



# SECTION 1

## SINGAPORE PRESCHOOL LANDSCAPE



# Are you concerned about your child's literacy development?

Problems in learning to read and/or spell could be signs of specific learning challenges such as dyslexia. This applies when a child's overall progress seems at odds with his/her general ability level.

## If your child has difficulty in these areas:

- Letter formation
- Letter sequencing
- Reading
- Spelling
- Learning of sight words
- Handwriting
- Following multi-step directions or routines

Our Preschool Early Literacy Intervention team will address your concerns about your child's literacy development and share with you help that is available.

**For preschool children only.**



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# Screening and Intervention for Young Children: An Introduction and Case Study

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It is never too early to seek further advice on assessment and interventions for your child, if you are concerned. In the case study below we show that problems, if left unsupported, develop further over time, but even short term targeted support linked to screening can not only be successful but also persist over time.

In the early years in school, and even before children start school they learn huge amounts of information. Parents should seek help if they notice that their child seems to be having difficulties. These may include speech, behaviour, concentration, clumsiness, eye contact, and listening. Parents can find a range of check-lists that will show them whether or not their child's behaviour is age appropriate. This is possible even for young babies.

We all know that there are individual differences in the speed of development, and that some children will focus on their motor skills, while others develop their language. However, if your child is missing their targets, it is important that this is followed up and they receive a check for sensory processing, amongst others.

If your child attends preschool you should receive detailed comments on their development and how this fits within the developmental stages. Even preschool and nursery now have criteria for successful development. They will alert you if they notice problems for your child.

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Once your child reaches school, there are a number of key periods that should be monitored. Transitions, from preschool to school, infant to junior, primary to secondary and beyond, are all times when your child will be under additional stress in trying to get to grips with the demands of a new environment. It is particularly important that you liaise with the school at these stages to let them know if there are any problems. If there is a family history of dyslexia, schools should be informed, so that your child can be carefully monitored.

In order to ensure your child is ready for school, you need to check that they can follow simple instructions, dress themselves, sort out their toilet needs, and take part in all the activities that are expected of them. In order for a child to learn successfully, their spoken language, listening skills, memory, attention and all their executive functions need to be developed to the appropriate level. If they are not yet ready to learn, then they will experience problems in early schooling.

Some children with dyslexia will seem to learn well in the infant school and their problems become apparent in the juniors or at secondary level. It is important to seek help as soon as you are aware that there are difficulties.

## **BACKGROUND**

Why is it so important that we identify children who are likely to struggle with learning to read? Children with Dyslexia will fail to progress in the early stages of learning, although they may seem to have the ability to achieve in line with their peers. This seems to be because they need to be taught very explicitly in order to pick-up and remember what they have been taught. Research evidence from the USA has shown that children who do not receive the support they need in the early years may need 67.5 hours of one-to-one support in order to catch up with their year group in junior school. This is an enormous amount of support and will inevitably be very expensive to deliver.

In order to identify children who need support in the early years the concept of screening and intervention must be introduced. Screening is a process that identifies children at risk of dyslexia, at a stage before they could formally be diagnosed. This is a method which can empower teachers to identify problems in the children they work with.

There are a number of screening tools, including DEST-2, DST-J from Fawcett and Nicolson, CoPs from Singleton, and the Dyslexia Profiler from Smythe. The first two tests were designed as pencil and paper tests to be administered individually. Screening tests by Singleton can be delivered as a group test by computer, and have been used by the DAS to screen children of concerned

parents in group sessions. The Dyslexia Profiler is still under development for younger children and again is delivered by computer, and has recently been evaluated as a possible tool to be used by DAS.

There are also a number of tests that tap narrower aspects of dyslexia including tests for phonological difficulties; these include Phonological abilities test (PAT) from Muter, Snowling and Hulme, and Phonological assessment battery from Fredrickson, Frith and Reason. These are available from [www.dyslexiaactionshop.co.uk](http://www.dyslexiaactionshop.co.uk).

