Mobile learning in early childhood education: A school-university partnership model

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6.1 Introduction

This chapter considers the benefits and challenges of adopting mLearning in early childhood education (ECE) from the perspective of the school leaders and school communities, which included parents, carers and non-participating teachers. This chapter presents the findings associated with the following research question:

What are the impacts of mLearning implementation in schools on school-university partnerships?

The results of this research were divided into four chapters. Chapters 4 and 5 present the findings collected at the classroom level. Chapters 6 and 7 present the findings gathered from the school and University leadership and communities. Chapter 7 presents findings from the participating School of Education (SoE) staff and the community at the University. Table 6.1 presents the organisation of the leadership and community findings in chapter 6.
### Table 6.1

*Overview of Chapter 6 Findings from the Schools*

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6.2 The experiences of School A’s leadership

Over the three-year research period, there were three principals at School A. At the inception of the research (2013), there was a new Principal, Tim, who became Principal for the first time. After eighteen months (2014), Lara replaced Tim, as acting Principal for six months before the appointment of a new permanent Principal. In the final year (2015) of the study, Sam became the permanent Principal. The leadership instability over the three-year period meant that relationships between the school leaders and the SoE staff had to be re-established each year. In the course of the first and second years, the partnership grew deeper particularly with the practising teachers, ICT lecturer, researcher, and ICT coordinator. In the final year of the partnership, a new Principal and the loss of a key participating teacher at School A posed a challenge to the partnership, but the stability of the University staff and an enthusiastic and supportive Principal assisted the partnership to continue. A description of the experiences of each leader at School A follows.

6.2.1 Tim.

Tim’s predecessor established the mLearning partnership with the University, and Tim knew little about it. The partnership was reliant on pre-service teachers (PSTs) teaching children in School A in the very first school term of the school year. Prior to teaching the children at School A, the participating teachers needed to visit the University to meet the PSTs and provide curriculum ideas for the lessons. With little forewarning, Tim agreed to participate in the mLearning partnership and released one teacher to attend the University to meet the PSTs in their ICT workshop in the second week of the school year. Tim was keen to participate in the mLearning partnership and learn more, choosing to come to the University for an interview and to meet the PSTs.
When questioned about the role of the technological leader, Tim stated the role was to encourage technology integration at the school, to budget for purchases and know about the latest Department of Education policies. Tim had previous experiences that were challenging regarding the Department of Education and ICT policies and support, and as a result, was reluctant to make decisions regarding technology without the support of the Department of Education. At the start of the study, Tim claimed that he was in favour of the BYOD model of technology integration and said: “As for the school buying them, forget that. It is not going to happen” (Tim, 2013). Tim maintained that he was strongly in favour of mLearning in early childhood education but that he was a novice. Tim also stated that the school had to rely on the P & C Association for additional mLearning resources, and he described members of the P & C Association as “not engaged.”

School A had no ICT policies and no professional development planned in the technology area for 2013 or 2014. Tim pointed out that computing was still an unguided weekly event in the library, and the children did not learn any skills. The PST visits in the first year were successful, highlighted by an incidental meeting in the playground, where Tim said that the feedback from the parents was good, and he wanted help providing information about good apps for parents. The University’s ICT coordinator invited Tim to take a tour of the early childhood classrooms to observe the research in action, Tim accepted the invitation.

Tim generated a grant submission for 15 iPads for School A at the end of 2013. The submission of the iPad grant was surprising because Tim’s view appeared to have changed from earlier in the year when he said that he was against purchasing mLearning devices. It is possible that the good feedback from the mLearning brought to the school by the University and some time to settle into a new role encouraged Tim to rethink his initial views about purchasing mLearning resources. Tim also spoke about improving infrastructure and installing Wi-fi but showed no interest in the University’s offer of iPad professional
development. Unfortunately, the iPad submission was not successful. The researcher and ICT coordinator were persistent in offering assistance so that School A might see more value in the partnership. When offered the loan of an iPad synchronizer he said: “Fantastic, I have heard from colleagues how time-consuming synchronizing iPads can be” (Tim, 2013).

Tim did not appear to plan too far forward and perhaps needed reminding that he was in a partnership that could be beneficial to the school. Tim’s priority in the first year at School A was to organize the school, mLearning resources, and staff. At the beginning of the first year, Tim was concerned about an out-of-date and warranty server and the lack of money in the school for a replacement. At the end of 2013, he said that he had managed to replace the server and generate some capital. Although there were still no policies regarding technology in the school, he spoke of talking to the Deputy Principal about formalizing an ICT plan. However, a plan did not eventuate while Tim was at School A.

At the end of the first year, Tim invited the researcher and ICT coordinator to attend a staff development day at the start of the new school year to talk to staff about the research and recruit teachers to participate. The need for recruitment was because Tim thought it was unlikely either of the teachers from the first year would be at the school the following year. Jessica was applying for new jobs and Kelly was on a temporary contract that was unlikely to continue.

Relief was provided by the Principal and the Deputy Principal so that the participating teachers could come to the University in 2014 to meet the PSTs. At the beginning of 2014, Tim reported that School A was purchasing ten iPads, and the P & C Association would match the school’s purchase with ten more. When the researcher contacted School A in the middle of 2014, Tim advised that he had moved to another school and provided details of the new Principal Lara, who indicated that she was unaware of the mLearning partnership or iPad submission. Figure 6.1 shows a timeline of the technological leadership at School A.
Figure 6.1. Timeline of technological leadership at School A (2013-2015). This figure shows how the technological leadership changed as the partnership evolved.

Tim came to School A as Principal from another larger school where he had been Deputy Principal and the move to School A was of no financial advantage to Tim. In semester two 2014, he won the position of acting Principal in a larger primary school, which resulted in financial advancement. A few months later, he won a substantive Principal’s role
in a large primary school that he commenced at the beginning of 2015. At this point, the position of principal for School A became vacant and was advertised for 2015. Between 2012 and 2015 there were four principals at School A indicating that the school was a promotional stepping stone for aspiring principals.

6.2.2 Lara.

Lara came to School A for six months after Tim left. When asked to describe the technological leadership at School A, Lara said: “No, I can not. I think it is being led by Jessica, the pre-primary teacher, because of this project” (Lara, 2014). Lara’s actions indicated that she thought there was minimal technological leadership at School A. When describing the enthusiasm towards mLearning displayed by the two teachers participating in the mLearning partnership, Lara said: “They will probably be the [technological] leaders” (Lara, 2014). Lara described the technological leadership in her previous schools as distributed amongst teachers who had the interest and knowledge. Lara was not aware of any technological policies in School A and was unsure of how many iPads there were in the school. The decisions to purchase iPads for the school and upgrade the infrastructure occurred before Lara arrived at the school. Lara indicated that purchasing the iPads had been a contentious decision, and many of the staff were upset as illustrated:

The money put aside for the iPads and infrastructure, I think it was taken from the library, so there has been a band of teachers who have come, and said that books in the library are far more important, and they should have been consulted. (Lara, 2014)

There was no planned professional development for the staff of School A to coincide with the purchase of iPads. When questioned about professional development Lara said: “We will proceed as if I am here [next year], but once again it is not my area. I do not have a great deal of interest in it, so I am sorry, it has been forgotten” (Lara, 2014). The fact that Lara
placed little importance on mLearning was possibly because she thought there were other more important issues in the school as illustrated by her comment:

> It floored me when I heard about all this IT stuff because if I were drawing up a plan for where I thought this school needed to be, it would be the need to have good teaching in the classrooms around literacy and stuff like that as well. (Lara, 2014)

Lara showed her concern for quality education in the statement: “It is a danger giving iPads to mediocre teachers” (Lara, 2014). Lara’s position as acting Principal was difficult because it was so short, but she was strategic in her thinking. School A had just been granted IPS status and Lara felt it was important to unpack the school’s vision statement so that the staff had a clear understanding of the meaning of the vision statement which stated that School A was a contemporary learning community, which empowers students to be active and engaged citizens. Staff member comments about the school vision statement focused on values and ICT. Although ICT was a key theme brought up by the staff, Lara thought that less than half of the staff were ready to use technology in the classroom. Lara’s approach was to share leadership to empower the staff, however, when asked how the staff could be assisted to become ready to integrate technology into teaching and learning, she had no suggestions at that time.

