioned. This may be more cultural than a reluctance to engage with children. At home siblings and female relatives provide learning support although father's roles are not mentioned. However, from the children's accounts, there is no doubt that female caregivers, relations and siblings take an interest in their learning through their encouragements and direct assistance in learning at home.

6.1. Caregivers

6.1.1. Caregiver characteristics

Table 31 summarises caregiver characteristics. The main difference is in the gender and wealth characteristics where the differences across regions are significant. Generally, caregivers are predominantly female except in the North where caregivers are classified as mostly male – Control: 54.0%; Direct: 65.7%.

About 50% of caregivers have no education It is highest in North – Direct: 80.0%; Control:75.3%.

About 75% of households earn about \$139 a month equivalent to about 4.6\$ a day. In effect, most household earnings were above the poverty line of \$1 a day.

The household wealth index indicates that the poorest caregivers are in the North and relatively richer households are in Accra with Volta in between. Caregivers also spend a little over 7 hours a day working. The effort of the P3 project to enlist households in activities that support their children's education has to consider this demographic profile of households and how they differ in the three regions.

Table 31: Caregiver characteristics (N = 1844)

		Accra		Volta		North			
	N	Control	Direct	Control	Direct	Control	Direct		
Characteristics		Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	F-statistics	p-value
Gender	1844								
Male	846	32.1%	15.0%	37.3%	22.2%	54.0%	65.7%	5.39	0.020*
Female	998	67.9%	85.0%	62.7%	77.8%	46.0%	34.3%		
Caregiver age (in Years)	1716							0.43	0.508
Less than 20	18	0.7%	1.1%	2.3%	1.2%	0.2%	1.0%		
20 – 30	318	18.4%	16.7%	18.7%	19.8%	20.1%	17.1%		
31 – 40	651	47.8%	43.9%	38.3%	36.0%	33.9%	37.3%		
41 – 50	470	25.0%	26.7%	24.3%	24.3%	29.3%	29.7%		
51 – 60	177	5.2%	10.0%	9.4%	10.5%	10.6%	12.0%		
More than 60	82	2.9%	1.7%	6.8%	8.1%	5.8%	2.9%		
Highest Education	1841							0.68	0.408
None	973	21.9%	16.2%	17%	25.1%	75.3%	80.0%		
Primary	284	21.9%	16.8	37.7%	28.7%	7.1%	5.4%		
JHS	369	37.2%	45.8%	32.2%	32.4%	9.3%	6.5%		
SHS	131	13.9%	12.9%	9.3%	8.9%	2.7%	5.6%		
O/A Level	5	0.7%	-	-	1.2%	-	0.2%		
Post SHS Certificate	12	-	2.2%	-	0.8%	1.1%	0.2%		
Diploma	46	2.2%	5.6%	3.8%	0.8%	2.6%	1.7%		
Degree	19	2.2%	0.6%	-	2.0%	1.8%	0.3%		
Masters	2	-	-	-	-	0.2%	0.2%		
Monthly Income (in Cedis)	1106							2.15	0.142
Less than 500	834	62.6%	60.3%	73.0%	82.6%	74.6%	87.7%		
500 - 800	188	25.2%	25.6%	21.8%	11.8%	17.1%	7.8%		
900 - 1200	48	7.5%	7.1%	3.3%	2.6%	6.7%	1.6%		
Above 1200	36	4.7%	7.1%	1.9%	3.1%	1.6%	2.9%		
Household wealth	1844	56.13	56.58	47.45	42.39	34.38	32.72	10.73	0.001**
Hours of work	1752	7.47	8.14	7.58	6.61	7.47	7.47	0.200	0.654

** $p < .01$; * $p < .05$

6.1.2. Comparing caregivers' learning beliefs

For caregivers, total learning belief scores ranged from +4 to -63. We conducted a two-way ANOVA to compare caregivers' learning beliefs across treatment and region. Simple main effects showed differences across treatment ($F(1) = 54.20, p < .001$) and region ($F(2) = 28.63, p < .001$) and interaction between treatment and region ($F(2) = 26.12, p < .001$).

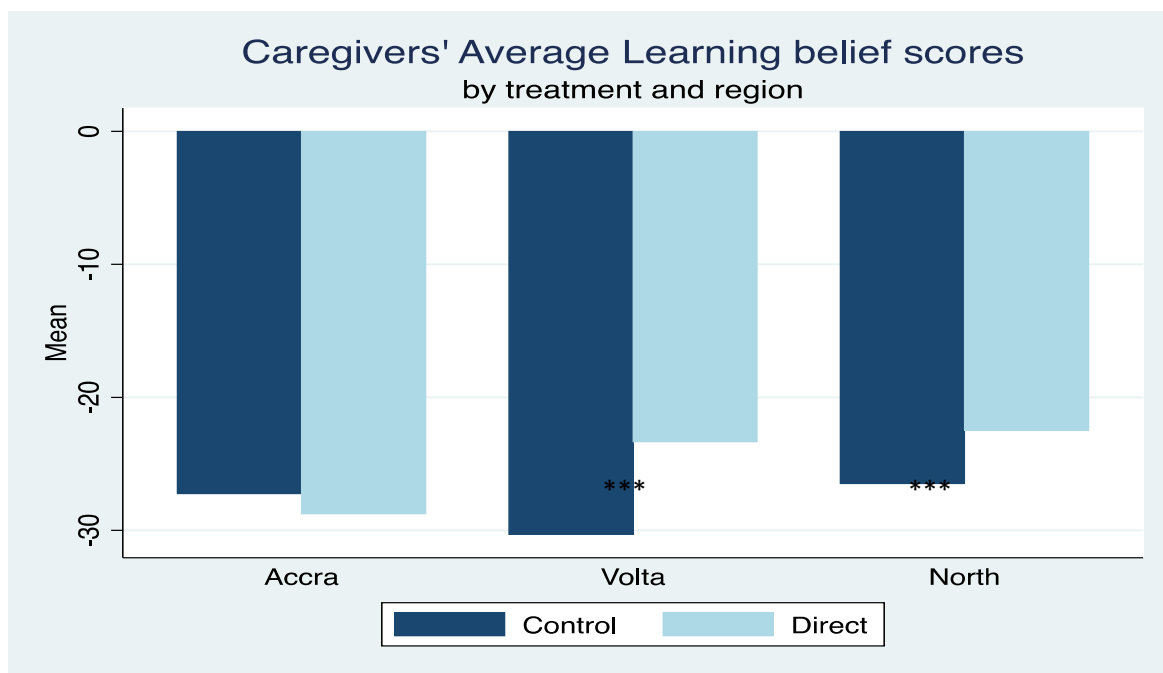


Figure 19: Caregivers' Learning beliefs

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. *** $p < .001$

There are two main findings from the analysis:

- Generally, the caregivers had very low scores, indicating a much stronger belief in direct instruction than found with teachers and headteachers
- Caregivers with children enrolled in Direct schools in Volta and North had statistically significant higher average scores (i.e., less strong belief in direct instruction) compared with those in Control schools. Although, in Accra caregivers in control schools held less strong believe than those in Direct schools, the difference was not statistically significant.

6.1.3. Caregivers' play and learning beliefs

The analysis of the playfulness and learning value ratings revealed four main interesting findings (figure 20).

- We observed differences in playfulness and learning value ratings mainly in Volta and North
- In both the North and Volta, there were cases where the Control group rated activities as more playful and associated higher learning value than Direct (e.g., music and dance/ dramatic play)
- The only difference observed in Accra is learning value of dramatic play, where caregivers from the Control schools had higher scores
- Although caregivers in Control in North and Volta rated traditional games as more playful, those in the Direct group associated higher learning value to these games than caregivers' from the Control schools.

The findings of the play and learning beliefs of caregivers in relation to other forms of play are shown in figure 21.

- Again, differences are noted mainly for caregivers in Volta and North
- The only exception for Accra is electronic play, where those in Direct had higher scores on playfulness ratings but did not differ in the learning value ratings

- Generally, storytelling and reading are viewed as less playful, but have higher learning value.

Caregivers' Average Play and Learning Beliefs scores

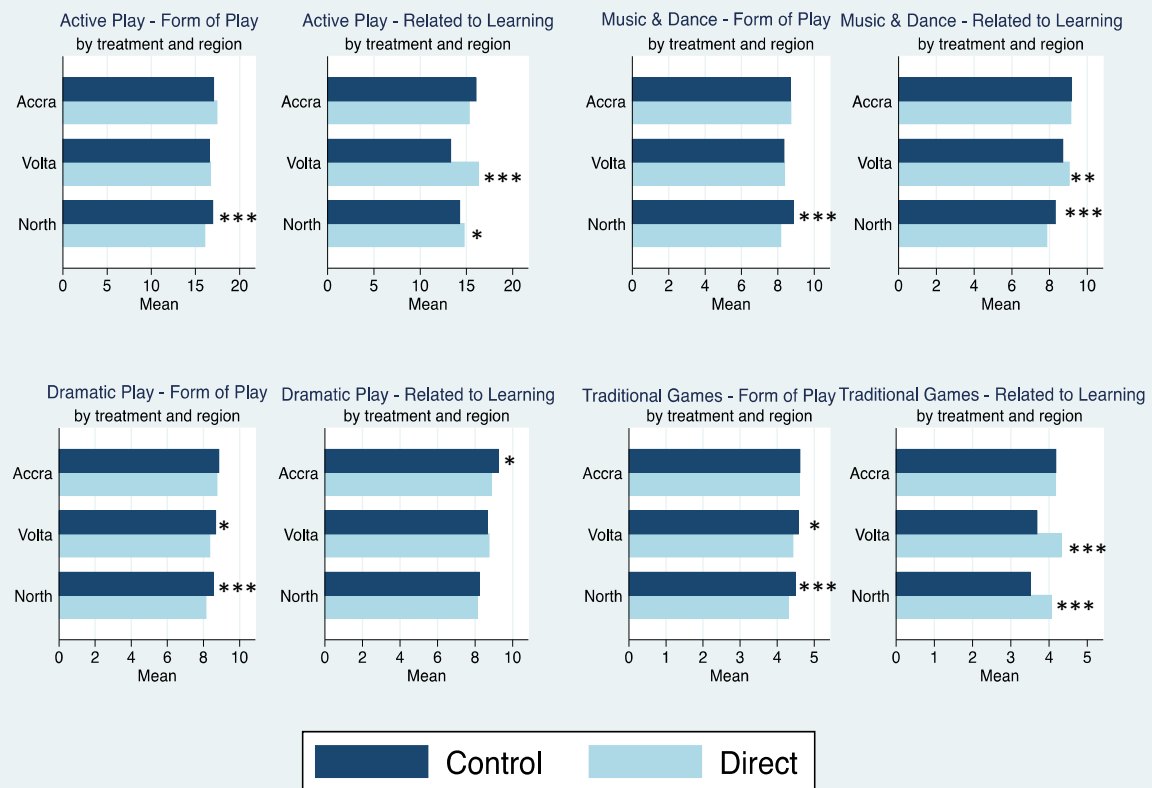


Figure 20: Caregivers' Play and Learning beliefs 1

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. ***p < .001; **p < .01; *p < .05

Caregivers' Average Play and Learning Beliefs scores

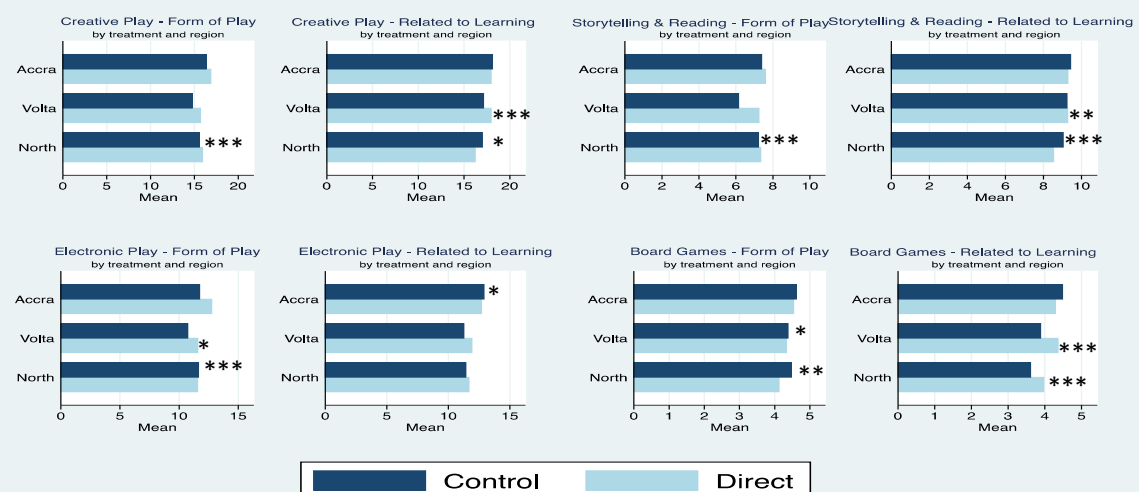


Figure 21: Play and learning beliefs

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison. ***p < .001; **p < .01; *p < .05

6.1.4. Caregiver Attitude towards Holistic Education

We explored caregivers' attitudes towards holistic education (see Figure 22 below).

