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The art and science of coaching: Professional development to address mobile technology integration in a complex hospital school environment

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The art and science of coaching: Professional development to address mobile technology integration in a complex hospital school environment

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Key words: coaching; professional development; hospital school; mobile technology integration; mobile learning

Biography

Dr Dorit Maor is a Senior Lecturer in the School of Education at Murdoch University, Perth, Western Australia. Her teaching and research expertise is in the area of eLearning, in particular the integration of innovative pedagogies with new technologies.

Katherine Mitchem is a professor of Special Education at the Department of Special Education, California University of Pennsylvania, Pennsylvania, USA. Her teaching and research expertise is in the area of mobile technology to support students with special needs.

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Abstract

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Introduction & background

The educational progress and social and emotional wellbeing of hospitalized students can suffer because they cannot attend their regular schools. Through a variety of flexible delivery options and by liaising with the regular school, hospital schoolteachers can provide learning support

to these students to help them maintain their learning and reduce their feelings of isolation and anxiety that disrupted schooling may cause. Mobile technologies offer opportunities for transformative change in teaching and learning in schools (Owen 2015) and are particularly appropriate for hospital schools which require communication and collaboration with parents and enrolled schools, access to a wide range of curricula, expert skills and knowledge to meet complex and challenging needs of diverse student populations. To improve learning outcomes for their students and reduce the gap between the technology-rich learning environment of students' regular schools and the hospital school, an Australian hospital school recently introduced mobile technologies and relevant digital pedagogies. The integration of mobile technologies to support learning requires specialized professional development for teachers that focuses on exemplary pedagogies (Cochrane et al. 2013; Laurillard 2012). While such professional development is important for classroom teachers, it is even more crucial for hospital schoolteachers who support vulnerable children in a dynamic environment (Authors 2015).

A large research project sought to examine the integration of mobile technologies within a professional development (PD) program in hospitalized school settings. The lack of empirical research in this area (Authors 2015) made this a significant project that investigated the integration of technology with pedagogical approaches to teach hospitalized students who experience complex academic, social, emotional, and physical needs. Following a mixed-methods study to determine teachers' mobile technology needs and current mindsets (McCarthy, Author & McConney, under review), a job-embedded coaching approach emerged as most likely to meet the unique needs and complex challenges present in a hospital school setting. Selecting coaching as a driver for PD had the inherent advantage of building capacity within the organization thus potentially contributing to

sustainability, a long-term goal. The question is what does that coaching process look like and how does it differ from coaching provided in a regular school setting?

Within the larger project, this current study sought to examine how the model of coaching developed to meet the unique needs of the hospital school setting and specifically the role of the coach in facilitating teacher and student learning. We sought to answer the following research questions:

- What are the contextual influences that shaped the coaching model?
- What specific coaching practices support teachers' individual professional learning needs for successfully implementing mobile technologies in hospital school settings?

Literature Review

Teaching and learning in hospital school contexts

Teachers in hospital schools face a unique set of challenges in that they must be prepared to teach various topics to a wide range of students, with multiple complex needs and varying levels of motivation, from a variety of jurisdictions in a number of different settings on any given day. Children who are required to be in the hospital frequently or for significant periods of time tend to experience trauma not only physically but also emotionally and socially (Brokstein et al. 2002; Bush and Simonian 2002). In addition to limited contact with families and missing the routine of school life, hospitalized children also need to accept the rules and limitations of their new environment (Authors 2015). Prolonged absence from school can cause severe barriers to learning (Martinez and Ercikan 2009) and, especially in the case of students who are required to complete major assessments in final grades, high anxiety and stress to the young person. With limited time for schoolwork but an expectation to cover the full curriculum, students may be concerned about keeping up with coursework they are missing and meeting school expectations.

School provides opportunities for social connection and friendship, and group work provides opportunities for social interaction; therefore, it is difficult to separate the educational and social implications of children's absence from school. The risk of lack of motivation to continue with schoolwork while experiencing isolation and/or life-threatening illnesses can have a critical effect on children and add to the accumulation of learning difficulties (Jackson 2013). Students experiencing loneliness and vulnerability are additional issues (Palmer et al. 2007) that hospital teachers contend with on a daily basis placing the teacher in the role of social worker, guide, and mentor as well.