### 6.2.3 Sam.

In 2015, Sam was appointed as Principal to School A. He demonstrated his interest in the partnership by visiting all the classrooms during the PST visits without prompting and made a point of thanking all the PSTs. He commented that the staff had learnt from the PST visits. Sam stated that he would be at School A for at least three years and acknowledged that the rapid change in leadership at School A over the previous two years had affected progress regarding technology integration. Sam’s comment illustrates his view:
I think the frequent change of principals has probably injured some teachers’ desire to get this [mLearning] up and running because different principals come with different thoughts about what technologies they would like to see in this school (Sam, 2015).

Sam indicated that he had the technical skills necessary to assist his staff, but when required, would call for help. He stated:

I am resourceful enough to know when I cannot help and get some assistance in as well. It is calling on some people to come and help me, upskilling myself, or if it is above me, paying someone to come out and do the work (Sam, 2015).

At the start of 2015, School A had a Wi-fi network but had not purchased any iPads. The school was ready to purchase a set of 15 iPads that the P & C Association had agreed to fund the previous year. The P & C Association wanted to source the iPads independently. After observing the first PST visit, Sam did not want to delay the introduction of the iPads further so decided to go ahead with the purchase. The iPads arrived the following week. A further 15 iPads were purchased using P & C Association funds a few weeks later. Sam saw his role as technological leader as one of providing professional leadership and creating opportunities for staff development: “I have an obligation as a school Principal to provide some professional leadership and build staff capacity in that [technology] area, but it needs to be coupled with a teacher’s desire to upskill themselves and increase their skill set” (Sam, 2015). School A’s 2015 annual report placed increased teacher proficiency in the use of iPads as a recommendation for the future. Sam volunteered: “I have not taught with iPads, so it is about me seeking some professional development for myself as well as the staff. I think it is the same for many principals because iPads are only 2010 onwards” (Sam, 2015).

Sam planned to store the iPads in a secure storage unit in the pre-primary (PP) classroom, because of Karen’s, the pre-primary teacher’s participation in the partnership.
Karen was willing and enthusiastic about upskilling herself, so Sam organized for her to attend two days of professional development: “I think Karen is going to be the driving force in the pre-primary. However, then what we potentially have is a group of pre-primary students coming into Year 1 with no mLearning, so we have to develop a plan to ensure that iPads will be available across all school years” (Sam, 2015). Despite Karen’s enthusiasm for the mLearning partnership, and Sam’s thoughts that Karen would be a driving force in the school, Karen left School A unexpectedly in the middle of the year. Sam selected the participating teachers for 2016 who would be able to share knowledge with colleagues and act as technology leaders within the school.

When questioned about his view of shared leadership, Sam described it as involving community members including teachers, parents, and carers. The school board was made up of community members who set the strategic focus of the school by collaborating to create a business plan. The business plan included the direction of the school concerning technology. Sam wanted technology integration to be important to the community and not just to the school Principal. His comment reflects this view: “I think it is about empowering the community rather than me saying I am going to purchase some iPads” (Sam, 2015). Figure 6.2 provides an overview of the technology integration at School A under the leadership of three school principals between 2013 and 2015.
Figure 6.2. Technology integration at School A. This figure shows the steps towards technology integration from 2013-2015.

6.3 Benefits of and challenges to mLearning at School A

This section considers the benefits and challenges to mLearning implementation at School A for the school community which included school leaders, and parents and carers. Data was collected using interviews and surveys and coded using NVivo software. Common themes were identified through a data reduction process using open, axial and selective coding. The themes identified as benefits or challenges to mLearning at School A were professional development, lack of expertise, technical support, time, and mLearning resources. These themes are presented in more detail.

6.3.1 Professional development in the use of mLearning.

Key issues identified by members of the School A community were a lack of teacher expertise with mLearning and the need for teacher professional development in mLearning. These issues are considered together because a lack of expertise leads to the need for
professional development. mLearning professional development occurred in several ways throughout the study. For example, the synergy between the practising teachers and PSTs during the school visits and through the ICT units offered at the University to the practising teachers and PSTs. University staff also facilitated mLearning professional development for staff and parents.

After the initial PST visits, Jessica the pre-primary teacher commented: “It was great to sit down with the students [PSTs] and watch and learn about mLearning” (Jessica, 2013). After attending an ICT workshop at the University in 2013 with the PSTs, Jessica said she was keen to attend more and thought about swapping her planning day so that she could attend. Jessica’s comments indicate that mLearning professional development occurred as a result of the PST visits and attendance of a University ICT workshop.

Angel stated that the only professional development that she had undertaken on mLearning was the parent workshop delivered by the University at School A in 2013 and that she had used her lesson preparation time to attend. Angel was keen to attend mLearning professional development as illustrated by her comment: “I put my name down for two iPad professional development sessions, and they were both booked out. I am waiting to hear about a third” (Angel, 2014). Sam indicated that the age of the staff affected their ability and enthusiasm towards including technology:

I think there is a fear out there. Teachers are highly resistant to change. We have an aging workforce. There is nothing wrong with an aging workforce but it is about people adopting this form of technology and being able to upskill themselves (Sam, 2015).

When questioned, the participating teachers rated their confidence and skill with mLearning at the start of the research of between one and three on a scale of five. Jessica acknowledged that attending the ICT tutorial at the University increased her confidence in mLearning and gave her the desire to learn more. Jessica gave up a week of her school
holiday to attend an intensive ICT unit at the University at the beginning of 2014. Jessica used what she learnt from the ICT unit and created Wordles (word clouds) and avatars with her class a few weeks later. Jessica valued and shared her acquired technological knowledge with her colleagues and the children in her class, as illustrated by her comment:

I was lucky to do the course over the summer holidays, and I had the time to sit down with someone to guide me through how to use different mLearning tools. I found that invaluable. Now I am applying that in the classroom. Now I realize it is quite easy. To begin with, I was quite daunted. (Jessica, 2014)

Jessica briefed her successor, Karen about the mLearning partnership and shared some of her newly acquired ICT skills. Karen later asked about the ICT unit that Jessica had attended and expressed an interest in attending.

A discussion with the SoE staff in the first year of the research prompted Tim the Principal to think about professional development at School A and ask Jessica to present what she had learnt from the partnership at a staff meeting, which she did. Tim commented in the initial interview that he thought the best professional development was teachers working shoulder to shoulder. Tim initially indicated that he had little confidence in the staff’s technological abilities. When asked to rate the technological knowledge of his staff of eighteen, he ranked them as zero out of ten. The University offered to provide professional development to school and parent groups. He said that he would ask the P & C Association if University representatives could attend a meeting of the Association to present information on the mLearning partnership. This meeting did not eventuate. The fact that Tim was in a new role, had competing priorities and was time poor is possibly the reason that he did not follow up on this opportunity. Encouraging School A, to accept the University’s offer to facilitate professional development was a challenge.
In the final year of the research, Sam requested an iPad professional development workshop for all staff at School A. The ICT lecturer (Victoria) presented the workshop. Although some of the staff were reluctant, this hands-on session had all staff engaged, and the Principal later commented that he liked the key message that home and school use of iPads is very different. A few weeks after the staff iPad professional development session, Angel was utilizing things she had learnt with her class and said: “I am now working with small groups of eight or nine children creating a digital book using Book Creator about the school day. The first one is very simple, but the children took it to show the Principal” (Angel, 2015). These findings revealed that teachers such as Angel and Jessica at School A increased their confidence and knowledge in the use of mLearning in the classroom through the professional learning that occurred because of the mLearning partnership. The other participating teachers at School A, were only in the partnership for one year, so there was not sufficient time to determine if there was a genuine increase in their confidence and knowledge with mLearning.

The school-university partnership provided an opportunity for professional development of the participating teachers and other teachers within School A. The professional development occurred because the PSTs, guided by their lecturers, delivered lessons using developmentally appropriate mLearning tools. This provided the teachers with the opportunity to engage and learn alongside the PSTs and children. Professional development also occurred as a result of workshops delivered at the schools for staff, parents and carers and the ICT lecturer working one-on-one with individual teachers.

All the participating teachers at School A indicated that they lacked professional development opportunities and rated their confidence using mLearning as low. The partnership provided a way for the schools to access free professional development. Professional development was a challenge for the schools who were unable to provide the
training needed by the teachers. Professional development was a benefit of the partnership for School A as the University fulfilled this need. Figure 6.3 shows professional development as a challenge to mLearning at School A because of the lack of availability, cost and limited time for teachers to undertake professional development. Although the University offered one-on-one sessions with individual teachers, only Jessica at School A took up this offer. The University also invited teachers to attend an ICT intensive, however, only one teacher was willing to give up personal time and attend. The lack of time and competing pressures that teachers frequently spoke of is likely to have contributed to lack of uptake of professional development.

