

Teaching with technologies – the journey

Background

The purpose of this learning brief was to outline the factors that have encouraged teachers in the project to adopt and integrate ICT into their teaching and learning processes. The focus of the Learning Gains through Play project has always been on teacher empowerment. Teachers have participated in an intense professional development programme supporting the embedding of technology use in classroom teaching and learning, the development and practice of new and innovative teaching strategies with technology and integrating the technology within lesson planning to meet the CAPS curriculum requirements. Included in the programme is hands-on, as well as virtual, follow-up support and monitoring of teachers' implementation of the skills and knowledge acquired during the project. First, we describe the extent of teacher familiarity with technology at the start of the project; then we explore the factors that contributed or detracted from teacher uptake of technology and to conclude we summarise the factors that have affected the rate of uptake of technology use by teachers.

Introduction



The Learning Gains through Play (LGP) project focuses on the development and practice of foundational literacies in Grades R and 1 through the innovative use of technology-enabled, learner-centred play in the classroom. Intel tablets loaded with carefully selected apps and games are integrated into learning activities to stimulate and enhance fine-motor skills and to develop and practice visual literacy and numeracy skills. Xbox Kinect game consoles use data

projectors and television screens to engage learning through play, develop gross-motor and fine-motor skills and provide opportunities to reinforce visual and number literacies. 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 these apps and games. The project includes ten project schools, five in the Western Cape and five in KwaZulu-Natal. Data is also collected from a control school in each province. These control schools have not been provided with any Learning Gains Project inputs, and their results are compared with the project schools to establish learning gains achieved by the intervention. In 2014, baseline assessments were conducted with learners in Grade R and Grade 1 at each school. These learners were tested again in 2015 and will be tested again in 2016 to complete their cohort data. Results of 2015 were compared with baseline results of 2014 and the difference in these was compared for project and control schools to determine the value added by the project to the improvement in each of the foundational literacies. Interim results are very exciting with significant improvements in Oral English Skills and Visual Literacy Skills particularly in the higher order visual interpretation skills specifically targeted by selected tablet apps. The full extent of learning gains achieved through this exciting project will emerge as the research is completed late in 2016.

Existing levels of teacher technology knowledge

During the baseline data collection in July 2014, teachers were surveyed for their exposure to technology. Few teachers had heard of tablets let alone touched one. 74% of KwaZulu-Natal teachers and 96% of Western Cape teachers had a computer at home or work. However, only 17% of KZN teachers and 20% of WC teachers had used computers daily, either at home or work. Although more Western Cape teachers had access to computers than Kwa-Zulu Natal teachers, the KZN teachers had more access to the Internet from home than WC teachers. Of the 96% of WC teachers who had access to a computer, 80% had a computer at home, and while 74% of KZN teachers had access to a computer, only 39% had a computer at home. Bearing in mind that 70% of KZN teachers and 20% of W Cape teachers said they had never used a computer at work it was not surprising that teachers self-assessed their computer skills as being 'very basic.' While 9% of KwaZulu-Natal teachers had a tablet at home, only 4% of them used it regularly. Of the 28% of Western Cape teachers who had a tablet at home, 20% said they used it daily. When surveyed about their views on whether using technology in the classroom would make them better teachers, a small percentage of teachers in the Western Cape did not see what value technology could add. However, overall, teachers believed that technology could improve learner understanding and would lead to increased enjoyment of teaching and learning.

How were teachers encouraged to use technology?

Attitude plays a significant role

The positive attitude of teachers, as well as that of principals, towards the adoption and integration of technology, is significant for successful integration and sustainability. It was clear that teachers would be resistant if they perceived activities using technology as extra work or not fulfilling the outcomes of the Curriculum Assessment Policy Statements (CAPS). Additionally, if teachers worked in environments where principals did not understand or encourage technology use, it would be unlikely that they would integrate technology into their teaching. It was imperative that School Management Teams underwent a Change Leadership course which prepared them to understand the pedagogical possibilities, to manage technology in their school environments and to develop improved leadership and supportive management practices. There were three schools that experienced a change of principal during the project. Where the original principals were very supportive of the project, teachers may have had to contend with a sudden absence of support for their innovations and had to appeal to other members of the SMT to enlighten the new principal about the higher objectives of the project.