Hospital teachers communicate with their students' regular schools while the student is in hospital and often continue to support them through face-to-face and virtual communication while the student is recuperating at home or at another facility. Frequent communication and collaboration with parents and other educators and school administrators is critical for a successful transition (Franck et al. 2013).

Professional development and mobile technology integration

The teacher is the single biggest factor in student outcomes (Blanton et al. 2011), and in today's diverse and global environment, teachers need increasingly sophisticated knowledge and skills (Ball and Thames, 2008). Following initial teacher preparation and certification, professional development (PD) is the primary method for teacher education, and is foundational to educational reform (Dede et al. 2009). Yet, PD, in general, is often ineffective, and has been thoroughly criticized in the teacher education literature for failing to (a) bridge the long-standing research to practice gap (Boardman et al. 2005), (b) result in systemic change (Schaughency and Ervin 2006), (c) create sustainable change in teacher behavior (Kretlow et al. 2011), and (d) provide clear and reliable links to improved student outcomes (Holdheide et al. 2010).

With regard to mobile technology integration, the research findings are no different. Although mobile technologies can positively support student engagement and learning with new pedagogical practices (Ally et al. 2014), teachers struggle when attempting to integrate technology into their instruction and may face off-putting obstacles (Kopcha 2012). Many teachers report that they need help selecting effective pedagogical strategies in the use of technology and are unaware of all the benefits of mobile technologies for personal, administrative and teaching requirements (Owen 2015).

High quality PD exists, and we have learned much about the requisite features of effective PD, including actively engaging teachers in learning (Pierson and Borthwick 2010), developing collaborative communities (Sindelar and Brownell 2001), providing expert support (Zorfass and Rivero 2005), focusing on interventions that are practical, meet specific needs, and are aligned with the local context (McLesky and Waldron 2004). Many researchers concluded that for teachers to learn to use and integrate technology meaningfully, it must be guided by appropriate theoretical frameworks (Koehler and Mishra 2009; Mishra and Kereluik, 2011; Puentedura 2012) with individualized job-embedded coaching (Yendol-Hoppey and Dana 2010).

Research has established that teachers' views influence their adoption of new practices and innovations (Boardman et al. 2005; Kretlow and Bartholomew 2010), and teachers' confidence and self-efficacy beliefs about use of technology affect their willingness to try, and to integrate technology effectively (Barrett-Greenly 2013). Teachers' perceptions about the power of an intervention, its accessibility, and ease of use also influence adoption and fidelity of implementation (Knight 2009). In accordance with their beliefs, prior knowledge and experience, and local context, it is also documented that individual teachers react in different ways to recommendations presented in PD and to the PD itself (Boardman et al. 2005; Hill 2009). While

some teachers adopt innovations quickly and skillfully, other teachers require more supports to learn and practice, while still others fail to adopt the innovations at all. In addition, teacher resistance to change in response to consultation has been noted as a problem and one that must be considered in providing PD (Billingsley 2004). New practices are often complex and require sophisticated knowledge and skills; learning requires a huge investment on the part of teachers of which researchers must be mindful. With respect to learning about new innovations (Knight 2009) teachers must believe their effort is "worth it."

According to Koehler et al. (2013), research on instructional uses of technology reveals that teachers often lack the knowledge to integrate technology into their teaching successfully. This lack of knowledge and personal experience with mobile technologies contributes to a lack of confidence and willingness to risk new strategies and innovations (Kukulska-Hulme and Pettit 2008). In research where teachers were engaged in PD that involved observing each other's classrooms, identifying and solving problems as they arise supported by teacher coaching, observations, and feedback, Barrett-Greenly (2013) found that they increased both confidence and skills in using mobile technology and educational applications.

Coaching

As a practice-based professional development approach, coaching has generated significant interest in recent years (Blachowicz et al. 2005) and is appealing because of "the opportunity to tailor information and guidance to a teacher's knowledge, skills, and specific classroom circumstances" (Powell and Diamond 2013, p. 103). This is particularly suited to situations where high levels of individualization are necessary as a result of the unique demands of the environment and the content as in the case of the hospital school setting. The very nature of coaching affords specific advantages over other forms of PD. For example, support by the coach can be provided in

the context of the teacher's practice at the point of need, and often integrates colleagues and collective participation in its design, building both expertise and teacher quality through collaboration (Garet et al. 2001). In addition, coaching is offered on an ongoing basis, countering a common criticism of PD that it is too short and lacks follow-up, in turn leading to teachers' resistance to change when faced with challenges after the PD is over (Coburn 2004; Tyack and Cuban 1995).

