

Workshop 2:

Early years Chess in Education

Research study:

Mvelaphanda pre-school MiniChess
program in an informal settlement
area in South-Africa

Background

- Enhancing learners from disadvantaged communities ability to perform successful in an academic environment is challenging. The purpose of this study was to determine if the implementation of a structured chess programme at early childhood level could address this in a successful matter.
- A Pilot study with pre-school learners were implemented in the informal settlement of Tembisa to establish if chess will increase the performance of early childhood learners.

Cognitive development theory

- Piaget and Vygotsky believe that young children are curious and actively involved in their own learning as well as in the discovery and development of new understandings. Chess can be considered an instrument to establish a foundation, irrespective of background, deficits or possible shortfalls.
- When children are exposed to a structured educational environments such as MiniChess program they can acquire high-level cognitive skills.
- Abilities that are put in place early are the relevant perceptual discriminations on which later academic skills rely. Utilizing sensitive periods in cognitive development is of critical importance.

ZPD as Dynamic Construct.

Zone of Proximal Development

Skills too difficult for a child to master on his/her own, but that can be done with guidance and encouragement from a knowledgeable person.

What
is
Known

What
is not
Known



Learning

Participants

The pre-school group was tested and 25 learners whose parents signed permission took part in the MiniChess programme. This group was compiled of 14 girls and 11 boys between the ages of 5 ½ and 6 ½ years old, about to attend school the following year. Some of the children attended school on an irregular bases and none attended the full programme. Unfortunately, at the time we did the post-test, many of the children had already left for the end of the year vacation and only 9 of the experimental participants was available for post-testing. The control group was made up of 6 participants at the same school.

Materials used

The Aptitude Test for School Beginners was used. It is a group, sifting test used to determine some basic skills that is needed to perform and learn in a structured school environment.

An indication is given of the child's potential for basic academic achievement. It also gives an indication of where the child is not achieving and that can lead to potential causes for backlogs. It is a structured group test with norms and standardisations.

The battery includes the following:

1. Perception

- The test consist of pictures of objects familiar to the testees, such as animals, plant etc.
- The purpose of this test is to determine the beginners visual perception. Stress is laid on analytical observation and the ability to distinguish between similarities and differences in the picture. This ability is essential for reading and writing proficiency.

2. Spatial development

- The testee must indicate which picture or figure selected from four given pictures resembles the example picture if it is rotated clockwise or anti-clockwise.
- Three-dimensional figures are excluded and the rotation takes place through a maximum plane of 180° . This measures the pupil's ability to rotate a given figure mentally in a specific manner. Spatial orientation and the ability to visualize are essential primary abilities for general success at school.

3. Reasoning

- This item consists of four pictures and the pupil must endeavor to establish a connection between the pictures and find a rule from which to draw an inference.
- The pictures consist of familiar objects, of which one does not fit in with the rest. Logical thinking and the ability to classify are measured. Comprehension and logical thinking are important aspects of the learning process and should predict success at school.

4. Numerical understanding

- This test provides an indication of the testee's ability to count and his/her grasp of quantities, proportions and numbers.
- Verbal comprehension, logical thinking and concentration also plays a part. All these abilities are important for satisfactory progress at school, particularly as far as Mathematics are concerned.

5. Gestalt

- This refers to physical structures, to physiological and psychological functions or to symbolize units.
- Mental processes that are involved include: the ability to reproduce simple figures correctly. For this, perception of 'gestalt' is important.

The position of horizontal , vertical, oblique and curved lines between dots must be observed and reproduced. This is important for reading and writing.

- Attentiveness, concentration and the absence of figure background confusion are also essential for success in this test.
- The ability to distinguish between letters of similar form, e.g. b and d, and to recognize the sequence of letters in words and of words in sentences, is to a certain extent dependent on the accurate perception of spatial position and relationship.

6. Co-ordination

- The aim of this test is to evaluate fine motor skill. It provides an indication of the pupil's maturity and skill in using pencil and paper, abilities which are essential for writing.

