The relation between school readiness and school performance in Grade 1 and Grade 7

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Abstract
The aim of this study was to determine the influence of school readiness on school performance in Grade 1 and Grade 7 with specific reference to Home Language and Numeracy. The empirical study was conducted by means of quantitative research, specifically a longitudinal panel study. Through a purposive method of sampling, one school in the Free State Province was selected and the Aptitude Test for School Beginners (ASB) was administered to Grade 1 learners. A highly significant correlation between school readiness scores and Grade 1 performance was found and the conclusion was drawn that school readiness does, in fact, influence school performance in a highly significant way. Furthermore, a highly significant correlation between school performance in Grade 1 and Grade 7 was found, as well as between Home Language and Numeracy, indicating that school readiness has an indirect influence on Grade 7 performance. The recommendation is thus made that all learners should be tested for school readiness in Grade R.

Keywords: school readiness, school performance, Home Language, Numeracy, the Aptitude Test for School Beginners.

Introduction
Research indicated that school readiness influences the learners’ adaption and performance when they enter formal education. This might be the case for the Foundation Phase, but as learners grow older, there are more aspects that influence school performance than merely school readiness. Middle-of-the-road school performance is quite common for learners in the Intermediate Phase. Some learners seem as if they never can thrive in the primary school situation. These learners never render excellent performance and it seems as if they cannot reach their full potential.

This gives rise to another issue, namely whether school performance stays the same from Grade 1 to Grade 7. A deeper probing of this issue lead to the question as to whether or not learners can overcome their learning difficulties over time, and on the other hand, whether it is possible for learners to always excel in their school performance, or whether performance can decrease during the primary school years.

Developmental psychologists are of the opinion that past and present behaviour are good predictors of future behaviour – thus it could be derived that good or average performance would stay the same throughout the primary school years. However, in this regard, Louw and Louw (2007:11) claim that human behaviour is too complex and too unique to be represented by such a rigid formula.

The aim of the research
The aim of this research was to focus on the influence of school readiness on school performance in Grade 1 and Grade 7. For this purpose, the course of the learners’ performance in Grade 1 and Grade 7 (Home Language and Numeracy) was to be determined.

The following research questions were posed and investigated by means of an enquiry into the literature, as well as an empirical investigation:
• Is there a relation between learners’ initial school readiness and school performance (for Home Language and Numeracy) in Grade 1 and Grade 7?
• Is there a relation between school performance (for Home Language and Numeracy) in Grade 1 and Grade 7?
According to these questions, the following research aims were set:

- To explore the relation between initial school readiness and the learners’ school performance (for Home Language and Numeracy) in Grade 1 and Grade 7.
- To explore the relation between the learners’ school performance (for Home Language and Numeracy) in Grade 1 and Grade 7.

**School readiness**

School readiness indicates that the learner must be ready in totality for the formal education situation. Therefore it refers to a definite stage of development that includes aspects such as physical, cognitive, emotional, social and normative development (De Witt & Booyse, 2007:156-157). It is important to realise that school readiness cannot be reached without school maturity. Learners must further develop the skills necessary for understanding and organising information, and must have acquired perceptual and conceptual skills such as visual and auditory discrimination, as well as memory and problem-solving skills. These skills will prepare the child to be able to function within the formal school situation (De Witt & Booyse, 2007:157).

**School performance**

School performance refers to the progress that learners make in all aspects of their school career. This concept is especially associated with long-term improvement of broader life outcomes, such as increased adult employment and a higher standard of living conditions. School performance is typically influenced by cognitive skills and socio-emotional behaviour; the same type of skills that influence the learners’ school readiness (Cunha, Heckman, Lochner & Masterov, 2006). Landsberg, Kruger and Nel (2005:100-103) concur that emotional and social intelligence include life skills such as resilience, self-confidence and self-regulation. In this sense, self-regulation refers to significant competencies, for example paying attention, following instructions and inhibiting inappropriate actions (Price, 2002:305-320). These skills are the critical elements of school performance.

However, negative school performance does not imply that learners do not have the potential to perform better. These learners might not be fulfilling their potential, with the result that they become frustrated. This situation further degrades their emotional and social development. Latent potential must always be unfolded in order to enable learners to perform according to their abilities and to become fully-fledged adults (Perez-Johnson & Maynard, 2007:587-616).