According to Powell and Diamond (2013), while the core actions of the theory of change in PD are quite well known: coaching ---> improvements in teacher/classroom practices ----> improvement in child outcomes (p. 103), what is less clear is the specific implementation of the individualized practices that comprise coaching. Coaching appears to have distinct attributes that make it attractive as a PD approach for a hospital school setting that requires high levels of individualization, and for the introduction of mobile technologies, an innovation that presents its own set of challenges. There is very little empirical research in the area of hospital schools – in terms of evidence-based practices for teaching and learning (Authors 2015). Investigation of both the challenges and contextual variables affecting teaching and learning in a hospital school setting, as well as what implementation of coaching looks like, would allow an interpretation of the program effects and a better understanding of the ways in which coaching processes may lead to improved teacher and student outcomes.

Methods

Professional Development

The professional development introduced by the researcher team involved two components: (1) an introduction to pedagogical models for incorporating mobile technology in the education context and; (2) coaching that was conducted one on one and in small groups by an external coach.

The researchers conducted the PD program that focused on pedagogies and action research while the coach, who was employed by the hospital, led the coaching sessions with the hospital schoolteachers.

Participants in Coaching

The hospital school leadership's plan was to provide each teacher the opportunity for individual coaching. They hired a technology – pedagogical expert, the iCoach, to coach the teachers. The iCoach aimed to train, mentor, teach each teacher individually. Each coaching cycle comprised one hour per week for four weeks, one-to-one with the coach. In the first year the iCoach completed two rounds of training with teachers from the hospital school. Four teachers from these initial coaching sessions went on to become coaches. In the following year the iCoach continued training sessions with the hospital teachers and 39 teachers completed the coaching program. These sessions took place in the teacher's environment either in the class or by the bedside of the students.

Coaching Process

During the first session, the iCoach shadowed the teachers, observing how they worked with the students and assessing their needs. Following the initial session, the iCoach tried to determine what the teachers wanted to focus on. Her goal was to maintain a narrow focus so that the teachers didn't "feel that they have to bring amazing technology into all the things that they do". The teachers expressed a variety of needs including exploring creative applications, support for communication needs, and engaging apps to replace worksheets. With this information in hand, the coach planned for the subsequent sessions. The sessions varied depending on the teachers' articulated needs but were designed to demonstrate the use of a variety of apps relevant to the teacher's particular circumstances and content area.

Data Collection

Participants. In total, 75 Hospital School (HS) teachers and educational assistants were involved in the school's Information Learning Technology days. From those, twenty-nine people volunteered to participate in the research which involved pre and post surveys, pre and post individual interviews. Informed consent was obtained from all individual participants included in the study.

Interviews

Teachers' individual interviews were conducted at the hospital school facilities prior to the professional development (PD) program (pre –PD interviews) and after the completion of the PD program (post-PD interviews). Pre and Post PD interviews were approximately 20 and 30 minutes respectively.

Teacher Reflections

After each coaching session, teachers were encouraged to reflect on their teaching with technology for that week or session. They could choose to record this on an iPad (audio or video) or write their reflection. Most participants recorded the audio and the coach uploaded this to a separate Dropbox for transcription.

Coach Reflections

Approximately once each month the coach would record her own reflections on the coaching sessions with the teachers. These sessions were recorded and uploaded to Dropbox for later transcription.

Coach Log

The coach maintained an MS-Excel spreadsheet log in which each coaching session with teachers was documented along with comments about which applications, skills or content were introduced and/or practiced and what goals or focus was established for the following session.

Data Analysis

Each individual interview and coach reflection was audio recorded and transcribed verbatim. Information from teacher interviews, the iCoach logs and reflections, and teacher reflections were cross-referenced and tabulated in a matrix to ensure the validity of the data. Analysis occurred through multiple read-throughs of the transcripts, writing notes in transcript margins regarding key ideas, and classifying and interpreting using open-ended coding with key themes emerging from this process (Creswell 2003). Information from multiple methods of data collection and analysis by several researchers enabled triangulation of themes, which increased the reliability and validity of the outcome. One major theme, the uniqueness of the setting and multiplicity of demands emerged with a number of related sub-themes that provided a deeper understanding of the needs of teachers and students and subsequently shaped the model and process of coaching that took place at this hospital school. Related sub-themes included: the need for communication and connection; the inability to plan, the need for instant access to materials and resources; infrastructure problems; health and safety concerns; and finally, the role of teacher as facilitator vs being in charge of the curriculum.