![Diagram showing professional development as a challenge to mLearning at School A and a benefit of the mLearning partnership with the University. The green boxes indicate benefits and the red bevelled boxes indicate challenges.]

*Figure 6.3.* Professional development as a challenge to School A and a benefit of the mLearning partnership with the University. The green boxes indicate benefits and the red bevelled boxes indicate challenges.
6.3.2 mLearning environment.

This section is about the acquisition and management of mLearning resources at School A. The mLearning resources needed managing so that they were ready for use by successive teachers. Figure 6.4 captures the acquisition of mLearning resources at School A over the three-year research period.

![Figure 6.4](image.png)

**Figure 6.4.** The mLearning resources available at School A, 2013-2015. The figure shows the acquisition of mLearning resources over the research period.

6.3.2.1 mLearning resources.

At the start of the partnership, School A had very limited mLearning resources and no access to Wi-fi. Teachers had the opportunity to borrow mLearning resources from the University and observe the PSTs using mLearning resources with children in their classrooms. Towards the end of the three-year research period, School A was well resourced and had technology integration embedded within the school business plan. The inclusion of technology integration in the school business plan meant that it would be a measured and
reportable outcome. At the start of 2016, School A had 50 iPads, and each staff member had a school iPad. Together with the mLearning resources was an action plan to upskill teachers and ensure the use of ICT across all year levels and areas of the curriculum. mLearning resources were a challenge for teachers at School A because these were not available at the start of the study. The acquisition of mLearning resources at School A took place as the partnership progressed and was influenced by the disposition of the school leaders towards mLearning.

6.3.2.2 Technical expertise.

The Deputy Principal was the person responsible for technological support in School A and this was one of many duties. One of the participating teachers, Kelly, arrived in 2013 at the beginning of the school year to an IWB that was not working. The IWB was not repaired until the start of term three. When sharing this information, Kelly said: “Having someone show me and fix things so I can get things up and running would be good” (Kelly, 2013). As the partnership developed, the University staff provided some technical support as illustrated when Jessica wanted to project her iPad onto the IWB: “Can you tell me the adaptor cable I need to connect the iPad to the computer?” (Jessica, 2014). University staff provided assistance with such technical questions and therefore removed barriers teachers’ use of mLearning in the classroom.

The Deputy Principal arranged Wi-fi for School A in 2014, but there was no provision for professional development or policies developed to support the new infrastructure. The Principal in 2015, Sam, stated that the Deputy Principal had the official role of ICT coordinator that was mainly troubleshooting rather than engaging in forward planning. Sam indicated that he was responsible for coordinating the ICT in the school in terms of planning, purchasing, rolling out iPads and setting up. When Sam purchased the first set of iPads for
School A, he used a more expensive educational company preferring to pay slightly more but having the iPads all set up and under warranty.

A lack of expertise in School A in the first two years of the research meant that teachers were unable to seek assistance within the school. Resolving technical issues was time-consuming and in competition with other school priorities which took up the time of the school leadership. Technical expertise at School A was a challenge and resulted in malfunctioning equipment not being repaired, and so unusable for long periods of time. The technical environment within School A improved in the final year of the research, with the acquisition of new mLearning resources, the Principal monitoring the use of mLearning resources, and a plan to up-skill staff.

6.3.2.3 Leadership.

The turnover of school leaders at School A provided many challenges for the integration of technology. The first Principal, Tim, needed time to settle into a new role. He had to juggle projects such as unexpected capital works, aging resources and infrastructure, and contend with a lack of funds. Tim was aware that staff members lacked technological knowledge, but other priorities were in competition for his time. The second Principal, Lara, was only at School A for six months. Lara was aware that staff lacked technological knowledge, and admitted that her lack of interest in technology resulted in no action being taken. The third Principal, Sam, was committed to integrating technology into the curriculum at School A and consequently progress towards that goal was accelerated in the final year of the research.

In terms of mLearning resources, School A was early on in its journey to integrate into the school culture. At School A, the early childhood classrooms were separate from the main school, but the Principal decided to store the first set of iPads in the early childhood
teaching area rather than in the main school. This illustrates the school Principal’s commitment to using mLearning in early childhood education because storage in the main school would have been simpler for the school as a whole. The challenges to the technical environment at School A can be summarized as a lack of mLearning resources, lack of technical expertise to repair faulty equipment and support teachers, lack of time, and a high turnover of school leaders with differing levels of support for mLearning. Figure 6.5 shows the key challenges to the technical environment at School A.

![Diagram illustrating the technical environment at School A](image_url)

*Figure 6.5. The technical environment at School A. The factors affecting the technical environment at School A were mLearning resources, leadership, time and technical expertise.*

The partnership with the University was of a benefit in two ways: firstly providing technical support to teachers who were able to liaise directly with the University for assistance. A second benefit of the partnership was the opportunity for teachers to borrow mLearning resources, which they did. The University also offered School A advice on developmentally appropriate hardware and software.
6.4 The experiences of School B’s leadership

The experiences of the three different principals from School B are presented. The school Principals provided the technological leadership of School B. Between 2013 and 2015 there were three different principals at School B, Gloria in 2013, Bo (acting Principal) in 2014 and Anna in 2015. A description of the experiences of the School B leaders follows.

6.4.1 Gloria.

When the partnership between School B and the University commenced, Gloria was in her third year as Principal at School B. Gloria regarded her role in technology integration as one of streamlining the process to make sure that School B purchased the correct mLearning equipment. She also saw that her role as the Principal and technological leader was one of selecting and sourcing equipment and monitoring its use. Gloria purchased iPads and wireless infrastructure at School B in 2012 while she was the Principal. An ICT audit took place at School B in 2013, and Gloria stated that she would use the results to decide what to purchase. When later questioned about the results of the ICT audit, the Principal and Deputy Principal struggled to remember the audit. This suggests that little was gained from the audit possibly because the results were not properly disseminated.

Gloria said that she was not going to spend money on anything unless it was going to be valuable and used. Gloria wanted to provide play-based, educationally justifiable and fun learning tools for the children in the early years of education. At the end of 2013, Gloria asked her staff if they would like any further mLearning tools and, to her surprise, there were no requests from staff except Louise, who requested a plasma television. It is probable that a lack of time and knowledge of potential mLearning resources prevented teachers from researching new mLearning resources.
The Deputy Principal attended the final meeting with the University participants, at the end of 2013, as Gloria, the Principal was leaving the school and wanted continuity of the partnership. Gloria had a good understanding of the partnership, and how it could work for School B. At the end of the year, she initiated a discussion about how the practising teachers and PSTs could meet at the start of the school year without the cost of teacher relief. Gloria’s actions demonstrated her desire for the partnership between School B and the University to continue.

6.4.2 Bo.

Bo came to School B in 2014 in the position of acting Principal for one year. Bo was technically proficient and had lots of experience with technology integration at a previous school. Bo was able to see what had to be improved and what needed purchasing to facilitate mLearning in School B. In 2014, Bo purchased five new iPads, five Mac Books, a secure charging system and improved the Wi-fi infrastructure. Bo applied for the Principal’s position for 2015 but was unsuccessful. Bo took steps to facilitate management of the iPads while maintaining a focus on improving outcomes in teaching and learning in the classrooms. Towards the end of her first year, she streamlined the use of the iPads and engaged a company specializing in providing educational, practical and technical support to schools.

From an ICT perspective, Bo’s goal was to ensure that teachers understood that technology was a tool for learning and not an outcome. The business plan developed by Bo had a goal of having a basket of iPads shared between two classes and then having a set of iPads for every classroom within two years. Unfortunately, Bo was not at School B in the final year and unable to enact the business plan. She acknowledged that School B had work to do in the area of technology integration. Her comment reflects her view:
Strong learning outcomes must be achieved irrespective of the technology. I think from a technology perspective this school is very early on in its journey. (Bo, 2014)

Bo stated that the staff was starting to move away from using technology for direct substitution and starting to utilize apps that were more creative. Direct substitution is when teachers substitute technology for a traditional teaching tool without adding anything to the learning process (Cavanaugh, Hargis, Kamali, & Soto, 2013). Bo said: “The school is moving towards an environment where children can pick up a device and use it at any given time” (Bo, 2014).

The University staff wanted to present a parent workshop on the creative uses of mLearning and showcase some of the children’s work completed with the PSTs. However, Bo requested a parent workshop on cyberbullying from the University instead. Bo’s request reflects the high profile of cyberbullying in the media. Following this workshop, which was delivered as active citizenship rather than cyberbullying, two further parent workshops on this topic were requested by School B. The request for further workshops suggested that the Principal thought the active citizenship workshop was worthwhile.