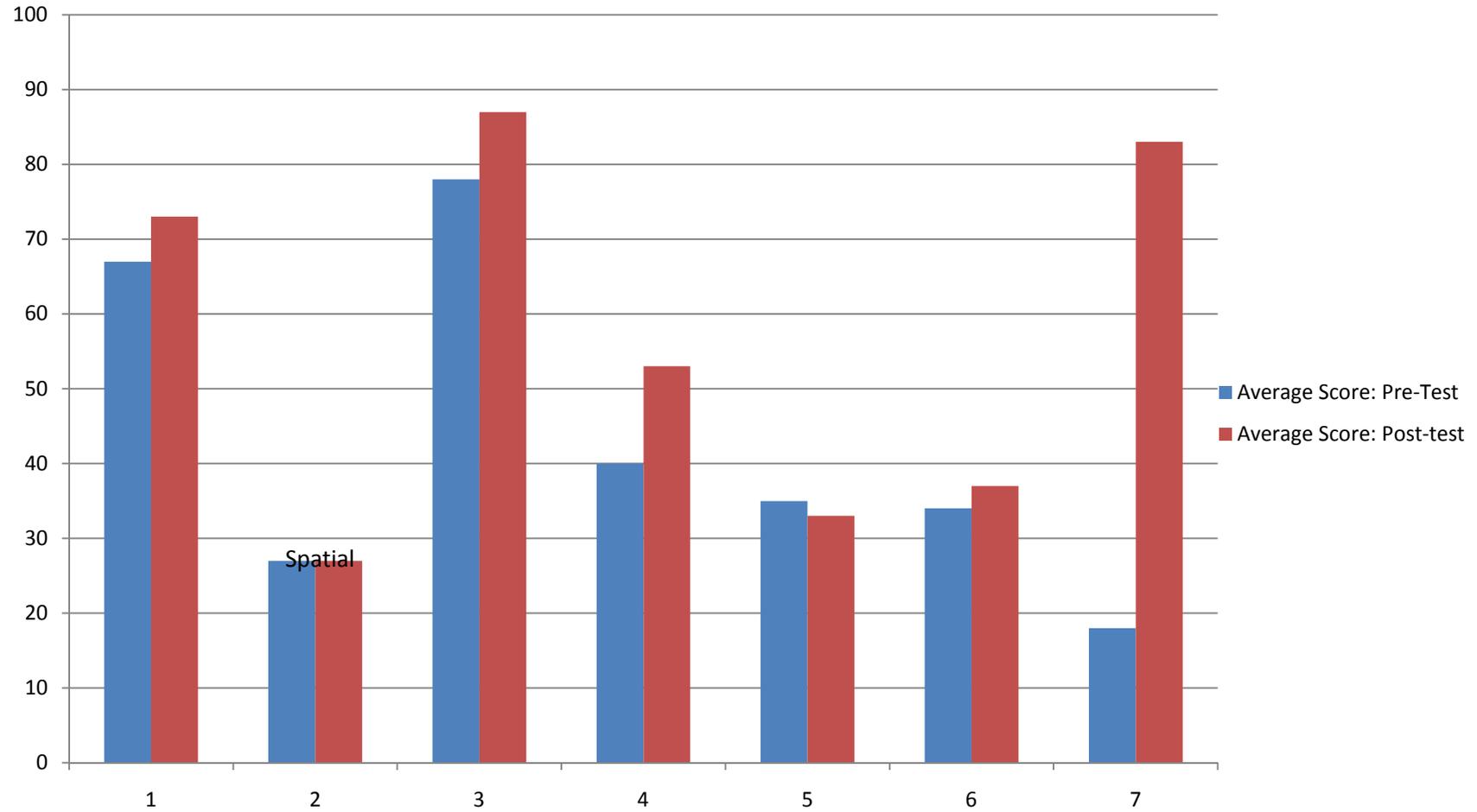
7. Memory

- One of the pictures has appeared in the previous tests. The familiar picture must be recognized. The testee is not told beforehand to remember the pictures.
- The non-intentional visual memory of the pupil is tested. For progress in the initial stages of school, a pupil has to rely to a considerable extent on his visual memory.