## **SCREENING**

What is screening? Screening is generally a quick and low cost test suitable for widespread use, which is administered by trained, but not specialist, personnel. Where a full diagnosis of dyslexia involves an educational psychologist, takes three to four hours, and generates a full report, a screening test should take no more than 30 minutes per person, and should generate a short report. Screening may be given to everyone, or to a subset identified by the teacher as having difficulties.

## **CHECK LISTS**

This is a simple yes/ no check list of problems that have been associated with dyslexia and other learning difficulties. Usually there will be a cut off for the number of issues identified that generate further action, including those identified in the studies below. A key indicator is the presence of dyslexia in the family, given that there is a 50% chance of being dyslexic if your parent is dyslexic, although a number of protective factors such as good spoken vocabulary can prevent the expression of the difficulties. This approach is under further development for use by the DAS in Singapore.

## **EARLY SCREENING**

Some excellent theoretical studies have been undertaken (e.g. Muter et al., 2004) investigating precursors of literacy in longitudinal studies, identifying in 6 and 7 year olds which skills at 4 and 5 are the best predictors of later success. These skills change over time, with rhyming and articulation in preschool children the best predictor of later phonological skills (Carroll et al., 2014). The crucial aspect of early screening is that it moves away from the 'wait to fail' approach that formerly characterised diagnosis in dyslexia, and tries to identify problems

early on and provide appropriate intervention. This leads to an ethical dilemma. The most successful screening tests are those that accurately predict which children will have difficulties. From an experimental viewpoint, it would be ideal if schools were not made aware of any potential difficulties, so that none of the children identified as 'at risk' were supported in school. The best predictive validity would be found if results were sealed away, and experimenters waited for the children to fail as predicted. However, if a child is identified as being at risk at five years, from an applied perspective it is unethical not to provide the support needed to help the child to learn to read normally.

Although screening tests should be objective, reliable and valid, they also need to be quick, suitable for non-specialists, and provide a quantitative 'at risk' score. Two key aspects for any screening test are the 'hit' rate (the percentage of 'really at risk' individuals who are screened as 'at risk') and the 'false positive' rate (the percentage of 'really not at risk' individuals who are screened as 'at risk'). An ideal screening test would have 100% hit rate and 0% false positive rate, but a more realistic target would be more like 85% hits and only 20% false positives, there is a trade-off between hits and false positives, so that it is easy to increase the proportion of hits by relaxing the 'at risk' cutoff, but this will increase the proportion of false positives.

Interestingly, it is much easier to predict those who have strengths in literacy rather than those who are at risk. It is particularly important that tests used for screening are set at the right level for the age group, and normed on a representative population, with no more than around 20% coming out at-risk.

There are a number of advantages for computer based screening, which places fewer demands on teachers and teaching assistants than paper based tests. On the other hand, many teachers prefer to administer tests themselves because they gain so much information from how the test is completed, which itself forms part of the profile. Moreover, there is potential for error in work on computers, because participants may not understand the demands of the task, and the computer cannot identify this, whereas a teacher can.

Another approach to screening is to monitor performance on specific theoretical aspects of literacy that have been associated with dyslexia, and these include tests of phonological processing. Interesting recent work on computerised screening for visual stress in children diagnosed with dyslexia (Singleton and Henderson, 2007) shows that around 40% of dyslexic children had some evidence of problems with visual stress based on significant differences in speed of identification for 3 letter words presented against a stressful black and white striped background. The visually stressed dyslexic children showed an improvement in reading speed with a coloured overlay and reported more

symptoms. However, it should be noted that the evidence for visual stress in this group was not very strong, nor was there significantly greater incidence of stress in the dyslexic children than the reading age controls. This suggests that visual stress may not be specifically linked to dyslexia, but that it is an added difficulty for those who have both dyslexia and visual stress.