During the following parent workshop, Bo downloaded a free version of the app being demonstrated and experienced the limitations of the free app as opposed to the full version. Although this app, Book Creator, had already been recommended to the Principal, she needed to see it in action to make the decision as to whether or not to load it on to all the school iPads. The Principal’s actions were consistent with literature about the importance of hands-on mLearning and the importance of vetting potential apps (A. Campbell & Scotellaro, 2009).

When asked about possible improvements for the partnership for the following year, Bo asked about including more teachers. The kindergarten teacher had expressed an interest in participating, which tended to indicate that the feedback about the mLearning partnership
within the school was positive. Logistics made including an additional class impossible, but there was a discussion about providing School B with details about the content of the ICT unit at the University so that teachers could attend single sessions.

### 6.4.3 Anna.

Anna was an experienced principal who came from an IPS which had 70 iPads. She had experience in managing finances vis-a-vis ICT integration as shown by her comment: “IPS schools can be creative with budgeting. My strength is budgeting. I think it is about accessing every revenue you can access” (Anna, 2015). Anna was a strong believer in effective ICT integration, and in a previous role had been an ICT support teacher, working side by side with teachers. In conjunction with the new school board, Anna wrote a business plan with a strong emphasis on technology. A focus of the business plan for 2015-2018 was developing an ICT strategy, which included teacher professional development to integrate ICT into teaching programs. Anna stated: “I see a business plan as a way of embracing technology” (Anna, 2015). Anna indicated that it was important that the school business plan was collaborative so that there was ownership of it, and that goals were measurable and achievable.

Anna visited the classrooms during the PST sessions and invited two parents, a former journalist and a photographer, to write an article about the mLearning partnership for the school newsletter. Such actions suggest that Anna thought the mLearning partnership was worth sharing with the community. Anna stated that she liked working in teams and would stay at School B for three years before seeking a larger school with more opportunity for teamwork. Anna shared leadership in School B by creating teams for literacy, numeracy, science and ICT capabilities. Different teachers were given responsibilities to lead discussions and then report back to the principal. Louise was given the ICT capabilities team
because of her interest and work in the mLearning partnership. Anna was also proactive and made suggestions that would be beneficial to the University as well as to School B, for example, she suggested that the teachers could be released to come to the University more often to give feedback to, or receive it from, the PSTs.

Anna was aware that she was the third Principal in three years and said: “I have to be careful” (Anna, 2015). The change in leadership had affected the staff and when one of the participating teachers, Rachel was asked how the iPads were being managed in the final year, she indicated that there was a new process and things were “up in the air”. Figure 6.6 illustrates technology integration at School B under the leadership of three school principals between 2013 and 2015.
Figure 6.6. Timeline of technology integration at School B. This figure illustrates how the technological leadership changed over the three-year research period.

6.5 Benefits of and challenges to mLearning at School B

Analysis of the data collected from surveys and interviews indicate four areas of interest. These are professional development, leadership, mLearning resource management,
and technology infrastructure. A description of the benefit and challenge of each of these four areas follows.

### 6.5.1 Professional development in the use of mLearning.

Professional development opportunities arose through the teachers working alongside the PSTs in the classrooms. Professional development was also available as a result of lecturers working directly with the teachers to give specific individualized support and professional development workshops delivered by the University staff. Gloria, the Principal in 2013, acknowledged that the mLearning partnership exposed all her teachers to new ideas. The teachers attended a whole ICT tutorial at the University in 2013 but in subsequent years were only able to attend for half an hour due to the cost of teacher relief. Rachel, a participating teacher, stated that the lack of professional development and concomitant ideas limited her ability to use mLearning. Gloria stated that her staff varied in terms of ICT skills and needed professional development. Subsequent principals shared this view:

I think Louise has got a bit more of a grasp of how technology can be used, but I think she has got some way to go in terms of how it is seamlessly embedded. (Bo, 2014)

Our kids are capable, and I think as a school, as a teaching staff, we are not giving those kids enough opportunity to do that. I think there are three reasons for this, one it is a confidence thing. Secondly, it is knowledge about how to implement technology, and thirdly it is space and infrastructure. (Bo, 2014)

I like the plasma screen Louise has, but I would like to see it as a workstation. At the moment, it is quite teacher directed. (Anna, 2015)

One of the difficulties with professional development is that it is often too general to suit the needs of K-7 teachers, or a group of teachers with varied amounts of existing knowledge. Chiu and Churchill (2016) posit that professional development for teachers should be specific to the needs of teachers in a school. Louise’s comment supports this point:
“What is relevant for K [kindergarten] is worlds apart from Year 7” (Louise, 2013).

Individualized professional development is expensive for a small school, but might be more manageable if schools can collaborate.

PSTs attending the ICT unit that was offered during the semester were grouped according to the degree for which they were studying. The ICT intensive unit was attended by primary, secondary and early childhood PSTs and, therefore, lacked degree-related specialization. One of the PSTs in the 2014 peer group who attended the intensive ICT unit made the point: “I felt that the [intensive ICT] unit was not suited to early childhood. I think we should have a separate unit so we can focus on information that is more suitable for early childhood” (PST, 2014).

Gloria was proactive in asking the University staff to deliver two professional development sessions at School B in 2013. A whole staff iPad workshop and another for EAs from across the network, also on using iPads, was planned. The feedback received from both these professional development sessions was very positive; for example, Gloria commented: “The EAs were so excited” (Gloria, 2013). The EAs, when asked what they had learnt from the professional development, gave favourable responses such as:

Great PD, all of this will help immensely in my personal life and especially at school. (EA workshop, 2013)

Helpful, professional development, I would be happy to do another one. (EA workshop, 2013)

Very useful. (EA workshop, 2013)

No staff professional development on technology took place in 2014 but Bo, the Principal, devised a professional learning model for the school’s business plan. The model aimed to increase the confidence of the teachers and enable them to reimagine and enhance
learning using technology (Morrison & Camargo-Borges, 2016). Bo stated that professional learning was the key to technology integration. The professional learning model included a planning session at the start, and then three or four more guided stages of observations, modelling, coaching, conferencing and debriefing in a series of cycles. The business plan focused on enhancing creativity in the school using technology as a tool, with appropriate funds being allocated. Bo asked Victoria, the ICT lecturer from the University to act as the expert helping to deliver this professional development.

### 6.5.2 Leadership.

Anna, the Principal in 2015, was an experienced school leader with a background in ICT, including a degree in educational technology. Anna had the school leadership experience and ICT expertise required to use the mLearning partnership to help with the implementation of mLearning at School B. Anna’s leadership traits were consistent with those of a good technological leader which include an ability to coach people to do their best work, having a good level of technological knowledge and the ability to make good decisions (Clarke & Zagarell, 2012). Anna wanted to create a professional learning community at School B and commenced this at her first staff meeting by asking teachers to share a learning experience. There was opposition to sharing learning experiences from the staff which are, but Anna, stated that she was going to persist as illustrated by her comments:

> I am passionate about using and integrating ICT but appreciate that not everyone feels the same, so I need to provide some guidelines. I see it as our performance management. (Anna, 2015)

> If we have a true professional learning community, we will be learning from each other. (Anna, 2015)

> I think everyone [staff] needs to be on the journey. (Anna, 2015)

> I think it [mLearning use] depends on the age of your teaching staff. I think it is not used widely because of a lack of understanding of how it can support what teachers
are already doing in the classroom. Teachers need to be shown good examples then I think they will embrace it. (Anna, 2015)

Anna’s leadership experience enabled her to access grants and be creative with budgeting so that she could access funds to purchase mLearning resources. Anna used her position as a leader with her technological knowledge to devise a means of implementing mLearning at School B.

Anna had delivered a great deal of professional development and attended professional development alongside her staff at previous schools. When an ICT technician visited her school to resolve a problem, Anna took the time and sat with the technician so that she could learn new skills to assist her staff. In doing so, Anna showed that she was on a learning journey. Anna was interested in the ICT intensive unit that the University offered. She expressed a desire for teachers to attend two or three sessions at the University during the summer break. Anna’s actions demonstrated her understanding that the staff needed upskilling, and opportunities such as an ICT intensive at the University could be valuable for her staff. Anna led by example taking opportunities to up-skill herself as well as seeking ways to up-skill staff. The partnership provided a source of professional learning opportunities for School B, and Anna was proactive in investigating such opportunities.