An additional risk of negative school performance is that these learners are, at times, associated with antisocial behaviour such as misconduct, criminal activities and incarceration (Petriwskyi, Thorpe & Tayler 2005:55-69; Yu, Chan, Cheng, Sung & Hau, 2006:331-341).

**Factors that influence school performance**

Factors that can become barriers to school performance include low socio-economic status, the lack of a resource-rich environment, low quality education, stressful households, uninvolved parents, unsupportive peers and negative factors within the individual self (Feinstein & Bynner, 2004:1329-1339; Landsberg et al., 2005). From these, the most important factors that influence school performance can be categorised as the individual self, and the home, school and community environments. These environments will directly influence the learner’s overall development and performance, which will be discussed below.

The individual self

Development will always be the cornerstone of school readiness and school performance (Cunha, 2006; De Witt & Booyse, 2007:80-90; La Paro & Pianta, 2000). Without explicit levels of development, learners will not be able to perform at school. All domains of development are crucial and none of them can be excluded (Duncan, Claessens, Huston, Pagan, Engel, Sexton, Dowsett, Magnuson, Klebanov, Feinstein, Brooks-Gunn & Duckworth, 2007:1428-1446).
Learners who have developed self-regulating skills can control their behaviour as well as their attention; learners who can pay attention and inhibit impulsive behaviour can properly relate to others; and if they can relate to adults and peers, they will be in the position of benefiting from the classroom learning opportunities. Learners with high levels of self-regulation and attention had better achievement score for literacy and numeracy (Duncan et al., 2007:1428-1446). Thus, the act of paying attention directly influences school performance (Chang & Burns, 2005:247-263; Wright, Diener & Kay, 2000:99-117).

Learners who enter school without these self-regulating academic skills have a significantly greater risk for experiencing difficulties such as peer rejection and poor academic achievement (McClelland, Cameron, Connor, Farris, Jewkes & Morrison, 2007:947-959).

Home
The learner’s total environment is divided into the sub-environments of family, school, peers and community (Hung & Marjoribanks, 2005:3-13; Schulting, Malone & Dodge, 2005:860-871). Although all the sub-environments are important, the family and the family’s social status continue to have an unmediated association with the learner’s school performance with regard to cognitive functioning, language development, and social and emotional functioning (Hung & Marjoribanks, 2005:3-13; NICHD, 2003:581-593; Schulting et al., 2005:860-871). The significance of the family can be refined to the parents’ interaction with the learner –parent-learner-interaction is a more powerful predictor of the learner’s school performance than the family background, such as socio-economic status (Hung & Marjoribanks, 2005:3-13).

School
The influence of the school and the quality of the education that the learners receive are of the utmost importance for successful school performance. According to Louw and Louw (2007:227), the classroom atmosphere, the school climate and structure, as well as its educational policy, have an effect on the learning and performance of each learner. They further argue that the presence of a warm and friendly teacher is not sufficient; efficient classroom management and teaching skills are essential. Other factors, such as parental involvement and the educational policy, can influence the learners in both a direct and indirect way (Louw & Louw, 2007:227). Peer relations also form an integral part of the learner’s life and can indeed influence school performance (Duncan et al., 2007; La Paro & Pianta, 2000:443-484). When learners enter the late middle childhood phase (from 6-12/13 years), friends become increasingly important in their lives. Louw and Louw (2007:227) are of the opinion that interaction with peers influences learners’ moral development and can thus especially influence learners’ motivation and attitude towards their school work and school performance.

Community
Learners from an economically disadvantaged background are much more likely to experience difficulties such as academic problems, emotional disturbances and behavioural problems. Although family poverty exerts the strongest influence on the learner, neighbourhood poverty also has an independent effect on learner development (McWayne, Fantuzzo & McDermott, 2004:633-645).

The relation between school readiness and school performance
It has been indicated above that school readiness refers to specific levels of language, cognitive, physical-motor, affective-social development as well as the cultural, situational and literacy readiness of the school beginner. School readiness is the stage when the child can adapt easily, effectively and without emotional disturbances within the formal teaching programme (De Witt & Booyse, 2007:156-157).