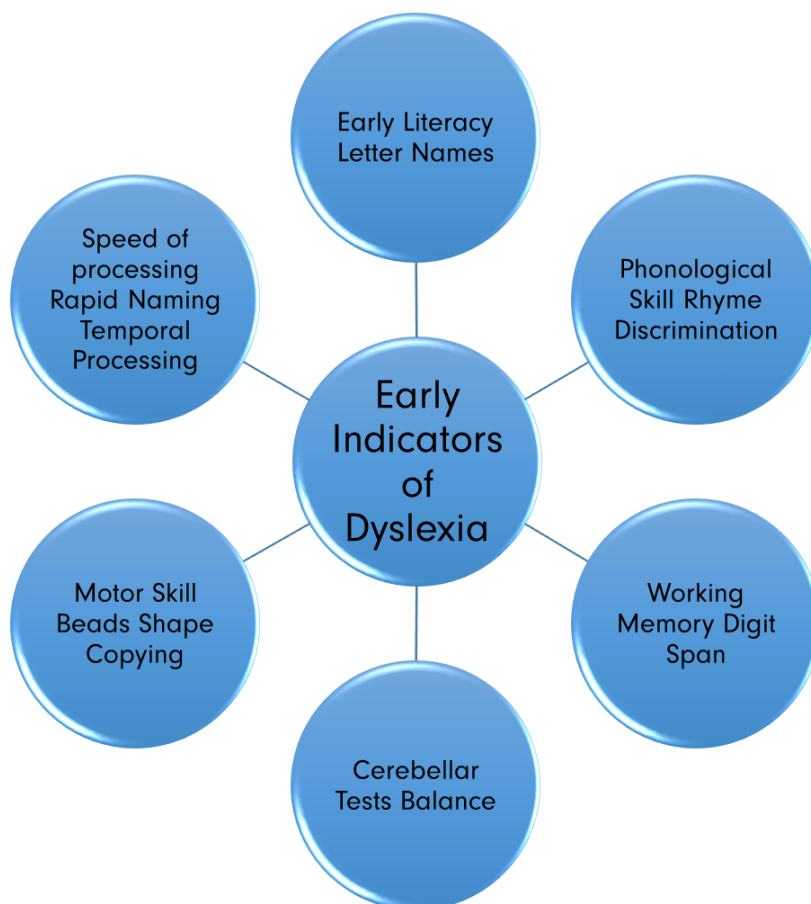
Screening young children empowers teachers to identify problems before they become entrenched, and enables them to use a profile of strengths and weaknesses to inform the development of an individual education plan. Furthermore, given the intended use of screening tests as the first stage in the support process, the most useful screening tests are designed to quantify strengths as well as weaknesses.

The DEST-2 is the broadest conceptually of the tests outlined above. It is a 30-minute nationally normed test intended for teachers to screen children from 4.5 to 6.5 years, and comprises a basket of sub-tests selected to give positive indicators of likely reading failure. The DEST leads to an 'at risk' index, together with a profile of strengths and weaknesses indicative of the appropriate types of support. Naturally the emphasis in designing the DEST was on the inclusion of tests on which there is a consensus in the research community. The intention was that the tests adopted would cover a sufficiently wide range of skills to give *positive* indicators of difficulty, and the tests selected were based on those with the greatest severity and highest incidence in the general population of children with dyslexia (Nicolson and Fawcett 1994). Tests of phonological skill were augmented with tests of clumsiness, on the basis of research (Fawcett, Nicolson and Dean 1996). The choice of tests was also tuned to the requirements of the UK Code of Practice, (§3.60-3.63). A key requirement is that *"... there is clear, recorded evidence of clumsiness, significant difficulties of sequencing or visual perception; deficiencies in working memory; or significant delays in language functioning"* (§3:61iii). – the statutory requirements for the initial stages in statementing.

The DEST was designed to screen for learning difficulties of all types, including language delay and general intellectual impairment, as well as specific learning difficulties, in particular dyslexia. Over 100 schools nationwide took part in the norm collection, feedback was given to all the schools involved, and with tests expressly designed for teacher interpretation, it is clear from the profiles which children have problems, and in which areas needed support. When a subset of 100 children were retested at age 8 a hit rate of 18/20 (90%) was obtained, with a false positive rate of 8/77 (12%). This means that the DEST identified the majority of children who later had difficulties, and by adding a category of 'mild risk' all the children with problems were identified.