Towards the end of 2015, Anna requested a list of suitable mLearning resources from the University. Anna indicated that she had $10,000 to spend and wanted to purchase enough of each resource so that there was sufficient for children to use in the classrooms. Anna’s actions demonstrated her faith in the University’s research of mLearning resources selected for use in the partnership. Anna intended to showcase the mLearning resources to staff at a professional development day at the end of the school year. School B was involved in two network professional learning sessions at the beginning of the following year, and Anna
asked Louise to facilitate a session on mLearning with a group of pre-primary teachers. Facilitating a workshop would provide Louise with the leadership opportunities that she was seeking. Anna used a variety of strategies to upskill teachers including using the University’s ICT unit and tailoring a job advertisement to a person with technology skills. Anna’s comments reflect her leadership strategies: “To me to have that opportunity [ICT intensive at the University] is fantastic” and “I am about having mLearning resources and the knowledge, so it is important to train teachers” (Anna, 2015).

Anna observed the PSTs working with children at School B and immediately released all early childhood teachers in the school so that they could walk through the relevant classes and observe what was happening. Anna’s actions exhibited leadership that took advantage of an opportunity when it arose. These early childhood teachers sat with groups of children and PSTs and engaged in the activities asking many questions about the various mLearning resources. Anna placed value in the PSTs and talked about using them to work one-on-one with teachers showing them how to use mLearning tools. Anna’s idea eventuated towards the end of the third year when PSTs, delivered a professional development workshop for twenty-five parents at School B. Anna’s leadership was of considerable benefit to mLearning implementation at School B. She had the skills, experience, and expertise necessary to make a successful plan for mLearning implementation. There was a high turnover of teachers at School B at the end of 2015, and Anna selected high-quality teachers for new positions and ones who had a positive disposition towards mLearning. The teachers participating in the partnership in 2016 were selected by Anna.

The turnover of leaders at School B presented a challenge because each leader had a slightly different skill set and approach to mLearning. Successive principals took School B progressively in the direction of mLearning implementation. Anna possibly had the largest impact because she was experienced in both leadership and technological knowledge. A key
enabling factor for Anna was the fact that School B gained IPS status prior to her
commencement giving her greater autonomy than afforded to previous leaders.

6.5.3 mLearning resource management.

School B had a relatively small number of devices (iPads, n=8), but there was no
system for managing these iPads in 2013, so problems arose. Initially, there were no boxes to
carry the iPads, no system for installing apps on the iPads, and no system for booking them.
The Deputy Principal who was responsible for the iPads in 2013, commented that they had
lost one iPad and one iPad cord. In 2013, a child at School B collected the iPads at the end of
each day and plugged them into the charging station. In 2014, the Principal took over
responsibility for technical support and purchased iPad secure storage and charging boxes,
and made the teachers responsible for booking the iPads and collecting and returning them to
the charging station. This Principal realised that the mLearning resources needed managing,
and it was no responsibility for a child.

In 2015, Anna, the Principal provided the technical support and was quick to call in
support when she was unable to resolve a problem. Anna numbered all the iPads, purchased
child safe cases and stored the iPads in secure baskets for moving around the school and
charging. Anna put a process in place for requesting apps and booking the iPads. Much
groundwork was put in place in 2015 to manage increasing numbers of mLearning devices
used in the school. All the iPads were reset and formatted so that the devices all had the same
apps, and could easily be accessed.

When the University staff facilitated the professional development sessions at School
B in 2013, Gloria’s lack of technical knowledge was highlighted. In both sessions, the iPads
brought to the session by the University were not compatible with the school Wi-fi, so some
teachers did not have Internet access. Gloria was unable to resolve this issue. The pre-primary
teacher at School B used the iPads for rotational activities and only four at one time. The reason that she only used four was that the network could not handle more than four iPads efficiently.

Poor management of mLearning resources is a challenge to mLearning implementation because mLearning resources become lost or in need of repair and are therefore not used. Another challenge is an mLearning environment that does not function properly, for example, poor Wi-fi and no support person to help teachers when technical problems arise. Louise’s comment illustrates these factors: “If there is a problem with mLearning resources they are just left until someone has time, because we do not have a technician” (Louise, 2013).

Gloria was unaware of the technological issues involved regarding her suggestion of bringing the PSTs to School B to conduct a tutorial. Gloria saw her role as a technological leader as that of connecting people to the ways that technology could be used to enhance teaching. With regard to teachers, she stated: “I think it is that they do not know what they do not know and how it fits the curriculum. I do not think they fully understand its potential and some of the technologies that are out there” (Gloria, 2013).

Bo’s experience with ICT integration at another school enabled her to solve problems that were barriers to effective integration of ICT. Upgrading the limited Wi-fi network was an example of this, as all participants at School B had commented on the poor functionality of the network and time taken to manage mLearning resources. Bo realised the importance of technical support and engaged the services of ICT educational consultants to manage the ICT network and the deployment of mLearning resources at School B.

Challenges to effective use of technology were identified by Anna, for example, the iPads were not numbered, so children’s work became lost, and the kindergarten teacher was
not able to connect her laptop to the Wi-fi. Anna spent personal time resolving technological issues which included coming to the school at the weekend and spending school funds on the services of a technician. At the beginning of 2015, only seven iPads were in the secure charging unit; the remaining iPads were scattered throughout the school and took two weeks to find. Anna resolved problems quickly so that teachers did not get frustrated and said: “Technical issues are blockers for teachers. When teachers get frustrated, they give up” (Anna, 2015).

Towards the end of 2015, the Wi-fi was working well throughout the school (including the kindergarten) and had been installed in the staff room, which was useful for meetings. The technician employed by School B in 2015 was available at short notice and could work across Apple and Windows operating systems. Teachers at School B also had access to central technical support from the Department of Education. Consequently, at the end of 2015, all the mLearning resources and infrastructure were working well. In addition to the improvements to the mLearning resources, Anna upskilled her staff by using a variety of new technological resources such as BrightPath, an online assessment tool; ‘Connect’, a tool to connect school and home; and Tiqbiz, a communication tool used to send text messages and notices to parents. These systems changed the way teachers did things and encouraged teachers to engage with technology.

Anna set up an iPad and laptop timetable so all staff had access and could plan to use mLearning resources. When not timetabled, any teacher was free to use the iPads. She stated that staff needed to be familiar with some specific apps that she put on all the iPads. As the technical support improved at School B, some of the challenges were removed. At the end of the final year, the teachers did not talk about technical problems when discussing mLearning as they had in the previous two years, possibly because technical support had improved. Improvements to resource management occurred as the leaders took responsibility for
managing mLearning resources and resolving problems. When leaders at School B were focused on mLearning implementation, they took steps to remove barriers so that teachers could engage with mLearning.

6.5.4 Technology infrastructure.

Figure 6.7 captures the acquisition of mLearning resources and infrastructure at School B over the three-year research period. At the start of the partnership School B had eight iPads and a Wi-fi network. The partnership provided the opportunity for teachers to borrow mLearning resources. School B borrowed a set of Bee-Bots from the University in 2014 for the whole school term and a digital microscope for a week.

Figure 6.7. Technology infrastructure at School B. This figure illustrates the mLearning resources and infrastructure available over the course of the study.
At the end of the three-year research period, School B had two mobile trolleys of iPads (30 iPads), eight digital microscopes, two sets of Bee-Bots, a class set of Talking Butterflies, Story Sequencers, and metal detectors. Technology was embedded within the school business plan with professional development to support staff and school leaders. The acquisition of mLearning resources took place gradually. The University staff guided the mLearning resources selected and used at School B. The technological leadership, particularly in the final year, enabled School B to move towards its goal of implementing mLearning across the curriculum.

The key challenges to mLearning implementation at School B were viewed as: resource management, maintaining continuation in leadership; and upskilling staff. The benefits offered by the mLearning partnership with the University were identified as professional development opportunities, access to advice about selection of mLearning resources and apps and the opportunity to borrow mLearning resources from the University.

6.6 **What are the impacts of the mLearning partnerships on school communities?**

The purpose of this research was to ascertain the impact of mLearning on school-university partnerships. This section contains data collected from the school communities. Such data was obtained from parents and teachers at the schools associated with the mLearning partnerships. The data was gathered by the researcher from parent surveys, the school websites, parent workshops and interactions observed through the classroom visits. Parent workshops were conducted each year and provided an opportunity to highlight the mLearning that the children had engaged in, and provide parents with up-to-date information about best practice mLearning in early childhood education.
6.6.1 School A.