- Generally, caregivers did not differ in their attitudes towards holistic education, except for artistic skills, where scores are higher for those in Direct across regions. Overall, caregivers agree with schools' supporting children's academic, artistic, athletic and socioemotional skills

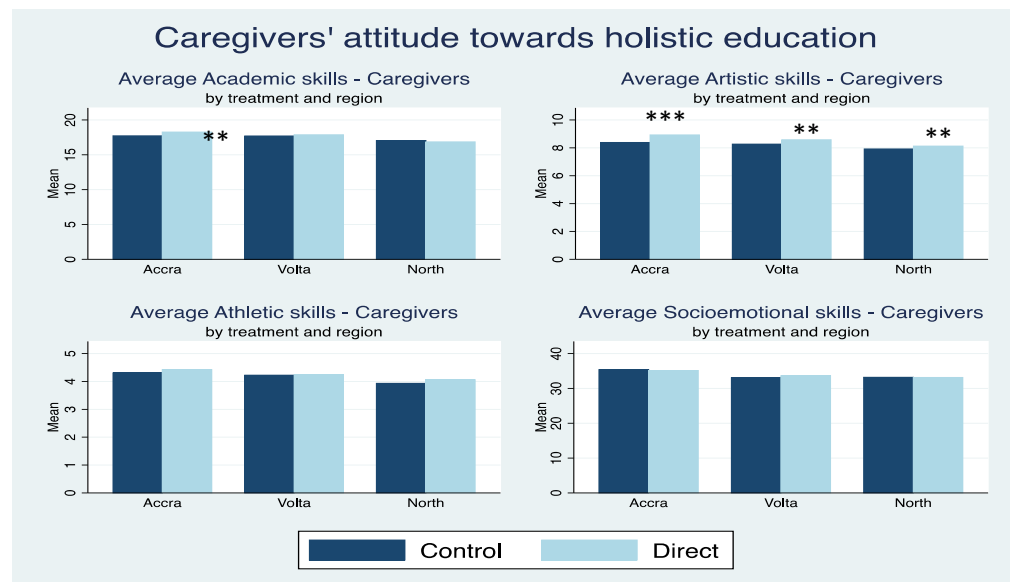


Figure 22: Caregivers' attitude towards holistic education

Note: Bonferroni correction was used to reduce the likelihood of Type 1 error arising from multiple comparison.

*** $p < .001$; ** $p < .01$

6.1.5. Caregivers resources for learning and play at home

We asked caregivers about the resources for learning and play they had at home (see table 32). Generally, the resources most reported were books (higher in Control in Accra than Direct (78.1% and 65.5% respectively). In the Volta region it is lower in Control (59.3%) than Direct (70.9%). Across the three regions it is much lower in the North – Control (48.9%) and Direct (58.4%).

Table 32: Caregivers' responses on resources for learning and play at home

		Accra		Volta		North	
		Control	Direct	Control	Direct	Control	Direct
What resources for learning do you have at home?	n	%	%	%	%	%	%
Books	1107	78.1	65.5	59.3	70.9	48.9	58.4
Materials for drawing or writing	1148	74.4	44.4	74.1	70.9	49.7	66.0
Electronic devices	102	15.3	13.3	4.2	4.0	6.8	1.0
Nothing	50	1.4	2.2	4.6	4.0	1.9	2.3
What resources for play do you have at home?							
Objects for physical play (e.g., ball or rope)	878	47.4	36.6	47.8	36.2	54.1	50.5
Objects found outside (e.g., sticks, rock, leaves)	870	33.5	22.7	42.3	36.6	55.2	57.8

Household objects (e.g., bowls or pot)	677	40.8	16.1	37.2	23.7	42.9	42.4
Homemade toys (e.g., dolls, cars)	361	18.9	21.1	23.5	28.8	22.1	12.1
Nothing	341	21.1	22.2	20.3	26.6	8.8	20.0
Drawing/writing materials	134	8.0	6.1	11.0	17.7	3.7	4.2
Manufactured toy	81	5.8	4.6	2.8	7.7	4.0	4.2
Electronic devices	79	10.9	11.6	1.2	2.0	5.9	1.3

Next to books were materials for drawing or writing. It is however relatively lower for caregivers from Accra in Direct schools (44.4%) compared to Control (74.4%). Electronic devices are the lowest for all caregivers across the regions. For Accra, Control (15.3%) Direct (13.3%); Volta: Control (4.2%) Direct (4.0%); and North: Control (1.9%) and Direct (2.3%).

Resource's caregivers say they have at home for children to play with are mostly objects for physical play (e.g., ball or rope), objects found outside (e.g., sticks, rock) and household objects (e.g., bowls or pot). Homemade toys such as dolls, cars are among the least available in homes, alongside manufactured toys and particularly in homes of Direct school caregivers in the North. For Accra, homes with manufactured toys are: Control (18.9%), Direct (21.1%); Volta: Control (23.5%) Direct (28.8%) and North: Control (22.1%) and Direct (12.1%).

6.1.6. Caregivers' views on play and gender

Caregivers were asked if boys and girls should have the same play opportunities. In Accra, a higher proportion from Control schools agreed they should than those from Direct – 79.5% and 42.2% respectively. Similarly, in Volta it was higher in Control (64.8%) than in Direct (58.8%). The highest was in the North where 71.3% in Control agreed as against 92.5% in Direct. But clearly the results suggest that a small but sizeable proportion do not think the opportunities should be the same.

6.1.7. Caregivers' view on play priority at home

Table 33 shows caregivers' responses on how they prioritise play at home. Generally, caregivers rated the priority they give to play at home within the medium range. However, the scores were similar for both Control and Direct in Accra (66% each). In contrast, in Volta and North, it was higher in Control than the Direct group (61% vs. 39% in Volta and 57% vs. 38% in North, respectively).

Table 33: Caregivers' views on play priority at home

		Accra		Volta		North	
		Control	Direct	Control	Direct	Control	Direct
	n	%	%	%	%	%	%
Level of priority of play in your home?		18.9	36.6	19.1	12.1	16.7	17.6
Least	457	16.7	13.8	27.9	35.8	32.4	18.1
Medium	941	66.4	66.6	61.4	39.5	57.6	38.3
High	424	16.7	18.8	10.1	23.7	7.7	42.2

6.1.8. Caregivers' views on play, its importance and role in play

Generally, caregivers do not rate play as important for developing academic skills as table 34 shows. Also, in terms of the developing socioemotional and psychomotor skill areas, caregivers rate the importance of play generally low.

Table 34: Caregivers' views on play, its importance and their role in play

Caregivers Rating of Play		Accra		Volta		North	
		Control	Direct	Control	Direct	Control	Direct
	n	%	%	%	%	%	%
How will you rate the importance of traditional games? (% Importance)	1329	85.5	81.53	60.21	79.73	72.57	90.73
How do you think play helps your child?							
Have fun	980	54.0	36.6	52.5	62.1	56.3	51.9
Social skills	934	54.0	24.4	45.3	58.4	44.2	61.6
Academic skills	523	16.0	15.5	27.9	39.9	30.8	28.5
Language and communication abilities	535	17.5	23.3	34.3	33.8	46.4	15.7
Better thinking/reasoning abilities	573	32.8	23.8	25.4	42.7	33.4	28.3
Solving problems	372	10.2	17.2	20.3	27.0	26.4	15.6
Do well at school	214	4.3	5.5	12.7	14.9	13.2	12.1
Express emotions or feelings	480	26.2	28.3	17.8	26.6	42.5	15.6
Physical attributes (e.g., coordination)	335	13.1	23.3	12.7	16.5	17.8	20.
Does not help	27	2.1	0.5	4.6	1.2	1.9	-
What role do you have in children's play?							
Buying toys or materials	498	26.2	23.3	27.5	29.4	33.4	22.1
Playing with child	586	21.1	16.6	30.5	47.5	45.8	21.9
Providing time or opportunities for play	943	45.9	41.1	47.4	32.2	49.5	66.0
Providing space for play	484	40.8	26.6	24.5	23.3	22.9	27.1
Supervising child's play	599	54.7	41.6	19.1	56.1	32.3	20.0
None	219	6.5	4.4	22.4	8.8	7.4	15.7

6.1.9. Caregivers' views on supporting children's play and learning

A sizeable number of caregivers say they do not play with their child at home – highest in Volta: Control (33.4%), Direct (23.3%) and in the North: Control (34.4%), Direct (28.0%). Generally, the picture painted from the responses is that playing with their child is not a frequent occurrence (see table 35 below)

Also, in terms of helping their child with learning activities this is not a frequent thing they do. It is particularly low in the North. The proportion of caregivers who said they helped with reading books/stories is relatively low, lowest in Accra for Direct caregivers than control – 51.1% and 67.8%. Across regions it is lowest in the North – Control (45.8%) and Direct (59.1%). Similar patterns emerge for helping with writing and counting which are all relatively low. The least activity they help their child with is drawing and painting and it is the lowest for Accra, 4.3% for Control and 5.5% for Direct, compared with other regions and groups.

Table 35: Caregivers' views on supporting children's play and learning at home

Caregivers Support for Play at Home		Accra		Volta		North	
	n	Control	Direct	Control	Direct	Control	Direct
How often do you play with your child?		%	%	%	%	%	%
I never play with my child	503	12.4	15.5	33.4	23.3	34.4	28.0
I play with my child occasionally	1158	70.1	60.0	59.7	64.5	64.0	61.6
I play with my child every week	76	8.0	6.6	5.5	7.6	0.2	3.4
I play with my child every day	106	9.4	17.7	1.2	4.4	1.3	6.9
How often do you help your child with his/her learning activities?							
I never help my child with learning activities	491	8.0	18.3	22.4	21.7	45.2	22.9
I help my child with learning activities occasionally	1088	60.5	55.5	64.4	57.2	48.3	66.5
I help my child with learning activities every week	109	7.3	6.1	8.4	10.8	2.8	4.7
I help my child with learning activities every day	155	24.1	20.0	4.6	10.0	3.5	5.7
What kind of learning activities do you help your child with?							
Reading books/stories	1034	67.8	51.1	62.2	58.8	45.8	59.1
Writing	865	63.5	55.5	54.6	42.3	35.6	47.8
Counting	739	63.5	44.4	42.8	39.5	27.5	42.1
Drawing and painting	181	4.3	5.5	8.9	17.3	11.4	8.3
None	305	13.8	13.8	21.1	14.9	19.8	14.2

6.1.10. Caregivers' views on children's play and the role of adults

Caregivers would generally believe it is important for them and other family members to play with their child but would prefer to read with their child than play with them. They also believe it is important for their child to play with other children.

Table 36: Caregivers' views on children's play and the role of adults

Caregivers view on Play & Role of Adults		Accra		Volta		North	
	n	Control	Direct	Control	Direct	Control	Direct
It is important for me to participate in play with my child							
Disagree	467	11.6	23.8	27.1	16.5	32.2	26.6
Agree	1376	88.3	76.1	72.8	83.4	67.7	73.3
I would rather read with my child than play together							
Disagree	771	39.4	38.3	28.8	42.7	49.4	42.4
Agree	1072	60.5	61.6	71.1	57.2	50.5	57.5
I do not think it is important for other family members to play							
Disagree	1372	89.1	75.5	72.4	66.5	66.2	81.1
Agree	471	10.9	24.4	27.5	33.4	33.7	18.8
My child does not need my help to play							
Disagree	998	64.2	48.8	42.8	60.1	37.9	67.9
Agree	845	35.7	51.1	57.2	39.9	62.0	32.1

My child will learn negative things if I allow him or her to play with other children							
Disagree	1216	59.8	58.3	57.2	57.2	60.9	80.8
Agree	627	40.1	41.6	42.8	42.7	39.1	19.1
I do not think it is important for my child to play with other children							
Disagree	1370	87.5	73.8	70.3	60.4	66.0	85.2
Agree	473	12.4	26.1	29.6	39.5	34.0	14.7
If I allow other family members to play with my child, he or she child will fall behind in his or academics							
Disagree	1347	72.9	68.3	66.9	62.5	66.8	86.2
Agree	496	27.0	31.6	33.1	37.5	33.1	13.7

6.1.11. Caregivers' views on when children should play

Generally, a high proportion of caregivers believe that their child can play at home only after completing their homework or chores. In the North, a higher proportion believe that children can play as soon as they get home – Direct (33.5%); Control (29.3%)

Table 37: Views on when children can play

Caregivers' view on when Children should Play	n	Accra		Volta		North	
		Control	Direct	Control	Control	Direct	Control
At home, when can your child choose to play		%	%	%	%	%	%
After homework or assigned household chores are done	1255	75.9	83.8	73.7	64.9	57.4	68.7
As soon as he or she gets back from school	444	11.6	8.3	19.1	17.3	33.5	29.3
Only on weekends/ holidays	108	12.4	7.2	4.2	16.9	4.4	1.0
Not at all	27	-	0.5	2.9	0.4	3.5	0.3

6.1.12. Caregiver views - Qualitative Insights

Caregivers of survey children in grades 1 and 3 were engaged in focus group discussions on a number of topics and issues.