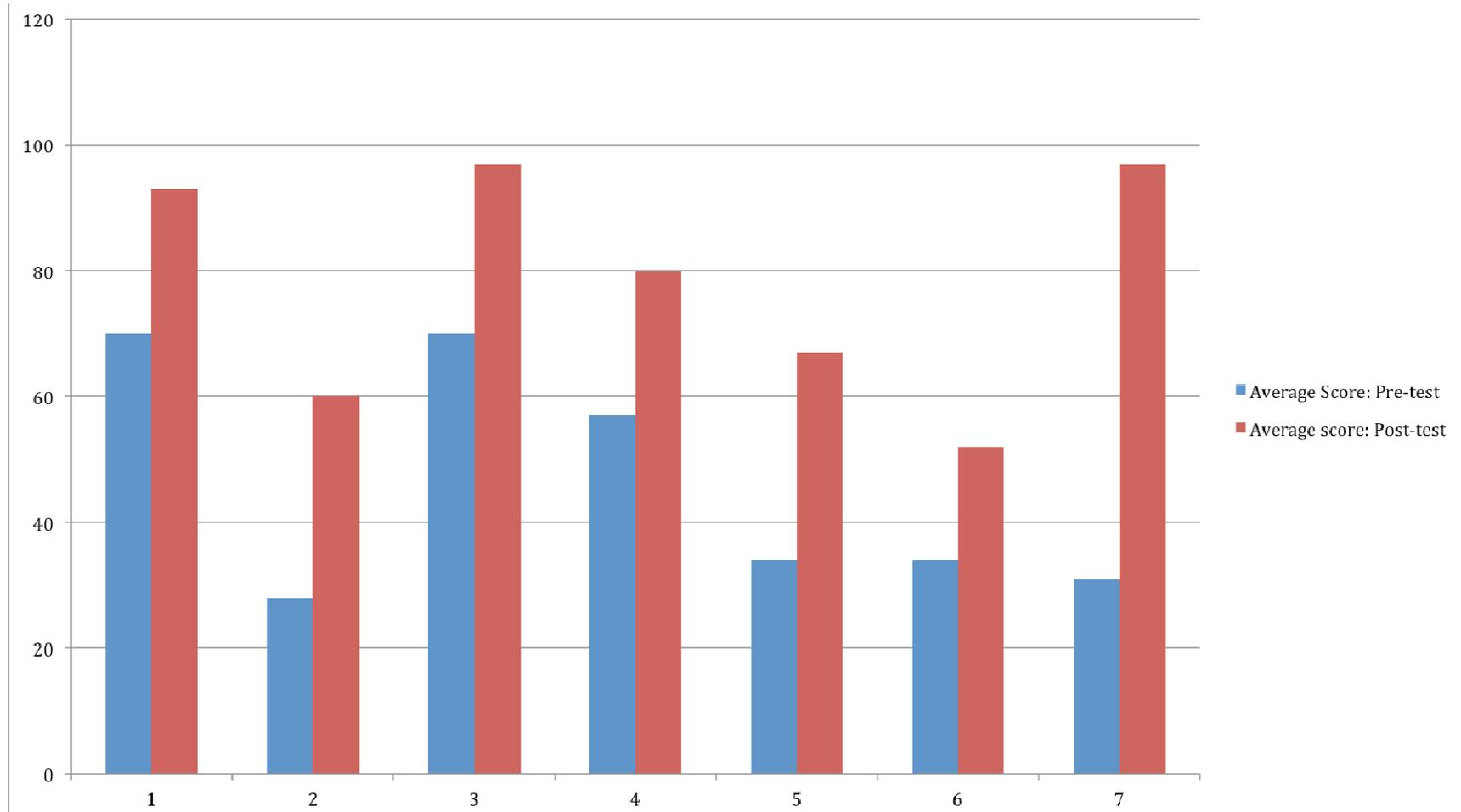
Conclusion

- A Non-Parametric t-test, the Wilcoxon Signed Rank Test was used for data analysis and is a test used specifically for small test groups. A cut off difference of 0,05 is used as indication for significant difference in performance.
- Statistic analysis did show that there were significant differences between the pre-test and post-test performances of learners in the Experimental Group. All participants in the Experimental Group had a better post-score than pre-score on all 7 dimensions.
- This means that the learners in the Control Group that did not take part in the programme, showed no significant increase in ability over this period of time, despite the fact that they did attend pre-school. Results on the ASB showed that these learners were not equipped to go to school the following year.