## ABOUT THE SCREENING TOOL

The Dyslexia Early Screening Test (Nicolson and Fawcett, 2004) uses early indicators of dyslexia, see the figure below, to identify children between the ages of 4.5 and 6.5 who may be at risk of failure. This enables preschool staff to identify pupils who may have difficulties with early literacy and/or motor difficulties. In the first instance a checklist can be administered to identify any teacher concerns.



*Summary: The danger if screening tests are too narrow is that they identify only reading problems, not the more complex difficulties associated with dyslexia. There is considerable misunderstanding about screening tests, which are not meant to replace diagnosis but designed to aid the teacher in identifying problems and providing support, in line with best practice. The DEST is now the best-selling screening test for dyslexia in young children, it has been used successfully by the DAS, and the DEST-2 is now under development for use in Malaysia by NECIC.*



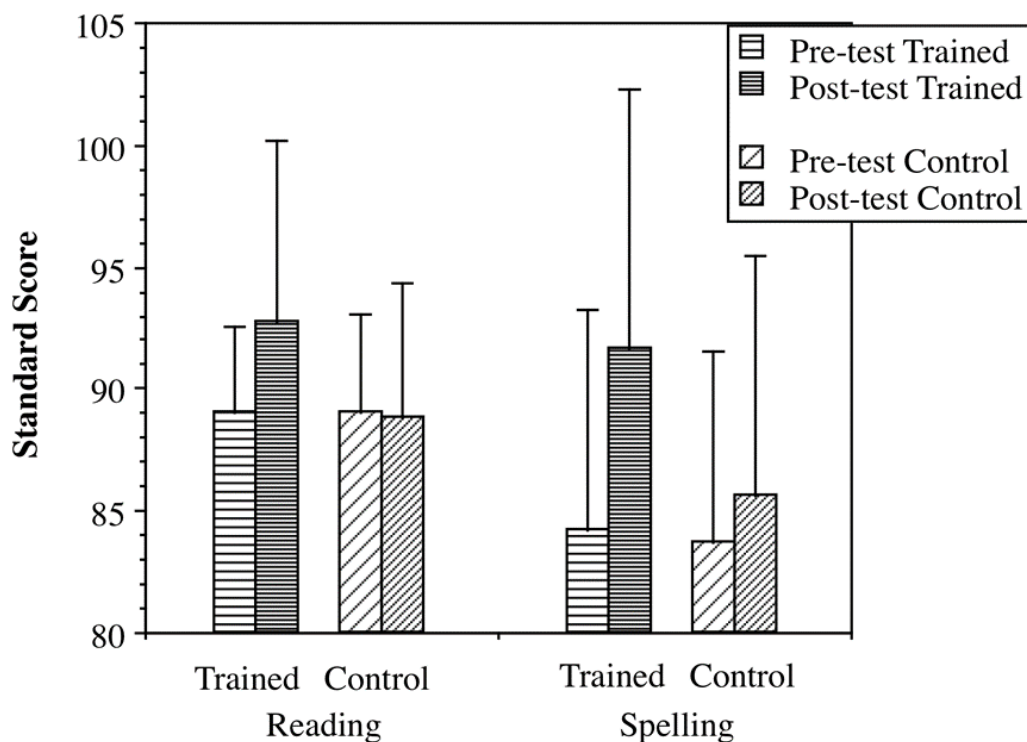
Although the screening tests are designed to take only 30 minutes to deliver, they need to be administered individually and could be demanding in terms of limited teacher time. However, the teachers themselves have noted how much they have gained from administering the tests themselves, because of the deeper understanding it can provide about children with Dyslexia. Overall, the teachers were agreed that it was useful to administer the test themselves, in order to see gaps in the children's knowledge, even in children who were not at risk overall, which were not easily identified in the course of their teaching. Schools had noticed how much difficulty the children experienced with rhyme, which they had not previously recognised. Schools can identify unexpected difficulties in children they had not previously suspected would struggle. This may be because many children with Dyslexia have good vocabulary, appear to be bright, and work out strategies to hide the fact that they are struggling.