School A was a community school and placed importance on local partnerships and parents. Parents at School A were involved in leadership groups the P & C Association, School Council, and school board. The Principal in the first year, Tim, stated that the feedback from parents about the PST visits was positive. Parental opinions affected the decisions made by school principals, for example, in the first year positive feedback from parents encouraged Tim in applying for an iPad grant.

6.6.1.1 Parent workshops at School A.

Parent workshops were facilitated by the University staff in 2013 and 2014. The feedback for the parent workshop in the first year was also positive. Most parents had little knowledge about mLearning and came to the workshop hoping to learn something that would enable them to better support their children. Feedback from the parents and carers indicated that they considered mLearning essential in early childhood education but were cautious and thought that children using mLearning required close supervision. After the parent workshop at School A in 2013, two parents who had not been present asked which apps had been demonstrated and bought the apps used in the workshop. The parents stated that they heard positive feedback about the workshop and the parents and teachers who attended stated that it had been a worthwhile experience. The president of the P & C Association attended the parent workshop in 2013 and was influential in the P & C Association’s decision to purchase iPads for the school the following year. The P & C Association raised $38,000 in 2014, $22,000 in 2014 and $15,000 in 2015 making a significant contribution towards mLearning resources at the school. The parent workshops provided parents with information about mLearning and gained the support of parents who were influential in organisations such as the P & C Association.
The early childhood teachers were proactive in organising parent workshops at School A. Kelly and Jessica distributed information in the school newsletter and sent letters home to the parents in the first year. Kelly stated that she thought the parents would appreciate some up-to-date information on mLearning in early childhood education. Jessica and Kelly requested replies from the parents and encouraged them to attend the workshop. Nine parents attended the session in the first year along with three teachers from the school, and eight parents attended in the second year. In the second year, Jessica wrote some information for her school newsletter regarding the parent workshop and sent it to the University before giving it to the parents. Jessica’s actions revealed her support of the partnership and willingness to collaborate with the University, to ensure that the parent workshops had the correct focus.

The parent workshops were hands-on sessions and took place at the beginning of the school day. Angel did not participate in the parent workshop in 2014. In 2014, Jessica mentioned that she was a member of her school’s council and suggested a future evening event coinciding with a council meeting as a way of attracting more parents to attend. Again, Jessica was proactive in her engagement with the University revealing a desire to make the partnership work. In 2015, the researcher discussed a parent workshop with the Principal who was in favour and suggested an evening session. The parent session did not eventuate in the final year due to unforeseen circumstances, as the Principal who agreed to organize the workshop had to take some unplanned leave. Further, the partnership needed the support of multiple participants. This need was highlighted when the Principal was on leave and one of the participating teachers was no longer at School A, resulting in a lack of leadership required to organise the workshops.
6.6.1.2 The importance of local partnerships at School A.

The term community was used in School A policy documents and referred to being connected to the locality. There were 20 comments in School A’s business plan to show that School A was a community school. In part, this was evidenced via School A’s community connections with the University and with a local sporting team. The following examples from interviews illustrate how teachers and school leaders regarded the importance of partnerships with the local University community:

The benefits [of a University partnership] are multi-faceted: educational philosophy, new technology, guidance with the latest technologies. It is great to have links with the local University. This school is community-based. (Tim, 2013)

We like to use things that are close to us [school]. (Angel, 2014)

We want to have a representative from the University on our school board. (Sam, 2015)

The School A Annual Reports for 2013, 2014 and 2015 stated that “parents were partners, community engagement was fostered, and the school had an extremely active P & C Association and school council”. The Annual Reports were written by the Principals at the start of each year and reflected on the previous year’s business. The 2014 annual report, written by Sam in 2015, stated that a goal for the future was community connectedness and the ICT parent workshop delivered by the University was a highlight of the year. The Principals at School A all placed value on the partnership with the University. Traditionally School A had a strong emphasis on the arts and parents, and carers placed importance on the arts as reflected by a parent survey comment: “School A has a strong sense of community and belonging, and it is aware of the importance of arts in the curriculum” (Parent Survey, 2014).
6.6.1.3 The importance of parental support.

The Bring Your Own Device (BYOD) model of technology integration is gaining popularity in schools globally (New Media Consortium, 2015). The BYOD model required parental support so that parents could see the value of the technology and agree to the purchase of mLearning resources. Tim, the Principal in 2013, was in favour of the BYOD. In 2015, the school business plan included a statement about exploring BYOD opportunities as a means of increasing the number of iPads in the school.

6.6.1.4 mLearning at School A.

A key focus area for School A in the 2015 Annual Report was planning and modelling the effective use of ICT as a learning tool for staff and students. This was a change in focus for School A. The Principal was aware that School A historically viewed itself as having a strong arts program, but he wanted to embed Science, Technology, Engineering and Mathematics (STEM) and ICT into the school culture and used the school business plan to achieve this goal. The school replaced the music specialist with a science specialist teacher in 2016 leaving the school without a music specialist. Members of the parent community (14) used social media to express concerns about this change including: “Let us hope a music teacher will be part of the new staff” (School A parent, 2015) and “Given that this town is the home to many amazing musicians I think it is sad that we have officially let go of what I thought was an integral part of School A” (School A parent, 2015). Only one parent stated that a science specialist might be an asset to School A.

6.6.1.5 Results from the parent survey.

Parents and carers completed a survey at the conclusion of parent workshops (Appendix E). The purpose of the surveys was to determine the mLearning resources available in the homes of children attending School A, how they were used, and to determine
the views of parents about mLearning in early childhood education. The number of surveys completed was 17, reflecting the small number of parents and carers who attended the workshops. However, the response rate was high with 100% of parents and carers who attended the workshops completing surveys. The parents of School A all had the Internet at home, so access to mLearning devices was high (94%). Children had access to mobile learning devices such as the smartphone (65%), iPad (59%), iPod (18%) and Android tablet (12%). Figures 6.8, 6.9 and 6.10 illustrate the ‘at home’ mobile devices available, frequency and type of use by children attending School A.

![Figure 6.8. Mobile devices used by children attending School A, at home. The results are from data collected from 2013 to 2015.](image-url)
More than 70% of the children from School A used mLearning devices at least once a week and the greatest (59%) use of mLearning with children was for playing games.

Figure 6.9. The frequency of mobile devices used by children at School A, at home. The results are percentages from data collected from 2013 to 2015.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>5.9</td>
</tr>
<tr>
<td>Less than once/week</td>
<td>5.9</td>
</tr>
<tr>
<td>1-3 times/week</td>
<td>35.3</td>
</tr>
<tr>
<td>4-6 times/week</td>
<td>17.6</td>
</tr>
<tr>
<td>Every day</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Figure 6.10. How children from School A use mobile devices at home. The results are from data collected from 2013 to 2015. The numbers represent percentages.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media</td>
<td>0.0</td>
</tr>
<tr>
<td>Research/Investigation</td>
<td>23.5</td>
</tr>
<tr>
<td>Drawing/creative activities</td>
<td>23.5</td>
</tr>
<tr>
<td>Talking/Skype</td>
<td>5.9</td>
</tr>
<tr>
<td>Listening to music</td>
<td>23.5</td>
</tr>
<tr>
<td>Texting</td>
<td>5.9</td>
</tr>
<tr>
<td>Taking photos or videos</td>
<td>29.4</td>
</tr>
<tr>
<td>Reading digital stories</td>
<td>17.6</td>
</tr>
<tr>
<td>Playing games</td>
<td>58.8</td>
</tr>
</tbody>
</table>
Current literature reveals that parents see the educational potential of mLearning devices, frequently supply tablets and smartphones to young children but lack the knowledge to guide educational use (Goodwin & Highfield, 2012). Such literature is consistent with the findings of the present research, which showed that children are using devices mainly for playing games rather than for educational activities. Regarding support for mLearning in early childhood education, parents were asked questions using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Positive (agree and strongly agree) and negative (disagree and strongly disagree) responses were combined. Figure 6.11 illustrates the support from the parents of the children at School A about using mLearning in early childhood education.

Figure 6.11. Parental views on mLearning in ECE. The results are from data collected from 2013 to 2015 at School A.

Results from the surveys showed that parents supported the use of mLearning. No parent agreed with the statement; The parents do not want mLearning. It was important to view the results of the parental surveys in the correct context, namely, a small number of respondents consisting of parents who already had a high level of interest in mLearning as
evidenced by their attendance at the workshops. An parent who had just enrolled her child in School A was concerned about the use of iPads in early childhood education and stated to the researcher: “The Principal has all the children using iPads” (School A parent, 2015).