School performance refers to the improvement learners make in every aspect of their school career. Successful school performance refers to cognitive, physical, emotional, social adjustment and self-regulating skills like distractibility, adaptability, paying attention, following instruction and inhibiting inappropriate actions (Wright, Dien& Kay, 2000:99-117). All these skills are critical elements for school performance. Learners that enter school without these skills, especially without self-regulating academic skills, have a significantly greater risk for
difficulties like peer rejection and poor academic achievement (McClelland et al., 2007:947-959). In contrast, learners with high levels of self-regulation achieve significantly higher levels of literacy and numeracy. This also explains the strong association between attention giving behaviour and school performance (Chang & Burns, 2005, 247-263; Wright et al., 2000: 99-117).

In conclusion it may be said that a learner’s school performance can be hindered by a lack of school readiness, but school performance requires much more than just academic skills (Wright et al., 2000: 99-117). Emotional and social intelligence (Landsberg et al., 2005: 100-103), resilience and self-confidence are all vital ingredients of school performance.

The course of primary school performance
Development during the middle childhood phase, according to Louw and Louw (2007:11), is crucial for generally successful school performance. Therefore, events in learners’ lives during this period can substantially influence their maturation towards adulthood. Feinstein and Bynner (2004:1329-1339) purported that:

... much is going on in the child’s life across the middle years of childhood that can enhance or impede progression, even reversing achievements or failures established during the early years.

Learners’ cognitive development and abilities may change substantially during middle childhood, either in a positive or negative way. For example, if a learner had perceptual problems or indicated slow development during the preschool years, these can be overcome and school performance can increase during the primary school years (Feinstein & Bynner, 2004:1329-1339). However, learners’ school performance can undergo negative changes during these years as well (Feinstein & Bynner 2004). Speece, Ritchey, Silverman, Schatscheider, Walker and Andrusik (2010) mentioned that some learners confront reading problems for the first time during the late middle childhood phase. Furthermore, 41% of learners with reading difficulties have late-emerging reading disability (Speece, Ritchey, Silverman, Schatscheider, Walker & Andrusik, 2010:258-276). It is sometimes the case that learners present with learning problems only when they enter the intermediate phase in Grade 4 – the time when learners begin to use reading as a learning tool.

Thus, the influence of school readiness seems to be very significant during the Foundation Phase. As the learner becomes older, a broader spectrum of factors will influence school performance, but school readiness will always be part of the basic foundation that was laid for school performance, whether it was positive or negative. Consequently, the situation as a whole will have a marked influence on the learner’s outcomes in adult life (Feinstein & Bynner, 2004:1329-1339).

Research methodology
The empirical study was conducted by means of quantitative research, specifically a longitudinal panel study (Neuman, 2006:37-40). By means of the purposive method of sampling, one school in the Free State Province was selected (De Vos, Strydom, Fouché & Delport, 2005:202). The Aptitude Test for School Beginners (ASB) was administered to the Grade 1 learners in this school. The learners’ academic records for Home Language and Numeracy for the Grade 1 July examinations, as well as the Grade 7 September examinations, were used in this research. Initially, the study group comprised 157 learners in Grade 1, and ended with 69 learners in Grade 7. All the learners received tuition in their mother tongue and all the learners were tested. All of them had attended pre-primary school the year before they entered primary school. They were all from average to above-average socio-economic backgrounds.

The ASB was selected because it tests the school readiness of learners six to eight weeks after they had entered Grade 1. This instrument can assist in predicting scholastic achievement by means of the test scores. The subtests measure the following abilities in detail: perception, spatial relations, reasoning, numerical abilities, gestalt, coordination, memory and verbal comprehension. The norms of the test have been determined specifically for this period (Olivier & Swart, 1974:2). The test is standardised for learners who share the same characteristics and background, as in the case of the study group for this research.
The statistical reliability and validity of this test have also been confirmed (Olivier & Swart, 1974:44-46). The reliability of a test refers to the consistency with which it measures what it purports to measure, and is expressed as a coefficient which can assume any value between 0 and 1. The higher the reliability of a test, the smaller the difference between the testee’s scores in repeated administrations of the test and the more useful such test results will be (Maree, 2008:215-216). The validity coefficient of the tests is satisfactory in general (Olivier & Swart, 1974). This article describes the study that was undertaken in order to establish the predictive validity of the ASB with regard to academic performance in Grade 1. The validity coefficient of the ASB can, in comparison with those of similar tests, be regarded as satisfactory (Olivier & Swart, 1974).

The ASB was administered within the class situation. The tester and three assistants were present. All the instructions of the test were strictly adhered to.