Results

What contextual influences shaped the coaching model?

To answer the research question about the contextual influences that shaped the coaching model, we examined themes that emerged from the teachers' and coach's interviews. These themes were: uniqueness of setting and the multiplicity of demands, communication and making connections, inability to plan and need for instant access, infrastructure problems, health and safety concerns, and facilitator—not in charge of the curriculum.

The overarching theme that emerged about the coaching model was the **uniqueness of its setting.** Hospital teachers and the coach discussed the difficulties they faced as a result of the multiple challenges in this unique hospital setting. One teacher referred to the diversity in the location of children in the hospital:

> *. . . to know how to use these devices effectively so they can help me maximize my time. I'll have kids in the classroom, several in isolation and some in day care and then I need to be on other wards and all those places at different times. It would be good to know how to deal with that.* (Pt.06-interview)

Several other teachers reported challenges in trying to meet the varying needs of many students often without being able to plan in advance. They constantly had to be able to problem solve spontaneously:

> *Everyday [involves] problem solving because you don't know who you're going to have and how they're going to feel. It's a different day every day.* (Pt.11-interview)

This is even more evident when there are short and long-term stay hospitalized students as described by another teacher:

> *… often we might only have them for one day: that provides one sort of issue. Another type of setting might be in Oncology where they are there all year. So, how do we provide for them and how do we make education as engaging and meaningful, but as practical as possible.* (Pt.03- interview)

The multifaceted situation that confronted the teachers in hospital schools is acknowledged by the iCoach. In fact, the iCoach herself saw the promise of mobile devices and digital pedagogies for addressing these issues, while at the same time she recognized the challenges of successfully accomplishing this:

I can really see these devices being so successful in this setting, used quite differently to other school settings: for those kids who can't get out of their beds; for those kids who are in isolation; for those kids who are just there on a one off visit; even for those kids who are there long term; technology can fit into all of that. (iCoach-Reflection)

Related to the hospital setting and supported by the hospital leadership was the **need for communication/connections.** One teacher reported that education for these kids is part of the treatment:

The principal wants us to try and connect these long-term kids with their schools and make them feel more connected. That's part of the ethic of my ward: school is part of their education and part of their treatment protocol. They need it to make them feel good about themselves. (Pt. 11-Interview)

In a similar fashion, another teacher talked about the need to help students stay up to date with their coursework from their regular school to ease the transition back once they left the hospital school:

I work in an eating disorders program so every one of them is a long term student. We work to keep them connected with their school and ensure that they cover missing work … (Pt. 01-Interview)

With teachers not knowing whom to expect on the wards each day or how able they will be to work, it was challenging to plan in advance and they often needed to identify resources and supports on the fly. This **inability to plan and the need for instant access** became a regular occurrence for many teachers:

I'll go to a ward and a student will say 'I need to do this today' so there is no pre-knowledge of what I will need on a particular day. (Pt. 05-Interview)

In an effort to manage and address this very issue, another teacher reported relying on her personal iPhone:

But to me it is worth the dollar cost because it's so convenient, it's so instant. My computer, my desktop sits down in another part of the hospital where I don't teach. My phone dings when I've got a message and there's the work for the kids so I can give it to them while I'm with them immediately. (Pt. 05-Interview).

These issues are compounded by challenges that appear to plague all technology integration initiatives; namely, **infrastructure problems.** Whilst these are not unique to the hospital setting, the challenges they present to teachers already facing multiple and complex demands may make integrating technology seem insurmountable and not "worth it." The frustrations of teachers are evident in the example below.

I move from ward to ward as a specialist teacher so I may have an idea for a student, who wants to do a particular topic, and I get there and you can't connect. Or, we're not allowed to access YouTube, for example, or it will drop out. Connectivity is a major problem. (Pt. 05-Interview)

Health and safety concerns faced by the broader community are even more acute in the hospital setting. In discussing the integration of mobile technologies with their students, teachers noted these concerns:

… the issue of confidentiality is a bit of a concern because now all of these technologies can take photos and can get launched on Facebook so if kids are going to be taking other kids' photos in hospital, whereas up until now that hasn't been happening… (Pt. 19-Interview)

Another teacher commented on the disadvantages of technology in relation to what can be accessed on the Internet.

