Investigating the factors of professional development programs that effect change in the classroom

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Abstract

This paper reports on the implementation of two professional development programs designed to support ICT based pedagogies in Victorian (Australia) schools. In both programs the teachers participated in an intensive program of professional development designed to assist them in embedding ICT into their classroom practice. There was a large diversity of circumstances experienced by the schools, not only in terms of ICT availability and use, and teacher experience, but also in issues of cultures of curriculum planning and integration, size, communication, and pedagogical presumptions. Both projects were successful in implementing change; however there were teachers in both projects who failed to take advantage of the PD. Some of the limitations with both studies include the high expectations of time comittment by the teachers – who are already fully committed with full teaching loads, and the high expectations of the change that will occur in the teaching and learning as a result of the PD, wthout consideration of the time needed to learn and adopt new pedagogical practice. In some cases, teachers and the school did not appreciate the necessary commitment to take full advantage of the opportunity being provided. This was compounded by the lack of support and recognition by school management.

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Introduction

This paper draws on the results of two professional development programs organised by the Association of Independent Schools of Victoria (AISV) that focused on ICT based pedagogies. Extensive planning went into both projects: they were based on previous research in Professional Development and current educational thinking - with both focussing on the pedagogical aspects to ensure integration of the ICT into the classroom practise. Osborne and Hennessy (2004, p. 5) argue that current research suggest that it is not appropriate to assume simply that the introduction of learning technologies in schools "necessarily transforms science education. Rather, we need to acknowledge the critical role played by the teacher, in creating conditions for ICT-supported learning". For schools to incorporate ICT into their curricula, and there are compelling arguments to do so (Harrison, e .al.,2003), there needs to be a number of factors in place (Ping, Swe, Hew, Wong & Shantri, 2003) with a principal factor being teacher competency with ICT (Levin & Arafeh, 2003). Teachers in both projects were required to make a commitment to participate in the project and implement changes in their classroom activities based on their instruction

Professional development programs provide opportunities for teacher to learn new skills. Both professional development projects were proposed in response to the fact that many teachers have not recognised the potential or capabilities of ICT to their own teaching and students' learning (Levin and Arafeh 2003); nor do all teachers have the necessary technological or pedagogical skills to teach using this type of technology (Mishra and Koehler 2006). Mishra and Koehler argue that while many teachers are aware of the uses of the various technologies and the skills needed to use the technologies, they have not developed a pedagogical intent for its uses. This project provided teachers with opportunities to be creative and explore the pedagogical potential of the technology in the classroom.

Background

The first project called *Using ICT to Support Literacy and Numeracy in Rural Schools* was held in 2006 and provided specialist instruction in the pedagogical use of ICT to teachers in rural areas. There were three separate hubs of rural schools involving 14 schools; 5 secondary, 4 P-12 colleges, and 5 primary schools. The school populations ranged from 50 to 600 students. AISV provided professional development (PD) to a selected teacher from each school who was designated as the ICT Coordinator. The PD involved an intensive five day training program, covering issues such as curriculum, inclusivity, pedagogy and ICT integration in addition to learning a variety of new skills such as blogging, using search engines and learning computer programs. During the PD coordinators were to construct an ICT embedded unit of work. There was an expectation of the project that following the PD coordinators would upon return to their school and implementing their ICT embedded unit of work. Coordinators were also expected to provide PD to colleagues at the school under a "train-the-trainer" model in a similar manner that they were professionally developed. The trainee teachers were also expected to implement an ICT embedded unit of work.

The second project *The Development of Thinking Skills Through ICT* was held in 2007 also provided specialist instruction in the pedagogical use of ICT to teachers,

however this project provided instruction in Web 2.0 technologies including wikis, blogs, RSS feeds, social bookmarking and social-networking sites. The teachers involved were computer literate before the project began. Thirteen teachers from six well-resourced schools in Melbourne, participated in the project. They were introduced to the philosophy of the program in December 2006, and to the online resources in March, 2007; a 3-day program was held in July school holidays, then the teachers began implementing their new programs, with a follow up PD in October. The participants came from a variety of subject areas including Science, Health, LOTE, Library, Humanities and General Primary, with students ranging from Year 5 to Year 12.