On desirable skills from education

There was collective agreement that schooling was mainly to acquire skills with most citing reading and writing as the most common skills they wanted their children to develop in the early grades. *"I want my child to be able to read and understand what he reads and also show abilities in certain subjects that would guide his progression on the academic work in future."* (B1 parent Greater Accra)

"we don't want them to become like us who couldn't go to school and because of that we can read and right and we cannot do formal jobs" (B3 parents Northern Region)

Parents acknowledged that socio-emotional skills of turn-taking, sharing and perseverance were also desirable for their children, but these were best developed in the home environment.

On gender expectations for learning through play

Caregivers felt boys and girls deserved equal opportunities to learn as both deserved equal life chances in the modern world - *'We are in the 21st Century so everybody must be given equal roles and responsibilities'* (B1 and B3 parent focus group Volta). However, although they agreed with the principle of equal opportunities for boys and girls in school and careers, there was disagreement about the play and learning opportunities that were most suitable for boys and girls. Some thought girls and boys naturally preferred different tasks at home suggesting that girls might prefer to do chores whilst boys like to play outside - *"Girls are good at helping their mothers, ... taking care of little children ... but boys do other things and like playing"*. Others felt girls were more organised than boys, but boys were more academic than girls.

In the Northern region some caregivers pointed out that traditionally it was not acceptable for girls to play a game like football, but that this was changing because of opportunities associated with the game *"In some section of Dagbon, they said if a female plays football, she will grow to become a bad girl"* but now they are aware of football scholarships, so this is changing the perception *"Football has made some girls and boys to attain higher degree in Savelugu area"* (B3 Northern)

On perceptions of play

Caregivers agreed that learning happens at home and in school but seem to make a distinction between the value of play when it occurs in school or home. The feeling was that encouraging play at school could become a distraction from learning suggesting perhaps their lack of understanding about the contribution play makes to learning in school. We could deduce that play was viewed much more as recreational - *"My ward has good social skills but too playful, too playful, that she easily forgets about her academic activities. When I teach her in the evening, by the morning she had forgotten most of the stuff. I had planned to come to the school to ask the class teacher for more homework to occupy her at home."* They emphasised the physical and social benefits of play as exemplified in this view:

"I think play is good for developing social skills among children. Children who are constantly denied of play may become anti-social in future. I suffered this when I was young girl. As I never attended school, I did not have classmates as friends. I was also not allowed to play around with my age mates in the neighbourhood as the only girl. Now I have grown up to hate social gatherings and my family seemed quite worried with this attitude, but I can't help it" (B3 Greater Accra)

On supporting learning at home

Caregivers wanted to support their children's learning at home and said they monitored homework, whether it had been completed. Some said they went as far as arranging additional teacher support or purchased additional learning materials for learning. In one case, a parent who clearly is better financially resourced said she *"I downloaded the phonics game and put it on the tablet ... she plays with it and I realise she is learning a lot from interaction with it"* (B1 Volta). Some pointed to their own lack of education as a barrier to providing specific help with homework but were able to call on other members of the family to help. It is important that the project targets and taps into this wider pool of support.

Caregiver agency in children's education seem strong. They gave instances where they voiced their opinions at PTA meetings about children's education and asked schools to provide more information about general performance, and how they could support children's learning at home. A few argued that they encouraged learning at home so children would not 'spend all their time playing'.

There pointed to limited opportunities for organised out of school learning activities for children including religious programmes such as 'Sunday School' and Islamic programmes and felt these were equally important for children:

“The Sunday School activities are very helpful to the children as the children are taught how to read the Bible, learn to memorise some verses, practice singing ... and interact with other children.”

“The makalanta serves as a good environment for learning, recitation, moral development and disciple for the children as they are encouraged to practice these values at home”

Summary

Overall parents valued play for physical and social development but made a clear distinction between play, schoolwork and homework. Most espoused a view of play that suggested it was important in and for itself. They could see how some types of play can be beneficial for learning in school but felt too much of it would distract from what they saw as actual learning. An encouraging viewpoint is that boys and girls should be treated equally but they also held strong views about traditional roles for boys and girls especially in the home. So, whilst they welcomed giving boys and girls equal opportunities to engage in play, at home girls were often expected to help with household chores whilst boys could spend more time playing.

7.1. System and ITE Providers

7.1.1. Qualitative insights into system leaders and ITE provider preparedness

System leaders in the Ghanaian Basic Education context refers to a cluster of middle and senior leaders/education officers located in district/municipal/regional offices with diverse roles that range from school supervision and monitoring to leadership of teacher professional development and In-Service Training. RTP” s work involves working closely with a section of these systems leaders to understand their level of awareness and perspectives on use of games to support learning; their level of influence in the design and delivery of ECE; their capacity to integrate play in initial teacher education; and their perspectives on system capacity to improve teacher professional development.

For this baseline study, we provide narrative/qualitative insights from a group of circuit supervisors (CS), district training officers (DTO), SISO, deputy director (supervision and monitoring), and district early childhood coordinator.

The study was not able to undertake some of the planned activities at system level due to the impact of covid-19 related restrictions on accessing some officials and visits to some institutions for additional data. The team will use the midline/learning study to collect and analyse data relating to the curriculum of ECD centres and other training institutions as indicated in the baseline study inception report.

On level of awareness and perspectives on using games to support learning

All 18 education officers interviewed described and explained with confidence the significance of using games to support learning and children’s development in the classroom and school setting. They all showed a high level of awareness some of which was attributed to activities introduced by Right To Play in their districts.

Education officers were of the view that games were useful in the teaching and learning process is beneficial as they helped to maintain students attention and made the learning environment enjoyable and improved learning.

“...there is relaxation in the classroom when there is game. There is joy in the classroom because children feel free, and they learn better when there is game. [CS: Volta]

“You know children by their nature love games. At the lower level in particular if you introduce games into your teaching and learning, it helps them to even forget that they are in different environment... apart from the home.” [CS: Greater Accra]

Some saw games as useful if only they were linked to learning outcomes whereas others described games-based activities as more useful for socio-emotional development. Some education officers mentioned a new drive to encourage cross gender engagement in some games; meaning boys should be encouraged to participate in games that are typically played by girls and vice versa.

On system capacity to improve teacher professional development

Views about system capacity to improve teacher professional development particularly play-based learning varied slightly across the three districts studied. In the Greater Accra district, education officers appeared to have been trained on how to use play to improve learning, with further plans being developed to cascade to teachers.

Greater Accra

Circuit supervisors (CS) expressed confidence in their ability to support capacity development in innovations in teaching and learning successfully, also said adequate funding was a major challenge. There was acknowledgement of the contribution that RTP was making to ensure play became an important element of school lessons - *“RTP schools have been trained such a way that they integrate games into their lessons. So, during class observations we look at their lesson plan first and we see that they have integrated the game before... when you observe classes, you realise that the children are happy.”*

CS described the district as having medium capacity to improve teachers citing external support and financial resources as needed if all teachers in the district were to benefit from large scale implementation of teacher reforms to improve teaching and learning. Also, RTP support to was described as unequal as some districts were only just starting to be supported.

Volta

In the Volta region districts education officers felt that the district had strong capacity, but this was not shared by all. Those who argued there was strong capacity focused on the technical knowledge of circuit supervisors and district training officers. For example, one the respondents explained as follows: *“staff were taken through mentoring and coaching. Headteachers, teachers, and district officials were trained to implement innovations in teaching and learning. Recently, 18 staff from the district went through training” [CS/DTO]*

Those of a different opinion pointed to the lack of funds to undertake monitoring and supervision duties – for example, a view was that *“the district does not even have the capacity to support circuit supervisors to visit the schools. Had it not been the intervention and support of Right to Play, things would have been difficult” [CS]*

The difficulties in scaling up teacher professional development focussed on three broad issues

- Lack of funds or logistics to run teacher professional development events and provide support for teachers and practitioners
- Demanding and challenging new curriculum and limited logistical support for effective implementation
- Weak collaboration between College of Education (COE) tutors and district officers which impacts on effective preparation of teachers in the use of play-based learning approaches

North

Education officers in the North like colleagues elsewhere strongly believe, they had capacity to provide support for teachers to implement innovative teaching. They cited cases where district education officials have been involved in referred to professional development activities for teachers across the district where they had served in the role as trainer of trainers.

Some education officers explained that sometimes, teachers in the district are recruited to serve as trainers of trainers and therefore constitute a strong training workforce with capacity to provide professional support. Education officers explained that there is good relationship between the schools and the district which made teachers willing to accept the new innovations suggested by their supervisors.

Financial constraints were raised as a barrier to scaling up professional development, and support from NGO especially RTP was described as very important and critical.

“The directorate will tell you they don’t have anything for that purpose. Sometimes, even transport to organise training. The directorate will tell you they don’t have anything. Even fuel to go support teachers in the field is a challenge” [SISO Training Officer].

RTP’s professional development programme(s) were mentioned as making a difference and filling a gap in government capacity to support innovations and education reforms at the district -

“Not just because of the positive effect of the play pedagogy but because it is only when supports like RTP are in, that we are able to provide other support to the schools. Every activity dies out because government don’t provide any form of material or logistics support for their work”.

8. Key Findings

In concluding this baseline report, we focus on the key messages and lessons that can be used to interrogate the P3 learning through play project, identify programme areas that may need strengthening and in which regions, and recommendations to improve the programme’s impact.

The following are the main conclusions we draw from the study:

Teachers and Headteachers

1. Guided play is consistently rated high as compared with direct instruction and games by most teachers and headteachers. Games on the other hand are consistently rated low in its learning and socioemotional learning value which suggests that teachers are less likely to use them purposely in play-based learning.
2. Teachers, headteachers and caregivers hold a strong belief in direct instruction, but still hold the view that play has a role in learning but not as much for developing academic concepts and skills. Classroom observation evidence suggest that teachers in Direct schools are introducing play-based learning although direct instruction constitute a significant part of their practice consistent with their learning belief system.
3. is more likely to be the effect of earlier interventions, including RTPs, that had targeted some GALOP schools. However, this needs further exploring in the midline evaluation for further insights.
4. Head teachers and teachers hold a strong belief that play-based learning in the lower primary grades serves the purpose of creating enjoyment for learning, whereas in the upper grades play-based learning should be used to make content specific learning more accessible especially to weaker students.
5. Teachers in GALOP schools showed a better understanding of the use of play to promote learning and were more inclined to choose activity-oriented approaches over direct instruction. This may simply be the effect from earlier exposure to interventions that promoted teaching at the right level (TARL) and activity-based instruction. It is also likely to be the result of earlier RTP

interventions in Ghana. It would be interesting to know from midline and endline evaluation whether the current RTP programme produces stronger effects in the Direct intervention schools.

6. Belief in play and its learning value is low across all stakeholder groups, but some less so than others. GALOP head teachers for example, score higher on learning value of play than headteachers in Direct schools who score better than Indirect head teachers. Similarly, GALOP teachers score higher on learning value of play than Direct teachers, especially in North. Direct parents' belief in play and learning value of play is the lowest among the stakeholder groups.
7. Play is sometimes perceived as an activity with minimal cognitive value. There is stronger association between play and development of life skills than school subjects. This could be the influence of strong cultural belief of play as a form of recreation or entertainment.
8. Corporal punishment remains an issue across all the study schools. Teachers admit to using the cane to punish negative behaviours and poor performance, although again it is a little lower in GALOP schools. The proportion of teachers who admit punishing children for poor performance is especially high in Control schools in Accra and highest in Direct schools in the North. Some children said they hesitated to ask questions for fear of ridicule and punishment by the teacher.
9. Headteachers and teachers all point to the need to improve structures for delivering play-based learning in schools stressing in particular increasing teaching and learning materials and improving space for play-based activities.

Children

1. Cultural and gender norms influence views around play – with certain types of play seen as more appropriate for boys or girls, and also girls allowed less opportunity to play in the home than boys. Girls spend more time doing household chores. Many of children also report that they often go without food
2. Generally, compared to boys a high proportion of girls take care of others. This incidence is particularly high in the North. Even in Accra, about 51% of girls compared to 28.8% of boys take care of siblings.
3. Household chores is high for all children across regions and groups. Girls in the North do more household chores compared with boys. Generally, children in the North do more work on farms, engage in cattle keeping/other family business, with boys doing more of these than girls. Similarly, boys engage more in these activities in Volta than girls. In Accra it appears to be the reverse. Working for pay or money is relatively high in Volta region in both control and direct.
4. Generally, the main opportunities to learn is at school. Studying outside of school is lower especially for boys and girls in Control schools in the North and relatively higher for children in Direct schools.
5. Child gender is significantly, but negatively associated with all physical activities and two cognitive-stimulating activities (*craft and board games*) - girls reported having lower preference for these games than boys
6. Child gender is positively and significantly associated with *singing songs and local games*, Girls reported having higher preference for these than boys.

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7. We find negative associations between household risk, stress management, empathy, self-concept and total ISELA scores, indicating that children with higher household risk had lower ISELA scores. In contrast, household risk was positively associated with perseverance, suggesting that children who reported higher household risks had higher scores on the perseverance task.
 8. Boys and girls in Direct schools across the three regions perform better on socioemotional skills, but are lacking in some important domains e.g., conflict resolution and self-concept. Children's stress management score is the lowest at under 30% (still higher in Direct than Control), suggesting that children are struggling on how to manage stress

System level and education officials

1. From the qualitative evidence, Directors of Education and Education supervisors believe they have moderate to high capacity to implement education innovations. They see the lack of consistent provision of financial resources as a major barrier to sustaining any improvements that may result from the intervention. They believe that with additional technical resources support from the RTP project they can deliver effective in-service teacher training to strengthen teachers capacity to improve play-based learning.