The access to Internet has been a concern. It becomes an issue when you set up a child on the Internet and you've got to be very cautious of where they go on the Internet. You need someone to sit with them so it takes up time. It's great in a lot of ways but it also has its disadvantages. (Pt. 06-Interview)

Finally, a sub-theme that seemed unique to the hospital setting and required the iCoach to make adjustments to the coaching model related to the role of the hospital teacher and the fact that, as **facilitator,** she **was not in charge of curriculum.** Often, a hospital schoolteacher functioned as a liaison between the student and the enrolled schoolteacher providing support as needed to ensure the student keeps up with the curriculum from their enrolled school. The success of this varied greatly and depended on the quality and frequency of communication between regular schools and hospital schools. One teacher noted,

I can create something but that may not be what the home schoolteacher is requiring of them. A lot of it is interpretive, like what do they mean by a particular lesson? (Pt. 05-Interview)

With increased use of mobile technologies, communication forms were changing, too. One teacher reported that sometimes the student was in direct contact with the teacher:

We used to always be completely in charge of the student and what was happening because the teacher would be in contact; now there's a lot of contact from the student directly to their

home teacher and you have to make sure you are part of that because you are the one who is facilitating their learning in tandem. (Pt. 04-Interview)

These findings suggested a coaching model designed for a regular school would not work. The wide range of students, ages, content areas, and the complexity of needs that presented on any given day made group planning impossible and individualization a necessity. Being able to access multiple content areas and multiple types of skills and activities at different levels that were engaging and accessible to different needs at the drop of a hat was critical for any teacher in this type of situation; yet, this level of expertise, experience, flexibility, innovation, and teaching background was rare. Acknowledging these contextual factors was particularly crucial in providing support to hospital schoolteachers as they learned to integrate mobile technologies to support their students.

To answer the second research question of **what coaching practices best support teachers' individual professional learning needs for successfully implementing mobile technologies in hospital school settings,** we examined themes that emerged from the coach log, teacher and coach interviews and reflections. A number of themes emerged about what best supported teachers' individual professional learning needs and influenced the form of the model of coaching. These included: acknowledging the context; building relationships and establishing trust; identifying time-saving efficiencies; technology as a tool not a learning outcome; individualization-meeting the teacher where they are; goal-setting; modeling, practice in small steps, building from this basis; and the coach-facilitated reflection process.

Acknowledging the context. Coming to terms with the dynamic nature of the hospital school environment was challenging for the iCoach who had years of experience as a special needs teacher

and an instructional technology coach in a regular education setting. The coaching model had to adapt to the fluidity of the hospital environment. As the iCoach reflected:

> *Something to really think about is how the model is so different within a hospital school setting and now, I'm really … learning how to get my head around it. I still get anxious when I see teachers I've had no correspondence with so it is trying to be prepared for pretty much anything and having a few things that I can pull out and use with them*. (iCoach-reflection)

It was clear that the coach needed to adjust to this type of environment. The coach was used to planning ahead of time, having a lesson plan and thinking about resources. This setting for her was *'a whole different way of looking at things'.*

This changing environment forced the iCoach to rethink not only how she did things but what was pedagogically sound to present to teachers. For example:

> *I wouldn't normally push to have that many apps but because the children… are so varied and obviously at different levels it is good to have apps for all of those different abilities.* (iCoach-reflection)

In a similar fashion, coming from the outside, the iCoach believed that she had to spend time **establishing relationships and building trust**:

> *I've coached in mainstream and Ed support schools but coaching in a hospital setting is very different and the teachers don't know you… they don't know what you've done and to me it is important that I am an educator, that I have been teaching for 12 years and that I have led different sections of the school*. (iCoach-reflection).

The iCoach wanted the teachers not only to know about her professional role but also details about her experience. Interestingly, when asked how teachers could best be guided in the use of mobile technologies, responses from teachers towards the iCoach seemed to be universally positive,

such as, '*someone like D who is directed at finding and knowing where to go, in helping us*' (Pt. 011-post interview), especially with regard to her skills and ability to support them. Perhaps, the new and different demands placed on the iCoach caused her to question her own abilities and competence to function well in this novel setting.