Ethics
Research ethics are a set of principles or guidelines that assist the researcher with regard to the way in which the public should be presented, and in terms of how to assure the participants of absolute confidentiality and to gain their trust (Dyer, 2006:285-286). In this regard, the researcher obtained permission from the Department of Education, the principle of the relevant school as well as all the parents of the learners to conduct the research. Participants were informed of the purpose of the research and all information about the participants was treated with confidentiality. The researcher and testers also remained detached from the research participants, so that they could draw unbiased conclusions. All other ethical principles were also adhered to.

Shortcomings and further research
A shortcoming of this research is that it cannot be generalised to all children in South Africa, as the sample consisted of learners from only one school. Further research with a bigger sample group would yield more valuable information. Qualitative research regarding reasons why specific learners’ performance changed from Grade 1 to Grade 7 can also provide insight into this issue.

Discussion of the results
To process the raw data, Pearson’s correlation and a t-test were applied to the data. (Please note that the abbreviation ST is used for “subtest” in the following tables.)

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Correlation between ASB and school performance in Grade 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ASB</td>
</tr>
<tr>
<td>Grade 1</td>
<td></td>
</tr>
<tr>
<td>HL</td>
<td></td>
</tr>
<tr>
<td>Pearson</td>
<td>0,34</td>
</tr>
<tr>
<td>correlation</td>
<td>(r)</td>
</tr>
<tr>
<td>Sig. (p)</td>
<td>0,00**</td>
</tr>
<tr>
<td>Grade 1</td>
<td></td>
</tr>
<tr>
<td>Num.</td>
<td></td>
</tr>
<tr>
<td>Pearson</td>
<td>0,31</td>
</tr>
<tr>
<td>correlation</td>
<td>(r)</td>
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<tr>
<td>Sig. (p)</td>
<td>0,00**</td>
</tr>
</tbody>
</table>

N=137  *≤0,05=significant   **P≤0,01=highly significant

From Table 1, the following deductions can be made:
All of the subtests of the ASB show a highly significant correlation with the learners’ performance for Home Language in Grade 1. All of the subtests, except subtest 5 (gestalt) and subtest 6 (co-ordination), show a highly significant correlation with the learners’ performance for Numeracy in Grade 1. Subtest 6 correlates significantly
with the learners’ school performance in Numeracy. This may be due to the fact that co-ordination skills are essential for writing skills and are evaluated as part of Home Language, but that they are not necessarily critical with regard to numerical skills. Subtest 5 does not show a significant correlation with the numerical school performance of the learners. This may be due to the fact that reading and writing skills (gestalt) do not necessarily correlate with numerical skills and performance.

From Table 1, it can be deduced that if the learners did not perform well in the ASB, school performance in Grade 1 will most probably be influenced negatively. The reverse will also be true: if the learners rendered good performance in the ASB, they will most probably render good school performance in Grade 1.

The only difference between Home Language and Numeracy is subtest 5 and subtest 6. This leads to the conclusion that Numeracy is based on the same skills and building blocks as Home Language, and that performance in Home Language and Numeracy influences each other. At this stage, the verbal skills of the learner forms the basis of school performance in general.

Table 2  Correlation between ASB and school performance in Grade 7

<table>
<thead>
<tr>
<th></th>
<th>ST 1</th>
<th>ST 2</th>
<th>ST 3</th>
<th>ST 4</th>
<th>ST 5</th>
<th>ST 6</th>
<th>ST 7</th>
<th>ST 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 7 HL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson correlation (r)</td>
<td>.234</td>
<td>.062</td>
<td>-.011</td>
<td>.198</td>
<td>-.043</td>
<td>.201</td>
<td>.104</td>
<td>.143</td>
</tr>
<tr>
<td>Sig. (p)</td>
<td>.052</td>
<td>.615</td>
<td>.927</td>
<td>.102</td>
<td>.726</td>
<td>.098</td>
<td>.396</td>
<td>.242</td>
</tr>
<tr>
<td><strong>Grade 7 Num.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson correlation (r)</td>
<td>.215</td>
<td>.181</td>
<td>-.018</td>
<td>.315</td>
<td>-.151</td>
<td>.115</td>
<td>.249</td>
<td>.091</td>
</tr>
<tr>
<td>Sig. (p)</td>
<td>.076</td>
<td>.138</td>
<td>.881</td>
<td>.008**</td>
<td>.215</td>
<td>.347</td>
<td>.039*</td>
<td>.458</td>
</tr>
</tbody>
</table>

N=69*  
*P<0,05=significant  **P<0,01=highly significant

Only subtest 4 (numerical skills) shows a highly significant correlation with Grade 7 Mathematics, and only subtest 7 (memory) correlates significantly with Grade 7 Mathematics. These correlations might be based on the aptitude of the learners. No other correlation exists between school readiness and school performance in Grade 7.