Both professional development programs shared common approaches - focussing on the pedagogical aspects with opportunities for the teachers to learn new skills and develop resources that would be relevant to their own teaching situation. Research has shown that the presence and use of the technologies are influencing the way people learn, with increased visual genres, greater interactivity, and immediate feedback. Because the systems of technologies are changing at a rapid rate that has not previously been observed, teachers are faced with the challenge of constantly learning new skills needed to use the new technologies with which students are often more familiar than the teachers. ICT is an area all teachers are responsible for and one they must include in their teaching and hence there is a need for all teachers to be able to teach using ICT effectively (VCAA 2005).

Aim and Methodology

This aim of this paper is to identify factors in both studies that influenced teacher's ability to maximise the opportunities that the PD provided and effect change in their classroom as a result of the PD. The research question is: What factors impact on a teacher's ability to effect pedagogical change to classroom practice as a result of PD?

There are multiple data sources from both projects. A similar interpretive approach was adopted in each case, gathering mostly qualitative data including observations, interviews, work samples. This data is used to identify some of the limitations and strengths of the PD that impacted on the change in teachers' pedagogies along with the internal and external factors relating to the teachers that impact on their own learning. The multiple data collecting instruments and the context of the data collection used in the first project is given in Table 1, and the second project in Table 2.

Table 1: Data collection schedule for the first project -Rural

Activity	Research methods/instruments
Project beginning	Audit questionnaires for the coordinator of each school, related to resources and experience in using ICT.
Initial visit	Field notes, informal interviews at schools selected on the basis of practicalities of visit.
	Baseline class questionnaire for students including extent and nature of use of ICT at school and at home, as well as attitudes towards ICT.
Meeting with	Field notes on issues and processes

consultants	
PD intensive	Field notes; Evaluation questionnaire for all participants Focus group discussion with the coordinators concerning their plans and hoped for outcomes, and the issues they see affecting the progress.
Visits to clusters	Field notes; Coordinator interviews concerning classroom implementation and change, training of teachers, and issues arising. Interview with focus group of students
Virtual community	Notes from blog set up during the intensive and continued after.
Showcase cluster meetings	Field notes; Collection of sample student and staff materials; Final questionnaire for participating teachers; Notes from debrief with consultants.

Table 2: Data collection schedule for the second project Web 2.0

Activity	Research Method
Project Beginning	Initial meeting about project – expectations and observations
Introductory visits	Initial visits to six schools
Interview	Interview Educational consultant
Intensive PD	Attendance at 3 Day Summit Collect questionnaires (pre) Collect PD evaluations
Interviews –follow-up	Interviews with participants in week 4 of Term 3
Meeting - review	Meeting at AISV – follow-up to Interim report
PD	October PD Day
Website	Monitoring website
Interview	Interview teachers Interview students Collect questionnaires (post)
Field notes	Post-project- Attended follow-on PD at AISV
Interview	Post-project - Interview Tom March

Both projects provided ongoing Professional Development (PD)[1] with access to an educational consultant. Teachers were informed of the expectations of the PD program and invited to attend. The teachers were responsible for the implementation of the technology - designing teaching material that incorporated the technologies into their lessons.

Results

The uptake of the PD programs for each of the projects is recorded in Tables 3 and 4 respectively. The sample size is small, and the results include attrition due to teachers changed circumstances. The range of results presents the impetus for this paper.

[1] PD will be used as abbreviation for Professional Development

Table 3: Extent of completion of stages of project by coordinators n=15.

Teach planned ICT unit	Implementing new ICT sequences	PD other staff at home school	Trainee teaches ICT unit
7 - yes	8 – yes	6 – yes (training 12 teachers)	5 – yes
8 - no	2 – partial # 4 – no 1 – unclear	6 – partial 3 - no	3 – partial 7 - no

Note: # "partially" refers to the introduction of ICT to other staff, or their use by staff, on an informal or ad hoc or limited basis rather than in a more structured setting dealing with substantial innovation.