Given the contextual challenges facing the hospital schoolteachers identified above, it was clear that the content of the coaching model had to address some of the teachers' most pressing needs for them to best meet the needs of their students. **Identifying time-saving efficiencies** to provide teachers instant access to multiple resources from any location and assist them with some of the record-keeping, administrative tasks, and communication needs was a high priority for these teachers. One teacher said,

> *If I could get my emails directly on an iPad, print out the content wirelessly, be able to email things directly to the school, there would be lots of ways that would be helpful. At the moment I have to log on to a computer and wait for it to boot up; it's so much quicker to use an iPad.* (Pt. 01-interview)

This teacher suggested that her role in organization and liaison was important too:

> *There would be lots of ways to facilitate my role, because part of my job is teaching but there's a whole other side that's organization and liaison and asking other teachers to do things for these kids. So that's where I see it would be really useful for me.* (Pt. 01-interview)

The iCoach noted early on the crucial importance of dealing with infrastructure issues and providing technical support as well as support for digital pedagogies in her coaching so that they could immediately see the fruits of their labor.

A second critical time-saving efficiency was the introduction of Dropbox to teachers, facilitating instant access to multiple resources from anywhere in the hospital.

> *Dropbox has really taken off at the hospital which has been exciting to see. Teachers have created their own Dropbox account and we've allowed the hospital's Dropbox account to have access to that so when they're up on the ward, they can just pick up any iPad and access any worksheet. It's just so much more accessible for the teachers.* iCoach-Reflection)

Taking care of perceived infrastructure problems and IT frustrations also appeared to be part of the iCoach's role since she was on the front line with teachers and heard why it was impossible to implement mobile technologies. In response to a teacher's concern about lack of iPad access, the iCoach reported:

> *...Had discussion with her line manager and turned out frustrations for no reason, more a communication breakdown between her and her line manager. As it turned out, she was able to take 3 iPads up for the day and lock them there at night*. (iCoach, reflection)

Technology as a tool not a learning outcome. It was clear from the beginning of the initial study that the goal of the professional development was to help teachers use technology in an integrated pedagogical way. Through the process of coaching it became evident that this goal could be achieved in different ways when technology was considered as a tool and not a learning outcome itself. One teacher reflected on how her teaching practices had changed as a result of the PD and the coaching:

> *I can access short stories quickly. Most of the poems I need are on the Web instead of trying to find books. It's made me more confident that I can just turn up and meet the needs of the student…* (Pt. 07-Interview)

The iCoach related an anecdote about one of her most reluctant participants in PD who had told her there was really nothing she could do for her in her area. She continued:

> *She teaches lots of different students, so she goes in the morning to visit all the kids who've come in, goes to get worksheets to hit that level of learning. She's got this mass of stuff on her shelf — just old faded worksheets is all she's got – those poor children! She was looking at frogs and I said 'let's take something that you might use over and over again and let's try to do something with that.' So I put together an iBook with a link to a frog dissection and she tried it out on a few students. She could see from their expressions they were really excited about doing it. After that, she started coming around, saying 'maybe you could do a book about this'. My goal is to make lots of iBooks for her so she'll use them instead of the worksheets*. (iCoach-Interview)

Perhaps the willingness to accept flexible learning outcomes from participants and to realize that changes in a teacher's ability to integrate mobile technologies rather than to create with mobile technologies is perhaps a better predictor of changes in teacher practice and student outcomes. The iCoach reflected on her experience:

> *I think I've learnt to relax over time and realize there are some things a lot harder to add the IT element in to and that's okay. If it's only being used a little bit extra to what is being done, then that is okay too.* (iCoach-Reflection)

The Coaching Process

Individualization/Meeting the teacher where they are

A primary consideration for the iCoach was to determine the issues that were likely to arise for the teachers when using technology. She explained:

It's all about trying to find something to grab their attention [for when I work with them] the following week. So I look for something that I can really show [teachers how to] put this straight into practice . . . something that they'll like and find easy to do. (iCoach-interview)

Sensitive to the unique setting and complex needs hospital teachers faced on a daily basis, the iCoach soon realized that the coaching process required the same amount of individualization as did their daily teaching practices. She reflected,