## **LINKING SCREENING TO INTERVENTION**

There are a number of different approaches that can be used to screening and intervention, and here we shall first consider some research conducted in the UK, which shows the effect of short-term intervention, just 10 weeks. In earlier research Angela Fawcett and her colleagues (e.g. Nicolson et al., 1999, Fawcett et al., 2000) showed that children aged between five and seven can make significant progress following a 10 week small group intervention, with support given three times a week for 20 minutes. The type of support was based on Reason and Boote (1994) and emphasises meaning, phonics and fluency.

These six year-old children showed mild problems in reading and spelling and after the 10 weeks, their performance had improved so they now fell into the average range. By contrast, children who did not receive explicit intervention, just the standard school support, fell back slightly in reading. The bar chart here is based on standard scores, which take into account the age of the child as well as the level of accuracy they can achieve, in reading or spelling single words.

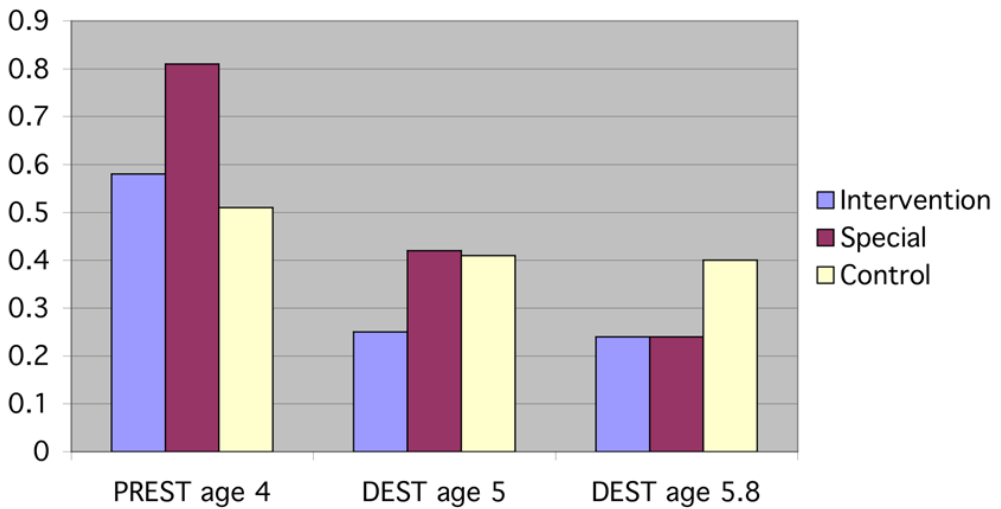
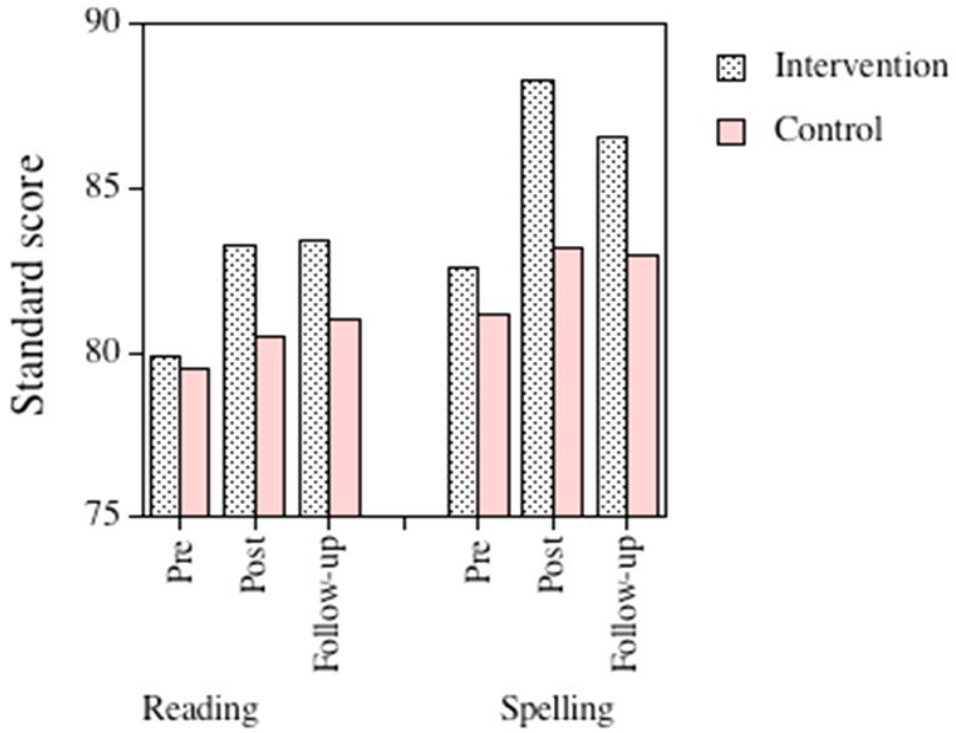
One of the difficulties with any type of intervention is that sometimes something called 'fade out' occurs. It may be that the extra interest shown in the child as well as the support provided, means that they improve. When support is withdrawn, they may simply fall aback to a lower score. So in our next study, with slightly older children aged seven, we also included a six month follow-up to check this didn't happen. Sure enough, the children who had received support maintained their progress, although they had only had a few weeks intervention. Looking at the figure, you can see that the intervention and control group had very similar scores at pre-test, when we started the intervention, but after the