Caregivers/Parents

1. Unlike Accra and Volta, caregivers in the North are predominantly male. In the Ghanaian context, caregivers are not necessarily parents and as this study shows a small but significant number of caregivers are grandparents and older siblings. Different caregivers will have different ways in which they relate to children and support their socioemotional learning and development.
2. A high proportion of caregivers are illiterate and work long hours. Most are engaged for most part of the day in income generation activities which raises questions about their ability to spend quality time engaging in play-based activities with children.
3. Caregivers are the least to value play-based learning especially in school contexts. They tend to see play as recreational and gendered. Away from school there is a social expectation that whilst girls are engaged in household chores boys have the freedom to play.
4. Overall caregivers valued play for physical and social development and made a clear distinction between play for leisure at home and school-based play. They could identify instances where playing games and singing could be used to develop academic skills although in limited circumstances. Generally, they believed that boys and girls should be treated equally in the school learning environment, but still held strong gendered views about play especially outside classrooms and in the home environment. They worried about 'too much play' and play as a distraction from academic learning.
5. Caregivers infrequently help their children at home with learning activities and homework especially in the North. Helping with reading or telling stories to children is also low as with writing and counting. Helping children with drawing and painting and it is the lowest for Accra, 4.3% for Control and 5.5% for Direct, compared with other regions and groups.

9. Insights from the Validation Workshops

We organised one day validation workshops for key stakeholders in all three regions to present findings of the baseline. The workshops produced further insights and validation of the findings and suggestions on how to improve the P3 project. About 90 participants attended including regional director(s), representative of regional directors, representatives of municipal director(s), chief inspectors of schools, heads of planning, district training officers, headteachers, teachers and caregivers (Accra workshop).

In presenting the findings we asked the participants to respond to two main questions (a) Why is there a seeming disconnect between teachers' beliefs about play and direct instruction? (b) Why do headteachers think their teachers are including play-based learning when it appears many not?

The main discussion points are presented below:

Why is there is a disconnect between teachers beliefs about play and their orientation to direct instruction?	Why do headteachers think their teachers are including play-based learning while they are not?
- Teachers are of the view that play cannot help them to achieve the curriculum goals - The initial training given to teachers was activity and objective-based rather than play-based - Resources are not available for PBL - e.g., time, space and materials - PBL is stressful and time-consuming - There is still a lack of understanding of the concept of play by teachers - There is still a strong belief that play does not have a direct learning effect - Teachers cannot identify the play-based method with the content of output indicators/competencies being treated - The existing structures do not promote the use of play-based methods in the school - PBL is a new concept and teachers are used to the direct teaching approach - PBL approaches 'conflicts' with what teachers learn about teaching in initial training - Using play to learn is not part of the culture in growing up - Play is rather seen as an extra-curricular activity in the school - Teachers are focused on the academics - ranking and working towards the Basic Education Certificate Examination (BECE) – PBL is therefore a distraction - There are 9 subjects to teach and PBL is seen as time-consuming - Training is not enough - it needs to focus on what kind of play for what kind of topic	- Most headteachers are of the view that the energizers or icebreakers are the games teachers are using in teaching – heads confuse icebreakers with playful activities - Headteachers are not acquainting themselves with PBL activities - There is improper vetting of teachers PBL learning notes - Headteachers are appointed without proper orientation including the role of PBL - There is inadequate supervision and monitoring of teachers - Headteachers lack of understanding of PBL concepts - Overdependence on the teachers' lesson plans without observing teachers teaching - Negative influences from the community to learners and name tagging - e.g., 'pilolo training', 'oware training' - Headteachers mindset about play is that play is non-productive in relation to academic work - Headteachers have not yet grasped the concept of PBL adequately (yet) - Community pressure due to lack of understanding of PBL concept. - Headteachers feel adopting PBL will mean teachers will not complete the curriculum

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|--|--|
| <ul style="list-style-type: none"> • Large class sizes - e.g., of more than 100 - needs 4 classrooms, not 1 • Parents complain their children are not learning when they learn that teachers are using play in teaching. | |
|--|--|

10. Recommendations

Several important findings emerged from the baseline study. The key ones that require critical attention by the P3 program are highlighted.

Teachers and Headteachers

- Based on the evidence from the baseline a conscious effort should be made by the P3 project to improve teachers' ability to use play-based activities to develop academic concepts.
- Teachers should be encouraged to identify specific games/activities and their learning value as they plan their classroom lessons. The project needs a stronger articulation of the links between active/play-based learning and promoting children's school-based learning.
- The project should make teachers more aware of and equip teachers on how learner-centred activities can be used to promote children's socioemotional learning.
- Teachers tended to belief more strongly in didactic/direct instruction in supporting children's learning than in active/play-based learning. An emphasis in program design should be on increasing teachers use of active/play-based learning. Experiential learning should be used to show teachers how active/play-based learning enhances concept development. This should be strongly reflected in teachers lesson plans.
- Almost all teachers had heard of socioemotional learning, believe it can be taught in schools, but they admit to not prioritising this in their classroom practice or engagement with students. What many of them felt was lacking is training that will equip them to support pupils' socioemotional skills development. The P3 project should prioritize the development of teachers' skills in this area, and work with Colleges of Education to develop or strengthen their curriculum to address this gap.
- Improve teachers understanding of the damaging effects of corporal punishment on children's active participation in lessons and socio-emotional learning.

Caregivers

- The P3 project should provide strategies for caregivers to engage with their children in ways which enhances their life skills. First, by making caregivers more aware of the importance of life skills in a child's development and the kind of time-sensitive activities they can encourage in their homes and communities to develop life skills, especially stress management techniques.
- The project should sensitise caregivers about the importance of gender responsive caring and gender responsive learning through play activities.

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- Although caregivers have good knowledge of the value of play in a child's life and development, they are less appreciative of its importance in learning at school. The project should engage caregivers in activities that will help them understand the value of play-based learning in school. Examples of how local games are used in the classroom or school to promote learning will improve their understanding of play-based learning.

RTP Ghana Country Office

RTP Ghana Country Office should use the main findings of this baseline to review the LtP program especially the implementation strategy for areas that need revision or strengthening.

The project should increase emphasis on how teachers can use play-based learning to enhance socioemotional wellbeing of children. Teachers should be given training in how to make this explicit objective in their lessons and introduce assessments that measure its development.

Although the findings suggest that generally the learning environment is positive especially teachers support and encouragement to students, caning is still prevalent and strongly disliked by students. The project needs more attention on this issue and teachers trained to adopt positive incentives to reward or encourage participation. This is particularly important for building children's self-confidence and socioemotional wellbeing. The project should use its Monitoring and Evaluation plan to track progress in teachers classroom management skills and children's participation in learning.

RTP should consider extending its programme to the Colleges of Education focusing especially on changes or improvements in the curriculum to improve teachers capacity to promote children's socioemotional wellbeing and skills. The project could also include support to teacher education programmes to include action research on the use of play-based learning to enhance socioemotional development and in particular stress management.

The baseline team was unable to observe RTP training in action as a result of the constraints/challenges imposed by the COVID-19 pandemic, and therefore is unable to evaluate how it is introduced to teachers. The training for Direct Intervention schools should focus on areas that this baseline has highlighted as needing much attention.

Appendix 1:

Performance Monitoring Framework: Direct only

CHILD				
ISELA – % total of children demonstrating life skills				
Analysis: We estimate the percentage score for each skill. We estimate the mean score (average) of the Direct group and report the percentage of children equal to and above the mean				
Relationship	The average score for the relationship domain is 57.44 out of a 100-point scale (male: 58.88; female: 56.16). The % presented shows children with scores equal to and above the average score	Grade 1	Male	51%
			Female	45%
		Grade 3	Male	61%
			Female	59%
Stress management	The average score for the stress management domain is 18.52 out of a 100-point scale (male: 18.84; female: 18.24). The % presented shows children with scores equal to and above the average score	Grade 1	Male	50%
			Female	49%
		Grade 3	Male	61%
			Female	63%
Empathy	The average score for the empathy domain is 46.64 out of a 100-point scale (male: 47.96; female: 45.48). The % presented shows children with scores equal to and above the average score	Grade 1	Male	42%
			Female	38%
		Grade 3	Male	58%
			Female	58%
Perseverance	The average score for the perseverance domain is 45.23 out of a 100-point scale (male: 47.81; female: 42.95). The % presented shows children with scores equal to and above the average score	Grade 1	Male	43%
			Female	42%
		Grade 3	Male	69%
			Female	63%
Conflict resolution	The average score for the conflict resolution domain is 44.06 out of a 100-point scale (male: 44.66; female: 43.53). The % presented shows children with scores equal to and above the average score	Grade 1	Male	48%
			Female	47%
		Grade 3	Male	59%
			Female	55%
Self-concept	The average score for the self-concept domain is 27.44 out of a 100-point scale (male: 30.00; female: 25.18). The % presented shows children with scores equal to and above the average score	Grade 1	Male	29%
			Female	22%
		Grade 3	Male	39%
			Female	36%
Total ISELA	The average score ISELA is 39.89 out of a 100-point scale (male: 41.36; female: 38.42)	Grade 1	Male	46%
			Female	38%

	38.59). The % presented shows children with scores equal to and above the average score.	Grade 3	Male	60%
			Female	55%
Learning environment	The average score for the learning environment (children who felt unsafe or witnessed violence) domain is 22.86 out of a 100-point scale (male: 23.79; female: 22.02). The % presented shows children with scores equal to and above the average score.	Grade 1	Male	47%
			Female	46%
		Grade 3	Male	50%
			Female	44%
Class climate - % of children who perceive their learning climate to be supportive				
Teacher care and monitoring	This domain has one item. We estimated the percentage of children with non-zero scores	Grade 1	Male	96%
			Female	90%
		Grade 3	Male	96%
			Female	93%
Autonomy	This domain has two items. We created a composite score and estimated the percentage of children with non-zero scores	Grade 1	Male	94%
			Female	94%
		Grade 3	Male	97%
			Female	94%
Interaction	This domain has three items. We created a composite score and estimated the percentage of children with non-zero scores	Grade 1	Male	83%
			Female	85%
		Grade 3	Male	86%
			Female	90%
Class climate	Create an index variable using items for teacher care, autonomy and interaction. Estimate the average score of the Direct group. Estimate the percentage of children with scores equal to and above the average. Average score of Direct is 4.69 (male: 4.72; female: 4.67)	Grade 1	Male	76%
			Female	73%
		Grade 3	Male	80%
			Female	79%
Children’s play preferences – % Children who report teachers facilitating learning through play in their learning environments				
Total scores	Total scores were based on 13 items. The response options were recoded to two, creating a dummy variable (0/1). We created a composite score (or index variable) by adding the items. We used the 50% percentile (median) of the Direct group as a benchmark and estimated the percentage of children with scores equal to and above the median. Median of score of Direct is 11.	Grade 1	Male	57%
			Female	56%
		Grade 3	Male	62%
			Female	58%

TEACHERS			
% of teachers knowledge of learning through play and links to holistic skills development			
% total of teachers who know of the importance of holistic skills development			
Academic skills	Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for the academic skills (Direct) is 17.46 out of a 20-point scale. (male: 17.58; female: 17.31)	Male	69%
		Female	61%
Artistic skills	Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for the artistic skills is 8.15 out of a 10-point scale. (male: 8.24; 8.01)	Male	89%
		Female	85%
Athletic skills	Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for the athletic skills is 4.14 out of a 5-point scale. (male: 4.24; female: 4.01)	Male	94%
		Female	91%
Socioemotional skills	Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for the socioemotional skills is 34.34 out of a 40-point scale. (male: 34.53; female: 34.08)	Male	55%
		Female	49%
Holistic skills total	Estimate total scores. Estimate average score of Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for total holistic development is 64 out of a 75-point scale. (male: 64.60; female: 63.44)	Male	55%
		Female	43%
% total of teachers who belief play can support/improve learning			
Beliefs about active/play-based learning	Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. The average score for the total learning belief is -15.70 out of a +34 to – 70-point scale. (Male: -15.91; female: -15.61)	Male	44%
		Female	47%
% total of teachers who know of the importance of socioemotional skills			
Importance of socioemotional skills	Estimate total scores. Estimate the average score of the Direct group. Estimate the percentage of teachers with scores equal to and above the average score. Average score for Direct is 38.96. (male: 38.98; female: 38.94)	Male	63%
		Female	55%
% total of teachers who know of the use of play to support children’s learning			
		Male	70%