School Management Team support

When a Grade One teacher from Triandra Primary was asked by teachers from other schools what motivates her and her colleagues to integrate technology on a daily basis, she simply said "... *partly it is through our principal's support and encouragement*". Through the Change Leadership Course, School Management Teams have become aware of the possibilities that technology can offer to improve administration and to change pedagogy, and thus support teachers in project implementation. Heads of Departments meet with the teachers after school to help them with lesson plans that integrate technology. In 2016, for the first time in the project, Qhamukile Primary grade R and 1 teachers engaged in team planning at the beginning of the year; they reviewed apps and schemes of work to see which would enhance the identified topics and skills. They shared details of this experience at the most recent teacher development workshop. This workshop was of a "one-step-further" type, on technology integration; teachers showed how confident and independent they had become in selecting and evaluating relevant and appropriate apps that they knew would meet specific CAPS objectives.

“Our principal is very supportive to us that is the reason why everyone is keen in the project. The entire management is very supportive of the project such that the Deputy Principal transports us to the TPD workshops.”
Grade 1 teacher, Solomon Qatyana Primary

Gaining personal confidence in using technology

One of the secrets of successful technology adoption was allowing teachers time to play with their tablets over a longer than usual period before they had to manage the use of learner tablets. This was an unplanned advantage due to the late delivery of learner tablets but resulted in greater gains because teachers had time to experiment and become familiar, removing any technophobia they might have had. Because the focus was on teaching needs and not on the technology or even on the acquisition of technology skills the teachers acquired technical skills progressively and unobtrusively.

“You know I was always afraid of technology and did not want to try anything new – but now I feel good – I can tell others how to do it – and can show them. Kids at home say, where did you learn that?”

Grade 1 Teacher, Temperance Town Primary

Exciting new teaching strategies



In general, the teaching profession tends to be conservative and often lacking in the confidence to try something new. Providing teachers with new teaching strategies which facilitated the attainment of 21st Century learning engagement was an incentive to use the technologies. Each module in the teacher professional development (TPD) course related to a teaching strategy that included the use of technology to facilitate the teaching and learning interaction. Teachers knew that after every single TPD session, they would be expected to apply what they had learned. They had to submit evidence of using that teaching strategy, by uploading completed work to the LGP project website. This process encouraged teachers to be creative, to carefully consider their pedagogical approaches and to make informed decisions on the innovative use of ICT – rather than as an add-on. Those who may have felt overwhelmed were guided by others, and collaborative teams were built. Teachers became motivated as they observed their lessons becoming increasingly more fun, interesting, diverse and enjoyable. Technology adoption became seamless because teachers could see its value and relevance to their teaching.

“The project has bettered me – made me more confident – before tablets there was nothing innovative in my teaching. Now I can save media - e.g. a YouTube video about how a seed grows – then show it to the class - It saves time – 30 seconds to download a video instead of 4 hours to prepare posters with photographs and not as effective by half.” Grade 1 Teacher, Temperance Town Primary

Access to ICT

Each teacher in the project was issued with a 10 inch Samsung Galaxy Tab3. Schools received a Wi-Fi router and monthly data bundles, mainly to facilitate the downloading of new apps and games. Having a connected personal device made it easier for the teachers to become familiar and confident through exclusive use over an extended period, both at the workplace and at home. The project provided each school with a bank of twenty, seven inch Intel tablets for grade R and 1 learners. Teachers often believe more is better, that more technology in a classroom will yield even better results or more engaged learners while believing that having fewer hinders such progress. The Head of Department at Qhamukile Primary recently supported this sentiment when she raised her concerns about the shortage of tablets, and that lessons took longer when learners had to share tablets in big groups. Contrastingly, some lessons have been observed where just a few tablets were being used effectively, such as in a learning station strategy or even just using a teacher tablet. Often these strategies are effective and promote collaboration and sharing of resources. Innovation does not always depend on the volume of resources.