The parents of the children at School A were asked to rate their personal level of technological knowledge using a five-part Likert scale with answers ranging from strongly disagree (1) to agree strongly (5). The results (Figure 6.12), show that half of the parents thought they lacked technological skills.

\[ \text{Figure 6.12. Parental views on personal technological knowledge. The results are from data collected from 2013 to 2015 at School A.} \]

\[ \text{Figure 6.13 illustrates the parental views regarding the value of mLearning in early childhood education, which were positive except for the statement about mLearning developing social skills for collaboration, where only 55% of parents agreed with the} \]
statement. This view aligns with common fears surrounding excessive screen time and the fact that technology use at home is usually in isolation as opposed to collaboratively as in the classroom setting, which research has shown to promote social interactions (Moore & Adair, 2015).

![Diagram showing parental views on positive aspects of mLearning in ECE](image)

*Figure 6.13. Parental views regarding positive aspects of mLearning in ECE. The results are from data collected from 2013 to 2015 at School A.*

In open-ended survey questions, parents commented about their views on mLearning in early childhood education and whether they had any concerns. Figure 6.14 presents the responses. Responses were coded using NVivo and grouped into four themes. The themes were, positive beliefs, negative beliefs, not concerned and concerned. The diamond shape illustrates the percentage of parental comments about each of these four themes.
Figure 6.14. Parental views about children using mLearning tools. The results were from open-ended survey questions completed by parents at School A.

Figure 6.14 indicates that more parent comments reflected concern (53%) about children using mLearning than no concern (29%). Positive views were slightly greater (41%) than negative views (35%) regarding mLearning in early childhood education. School A parents were surveyed about the benefits of school-university partnerships. Figure 6.15 presents the results. School A parents placed a high value on partnerships with more than 80% agreeing that school-university partnerships are beneficial to the school, the teachers, the parents and the children.
Figure 6.15. Parental views about the value of school-university partnerships. The results are from data collected from 2013 to 2015 from parents of children at School A.

6.6.1.6 The School A-University partnership.

The partnership between School A and the University developed over the three-year period and provided mutually beneficial opportunities for both partners. The benefit for School A was meeting business plan objectives. School A’s business plan 2015-2017 created by the IPS board had four main parts; every child is a successful student, high-quality teaching and learning, beneficial partnerships and school environments. Three committees were set up to oversee the main components of the business plan. The Principal requested a University representative on the teaching and learning committee because that committee included the targets associated with mLearning and STEM. The Principal’s actions demonstrated that partnership with the University was beneficial to School A. Having partnerships embedded in the school business plan meant that partnerships had to be measurable and achievable. Figure 6.16 summarizes the partnership between School A’s community and the University.
The partnership between School A and the University is illustrated by the following quotes:

The partnership is really important as we are part of the same community. It gave me the opportunity to observe my students, and there is rarely time to do that. It was good to see what universities are teaching PSTs. It was also lovely to have young, vibrant people in the classroom and be part of their journey. (Karen, 2015)

I have been looking for ways to network with universities. This [partnership] is just fabulous. (Tim, 2013)

In summary, the findings show that School A valued being part of a local community. The University was in the same locality as School A so the locality aspect of community was achieved. In order for partnerships to be sustainable, they need to be mutually beneficial. The
findings revealed that in the final year the partnership became mutually beneficial, and the benefits went beyond just the participants in the mLearning partnership.

6.6.2 School B.

School B was a community school and placed importance on local partnerships. Members of the School B community stated that local partnerships were important. For example; Louise stated early on: “I think this is the beginning of an exciting partnership” (Louise, 2014). Anna saw value in the partnership: “I think our partnership is great. I am new to the district, and I need support. I think the partnership is a great resource” (Anna, 2015).

Bo’s comments also reflect her support for the partnership:

I think it has been a really good partnership in the way that our teachers and students have been exposed to some really strong practice in terms of embedding technology (Bo, 2014).

I think the professional learning component [of the partnership] for our staff has been the major thing. (Bo, 2014)

The partnership is a resource for the school which is amazing to have, but I think the school needs to continue to be stronger in that [mLearning] area because I do not think we are anywhere near where we need to be. (Bo, 2014)

At the end of 2013, Gloria stated that the University was welcome to extend the mLearning partnership to her new school in 2014 indicating that she valued the partnership. She said that having the opportunity to view technology in action before investing money was advantageous. She made the most of the partnership with the professional development sessions that the University arranged for School B at her request. Before leaving School B, she made sure that School B supported the University with PST professional experience placements without any prompting. As a result, School B took PSTs from the University for an extended professional experience for the first time in five years. The following year,
Gloria’s new school also offered professional experience places to the University for the first time.

Parents at School B were involved in parent associations such as; the P & C Association, School Council and school board. Annual report statements and feedback from the community illustrated the importance of strong ties with the local community at School B:

Strong partnerships between our community and school have ensured many positive outcomes for our students. (Annual report, School B, 2013)

I think the benefits of our partnership are outstanding. It is a fantastic professional learning opportunity for staff, to have engaged hands-on practitioners. The time and effort that they [PSTs] put into one lesson is huge. In the future, I will free up teachers so they can come and observe. (Anna, 2015)

The annual Report for School B stated that the success of the school was in part due to the high level of parental support and that partnerships with parents were important. In 2015, community partnerships were embedded into School B’s business plan, and a University representative was invited to become part of School B’s board.

6.6.2.1 Parent workshops.

Parent workshops took place in each year of the study. The purpose of the parent workshops was to provide parents with up-to-date information about the use of mLearning in early childhood education and to gauge parental views on mLearning. Parental attendance of workshops was a challenge and required the support and enthusiasm of teachers and school leaders.

6.6.2.1.1 Year 1 (2013).

The location selected for the first parent workshop at School B in 2013 was not ideal. It was noisy and far away from the classrooms. The parent workshop was supposed to be an
opportunity to showcase the work the children had completed with the PSTs, combined with a practical hands-on session where parents explored mLearning. However, it was advertised, unbeknown to the University as a question and answer session. A question and answer session did take place with the few parents (n= 4) who attended, the Principal and one of the teachers, Louise. There was no opportunity to showcase the children’s work. The University answered questions and gave advice rather than delivered the planned hands-on session. The Principal at School B, Gloria gave one of the teachers, Louise, the task of organizing the parent and carer workshop. A discussion about the workshop with the Principal revealed that Louise had not distributed the information to parents or requested replies from them. As Louise, did not succeed in encouraging parents to attend, the sense from the SoE staff was that Louise was not supportive of the parent workshops. This was further illustrated by the fact that Louise incorrectly advertised the workshops on a further occasion, again indicating a lack of understanding about their purpose. Louise’s lack of support for the parent workshops was a challenge in the first year of the partnership.

6.6.2.1.2 Year 2 (2014).

There were three parent workshops arranged at School B in 2014. The first was on digital citizenship at the suggestion of the school, with seventeen parents attending; and the second on using iPads creatively, with six parents attending. Although only a few parents attended the second workshop, the Principal, Bo, and pre-primary teacher Louise were present and participated in the activities. The parent workshops provided an opportunity to upskill the Principal who subsequently used the acquired knowledge to select apps for the school’s iPads. Despite poor attendance (n=4) at the third parent workshop in 2014, personal relationships between the University staff and school leadership strengthened.
In 2015, when the University suggested a parent workshop at School B, Anna had just observed a PST session and indicated that she wanted parents to see the activities the PSTs delivered to the children. Presenting professional development thus became an opportunity for PSTs in the second year of their degree. Six pairs of PSTs were invited to be presenters, chosen by their lecturers. Anna distributed two different flyers advertising the workshop in the hope of attracting as many parents as possible. The first flyer advertised the workshop as a hands-on opportunity to explore mLearning technologies. Anna distributed a second flyer when few responses to the first were received. The second flyer invited parents to come for coffee and cookies and learn about some fun mLearning devices. On the morning of the parent workshop, the Principal was embarrassed that she had only received six replies and was apologetic. The two fliers and the fact that the Principal was disappointed by the number of responses indicated that she wanted the workshop to be a success. Despite initial concerns, 25 parents attended. The PSTs presented a well-received session, introducing and explaining their lessons and describing how the mLearning tools supported the children’s learning. The PSTs then engaged with groups of parents while their young children demonstrated the mLearning resources in a highly competent manner. Positive comments made by participants demonstrated that the parent workshop was a success:

Show and tell today was brilliant, great to see what is out there. Thank you for coming to our school. (Parent, School B, 2015)

Feedback from parents was really good; one parent thanked me for forcing her to come. (Anna, Principal School B, 2015)

I am so proud of you all. I could never have imagined this three years ago. (Julie, ICT coordinator, 2015)

The PSTs commented that many parents had asked where to purchase various mLearning resources and how much they cost. The mLearning tools used did not include iPads because the activities planned were based on curriculum suggested by the teachers and
iPads were not deemed to be the best choice. The mLearning resources used were Bee-Bots, metal detectors, Story Sequencers and digital microscopes. The Principal commented that many parents had a disposition towards the arts and music and not technology, so the parental workshop was empowering because it highlighted a variety of mLearning tools without iPads. The Principal requested details of all the mLearning resources and stated that she would purchase all the mLearning resources that the PSTs had used at School B.