intervention (post-test) and at follow-up, the intervention group had made significantly more progress than the controls who had just ordinary classroom teaching.

This effective and cost-effective approach has also been used with even younger children, aged 4, using a combination of language, motor skill and pre-literacy games, and these effects have been shown to persist in longitudinal studies. In the figure below, the risk levels for the children are shown at age 4, and using the DEST at ages 5 and 5.8. The special group were those already identified at age 4 as having difficulties, including some with a family history of dyslexia, hearing impairment, attention problems, and mild autism. The special group also received intervention. It is interesting to see that this special group continued to have similar problems to the controls at age 5, although they had made tremendous improvements since their test at age 4. But by age 5.8, with further support at school, even the special group had caught up with the intervention group. It may be seen that children who had received intervention, again in small groups for about an hour a week for 10 weeks made striking improvements. So 85% of the intervention group were at risk at pre-test, and none were at risk in the later DEST tests (Fawcett, Lee and Nicolson, 2014). Where children are identified as falling behind their peers, the Dyslexia Early

## Effects of intervention on reading and spelling



Screening Test (DEST-2) assesses the 6 key areas identified above. A test of receptive vocabulary was added for the 2nd edition, where the child must identify which word is represented in sets of 4 pictures, giving a rough measure of verbal ability/IQ. An analysis of the data provides the school with a report outlining the number of children likely to need support. From the assessment, appropriate interventions are suggested to scaffold and build areas of difficulties, whilst utilising areas of strength to build confidence and self esteem. The 'Hands on Literacy' pack provides schools with interventions for support staff to deliver, and was developed by Debbie Avington in conjunction with the Bridgend team, based on earlier research from Fawcett, Lee and Nicolson.

The Welsh assembly government recommended an early screening and intervention approach in their 2009 report. This approach has now been rolled out with 50 schools in South West Wales, including Bridgend and Pembrokeshire, working with children aged 5, and will also be used with children in Welsh cluster schools. The approach was first evaluated with experimental and control schools, and performance compared at pre and post-test. Criteria adopted for inclusion in the evaluation were an at risk score of 0.6 or more, indicating mild risk, with an at risk score of 0.9 or more indicating strong risk. Intervention was provided 2-3 times per week for 20 minutes for a 12-week period. Following the intervention, 75% of the intervention group were no longer at risk, reducing the risk factor by twice the amount of normal teaching, and there were significant improvements in identifying the first letter, a key skill in early phonological development.

One of the key issues here is how well it works for children with the greatest difficulties. It is relatively easy to help children with very mild problems, but often more severe problems are slow to respond to support. Here children with the greatest difficulties at pre-test made the most striking progress and only one child failed to progress. The feedback from teachers in schools taking part in the project was particularly pleasing overall, and the intervention is now in use in over 50 schools in South Wales.