Social and emotional skills can best be supported through play-based learning	Combine response Agree and Strongly Agree response options. Estimate the percentage of teachers who agree/strongly agree. Average score for Direct is 3.56 out of 4-point response. (Male: 3.65; Female: 3.44)	Female	52%
Best way for pupils to learn in your school	Estimate the percentage of teachers who report a play/active learning.	Male	38%
		Female	50%
% total of teachers who know of the importance of play in children’s learning			
Rate the importance of play in children’s learning	Combine response Important and Very Important response options. Estimate the percentage of teachers who report important/very important. Average scores for Direct: 3.93 out of 4-point response. (male: 3.90; Female 3.97)	Male	95%
		Female	98%
Rate the importance of traditional games	Combine response Important and Very Important response options. Estimate the percentage of teachers who report important/very important Average scores for Direct: 3.92 out of 4-point response. (male: 3.93; Female 3.92)	Male	96%
		Female	96%
Rate the importance of sporting activities	Combine response Important and Very Important response options. Estimate the percentage of teachers who report important/very important Average scores for Direct: 3.90 out of 4-point response. (male: 3.88; Female 3.93)	Male	92%
		Female	96%
How do you think play helps children in your school?	This item has 10 multiple response options. Create an index variable (total) using all 10 response options. Estimate the 50% percentile (median) of the Direct group. Create a dummy variable using the median as benchmark. Estimate percentage of teachers with scores equal to and above the median. Median score of Direct is 3.0. (male: 4.0; female: 3.0) (Interpretation: the percentage who mentioned 3 or more skills)	Male	71%
		Female	68%
% total of teachers who recommend play-based learning to parents/caregivers, community members or other teachers			
Recommending play-based learning	Create an index variable (total) using 2 items. Estimate the 50% percentile (median) of the Direct group. Create a dummy variable using median. Estimate percentage of teachers with scores equal to the median. Median score of Direct is 2.0. (male: 2.0; female: 2.0) (Interpretation: the percentage who recommend taking time to play with child at home and child learns a lot by playing games at school)	Male	91%
		Female	92%
% total of teachers with skills to facilitate learning through play in their learning environment with children			
		Male	76%

Teachers report on their level of preparedness to use play	Estimate total scores. Estimate average scores of the Direct group. Create dummy variable using the average score as benchmark. Estimate percentage of teachers with scores equal to and above the average. Average score for Direct is 30. (Male: 30.79; female: 30.59)	Female	74%
Teachers who have received training to support pupils' SES	Estimate the percentage of teachers who report having received in-service and pre-service professional training	Male	49%
		Female	44%
% total of teachers who self-report using learning through play			
How often do you use play in your lessons?	Estimate the percentage of teachers who report using play often/always	Male	52%
		Female	57%
% total of teachers observed implementing learning through play in their lessons			
Teachers observed using play in lessons	Estimate the percentage of teachers with scores in the high range (scores greater than 3.4)	Male	23%
		Female	34%
% Learning environments that show evidence of learning through play methods or manipulative			
Teachers observed using manipulative in lessons	Estimate the percentage of teachers with scores in the high range (scores greater than 3.4)	Male	52%
		Female	52%

HEADTEACHERS			
% total of headteacher who have knowledge of the importance of holistic skills development			
Academic skills	Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. The average score for the academic skills is 17.77 out of a 20-point scale. (male: 17.76; female: 17.82)	Male	73%
		Female	82%
Artistic skills	Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. The average score for the artistic skills is 8.17 out of a 10-point scale. (male: 8.17; female: 8.17)	Male	92%
		Female	76%
Athletic skills	Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. The average score for the athletic skills is 4.16 out of a 5-point scale. (male: 4.11; female: 4.29)	Male	98%
		Female	88%
Socioemotional skills	Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. The average score for the socioemotional skills is 34.64 out of a 40-point scale. (male: 34.23; female: 35.88)	Male	57%
		Female	65%
Holistic skills total	Estimate total scores. Estimate average score of Direct group. Estimate the percentage of	Male	49%

	teachers with scores equal to and above the average score. The average score for total holistic development is 64 out of a 75-point scale. (male: 64.29; female: 66.17)	Female	65%
% total of headteachers who have knowledge of learning through play			
Beliefs about active/play-based learning	Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. The average score for the total learning belief is -13.30 out of a +34 to – 70-point scale. (Male: -12.90; female: -14.35)	Male	47%
		Female	41%
% total of headteacher who have knowledge of the importance of socioemotional skills			
Importance of socioemotional skills	Estimate total scores. Estimate the average score of the Direct group. Estimate the percentage of headteachers with scores equal to and above the average score. Average score for Direct is 39.98. (male: 39.82; female: 40.47)	Male	53%
		Female	65%
% total of headteacher who have knowledge of the best ways to support the development of children’s socioemotional skills and learning			
Social and emotional skills can best be supported through play-based learning	Combine Agree and Strongly Agree response options. Estimate the percentage of headteachers who agree/strongly agree. Average score for Direct is 3.98 out of 4-point response. (Male: 3.98; Female: 4.0)	Male	53%
		Female	65%
Best way for pupils to learn in your school	Estimate the percentage of headteachers who report play/active learning	Male	45%
		Female	53%
% total of headteacher who have knowledge of the importance of play in children’s learning			
Rate the importance of play in children’s learning	Combine response Important and Very Important response options. Estimate the percentage of headteachers who report important/very important Average score for Direct is 4.0 out of 4-point response. (Male: 4.0; Female: 4.0)	Male	100%
		Female	100%
Rate the importance of traditional games	Combine response Important and Very Important response options. Estimate the percentage of headteachers who report important/very important Average score for Direct is 3.94 out of 4-point response. (Male: 3.92; Female: 4.0)	Male	96%
		Female	100%
Rate the importance of sporting activities	Combine response Important and Very Important response options. Estimate the percentage of headteachers who report important/very important Average score for Direct is 3.89 out of 4-point response. (Male: 3.86; Female: 4.0)	Male	92%
		Female	100%
How do you think play helps children in your school?	This item has 10 multiple response options. Create an index variable (total) using the 10 response options. Estimate the 50% percentile (median) of	Male	55%
		Female	47%

	the Direct group. Create a dummy variable using the median as benchmark. Estimate percentage of headteachers with scores equal to and above the median. Median score of Direct is 5.0. (male: 5.0; female: 3.0) (Interpretation: the percentage who mentioned 5 or more skills)		
% total of headteacher who would recommend play-based learning to parents/caregivers and community members			
Recommending play-based learning	Create an index variable (total) using 2 items. Estimate the 50% percentile (median) of the Direct group. Create a dummy variable using median. Estimate percentage of headteachers with scores equal to the median. Median score of Direct is 2.0. (male: 2.0; female: 2.0) (Interpretation: the percentage who recommend taking time to play with child at home and child learns a lot by playing games at school)	Male	98%
		Female	94%

CAREGIVERS			
% total of caregivers who have knowledge of the importance of holistic skills			
Academic skills	Estimate the average score of the Direct group. Estimate the percentage of caregivers with scores equal to and above the average score. The average score for the academic skills is 17.36 out of a 20-point scale. (male: 17.11; female: 17.57)	Male	45%
		Female	56%
Artistic skills	Estimate the average score of the Direct group. Estimate the percentage of caregivers with scores equal to and above the average score. The average score for the artistic skills is 8.38 out of a 10-point scale. (male: 8.25; female: 8.49)	Male	93%
		Female	95%
Athletic skills	Estimate the average score of the Direct group. Estimate the percentage of caregivers with scores equal to and above the average score. The average score for the athletic skills is 4.17 out of a 5-point scale. (male: 4.10; female: 4.22)	Male	95%
		Female	96%
Socioemotional skills	Estimate the average score of the Direct group. Estimate the percentage of caregivers with scores equal to and above the average score. The average score for the socioemotional skills is 33.63 out of a 40-point scale. (male: 33.39; female: 33.83)	Male	41%
		Female	46%
Holistic skills total	Estimate total scores. Estimate average score of Direct group. Estimate the	Male	36%

	percentage of teachers with scores equal to and above the average score. The average score for total holistic development is 63 out of a 75-point scale. (male: 62.85; female: 64.14)	Female	47%
% total of caregivers with knowledge of learning through play			
Beliefs about active/play-based learning	Estimate the average score of the Direct group. Estimate the percentage of caregivers with scores equal to and above the average score. The average score for the total learning belief is -23.81. out of a +34 to – 70-point scale. (Male: -22.56; female: -24.87)	Male	45%
		Female	34%
% total of caregivers with knowledge of the importance of play at home			
Level of priority of play in your home	Combine response medium and high response options. Estimate the percentage of caregivers who report medium/high	Male	79%
		Female	76%
Importance of traditional games	Combine Important and Very Important response options. Estimate the percentage of caregivers who report important/very important. Average score for Direct is 3.73 out of 4-point response. (Male: 3.78; Female: 3.69)	Male	90%
		Female	83%
How does play help your child?	This item has 9 multiple response options. Create an index variable (total) using all 9 response options. Estimate the 50% percentile (median) of the Direct group. Create a dummy variable using the median as benchmark. Estimate percentage of caregivers with scores equal to and above the median. Median score of Direct is 2.0. (male: 2.0; female: 2.0) (Interpretation: the percentage who mentioned 2 or more skills)	Male	84%
		Female	74%
% total of caregivers who are aware of their own role as well as that of other adults and children in learning through play			
It is important for me to participate in play with my child.	Recode response options to two (disagree and agree). Estimate the percentage of caregivers who agree	Male	72%
		Female	79%
I do not think it is important for my child to play with other children	Recode response options to two (disagree and agree). Estimate the percentage of caregivers who disagree	Male	81%
		Female	74%
I do not think it is important for other family members to play with my child	Recode response options to two (disagree and agree). Estimate the percentage of caregivers who disagree	Male	79%
		Female	74%
Caregivers’ role in play	Create an index variable (total) using 5 response options. Estimate the 50%	Male	47%
		Female	49%

	percentile (median) of the Direct group. Create a dummy variable using median. Estimate percentage of caregivers with scores above the median. Median score of Direct is 1.0. (male: 1.0; female: 1.0) (Interpretation: the percentage of caregivers who mention more than one (1) role in child’s play)		
% total of caregivers who recommend learning through play to peers, other caregivers, their own families, communities			
Recommending play-based learning	Create an index variable (total) using 2 items. Estimate the 50% percentile (median) of the Direct group. Create a dummy variable using median. Estimate percentage of caregivers with scores equal to the median. Median score of Direct is 2.0. (male: 2.0; female: 2.0) (Interpretation: the percentage who recommend taking time to play with child at home and child learns a lot by playing games at school)	Male	82%
		Female	79%
% total of caregivers who know about the classroom environment and learning through play approaches knowledge			
When it comes to learning activities at school, where do you mostly want your child to spend his/her time?	Estimate the percentage of caregivers who report both indoor and outdoor	Male	37%
		Female	30%
At school, who should be the focus of the class?	Estimate the percentage of caregivers who report both teacher and child	Male	23%
		Female	19%
What do you think is the most appropriate way for children to learn at school?	Estimate the percentage of caregivers who report play/active learning	Male	11%
		Female	18%

Appendices

Appendix 2: Teacher Characteristics Across Groups and Region

	Accra					Volta				North				
Characteristics	N	Control (n = 72)	Direct (n = 63)	Galop n = 54)	Indirect (n = 68)	Control (n = 41)	Direct (n = 72)	Galop (n = 71)	Indirect (n = 48)	Control (n = 184)	Direct (n = 184)	Galop (n = 210)	Indirect (n= 181)	F-statistics
		Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	Mean or %	
Gender													1.20	10.46***
Female	693	6.9%	17.4%	16.6%	14.7%	41.4%	51.3%	60.5%	68.7%	56.5%	72.8%	75.7%	72.3%	
Male	555	93.0%	82.5%	83.3%	85.2%	58.5%	48.6%	39.4%	31.2%	43.4%	27.1%	24.2%	27.6%	
Class														
KG2	239	19.4%	20.6%	16.6%	16.1%	9.7%	19.4%	19.7%	22.9%	19.5%	19.0%	19.5%	20.4%	
Class 1	259	20.8%	20.6%	20.3%	19.1%	34.1%	20.8%	18.3%	16.6%	21.7%	20.1%	20.4%	20.4%	
Class 3	265	19.4%	20.6%	22.2%	22.0%	36.5%	19.4%	21.1%	22.9%	20.6%	20.6%	20.9%	19.8%	
Class 4	242	20.8%	17.4%	16.6%	22.0%	9.7%	19.4%	21.1%	18.7%	19.5%	20.1%	19.5%	19.8%	
Class 6	243	19.4%	20.6%	24.0%	20.5%	9.7%	20.8%	19.7%	18.7%	18.4%	20.1%	19.5%	19.34	
Age													2.65	.6.03***
20 – 30	372	11.1%	17.4%	35.1%	17.6%	31.7%	27.7%	35.2%	43.7%	23.5%	37.5%	28.1%	40.8%	
31 – 40	609	56.9%	46.0%	40.7%	48.5%	56.1%	52.7%	43.6%	37.5%	46.4%	49.4%	51.9%	49.1%	
41 – 50	198	20.8%	23.8%	16.6%	20.5%	9.7%	11.1%	16.9%	16.6%	25.1%	11.9%	14.7%	7.7%	
51 – 60	66	11.1%	12.7%	7.4%	13.2%	2.4%	8.3%	4.2%	2.0%	4.9%	1.1%	5.2%	2.2%	
Highest Education													2.16	29.37***
SHS	362	18.0%	19.0%	29.6%	1.4%	53.6%	83.3%	49.3%	35.4%	25.1%	44.5%	19.5%	10.5%	
O Level	19	2.7%	3.1%	0.0%	2.9%	0.0%	2.7%	4.2%	2.0%	1.0%	1.1%	0.9%	0.5%	
A Level	9	0.00	0.0%	0.0%	0.0%	0.0%	1.3%	1.4%	4.1%	1.0%	0.0%	0.0%	1.6%	
Diploma	424	15.2%	15.8%	24.0%	22.0%	24.3%	4.1%	29.5%	45.8%	34.4%	35.3%	40.4%	58.5%	
Degree	418	63.8%	58.7%	44.4%	72.0%	21.9%	8.3%	14.0%	12.5%	36.6%	19.0%	38.1%	27.1%	