Another thing is learning how they work because they work in such a different way. They have a variety of students that come in from all walks of life. They don't know who they're going to get, what the students have learnt beforehand . . . and rather than going full on from the start, it is about going in gently and just really finding one or two things that spark their interest and can be used straight away and see the results. That's what will make them want to do it again. (iCoach-Reflection)

Working with different students and teachers with different needs was challenging for the iCoach, but her knowledge of various apps was helpful in this regard. She described how, in one day, she worked with a student studying Ancient Rome and was able to show her and her teacher an interactive app on this topic. On the same day, another student was learning about angles and the iCoach demonstrated the angles app to the teacher and the student. Another child, who the iCoach described as "completely disengaged," became very interested in an app that introduced frog dissections. For her, the goal was always to find an app that would grab the teacher's attention "*to make them see that the technology is worthwhile*". Other apps like Comic Life, GarageBand and iMovie were all important creative and open-ended apps that the iCoach used to assist in achieving positive outcomes and allowed her to work across disciplines. Her aim was to assist the teachers with a collection, or toolbox, of relevant apps that they could draw on to enhance their teaching.

Goal-setting. Time and again, the importance of goal-setting surfaced in the interviews as the initial step in the coaching process. One week the iCoach reported with delight about a small group of teachers:

> *...they had a clear goal in their heads already and that's the first time it's happened. Normally I go in and they don't know what I'm there for. Then I have to provide a lot of guidance to get them to where they're happy to work with me. All three teachers on Wednesday knew exactly why I was there, had thought about how they wanted to work with me – brilliant!* (iCoach-Reflection)

The final piece of this goal-setting component and identifying a focus with the teachers was the Coach's standard business practice of emailing the teachers and clarifying expectations for the next meeting.

> *I always send out an email after the meeting to reiterate what we talked about and the focus for next time, copying in the leadership team so they can see what is happening with that particular area.* (iCoach-Reflection)

Modeling, Taking Small steps, Building on Success

An example of the importance of modeling, taking small steps, and then building on those successes as a component of the iCoaching process is illustrated by a teacher who was working with students with head injuries and associated memory issues. He approached the iCoach for advice. Working together, they began to use an app called Snagit to create videos using screen capture technology. The teacher developed some short presentations about accessibility options for students.

> *One of the things I've learned with this coaching process is if you find a piece of software that is useful, it works, then you can start to see its potential. It happened with me using the*

Snagit software, I'm getting better at producing short videos. I've had feedback from students about what they think is good so I've been reflecting on that and trying to improve ... (Pt. 16-reflection)

The teacher explained that the iCoaching process had made him feel much more confident about using technology "*as a first port of call*". He found the technology gave students the opportunity to participate in their learning more actively and expressed an ongoing desire to develop a bank of resources accessible to all hospital schoolteachers.

The iCoach also reflected on the importance of this process to the willingness and enthusiasm of teachers to change and try out these new innovations:

In terms of the whole coaching element, it's important to have those consecutive sessions to build on things over time. I suggested to the senior leadership team about having a coach just pop in to the hospital on a regular basis, particularly now that the momentum is growing. You see the excitement (iCoach-Reflection)

The iCoach perceived this building process as one of the more critical components of the coaching process, leading to that "aha" moment in teachers and the point when teachers could see themselves integrating mobile technologies independently. She explained:

As we've gone through different apps, they've been a lot less reluctant to really explore the full capacity of each application...and you can see their brains already thinking about how it is going to fit in with what they are already doing. I hear the comments from teachers about 'oh wow I could have done this with this app last week…some child was struggling with the concept of day and night and this app just shows it so much more visually'. (iCoach-Reflection)

Reflection process

An important component in the coaching model was the reflection process. As previously described, the iCoach prompted teachers at each session to reflect on their current focus and what they had accomplished and think about how they wanted to expand on the next week, thus starting the iterative cycle (individualization-goal setting-modeling/practice-reflection) again. This component evolved to meet the needs of the highly time-stressed teachers so that teachers who participated in the research could record their reflections on the iPad (video or audio), they could write them down, or they could engage in a brief prompted discussion with the iCoach where she led them through the reflection and recorded it.