The intervention was developed in consultation with the teachers who were to deliver it, following an introduction to the principles of structured multisensory teaching through games and activities that were based on five areas of development, phonological awareness, visual, spatial and auditory memory and sequencing. It also draws upon fine and gross motor skill development as documented in the publication 'Do and Discover - Fun activities to develop physical skills in the early years', which was prepared by Bridgend in collaboration with Sharon Drew. The approach here was linked to the Early years Foundation phase in Wales, which concentrates in pre-literacy skills

delaying the introduction of reading until age 7. However, the more structured approach outlined in the section above is likely to be more useful to slightly older children.



In the picture above, the children are playing a naming game with a puppet, identifying the object by their first letters.

Staff asked for modelling of activities so that they could feel confident that they were giving children the best possible chance to develop appropriate skills. Recommendations for particular resources were requested and a detailed

synopsis of ideas for developing multisensory boxes/ storage and display areas for the project. Progress was evaluated following the intervention in comparison with children who had not participated in the intervention in the control school. Following feedback from project teachers it was felt that it would be better to limit some of the activities introduced in the early stages of the programme so that there was more 'practice time' and that new activities should be introduced on a fortnightly basis to allow for assimilation and transference of skills.

Staff felt it was difficult to leave out any activities, however, as they were all popular with the children and appeared to have a positive effect. The intervention was extended to twelve weeks and more activities were added, honing the intervention programme to meet the continuing needs of the identified children in the pilot schools.

In the picture below, the children are practicing rhyming, a key skill in early learning and a predictor of success in reading. In order to make it more fun, the child must chose the two objects which rhyme, and then use the tongs to put the fish in the dish



In feedback interviews teachers felt they had gained knowledge and awareness

of signs of Dyslexia. The experience had highlighted the importance of early intervention and they were now more confident in recognising and addressing the development of early literacy and movement skills. They appreciated the influence and support of specialist staff who contributed to the programme throughout the project.

The intervention therefore fulfilled its aims in enabling input from specialist staff that will contribute to the capacity, sustainability of knowledge and practice in participating schools.

All the children involved in the project enjoyed the multisensory activities and made progress but watching the children develop confidence and enthusiasm gave the greatest reward. The teachers thought that the project was interesting, informative and relevant and that the intervention programme could be transferred into good whole class practice. Evidence from teachers' and children's questionnaires, assessment results and overall statistical calculations point to an endorsement of the intervention programme in successfully facilitating accelerated development of early skills within the Foundation Phase classroom environment.

In terms of the intervention itself, therefore, universal satisfaction was expressed with the system developed, from the teachers, the children who had enjoyed taking part, and parents who were impressed with the outcomes. A number of schools had opted to use aspects of the screening, particularly the motor skills, and rhyming and phonology, as a whole school approach, even adopting some of the approaches in nursery so that future participants should have a good grounding in areas which had proved challenging to the current participants.

A short check-list has also been developed so that teachers can pinpoint those children they wish to screen with a view to providing intervention. The teachers were particularly impressed by some of the motor skill tasks, which they would not necessarily have included within their teaching.

In conclusion a short term targeted small group intervention proved effective and cost-effective in supporting children with difficulties in reception classes in South Wales. Records will be maintained on the children's progress up to the age of 10, so that we can see whether there are any long-term effects of the intervention, or whether as seems likely, further support will be needed over time.



## CONCLUSIONS

Early screening and intervention can successfully impact on the development of the child in terms of readiness to learn, phonological skills and self-esteem. Research has shown that leaving children to fail can be particularly destructive in terms of self-concepts and progress, with children falling consistently further and further behind their peers over time. We now have the opportunity and potential to provide support for young preschool children in Singapore, working through Kah Lai and other therapists at DAS to ensure that skills develop before the onset of formal schooling at age 7.

In the remainder of this book, we shall draw together a series of articles and chapters drawn from the Asia Pacific Journal of Developmental Differences and the DAS Handbook 2014, in conjunction with new materials, all of which highlight and emphasise the importance of early intervention.

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