Teachers' pedagogical beliefs

Teachers are always under daily pressure to cover the national curriculum at a rigidly prescribed pace, which leaves little room for play, exploration and discovery nor for practising and reinforcing fundamental skills that often require more time. Extra time is needed, however, for playing; so there is an inevitable resistance to it because teachers value their time. This phenomenon was evident when the Head of Department at Nogqaza Primary, expressed the view that her teachers were very busy; they were successfully achieving the outcomes of CAPS and did not have time to play. Subsequently, teachers

gradually came to realise that activities using technology could readily achieve the CAPS outcomes, rather than being something that detracts from vital instruction time. This realisation is an important fact that has taken time for teachers to grasp but once understood, technology integration has become second nature. Teachers' pedagogical beliefs play a major role in their eagerness to use technology. Foundation Phase teachers often



believe that learners need to touch and hold a pen, even after significant gains have been found in using apps that allow learners to trace letters on the screen. During the last TPD workshop, teachers reported that in March 2016 after SchoolNet's team visit and their encouragement, they were amazed how letter tracing apps had assisted learners with their writing skills and particularly those learners who had struggled to hold a pencil. Teachers confessed that they had not believed this possible and subsequently felt bad that they had been disadvantaging their learners all through the first term. One Grade 1 teacher had remarked that learners had learnt better when using the tablet because their hand - eye coordination had improved. A Grade R teacher from Qhamukile Primary described an alphabet musical app which had

helped her learners with listening and speaking skills. The app supports children to learn correct pronunciation as they follow-the-leader singer in the app. They had also quickly learnt the days of the week in the correct order.

"...Now it is understandable that this achieves the outcomes for CAPS but early on it seemed like an additional add-on - In a couple of weeks it becomes a routine – becomes part of learning.."

Grade 1 teacher, Temperance Town Primary

Classroom-based support

The project is now in its final year; teachers are encouraged to explore and to find their own solutions through trial and error before seeking help from colleagues. It is time-consuming, but some teachers have reported that they feel more confident once they have solved their own problems and they remember the solution more easily compared to being helped by others. This year, the project focus is on classroom-based support, namely peer coaches helping colleagues to plan ICT-integrated lessons with detailed lesson plans and to provide support during lesson implementation. In some schools, teachers are already practising this peer coaching strategy, but additional training will be required as the year progresses to organize instructional design in a more mindful and conscious manner.

".. it was my first time to hear about an Xbox Kinect too nor have seen it before, but now I can operate it. I enjoy the games given to us, we first explore them together, as foundation phase teachers before we let learners play." And, "I have difficulties in quickly grasping what was learnt from the workshops however my colleagues support and assist me to catch up."

Grade 1 Teacher Temperance Town

Evaluation feedback to teachers

Special data analysis workshops were conducted in both provinces in early 2016. The purpose of these workshops was to discuss the second year research findings with the project teachers, to identify their



school's strengths and challenges, as well as setting goals for the remainder of the project. Teachers were visibly motivated by the findings; they had not appreciated the close links between the technology activities and learner performance in the literacies. Furthermore, until they analysed the data they had not fully understood the potential impact that one specific app could have on an identified literacy. Some teachers who had not been extensively using the technology were shocked to discover the improvements particularly in visual literacies made by those schools who implemented widespread tablet use. Teachers suddenly gained insight and buy-in and thus embarked on sustaining the practices promoted by the project. Learner performance results correlated closely with the dosage of teacher implementation of project activities and therefore teachers could clearly see where specific technologies, apps, and games had been used.

"I've noticed that these learners who are exposed to technology they enjoy themselves and are more disciplined. I have a child (Zizile Weliso) in my class who is mentally challenged (she has a speech challenge), she has various learning difficulties (writing is a challenge too) in class but

when it comes to technology she is very interested and at times asks when will technology be used especially the Xbox. When she is using technology her performance is better." Grade 1 teacher, Nomsa Mapongwana

Conclusion

One of the major strengths of the project is that it has focused throughout on teacher professional development. It is common wisdom that teachers are essential for the sustainability of educational change. The quality of teaching and the time they spend with learners are the two critical factors in academic success, not the abundance of learning resources. This learning brief has outlined the following factors as being instrumental in teacher uptake of technology. These include the attitude of teachers, their personal confidence with the technology, the effect of the Change Leadership course to engender

the support of senior managers, access to technology, teachers' pedagogical beliefs, exposure to new teaching strategies, peer support and the inclusion of teachers in analysing the research findings. Now that Senior Management Teams have completed the Change Leadership training, most are starting to appreciate the opportunities afforded by technology to improve administration and to shift pedagogical practice. The majority of project teachers have now attained a high level of proficiency in their use of technology and are realising the value of play. They are starting to report that their learning environments



are transforming through the use of technology and increasing opportunities for play. Teachers have reacted positively to the research data and are starting to use the findings to identify opportunities for remediation and extension. Once the year three data for learner performance has been analysed, we will be able to report decisively about the impact of the two technologies on the factors that affect the acquisition of foundational literacies.

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