



Learning Gains through Play

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Introduction

This research is exploring learning through the use of play in Grades R and 1 in 10 schools in the provinces of KwaZulu-Natal and Western Cape in South Africa, using innovative technologies. While there is a deliberate emphasis on the relationship between motor development and cognition, the research has targeted five distinct literacies, namely visual literacy, oral communication in English, numeracy as well as gross and fine motor coordination. An additional focus in the visual literacy spectrum is the interpretation of emotions. At the heart of the study is how the development of these literacies is enhanced through play. Thus far, teachers have been excited and surprised to discover that digital games have been able to assist them to achieve the outcomes listed in the South African national curriculum.

Background to the study

Over a 3 year period, a benefactor of educational and social innovations, the D G Murray Trust, funded SchoolNet South Africa to provide professional development to teachers on the effective use of the Xbox Kinect and a bank of Intel tablets. Intel 7" android tablets, pre-loaded with carefully-selected appropriate apps, are being integrated in learning activities to stimulate and enhance visual literacy skills. These include visual recognition, discrimination and interpretation such as sequencing, and visual memory, fine-motor skills including 'new' skills such as pinching, dragging, stretching and pinpointing to improve traditional skills such as drawing and handwriting and early number sense and numeracy skills using specific target apps.

Xbox Kinect game consoles use data-projectors and TV screens to engage learning through play and provide further opportunities to develop, practice and consolidate these important 21st Century skills along with gross-motor skills of locomotor and non-locomotor movement and object-control skills. As the apps and games use the medium of English, there is the added benefit that learners acquire oral English skills, so vital for the transition from Foundation Phase to Intermediate Phase. The attitude of the motivation to learn, the enjoyment of learning and the confidence in learning are sought through the focus of the project on the use of play.



While teachers use apps and games to identify teachable moments and stealth learning opportunities that target specific literacies, they are recording and rating the effectiveness of each app and game. This collaboration will result in an anthology that will be of value to all Foundation Phase educators who are integrating or wish to integrate technology in their teaching and learning.



“ ... if the rudiments of reading, writing and calculating are not firmly entrenched by the end of Grade 3, then both learning opportunities and the larger life chances of young citizens will be curtailed.”^[1]

Our focus is on Oral English Acquisition. As English is the language medium for almost all of the apps and games, one of the components of the research is to measure any acquisition of English oral language that develops as a result of interacting with apps and games.

Research has shown that oral language skills have a profound impact on children’s preparedness for Foundation Phase and on their success throughout their academic career ^[2]. Any gap in their academic ability tends to persist or grow throughout their school experience.^[3] In South Africa “learners who speak English as a second-language clearly perform worse on average than their first-language English counterparts”.^[4] Literacy learning expert, James Paul Gee, proposes that settings which focus on acquisition rather than learning should be stressed if the goal is to help non-mainstream children (low-income, minority children) attain mastery of literacies. In other words, mastery is by subconscious acquisition rather than conscious learning.^[5] Learners interact with Xbox Kinect games and tablet apps in the medium of English which enables English language acquisition particularly English oral communication skills.

Teachers have reported that learners who may have lacked confidence to speak in class, even in their mother tongue, can be found shouting out in English while the class is engaged in Xbox Kinect games.

Language is a contentious issue in South African schools. In only one of the project schools is English the language of learning and teaching (LoLT). That school has not been included in the oral English testing even though none of the learners use English as their first language. Seven of the ten project schools use mother tongue for instruction through Foundation Phase and then switch to English LoLT in Grade 4. We anticipated that the acquisition of English through the use of the tablet apps and Xbox games would make this language transition easier.

Results of learner performance testing has just been completed for the second year of the project. It is important to understand the language protocols in both the project and the control schools in order to comment on the acquisition of English language results. In kwaZulu-Natal, oral English skills were assessed in three project schools and one control school. In all four of these schools, the LoLT in Foundation Phase is isiZulu and in Grade 4 there is a switch to English as the LoLT. This is exactly the same situation in the three Western Cape project schools where oral English skills were assessed except that the Foundation Phase LoLT is isiXhosa rather than isiZulu. The control school in the Western Cape is different in that it is a dual-medium school (English and Afrikaans) which means that learners at the W-Cape control school are exposed to English outside of the classroom because the majority of learners at the school are English-speaking. Many Afrikaans-speaking learners indicated in their interviews that they spoke both Afrikaans and English at home. This is evident in our 2014 and 2015 results as their achievement in Oral English Skills was much higher than those in all of the other schools tested, particular their speaking skills. For this reason, our project school results are compared to both the full control group (KZN and WC) and also the KZN control group who share the same school language protocol. It is interesting to note that that even though the language of the Xbox and the language used in the apps is English, the learners and teachers often still use their mother tongue, isiXhosa, Afrikaans or isiZulu while playing.

An Oral English scripted interview test was conducted one-on-one with each learner. All verbal responses and nonverbal actions were recorded on task scripts and scored according to rubrics. Results from this first evaluation in the second year of the project have informed on listening and speaking skills. The listening and speaking instrument was constructed to align closely with the national curriculum.