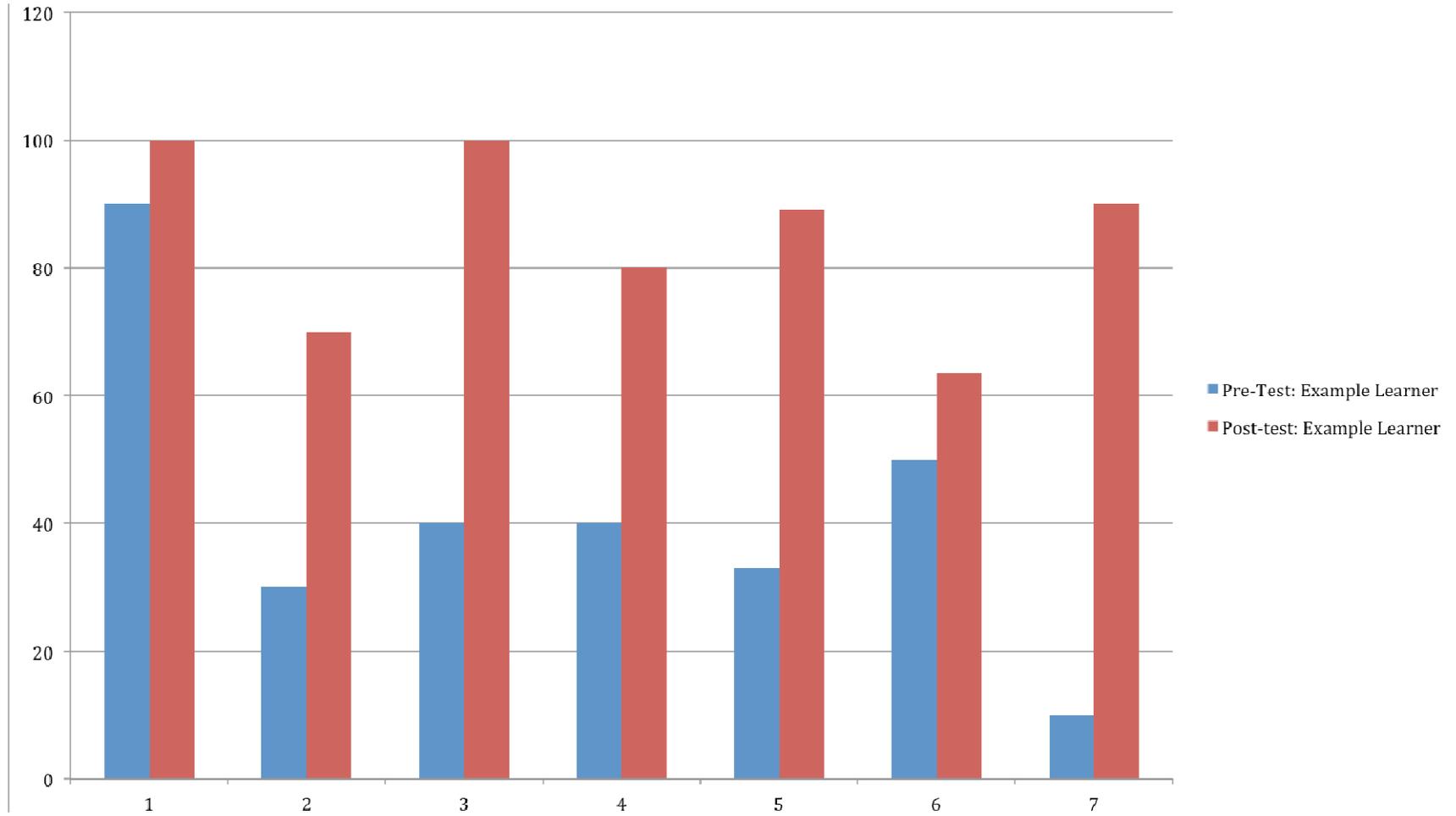
Results – Control group



Results – Experimental group



Sample Learner



Follow up

Ongoing intervention did not take place with any learners that took part in the initial pilot study. Recent enquiries regarding these learners brought the following to our attention:

- 14 Learners still attend a school in the informal settlement area.
- 2 Of the non participant learners have failed a grade in the meantime.
- Of the remaining 12, learners that did take part in the program, achieved an average 10% increased mark in mathematics alone.
- One of these learners in the experimental group had a very low pre-test score and his post-test score showed significant improvement, indicating him to be a borderline case at the time . This child still passed up to now and would possibly have failed did he not take part in the MiniChess program.

Conclusion

- The MiniChess program did enable learners to achieve better academically within the first three years of formal schooling.
- Sustained support is needed though for children to ensure better achievement and performance in future. If a program such as the MiniChess program could be implemented in the school curriculum during the foundation phase (ages 4-9), increased academic performance would be expected.

Current ongoing studies

- Extensive ongoing studies that was based on this initial pilot study are currently under way in South Africa:
- One such study is undertaken by the University of Johannesburg (UJ) involving around three thousand children over a 3 year period.
- North West University (NWU) - Vaal Campus - are also running a research program in 16 schools in the area (schools in low and high social economical areas), focusing on learner as well as teacher development.