> *I think that teachers are not used to reflecting and that's quite common. However, I think you will see there's been some really thoughtful reflections and getting people to think about the reason they're using the technology and what it adds... The PDs can really transform what they are already doing and the benefits are the engagement that we get from the kids.* (iCoach-Reflection)

As an illustration, one teacher reflected at the conclusion of her coaching cycle,

> *Two things I'll take with me from the past four weeks training: a huge favorite is Book Creator because you can use that for so many different projects. They can be doing a fiction, a non-fiction, and can put it also into the iMovie. Secondly, being able to Dropbox to the school that day is something I think is so important.* (Pt. 27-reflection)

Discussion/Conclusions

The findings from this qualitative study highlight the importance of understanding the context in which coaching will take place for it to be effective and for participants to be receptive. Penuel and colleagues (2007) and Guskey (2003) noted that consideration must be given to the complex contexts in which teachers work. Saunders (2014) reminds us of the importance of taking

into account "the nature and structure of the contexts and to examine any model of professional development in close relation to the systems which influence its design, operation and assessment" (p. 167). In this study, the content and process of coaching were shaped by the contextual influences of the hospital setting.

Given the multiple demands placed on the teachers and their inability to plan, it is not surprising that, initially, one research finding was the coach's relative focus on time-saving administrative tools and technical support assistance. In light of the wide variety of creative technologies that the iCoach made available to teachers, why was so much of her time spent providing support in how to use Dropbox, access email, and print from the iPad? As the teachers indicated, this was directly related to context and to teachers' desires to meet students' multiple and varied needs while simultaneously collaborating and communicating with other important stakeholders. In fact the issue of time or lack of it and the ongoing tension between curriculum coverage (to meet student needs) and opportunities for creative endeavors such as incorporating the use of iMovie or Book Creator was noted by some teachers.

In fact, lack of time is one of the most commonly voiced teacher concerns and one of the greatest barriers to technology integration in the classroom (Wachira and Keengwe 2010). Teachers were specifically concerned with lack of time to prepare, learn to use the devices and to address technical failures so it is not surprising that many were only interested in time-saving technology (Machado and Chung 2015). By introducing teachers to technologies, such as Dropbox, and teaching them how to access and communicate using mobile devices, the iCoach addressed time-saving technologies as well as meeting a significant need of the teachers (and students) for instant access to a wide variety of resources. While teaching someone how to print from an iPad may appear to be technical support rather than technology integration, helping a teacher see how the

student's product might be shared with the enrolled school makes the teacher's efforts in integrating technology "worth it" (Knight 2009). This represented a shift in the content from the original plan in response to these unique contextual demands.

Practical Implications

So what does an effective coaching model look like for hospital schoolteachers using the affordances of mobile technologies to meet the complex needs of vulnerable hospitalized students? Based on the themes described above, a set of guiding principles emerged that shaped the coaching model. These included:

1. Understand and get to know the context within which the teachers work
2. Individualize—Meet the teacher where they are (technology creation, use, support)
3. Goal-setting—Identify small reachable goals
4. Model, practice in small steps, build from success
5. Accept flexible outcomes
6. Reflect—what worked, what didn't, how to move forward/what next?

Given the demands placed on the coach, what does effective coaching look like and how is it measured? In the literature, PD seems to fail repeatedly with resistant teachers (Boardman et al. 2005). PD is only successful with those who want to adopt the new innovation. It was interesting to see how even with those teachers who were resistant; there was some change with this coaching approach. If technology was seen as a tool rather than an outcome, then getting teachers from a place where they used no technology to a place of more effective, interactive instruction with students where they were integrating technology would surely be seen as an improvement. Not all coaching is equal; hence, the art and science of coaching is extremely important. The coaching process was unique and successful because it was individualized, considered each teacher's needs,

took them from where they were, and moved them forward--all towards a goal of improving instruction for these vulnerable learners using mobile technology as a tool.

The involvement of only one coach in one large hospital school limits the generalizability of the findings. However, the model, while it was dependent to some degree on the personality and experience of the iCoach, may be able to be replicated using these guiding principles. Future research should examine whether the next generation of coaches to be trained from within the hospital school to use these guiding principles follows this model of coaching. Further research is also desired to examine the reactions of teachers to this coaching model and to measure the improvement in teachers' integration of mobile technology in their instruction. In summary, this study illustrated the contextual influences that shaped the coaching model and the unique coaching practices that best support teachers' individual professional learning needs for successfully integrating mobile technologies.

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