In the final visit of 2015, the Principal, Deputy Principal and one of the participating teachers approached the SoE staff to ask about the partnership. The previous evening the Principal had announced at a Board meeting that the school-university partnership was at the end of the original three-year plan. They all expressed concern that the partnership was over. The University staff involved made a commitment to maintain the partnership, as they considered the visits to be beneficial to the PSTs. The partnership continued the following year.

6.6.2.2 Parent surveys.

Parents and carers in School B completed a survey at the conclusion of parent workshops (Appendix E). The purpose of the survey was to determine the degree to which mLearning was available in the homes of the children at School B, gauge parents level of technological knowledge, and their views about mLearning in early childhood education. The number of surveys completed (n=33) reflected the small number of parents and carers attending the workshops over the three year period. The parents of School B all had access to the Internet at home. Access to mobile devices by children at School B at home was high (97%). Access to mobile learning devices included the smartphone (88%), iPad (79%), iPod (73%) and Android tablet (18%). Figures 6.17, 6.18 and 6.19 show the mobile devices used by children attending School B, frequency and type of use.
Figure 6.17. Mobile devices used by children attending School B, at home. The figure shows data collected between 2013 and 2015. The numbers represent percentages.

Figure 6.18. The frequency of mobile devices used by children attending School B, at home. The figure shows data collected between 2013 and 2015. The numbers represent percentages.
Figure 6.19. How children from School B use mobile devices at home. The figure shows data collected between 2013 and 2015. The values are percentages.

Most of the children (97%) from School B used mLearning at least once a week at home. The children used mLearning mostly to play games (94%), take photographs and videos (73%), to draw and create (70%) and to listen to music (57%). Parents showed their support for mLearning in early childhood education at School B using a five-part Likert scale with answers ranging from strongly disagree (1) to agree strongly (5). Figure 6.20 illustrates the results.

Figure 6.20. School B parental views on mLearning in ECE. The figure shows that few parents (23%) opposed mLearning in ECE.
Figures 6.21 and 6.22 illustrate School B parents and carers personal levels of technological knowledge and views on the value of mLearning in early childhood education.

![Bar chart showing parental perceived levels of technological knowledge](image)

**Figure 6.21.** School B parental perceived levels of technological knowledge. The figure shows that parents think that they can easily learn new technologies.

Findings (Fig. 6.21) revealed that about half of the School B parents agreed with the statements which indicated that they had a level of confidence using technology but were aware that there were things that they did not know.
Figure 6.22. Parental views on mLearning at School B. The figure shows the positive views of the parents of School B.

Parental views on the value mLearning (Fig. 6.22) in early childhood education were mixed 88% agreed that mLearning develops computer literacy, and only 30% agreed that mLearning develops children’s skills for other activities.

Parents were asked in an open-ended question about their views on mLearning in early childhood education. Responses were coded using NVivo and grouped into four themes. The themes were positive and negative beliefs, concerned about children using mLearning and not concerned. Figure 6.23 illustrates the results, which show that were more parents (84%) who had concerns than those who did not have concerns (28%). Positive comments were expressed by 80% of parents and negative comments by 28%. The diamond shows the percentage of parental comments about positive and negative mLearning beliefs and parents who were concerned and not concerned about mLearning.
Figure 6.23. Parental views about children using mLearning tools. The results were from open-ended survey questions completed by parents at School B.

6.6.2.3 Partnership between School B and the University.

The value of mLearning in the School B parent community was illustrated by the willingness of the P & C Association to raise money and use funds to purchase mLearning resources. A partnership between a school and a University should include the whole school community, including parents and carers because parents are the primary educators of children (Booth & Dunn, 2013). The P & C Association at School B was active and willing to spend money on mLearning resources. The P & C Association purchased eight iPads in 2012, five more in 2014 and School B had 30 iPads in 2015. In 2014, the funding raising was technology focused, and the P & C Association organised an event called iRun for iPads that raised $4,000 which was used to purchase additional iPads for the school. Anna’s comment
reflects the support given by the P & C Association: “The P & C are fantastic and raise about $15,000 to $20,000 each year, which is good for a small school. I want to work with the P & C Association to make fundraising for specific curriculum areas” (Anna, 2015). The P & C Association and parent community were valued by successive leaders at School B. The fact that the leadership was inclusive of the parent body enabled a high level of support from the parents. Figure 6.24 summarizes the partnership between School B and the University.

Parents attending the parent workshops were asked questions using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5) about the value of school-university partnerships. Figure 6.25 illustrates that more than 80% of School B’s

**Figure 6.24.** The partnership between School B and the University. The figure illustrates how the partnership developed over the research period.
parents agreed that the partnership was beneficial to parents, the school, the teachers and the children. The parents at School B placed a high value on school-university partnerships.

![Graph showing parental views on benefits of school-university partnerships](image)

**Figure 6.25.** School B parental views on the benefits of school-university partnerships. The figure shows that the views were positive.

In summary, the partnership between School B and the University developed over the three-year research period. The strengthening of personal relationships between participants enabled School B to access professional development from the University and advice about hardware and software suitable for early childhood education. School B also borrowed mLearning resources from the University and teachers considered further studies and casual employment at the University. School B invited a member of the University staff to join the Board of School B, further strengthening the partnership.

### 6.7 Conclusion

This chapter presented findings about how the partnerships at both schools contributed to mLearning in the school communities. The school communities (teachers, parents and carers and school leaders) were crucial to the success of the partnerships. Feedback from the school communities indicated that participants saw value in school-university partnerships. School leaders at both schools personally provided relief for the participating teachers to visit the University to meet the PSTs in the second and third years of the study and partnerships were embedded in the business plans of both schools.
One of the challenges to mLearning implementation was the lack of teachers’ technological knowledge. Teachers need time and mLearning resources to develop technological knowledge. As a result of the partnership, the University invited the participating teachers to attend free professional development alongside the PSTs. The cost of employing teacher relief meant that only three of the four teachers were able to attend one session only in the first year because the sessions fell in school time. In subsequent years, the teachers were invited to attend free professional development sessions in the summer holidays, alongside PSTs in an ICT intensive unit. However, only one teacher availed themselves of this offer. For a partnership to be successful, the teachers needed to increase technological knowledge to some degree. The partnership provided a way of overcoming the teachers’ lack of technological knowledge.

The purpose of this study was to explore mLearning in early childhood education. To achieve such a purpose, PSTs needed the confidence to use mLearning in the classroom. The teachers also needed the knowledge and confidence to use mLearning in the classroom and to share this knowledge and skills with colleagues, so that the learning could go beyond individual classrooms. At the end of the three-year study, both principals decided to select future teachers for the mLearning partnership so that they could maximise the learning within their schools. In each case, the Principal was able to select teachers who would be willing and able to share acquired mLearning knowledge with colleagues.

The participants considered technological support a key consideration when implementing mLearning and technology integration in schools. Neither school had any ICT policies in 2013 or 2014. The school business plan written for School B at the end of 2014 had technology as a key focus area, and the plan contained a provision for teacher professional development and funding. All the teachers had experienced technology not working properly and also equipment failure. The partnership offered technical support to the
schools, and as the partnership progressed, the schools were more inclined to seek assistance from the University.

Educational change in a school requires the support of all stakeholders. All stakeholders must, therefore, support and believe in an initiative if it is to succeed. The purpose of the partnership in this study was to examine the impact of mLearning in early childhood education. For a partnership to succeed, there must be benefits for the children, staff, and parents and carers; and the benefits must outweigh the disadvantages. This chapter has shown this to be the case.

Chapter 6 presented the findings collected from the leadership and communities of the schools. Chapter 7 presents the findings regarding the leadership and staff within the SoE at the University.