PGDE	5	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.4%	1.1%	
Masters	8	0.0%	3.1%	0.0%	1.4%	0.0%	0.0%	1.4%	0.0%	1.0%	0.0%	0.4%	0.5%	
Professional Qualification													2.26	2.79*
None	38	1.3%	1.5%	0.0%	2.9%	4.8%	5.5%	1.4%	6.2%	4.8%	3.2%	3.8%	0.5%	
Certificate A	36	1.3%	3.1%	9.2%	1.4%	0.0%	1.3%	8.4%	0.0%	3.8%	2.7%	0.9%	3.3%	
Diploma	741	37.5%	34.9%	48.1%	23.5%	70.7%	77.7%	78.8%	81.2%	50.5%	72.8%	59.5%	65.1%	
B.Ed.	423	59.7%	55.5%	40.7%	70.5%	24.3%	15.2%	9.8%	12.5%	39.6%	20.6%	35.7%	30.3%	
M.Ed.	9	0.0%	4.7%	1.8%	1.4%	0.0%	0.0%	1.4%	0.0%	1.0%	0.0%	0.0%	0.5%	
Years as a teacher		4.70	4.72	4.20	4.83	3.58	3.56	3.50	3.58	4.21	3.35	3.78	3.44	8.51***
Years as a teacher in current school		2.54	2.57	2.12	2.67	3.00	3.09	2.63	3.08	2.87	2.70	3.10	2.80	.829

Appendix 3: Means and standard deviations of teachers' learning beliefs score (sub-domains and overall score)

	Accra				Volta				North						
	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect			
	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	Min – Max	F-statistics	p-value
Active learning	33.63 (4.73)	33.73 (5.08)	35.44 (3.81)	34.29 (4.44)	34.87 (5.70)	34.36 (4.97)	33.98 (4.12)	36.97 (5.35)	35.70 (4.91)	34.63 (4.72)	37.19 (4.80)	34.64 (4.89)	13 – 50	5.29	0.000
Direct Instruction	47.98 (5.31)	47.22 (6.86)	48.29 (5.51)	50.07 (5.49)	50.51 (7.32)	50.79 (7.49)	49.90 (6.34)	53.22 (7.80)	54.75 (7.43)	50.96 (8.29)	49.38 (7.62)	52.04 (6.90)	25 – 79	4.16	0.000
Overall learning Belief	-14.34 (7.31)	-13.49 (7.84)	-12.85 (6.53)	-15.77 (7.60)	-15.63 (8.54)	-16.43 (9.16)	-15.91 (6.82)	-16.25 (9.16)	-19.04 (7.56)	-16.34 (9.55)	-12.19 (10.49)	-17.40 (6.85)	-43 – 18	3.69	0.001

Note: The reported F statistics is the interaction between treatment and region

Appendix 4: Means and standard deviations of teachers' learning beliefs score (by gender)

	Accra				Volta				North					
	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect		
	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	F-statistics	p-value
Active learning														
Male	38.4 (2.88)	33.54 (4.56)	33.77 (4.05)	33.50 (3.53)	34.11 (6.45)	35.08 (5.39)	33.86 (3.76)	36.48 (5.38)	36.19 (4.83)	34.87 (4.98)	37.35 (4.87)	34.78 (4.91)	1.41	0.20
Female	33.28 (4.66)	33.76 (5.23)	35.77 (3.72)	34.43 (4.59)	35.41 (5.18)	33.60 (4.45)	34.17 (4.68)	38.06 (5.31)	35.06 (4.97)	33.96 (3.92)	36.67 (4.58)	34.28 (4.88)		
Direct Instruction														
Male	51.6 (3.20)	46.18 (5.19)	49.22 (2.99)	50.30 (4.27)	50.88 (6.57)	50.40 (7.43)	49.88 (5.34)	53.87 (8.82)	56.0 (7.80)	51.22 (8.30)	48.89 (7.92)	52.20 (7.01)	0.70	0.65
Female	47.71 (5.35)	47.44 (7.18)	48.11 (5.89)	50.03 (5.70)	50.25 (7.94)	51.20 (7.64)	49.92 (7.75)	51.80 (4.79)	53.13 (6.63)	50.28 (8.31)	50.92 (6.44)	51.64 (6.64)		
Overall learning Belief														
Male	-13.2 (3.27)	-12.63 (7.15)	-15.44 (5.91)	-16.80 (6.59)	-16.76 (8.55)	-15.32 (9.37)	-16.02 (6.50)	-17.39 (9.40)	-19.80 (7.99)	-16.35 (9.80)	-11.53 (10.97)	-17.41 (6.95)	0.99	0.43
Female	-14.43 (7.54)	-13.67 (8.04)	-12.33 (6.58)	-15.60 (7.80)	-14.83 (8.62)	-17.60 (8.91)	-15.75 (7.41)	-13.73 (8.36)	-18.06 (6.88)	-16.32 (8.96)	-14.25 (8.61)	-17.36 (6.67)		

Note: The reported F statistics is the interaction between treatment, region and teacher gender

Appendix 5: Means and standard deviations of teachers' play and learning beliefs score

	Accra				Volta				North						
	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect			
	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	Min – Max	F-statistics	p-value
Active Play															
Form of Play	17.13 (3.17)	17.04 (1.94)	17.01 (2.20)	17.57 (1.97)	17.17 (2.40)	17.26 (2.18)	17.18 (1.62)	16.25 (2.28)	17.77 (2.48)	15.88 (1.95)	16.94 (3.24)	17.21 (2.04)	5 – 20	5.75	0.00
Related to learning	17.02 (2.50)	16.17 (2.34)	16.96 (2.38)	16.82 (2.64)	16.82 (2.85)	16.95 (2.45)	17.41 (1.68)	16.35 (1.95)	16.67 (2.51)	15.28 (2.19)	17.11 (2.92)	17.01 (2.11)	4 – 20	4.00	0.00
Creative Play															

Form of Play	16.91 (3.88)	16.87 (2.60)	17.29 (2.34)	17.76 (3.15)	16.21 (3.52)	15.79 (3.39)	17.32 (1.90)	15.08 (3.75)	17.05 (3.33)	15.19 (2.79)	16.99 (3.42)	16.15 (3.22)	4 – 20	3.68	0.00
Related to learning	18.86 (1.51)	18.12 (1.61)	18.09 (1.78)	18.63 (1.48)	18.12 (1.84)	18.11 (2.03)	17.87 (1.69)	17.97 (1.45)	18.34 (1.65)	17.05 (1.83)	18.31 (1.82)	18.07 (1.91)	10 – 20	4.74	0.00
Music and dance															
Form of Play	8.91 (1.76)	8.85 (1.28)	8.88 (1.05)	9.35 (0.91)	8.75 (1.29)	8.84 (1.25)	9.01 (0.91)	8.41 (1.26)	9.16 (1.11)	8.26 (1.25)	8.97 (1.17)	8.83 (1.30)	2 – 10	5.85	0.00
Related to learning	9.61 (0.70)	9.23 (0.91)	9.06 (0.89)	9.48 (0.76)	9.12 (0.95)	9.11 (1.00)	9.05 (0.92)	9.16 (0.90)	9.24 (0.89)	8.55 (1.08)	9.18 (0.96)	9.12 (1.22)	2 – 10	4.34	0.00
Dramatic Play															
Form of Play	9.06 (1.71)	9.14 (1.09)	8.96 (0.95)	9.47 (0.93)	9.29 (0.92)	8.98 (1.10)	9.16 (0.92)	8.56 (1.36)	9.19 (1.25)	8.56 (1.10)	9.21 (1.10)	8.78 (1.36)	2 – 10	5.18	0.00
Related to learning	9.67 (0.67)	9.30 (0.89)	9.18 (0.84)	9.57 (0.73)	9.26 (1.00)	9.11 (1.20)	9.30 (0.88)	9.33 (0.85)	9.15 (0.96)	8.86 (1.02)	9.32 (0.94)	9.07 (1.13)	2 – 10	2.51	0.02
Electronic Play															
Form of Play	11.37 (2.65)	11.57 (2.32)	12.29 (1.89)	12.02 (2.10)	11.48 (1.98)	11.63 (2.22)	12.64 (1.48)	11.12 (2.13)	12.45 (2.64)	10.98 (1.84)	11.95 (2.80)	11.76 (1.85)	3 – 15	5.02	0.00
Related to learning	13.28 (1.68)	12.84 (1.88)	13.17 (1.41)	13.13 (1.79)	13.26 (1.80)	13.15 (1.45)	13.21 (1.34)	13.31 (1.32)	13.14 (1.68)	12.24 (1.34)	13.67 (1.42)	12.93 (1.49)	5 – 15	4.54	0.00
Storytelling and Reading															
Form of Play	7.25 (2.19)	6.93 (1.87)	8.20 (1.43)	7.26 (2.04)	6.92 (1.82)	6.93 (2.19)	8.58 (1.10)	6.66 (2.03)	7.58 (2.13)	6.98 (1.73)	7.47 (2.44)	7.38 (1.86)	2 – 10	4.58	0.00
Related to learning	9.59 (0.68)	9.14 (1.02)	8.96 (0.98)	9.48 (0.80)	9.04 (1.18)	9.19 (1.00)	9.15 (0.97)	9.18 (0.81)	9.50 (0.86)	8.84 (1.00)	9.29 (1.01)	9.23 (1.05)	3 – 10	4.18	0.00
Traditional Play															
Form of Play	4.70 (0.54)	4.58 (0.55)	4.44 (0.57)	4.72 (0.54)	4.58 (0.74)	4.56 (0.64)	4.64 (0.48)	4.47 (0.58)	4.66 (0.55)	4.36 (0.57)	4.70 (0.48)	4.58 (0.62)	1 – 5	4.32	0.00
Related to learning	4.48 (0.80)	4.44 (0.61)	4.44 (0.63)	4.55 (0.69)	4.51 (0.63)	4.58 (0.49)	4.61 (0.56)	4.54 (0.58)	4.30 (0.92)	4.30 (0.70)	4.17 (0.57)	4.39 (0.72)	1 – 5	2.70	0.01
Board games															
Form of Play	4.59 (0.72)	4.44 (0.69)	4.48 (0.54)	4.76 (0.42)	4.56 (0.74)	4.48 (0.58)	4.54 (0.50)	4.47 (0.50)	4.57 (0.72)	4.24 (0.47)	4.53 (0.67)	4.45 (0.78)	1 – 5	2.27	0.03
Related to learning	4.63 (0.67)	4.47 (0.66)	4.51 (0.50)	4.77 (0.41)	4.56 (0.59)	4.51 (0.64)	4.61 (0.48)	4.50 (0.50)	4.27 (0.85)	4.20 (0.62)	4.60 (0.57)	4.53 (0.65)	1 – 5	3.56	0.00

Appendix 6. Percent scores of teachers' views on ways children learn

	Guided Play (%)				Direct Instruction (%)				Games (%)				Free Play (%)			
	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
Academic concepts																
Numbers	52.5	58.3	66.8	53.5	26.2	15.0	7.7	14.8	14.4	22.8	19.4	25.9	6.7	3.7	5.9	5.7
Shapes	44.4	45.1	57.6	38.3	31.9	23.8	11.9	16.1	11.7	24.7	8.5	34.6	11.7	6.2	11.9	10.7
Science concepts	49.1	50.1	62.3	50.5	34.3	31.3	16.7	24.2	7.0	13.4	13.1	17.8	9.4	5.0	7.7	7.4
Addition	49.1	47.9	52.8	39.3	31.3	24.1	13.4	17.8	13.1	21.9	27.7	38.7	6.4	5.9	5.9	4.0
Subtraction	50.8	49.5	59.4	42.7	33.0	25.3	11.3	20.5	11.4	22.5	3.2	33.0	4.7	2.5	5.9	3.7
Patterns and sequencing	60.6	44.2	47.7	49.1	23.5	26.3	19.1	22.2	9.7	19.7	21.1	21.5	6.0	9.7	11.9	7.0
Measurement	47.4	56.4	63.5	52.8	39.3	27.2	15.2	25.2	6.7	11.6	13.1	17.5	6.4	4.7	8.0	4.3
Communication skills																
Speaking	46.8	42.3	53.1	35.6	23.9	21.0	12.5	25.5	11.1	13.1	14.0	14.1	18.1	23.5	20.3	24.5
Reading	52.5	56.7	71.9	55.2	37.0	27.9	14.0	31.6	5.0	9.7	7.1	7.4	5.3	5.6	6.8	5.7
Writing	49.8	53.2	68.6	56.9	40.7	33.8	12.5	26.6	4.7	6.5	7.1	4.7	4.7	6.2	11.6	11.7
Listening	45.4	38.5	45.6	35.0	33.3	31.6	29.2	40.4	8.0	12.8	10.4	11.1	13.1	16.9	14.6	13.4
Socioemotional skills																
Self-control	48.4	39.8	48.0	44.4	23.5	21.0	12.5	22.2	12.7	20.6	28.3	14.8	15.1	18.5	11.0	18.5
Following directions	51.5	39.8	44.4	35.3	40.4	41.0	26.2	50.5	4.0	15.3	19.7	11.7	4.0	3.7	9.5	2.3
Building relationships	40.7	32.9	28.3	31.6	13.4	13.1	3.5	9.0	17.8	21.6	37.6	24.9	27.9	32.2	30.4	34.3
Solving problem	58.2	39.8	53.7	53.5	21.5	21.3	10.7	18.1	9.4	19.1	22.0	16.8	10.7	19.7	13.4	11.4
Independence	40.0	22.8	30.4	22.9	17.5	19.7	5.6	14.4	10.1	13.1	11.9	7.7	32.3	44.2	51.9	54.8
Getting along with friends	31.6	21.6	23.5	19.8	13.8	9.4	4.1	6.4	17.5	21.0	38.8	21.2	37.0	47.9	33.4	52.5
Express emotions	36.0	22.2	27.4	22.5	10.7	13.7	6.5	8.7	15.8	16.9	27.4	21.5	37.3	47.0	38.5	47.1