Table 3  Differences (t-test) in school performance between Grade 1 and Grade 7

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pair 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HL Grade 1 &amp; HL Grade 7</td>
<td>69</td>
<td>.719</td>
<td>.000**</td>
</tr>
<tr>
<td><strong>Pair 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Num. Grade 1 &amp; Num. Grade 7</td>
<td>69</td>
<td>.816</td>
<td>.000**</td>
</tr>
</tbody>
</table>

N=69  *P<0,05=significant  **P<0,01=highly significant

It is evident from Table 3 that there is a highly significant correlation between school performance in Grade 1 and Grade 7. This significant correlation exists for Home Language in Grade 1 and Grade 7 and Numeracy in Grade 1 and Grade 7.
Table 4  Correlation between school performance in Grade 1 and Grade 7

<table>
<thead>
<tr>
<th></th>
<th>Grade 7 HL</th>
<th>Grade 7 Num.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1 HL</td>
<td>Pearson correlation (r)</td>
<td>.719</td>
</tr>
<tr>
<td></td>
<td>Sig. (p)</td>
<td>.000**</td>
</tr>
<tr>
<td>Grade 1 Num.</td>
<td>Pearson correlation (r)</td>
<td>.609</td>
</tr>
<tr>
<td></td>
<td>Sig. (p)</td>
<td>.000**</td>
</tr>
</tbody>
</table>

N=69  *≤0,05=significant  **P≤0,01=highly significant

From Table 4, it is clear that there is a highly significant correlation between school performance in Grade 1 and Grade 7. This significant correlation exists for both areas, namely Home Language in Grade 1 and Grade 7, and Numeracy in Grade 1 and Grade 7. In fact, this highly significant correlation also exists between Home Language and Numeracy. Thus, if the learners’ performance in Home Language in Grade 1 were good, they also rendered good performance in Numeracy in Grade 7 and vice versa.

This means that learners’ school performance did not change significantly from Grade 1 to Grade 7. Thus, those learners who performed well in Grade 1 also performed well in Grade 7.

Conclusion
Because of the highly significant correlation between school readiness scores (according to the ASB) and Grade 1 performance, the conclusion can be drawn that school readiness does influence school performance in a highly significant way. This indicates that school readiness forms an important basis for school performance. Therefore, pre-primary education and Grade R should be regarded as critical.

Furthermore, there is a highly significant correlation between school performance in Grade 1 and Grade 7. This highly significant correlation exists for Home Language and Numeracy, but also between Home Language and Numeracy. From this it is evident that Numeracy is influenced by verbal skills up to Grade 7.

The highly significant influence of school readiness on performance in Grade 1 and the highly significant influence of Grade 1 performance on Grade 7 performance are indicative of the fact that school readiness has an indirect influence on Grade 7 performance. Hence, emphasis should be placed on the Foundation Phase (Grade R) and prior Grade R, as this forms the base for all further learning and school performance. It is thus clear that both school readiness skills and more advanced cognitive skills are needed at different intervals in the learner’s life.

Recommendations
It is of the utmost importance that all learners in South Africa attend a well resourced Grade R program. It would even be better if learners attend a pre-primary class before Grade R.

The medium of instruction in the Grade R class should match the learner’s home language. If learners attend a class where the medium of instruction is a second language, they should already be able to speak that language before entering Grade R, otherwise language becomes a barrier to learning.

It is recommended that all learners should be tested for school readiness in Grade R. School readiness testing as a tool to identify problem areas can benefit the learner. If problems are identified early, there is still time to work on the problem area to further the learner’s individual school readiness and to further his or her school performance.

Learners who experience learning problems in Grade 1 should be aided by means of remediation to improve their school performance from Grade 1 onwards. Learning problems that are identified early can still be rectified to better performance up to Grade 7.
References