We adopted an additional measure (Oral Languages Stages 1-5) to provide identification of the Oral Language Stage. These stages are: 1. The Silent stage: Learners express no verbal expression but may respond by nodding, pointing, gesturing or performing an act; 2. The Early Production Stage: Learners can speak in one- or two-word phrases. Can demonstrate comprehension by short answers to simple yes/no, either/or or who/what/where questions. They nod and shake heads and may say “I don’t know”; 3. The Speech Emergence Stage; Learners begin to use dialogue and can ask and answer simple questions. Learners use basic and repetitive patterns of speech. They may produce longer sentences but often with grammatical errors that interfere with communication; 4. The

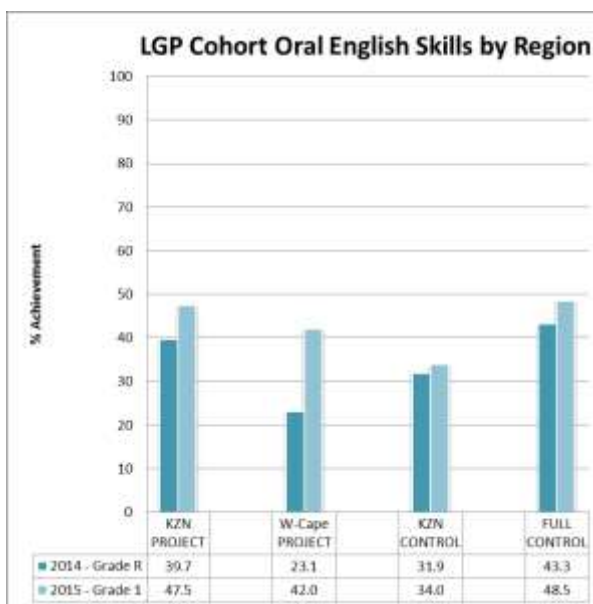


Intermediate Language Proficiency Stage: Learners start to make complex statements, state opinions, ask for clarification, share thoughts and voluntarily speak at greater length and 5. The Advanced Language Proficiency Stage – Advanced Language Fluency: Learners are now equipped to participate fully in grade-level classroom activities. They may need occasional support but they use grammar and vocabulary comparable to a native speaker. [6]

Results highlight the difference between listening and speaking skills and reinforces the similarities between the isiZulu and isiXhosa schools and their difference with the Afrikaans school. If we follow our cohort, all schools showed improved oral English skills from Grade R to Grade 1 which was expected. However the overall English oral skills measured in the project schools improved by 11.5% compared to an improvement of only 5.2% in the control schools. It is interesting to compare the KZN control school which only improved by 2.1%.

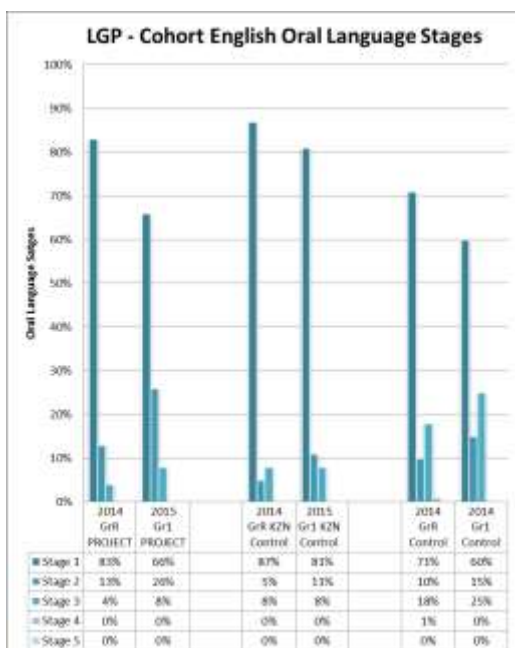
Baseline testing was conducted in Grade R and Grade 1 in the ten project schools and two control schools in the Western Cape and KwaZulu-Natal provinces, over the period of June to September 2014. Results were collected, processed and analysed. Follow up testing was conducted in the same schools in June to September 2015. Results were collected, processed, analysed and compared to the previous year. Current Grade R learners are compared with previous Grade R learners. Current Grade 1 learners are compared with previous Grade 1 learners. Most interestingly, previous Grade R learners can be tracked through Grade 1 to assess progress of the same cohort of learners. Due to the adoption of an additional measure (Oral Languages Stages 1-5*) after 2014 baseline testing, the rubric for task 3 was adapted to provide identification of the Oral Language Stage. All 2014 interview scripts were reassessed along with the 2015 interview scripts and these results were captured and used in the analysis.

Considering the two regions, while learners in KZN achieved better results, there was a greater increase in results among the W-Cape learners in the project schools. The improvement in the W-Cape project schools was 18.9% compared with the small improvements in the control schools of 2.1% to 5.2%.



Improvements in the cohorts of project learners at two of the KZN schools are similar to those in the control schools (2.1 – 5.2%) but the improvements achieved by KZN school 1 (19.6%), and WC school 2 (17.4%) and WC school 3 (19.5%) are substantial in comparison.

Interestingly it appears as if the schools with the lowest baseline results have shown the greatest improvements. Weaker-performing learners have 'caught up' to the other groups over this past year.



Considering the oral language stages, the project cohort shows more than twice the improvement than the control cohort shows. The number of children rising up to a new oral language stage in the project schools has more than doubled. There is clear evidence of measurable progress in the acquisition of oral English skills in the Learning Gains through Play project. This confirms the anecdotal evidence from teachers at the schools that the learners are improving in English simply by engaging with English-medium tablet apps and Xbox games.



The Learning Gains through Play project in 2016 offers the opportunity of enabling more learners to reach the Stage 3 Speech Emergence Stage before they switch to learning all of their school subjects in English. This should better prepare them to cope with the challenges of the Intermediate Phase of schooling.

During the third and final year of the study the focus will include case study methodology. There will be an attempt to measure the depth of professional development as well as the extent of exposure to the technologies given to learners by specific teachers and what effect this dosage has on learning gains.

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