Taking turns	46.8	35.7	34.0	41.0	22.2	18.5	10.7	23.2	18.1	27.5	42.0	24.2	12.7	18.1	13.1	11.4
Resolving conflicts	51.8	37.9	48.9	43.4	25.9	24.4	13.7	24.2	8.0	15.3	26.2	19.5	14.1	22.2	11.0	12.7
Persistence	48.8	35.4	42.9	36.3	24.5	19.4	11.3	22.2	15.1	8.2	30.7	21.8	11.4	16.9	14.9	19.5

Appendix 7. Percentage scores of teachers' responses on socioemotional skills

		Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
	n	Have you heard of SES? (% Yes)				Can SES be taught in class? (% Yes)				Have you received training? (% Yes)			
Gender													
Male	693	89.6	85.1	80.0	78.7	88.8	90.6	86.2	88.5	50.4	50.3	50.7	24.7
Female	555	83.0	76.6	72.5	79.6	88.3	89.0	85.4	82.1	51.5	45.9	52.5	27.1
Teacher Grade													
KG2	239	85.1	80.6	81.2	84.7	85.1	80.6	81.2	84.7	54.9	47.5	50.0	27.1
Basic 1	259	89.8	78.4	74.6	79.3	89.8	78.4	74.6	79.3	51.5	46.0	48.5	19.3
Basic 3	265	88.0	76.9	74.6	74.1	88.0	76.9	74.6	74.1	53.9	52.4	55.7	30.7
Basic 4	242	85.4	80.6	76.9	78.3	85.4	80.6	76.9	78.3	52.8	45.2	47.7	26.7
Basic 6	243	78.8	90.7	79.4	79.3	78.8	90.7	79.4	79.3	41.2	50.8	54.4	24.1
Professional qualification													
None	38	58.3	90.9	55.5	83.3	58.3	90.9	55.5	83.3	41.7	27.3	33.3	-
Certificate A	36	87.5	75.0	76.9	100.0	87.5	75.0	76.9	100.0	62.5	37.5	69.2	71.4
Diploma	741	87.9	82.5	72.9	78.6	87.9	82.5	72.9	78.6	53.5	50.9	53.7	26.0
Degree	433	85.9	78.4	87.7	78.3	85.9	78.4	87.7	78.3	48.4	45.8	46.2	23.6

Appendix 8. Percentage scores of teachers' responses on the priority of socioemotional skills

		Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
	n	Least				Medium				High			
Gender													
Male	693	61.6	54.4	57.1	31.7	15.2	25.8	30.4	35.2	23.2	17.5	11.4	23.7
Female	555	46.7	38.2	39.5	21.3	30.9	39.7	41.9	40.9	16.3	15.4	13.7	28.6
Teacher Grade													

KG2	239	62.2	45.1	45.3	27.5	20.7	32.2	32.8	29.3	16.9	17.7	18.7	29.3
Basic 1	259	49.2	44.6	47.7	36.2	23.1	30.7	35.8	27.5	21.7	18.4	13.4	24.1
Basic 3	265	50.7	48.4	52.8	22.5	32.8	23.4	35.7	48.3	16.4	21.8	8.5	27.4
Basic 4	242	52.7	48.3	55.3	22.0	20.0	37.1	32.3	37.2	20.0	12.9	10.7	32.2
Basic 6	243	51.9	50.7	51.4	29.3	23.0	35.3	36.7	44.8	21.1	12.3	10.2	15.5
Professional qualification													
None	38	41.6	27.2	11.1	66.6	25.0	27.2	66.6	16.6	33.3	27.2	22.2	16.6
Certificate A	36	62.5	-	23.0	28.5	25.0	62.5	61.5	42.8	12.5	37.5	7.6	28.5
Diploma	741	56.0	54.2	54.5	31.9	22.9	27.8	29.9	35.4	19.5	14.6	13.0	23.2
Degree	433	50.0	37.9	49.5	18.1	25.7	39.0	38.1	41.8	17.9	18.3	10.4	30.0

Appendix 9. Logistic regression analysis on teachers' perspectives on socioemotional skills

	Have you heard of socioemotional skills?	Can socioemotional skills be taught in the classroom?
Treatment		
Direct	.66 (.15) †	1.14 (.43)
Galop	.48 (.11) **	1.63 (.66)
Indirect	.67 (.16)	1.41 (.57)
Region		
Volta	1.66 (.49) †	.60 (.30)
North	.69 (.15)	.61 (.21)
Teacher Grade		
Basic 1	.66 (.16)	.71 (.32)
Basic 3	.58 (.14) *	.85 (.40)
Basic 4	.72 (.19)	.82 (.40)
Basic 6	.65 (.18)	.70 (.35)
Teacher Gender (Female)	.54 (.10) **	.80 (.27)
Teacher Age	.89 (.12)	.81 (.20)
Education	1.01 (.05)	.95 (.09)
Experience as teacher	1.03 (.08)	1.01 (.14)
Professional qualification	1.42 (.17) **	.96 (.22)

Standard errors in bracket

**** $p < .01$, * $p < .05$, † $p < .10$**

Appendix: 10: Percent scores of teachers' level of preparedness to use play (% Well Prepared)

	Accra				Volta				North			
	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %	Control %	Direct %	Galop %	Indirect %
Plan activities to meet the physical, emotional, intellectual and social needs of your children?	79.1	69.8	64.8	77.9	58.5	90.2	84.5	93.7	69.5	73.9	92.3	51.9
Plan activities based on children's needs and interests?	86.1	79.3	62.9	83.8	65.8	90.2	97.1	85.4	81.5	79.3	95.2	61.3
Prepare the classroom space for play-based learning?	65.2	68.2	70.3	82.3	73.1	91.6	90.1	85.4	77.1	85.8	94.7	64.0
Provide different activities to meet different needs and interests of your children?	80.5	68.2	81.4	86.7	68.2	91.6	95.7	77.0	76.6	78.2	95.2	60.2
Adopt and develop games using the curricular framework?	79.1	82.5	79.6	89.7	75.6	88.8	87.3	85.4	75.0	75.5	94.7	58.5
Facilitate meaningful playful experiences and learning for your children?	73.6	88.8	83.3	91.1	63.4	90.2	88.7	91.6	76.0	77.7	96.1	61.8
Promote activities that build children's social and emotional development?	79.1	82.5	85.1	92.6	68.2	94.4	88.7	87.5	76.6	80.4	96.6	60.7
Implement positive, non-violent disciplines when required?	93.0	85.7	87.0	89.7	78.0	95.8	91.5	87.5	82.0	86.4	95.2	72.9

Appendix 11: Regression analysis of teachers' perceived preparedness to use play in the classroom (N = 1248)

	Plan activities to meet the physical, emotional, intellectual and social needs	Plan activities based on children's needs and interests	Prepare the classroom space for play-based learning	Provide different activities to meet different needs and interests of your children	Adopt and develop games using the curricular framework	Facilitate meaningful playful experiences and learning for your children	Promote activities that build children's social and emotional development	Implement positive, non-violent disciplines when required
Treatment								
Direct	.03 (1.35)	.04 (1.05)	.56** (1.75)	.13 (1.17)	.21 (1.22)	.56** (1.75)	.50* (1.64)	.33 (1.39)
Galop	.97** (2.62)	.80** (2.22)	1.10** (3.00)	1.41** (4.09)	1.14** (3.12)	1.55** (4.70)	1.48** (4.41)	.94** (2.55)
Indirect	-.26 (0.76)	-.57** (0.56)	-.12 (0.89)	-.39* (0.67)	-.31 (0.73)	.02 (1.02)	-.19 (0.83)	-.36 (0.69)
Gender	.08 (1.07)	.01 (1.01)	0.0 (1.00)	-.05 (0.95)	.01 (1.01)	.29 (1.34)	.15 (1.16)	.01 (1.00)
Class								
B1	-.03 (0.96)	-.16 (0.84)	-.18 (0.83)	.09 (1.09)	.18 (1.19)	-.01 (0.99)	-.20 (0.82)	-.32 (0.72)
B3	-.24 (0.78)	-.29 (0.75)	-.23 (0.79)	-.18 (0.83)	-.10 (0.90)	-.09 (0.91)	-.27 (0.76)	-.48 (0.62)
B4	-.45* (0.63)	-.12 (0.88)	-.31 (0.73)	-.18 (0.83)	.05 (1.04)	-.14 (0.86)	-.34 (0.70)	-.49 (0.61)
B6	-.03 (0.97)	-.04 (0.95)	-.35 (0.70)	.04 (1.0)	.01 (1.00)	.27 (1.30)	.17 (1.18)	.40 (1.48)
Region								
Volta	.54* (1.71)	.51 (1.66)	.83** (2.28)	.31 (1.36)	.07 (1.07)	.08 (1.07)	.07 (1.06)	-.04 (0.95)
North	-.07 (0.93)	.01 (1.00)	.47* (1.60)	-.18 (0.83)	-.47* (0.62)	-.29 (0.74)	-.39 (0.67)	-.47 (0.62)

Regression coefficients are reported. Odds ratio in bracket

**p < .01 *p < .05

Appendix 12: Teachers' perspectives on play-based learning at school

	n	Accra				Volta				North			
		Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
How will you rate the importance of play in children's learning? (% Important)		94.4	98.4	96.3	98.5	92.6	98.6	100.0	97.92	94.5	95.1	98.5	97.7
Should boys and girls have the same play opportunities? (% Yes)		90.2	90.4	98.1	85.2	87.8	95.8	100.0	89.58	93.4	90.2	95.2	93.9
How often do you use play in your lessons?													
Always	273	26.3	33.3	18.5	35.2	17.0	18.1	18.3	29.1	9.7	25.5	25.7	18.2
Often	373	26.3	30.1	35.1	20.5	34.1	30.5	53.5	27.1	23.3	28.2	37.1	23.2
Sometimes	580	47.2	36.5	46.3	42.6	43.9	48.6	26.7	43.7	64.6	44.5	34.7	56.3
Rarely	19	-	-	-	1.4	4.8	2.7	1.4	-	2.1	1.6	1.4	1.6
when do children in your class usually play?													
As part of lessons	630	37.5	66.6	18.5	44.1	46.3	56.9	78.8	20.8	34.7	58.1	83.8	26.5
After exercises	309	25.0	14.2	48.1	26.4	17.1	25.0	12.6	77.1	24.4	21.2	10.0	34.2
Only at break	308	37.5	19.0	33.3	29.4	36.5	18.1	8.4	2.1	40.2	20.6	6.1	39.2
How do you think play helps children in your school?													
Social skills	858	65.2	50.7	70.3	70.5	43.9	66.6	84.5	50.0	58.7	65.2	74.7	87.2
Have fun	770	63.8	58.7	85.2	69.1	39.0	65.2	76.1	66.7	55.4	52.2	74.3	50.3
Healthy development	756	52.7	52.3	55.5	44.1	58.5	38.8	8.4	91.6	44.0	52.1	19.5	22.6
Better thinking/reasoning abilities	682	76.3	55.5	72.2	73.5	36.5	55.5	81.6	81.2	50.5	34.7	32.8	69.1
Academic skills	586	45.8	47.6	35.1	66.1	43.9	65.2	70.4	31.2	46.7	45.1	35.7	46.9
Language and communication abilities	547	37.5	36.5	33.3	44.1	29.2	47.2	73.2	2.08	48.3	40.2	36.6	60.7
Ability to solve problems	428	37.5	28.5	9.2	36.7	26.8	44.4	78.8	16.6	29.8	32.1	29.1	39.2
Express emotions/feelings	379	40.3	41.3	13.0	33.8	22.0	31.9	22.5	35.4	44.0	26.1	17.1	35.4
To do well at school	352	18.0	34.9	25.9	29.4	24.3	22.2	16.9	14.5	28.8	17.9	21.9	58.5

Physical attributes like coordination	327	29.2	20.6	13.0	20.6	24.4	25.0	53.5	20.8	21.7	38.6	8.5	34.3
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Appendix 13: Teachers' perspectives on traditional games

	n	Accra				Volta				North			
		Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
When do children usually play traditional games at school?													
As part of lesson	437	15.9	39.3	11.1	32.3	17.5	32.3	49.3	25.0	20.1	38.2	74.5	23.1
During break	732	81.16	54.1	81.4	61.5	82.5	61.9	49.3	75.0	75.8	59.5	23.5	71.6
After school	24	-	3.2	-	4.6	-	2.8	-	-	1.7	0.5	1.9	5.2
How will you rate the importance of traditional games for children in your school? (% Important)		92.7	95.0	94.4	95.3	92.5	100.0	95.7	89.5	92.5	94.3	99.0	93.1

Appendix 14: Teachers' perspectives on school management support for play-based learning

	n	Accra				Volta				North			
		Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
Do you have a school management committee (SMC)?	1138	69.4	79.3	92.5	79.4	97.5	98.6	97.1	95.8	91.8	89.6	97.1	93.9
Does your SMC support learning through play?	637	38.0	56.0	48.0	40.7	42.5	59.1	81.1	47.8	34.1	63.0	79.4	48.8
How much does your SMC support play-based learning?													
Little	365	29.7	34.2	39.0	26.1	40.9	37.7	49.1	66.6	57.1	57.4	55.0	57.6
Much	177	8.1	26.3	19.5	17.3	31.8	28.8	45.7	3.7	22.2	24.1	23.6	23.5
Very much	40	5.4	7.8	2.4	4.3	4.5	4.4	-	11.1	-	9.2	7.6	3.5
How satisfied are you with your SMC's support for play?													
Dissatisfied	133	29.7	22.7	15.8	7.8	28.8	8.3	17.1	8.4	23.1	15.2	3.7	27.0
Satisfied	417	24.3	50.0	49.2	52.6	48.8	68.5	36.5	84.7	66.8	28.2	44.4	55.2

Appendix 15: Percent scores of headteachers' views on ways children learn (N=268)

	Guided Play (%)				Direct Instruction (%)				Games (%)				Free Play (%)			
	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect	Control	Direct	Galop	Indirect
Academic concepts																
Numbers	55.5	51.4	58.5	59.7	19.1	22.1	10.0	16.4	19.1	25.0	27.1	20.9	6.4	1.5	4.3	2.9
Shapes	57.1	44.1	51.4	50.8	19.0	17.7	12.8	11.9	7.9	27.9	21.4	29.8	15.8	10.2	14.2	7.4
Science concepts	60.3	55.8	60.0	56.7	23.8	26.4	17.1	16.4	6.3	13.2	12.8	19.4	9.5	4.4	10.0	7.4
Addition	57.1	38.2	45.7	38.8	25.4	23.5	8.5	20.9	14.2	33.8	38.5	40.3	3.1	4.4	7.1	--
Subtraction	58.7	36.7	48.5	43.2	19.0	25.0	11.4	20.9	17.4	33.8	35.7	34.3	4.7	4.4	4.2	1.4
Patterns and sequencing	58.7	45.5	47.1	49.2	19.0	17.6	14.2	16.4	11.1	35.2	21.4	31.3	11.1	1.4	17.1	2.9
Measurement	60.3	48.5	61.4	41.7	23.8	33.8	10.0	35.8	9.5	16.1	17.1	19.4	6.3	1.4	11.4	2.9
Communication skills																
Speaking	49.2	30.8	52.8	29.8	20.6	27.9	7.1	19.4	7.9	14.7	24.2	16.4	22.2	26.4	15.7	34.3
Reading	53.9	55.8	68.5	61.1	38.1	23.5	8.5	23.8	3.1	13.2	17.1	5.9	4.7	7.3	5.7	8.9
Writing	61.9	52.9	60.0	55.2	31.7	30.8	14.2	29.8	1.5	10.2	5.7	5.9	4.7	5.8	20.0	8.9
Listening	53.9	32.3	42.8	35.8	17.4	30.8	27.1	37.3	7.9	14.7	14.2	14.9	20.6	22.1	15.7	11.9
Socioemotional skills																
Self-control	41.2	38.2	41.4	44.7	23.8	16.1	11.4	22.3	14.2	20.5	32.9	16.4	20.6	25.0	14.3	16.4
Following directions	52.4	42.7	38.6	28.4	41.3	36.8	24.3	58.2	3.2	13.2	24.3	10.5	3.2	7.4	12.9	2.9
Building relationships	36.5	25.0	24.3	29.9	9.5	14.7	5.7	4.5	28.6	25.0	47.1	32.8	25.4	35.3	22.9	32.8
Solving problem	61.9	51.5	55.7	52.2	14.3	26.5	7.1	20.9	6.4	16.2	25.7	14.9	17.5	5.9	11.4	11.9
Independence	42.9	25.0	24.3	22.4	11.1	14.7	2.9	7.5	6.4	14.7	20.0	14.9	39.9	45.6	52.9	55.2
Getting along with friends	39.7	17.7	24.3	16.4	3.2	11.8	5.7	4.5	17.5	27.9	51.4	34.3	39.7	42.7	18.6	44.8

Express emotions	31.8	19.1	22.9	31.3	7.9	11.8	4.3	5.9	22.2	26.5	44.3	19.4	38.1	42.7	28.6	43.3
Taking turns	39.7	33.8	31.4	40.3	19.1	20.6	8.6	13.4	28.6	36.8	51.4	35.8	12.7	8.8	8.6	10.5
Resolving conflicts	58.7	42.7	41.4	47.8	14.3	14.7	12.9	16.4	9.5	23.5	28.6	20.9	17.5	19.1	17.1	14.9
Persistence	46.0	30.9	37.1	40.3	15.9	30.9	8.6	19.4	26.9	16.2	42.9	26.9	11.1	22.1	11.4	13.4

Appendix 16: Headteachers' views on sporting activities in schools

	n	Control	Direct	Galop	Indirect
		%	%	%	%
When do children in your school usually engage in sporting activities?					
During PE time	197	74.6	72.1	69.1	83.1
As part of lessons	35	6.4	19.1	20.6	6.2
After school	13	3.2	5.9	2.94	7.7
Interschool competition	9	6.4	--	5.9	1.5
On Fridays	4	4.8	--	1.5	--
During break	6	4.8	2.9	--	1.5
How will you rate the Importance of sporting activities for children?	259	100.0	94.1	100.0	98.5
How often do children in your school engage in sports?					
Always	53	23.81	17.65	23.53	15.38
Often	109	30.16	50.00	44.12	40.00
Sometimes	98	42.86	30.88	30.88	44.62
Rarely	4	3.17	1.47	1.47	--
How does sports help children in your school?					
Healthy development	225	79.37	77.94	92.96	83.58
Social skills	201	77.78	73.53	77.46	70.15
Have fun	160	49.21	55.88	78.87	52.24
Better thinking/reasoning abilities	153	71.43	50.00	45.07	62.69
Language and communication abilities	113	42.86	35.29	40.85	49.25
Physical attributes like coordination	109	41.27	55.88	25.35	40.30
Ability to solve problems	96	38.10	30.88	39.44	34.33
Express emotions/feelings	78	38.10	29.41	14.08	35.82
To do well at school	78	28.57	23.53	26.76	37.31
Improves school attendance	7	--	1.47	1.41	7.46

Appendix 17: Regression analysis of children's perceived class climate

	Teacher care	Autonomy		Interaction		
	My teacher manages to quickly involve me if I don't pay attention for a moment	My teacher listens to my suggestions and takes them seriously	My teacher encourages me to ask questions in class	My teacher allows us to discuss our work with each other in class	My teacher encourages us to help each other in class	My teacher encourages us to share ideas with each other in class
Treatment (Direct)	0.45 * (1.54)	0.37 ** (1.36)	0.47 ** (1.58)	0.43 ** (1.53)	0.39 ** (1.47)	0.40 ** (1.47)
Gender (Female)	-0.30 (0.74)	-0.14 (0.88)	-0.14 (0.86)	0.10 (1.09)	0.09 (1.09)	0.13 (1.12)
Grade (Class 3)	0.34 (1.41)	0.57 ** (1.77)	0.42 ** (1.50)	0.05 (1.02)	0.15 (1.16)	0.05 (1.05)
Region						
Volta	-1.12 ** (0.33)	-0.79 ** (0.49)	-0.74 ** (0.48)	-0.52 ** (0.58)	-0.40 * (0.66)	-0.60 ** (0.54)
North	-1.02 ** (0.36)	0.07 (1.04)	-0.07 (0.95)	0.02 (1.03)	-0.08 (0.92)	-0.23 (0.79)

Regression coefficients are reported. Odds ratio in bracket **p < .01 *p < .05

Appendix 18: Regression analysis on children's play preferences - How much you would like to do?

	Cognitive-stimulating activities					Physical activities					Other activities				
	Colour/ draw/Paint	Craft and art	Stories	Board games	Book Reading	Jumping games	Sports	Running Games	Climbing games	Sing/ dance	Materials	Songs	Acting out	Local games	Videos
Treatment (Direct)	0.03 (0.03)	0.0 (0.03)	0.0 (0.02)	-0.07* (0.03)	-0.03 (0.03)	0.09** (0.03)	0.12** (0.03)	0.10** (0.02)	0.06* (0.03)	0.16** (0.03)	-0.02 (0.03)	0.18** (0.03)	-0.04 (0.03)	0.08** (0.03)	0.09** (0.03)
Gender (Female)	-0.01 (0.02)	-.09** (0.03)	-0.01 (0.02)	-0.07* (0.03)	0.03 (0.02)	-0.05* (0.02)	-.57** (0.03)	-0.14** (0.02)	-0.25** (0.03)	0.09** (0.03)	-0.04 (0.03)	0.14** (0.03)	0.03 (0.03)	0.55** (0.03)	-0.04 (0.03)
Grade (Class 3)	-0.16** (0.02)	-.17** (0.03)	0.03 (0.02)	0.03 (0.03)	0.02 (0.02)	-0.1** (0.03)	-0.03 (0.03)	-0.08** (0.02)	-0.12** (0.03)	-.12** (0.03)	0.09** (0.03)	-0.06* (0.03)	-.09** (0.03)	- 0.08** (0.03)	-0.12** (0.03)

Region															
Volta	-0.01	0.15**	0.04	0.02	0.09*	0.04	0.07	0.09*	0.21**	-0.03	0.14**	-0.04	0.01	-0.03	0.07*
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
North	-0.16**	0.01	-	-0.24**	0.01	-0.015**	0.05	-0.13**	0.07	-0.31**	-0.04	-0.31**	-0.16**	-	-0.14**
	(0.03)	(0.04)	0.12**	(0.04)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	0.12**	(0.04)

Standard errors in bracket

** $p < .01$, * $p < .05$

Appendix 19: Regression analysis on children's play preferences - How often do you do these activities at school?

	Cognitive-stimulating activities					Physical activities					Other activities				
	Colour/ draw/Paint	Craft and art	Stories	Board games	Book Reading	Running Games	Sing/ dance	Jumping games	Sports	Climbing games	Materials	Songs	Acting out	Local games	Videos
Treatment (Direct)	.06**	.06*	.11**	.15**	.05*	.19**	.19**	.15**	.21**	.22**	.12**	.18**	-.02	.10**	.23**
	(.02)	(.03)	(.02)	(.03)	(.02)	(.02)	(.02)	(.02)	(.02)	(.03)	(.02)	(.02)	(.03)	(.03)	(.03)
Gender (Female)	0.0	-	.02	-.02	.02	-.13**	.06**	-.03	-.48**	-.18**	-.02	.10**	.03	.54**	0.0
	(.02)	(.03)	(.02)	(.03)	(.02)	(.02)	(.02)	(.02)	(.02)	(.03)	(.02)	(.02)	(.03)	(.03)	(.03)
Grade (Class 3)	-.07**	-.02	.04*	.14**	.06**	-.03	-.10**	-.08**	0.0	-.04	-.04	-.09**	.04	-.06*	.07**
	(.02)	(.03)	(.02)	(.03)	(.02)	(.02)	(.02)	(.02)	(.02)	(.03)	(.02)	(.02)	(.03)	(.03)	(.03)
Region															
Volta	-.04	.11**	-.01	-.06	.04	.02	-.07	-.05	.02	.05	.05	-.12**	.01	-.06	-.13**
	(.03)	(.04)	(.03)	(.04)	(.04)	(.04)	(.03)	(.04)	(.04)	(.04)	(.04)	(.03)	(.04)	(.04)	(.04)
North	-.15**	-.01	-.04	-.17**	-.05	-.07*	-.22**	-.08*	.08*	.01	-.09**	-.26**	-.14**	-.08*	-.12**
	(.03)	(.03)	(.03)	(.04)	(.03)	(.03)	(.03)	(.03)	(.03)	(.04)	(.03)	(.03)	(.03)	(.03)	(.04)

Standard errors in bracket

** $p < .01$, * $p < .05$