Table 4 The second Project - The participating schools in teachers and extent of uptake of the ICT

School	Number of staff	Subject	Year levels	Uptake*(1-5)
Azalea	3	ICT/ Health Science	Year 11 Year 7 Year 6	3 5 2
Eucalyptus	2	Science Humanities	Year 9 Year 9	5 2
Lavender	3	Technology	Year 6 Year 6 Year 5	3 3 3
Hibiscus	3	Library Outdoor Education	Year 7 Yea r 9 Year 9	5 2 2
Rose	1	LOTE	Year 12	2
Banksia	1	None	-	1

*Uptake –an assessment by the researcher on a scale of 1to 5 with 1 being minimum and 5 advanced participation

Analyses and Findings

The results is divided into three sections, (i)circumstances and issues in the participating schools prior to the training program; (ii)the professional development program; and (iii)implementing change in schools following the training program.

Circumstances and issues in the participating schools prior to the training program

The planning of the programs was excellent; however communication of the level of commitment could have been improved. The invitation to teachers may not always have attracted teachers who were genuinely interested or adequately skilled in the use of ICT, with some teachers attending because it was expected of them by the school

administration. Teachers' expectations were sometimes different to that of the consultant and organising association despite the obligations and expectations of the attendees were outlined in detail at the introductory meeting held at school. The skills of the participants varied with some participants finding the PD too slow or inefficient. For example in the Rural project, an ICT teacher, Desire was skilled in ICT - "I think there's still a lot of knowledge that teachers don't have on the basics of how to do something."

The Web 2.0 project had instruction during the holidays and teachers did feel bitter having to sacrifice their holiday time. Attendance was not consistent and the participants did not form a cohesive group. The initial meeting at individual schools and the scheduling did not encourage communication.

The Professional Development program

For both projects there was extremely positive feedback from the teachers with respect to the intensive professional development program.

For the Rural Project all coordinators found a great deal of benefit in the knowledge and skills obtained despite coming into the training intensive with a range of ICT competencies. They also found benefit in working closely with teachers from other schools and envisaged close working arrangements would continue when coordinators returned to their schools. Most coordinators found the professional development activities demanding while a few felt at various times being overwhelmed through their perceived lack of competence. Apart from feeling highly motivated to implement changes in their own classrooms the coordinators recognised their experiences as a learner, and sometimes as a struggling learner, renewed their perspective in dealing with struggling students in their own classrooms. The results of an evaluation survey, indicated that the teachers were very satisfied with the quality of the PD program

For the Web 2.0 project, the intensive PD was well received by all participants with the responses regarding the consultants' competence, attitude, behaviour and enthusiasm all extremely positive with means ranging from 4.7 to 4.8 in a 1-5 Likert scale with 1 equalling strongly disagree and 5 strongly agree. The educational consultant provided excellent resources, stepwise instructions and online, ongoing support. This is supported with comments from interviews with several teachers being very complimentary of Educational Consultant saying that he responds quickly to e-mails addressing educational and technical issues.

Implementing change in schools following the training program

Both projects resulted in increased networking and communication among participants - but not all teachers experienced this to the same degree. For the rural project this depended on factors such as the dynamics of the group/hub, and the willingness of members to share and listen. Only one hub of the three included in the Rural project had regular communication, despite mostly being by three participants,

In the Web 2.0 project the three staff who did excel had students in each of their classes blogging and using ICT competently. The blog set up for the teachers was not well used and the anticipated communication among students at different schools did not occur except for a single example between the three mavericks. The mix of

teachers as varied across ages and disciplines. The three maverick teachers were secondary teachers, adapting the technologies to their programs more easily.

The participation in the program has led to these three teachers taking on leadership positions – utilising the ICT and teaching other teachers at their respective schools. The modest gains made by most teachers had a positive impact. There were changes in teaching practice documented with increased teacher proficiency and awareness of ICT resources.

In both projects teachers experienced frustrations and difficulties integrating ICT into the curriculum, but they also demonstrated great resourcefulness at solving problems and adapting to the technologies.

Discussion

There are strengths found in the format and delivery for both projects.

- Establishment of a community of learners – like minded teachers able tosupport each other both geographically, discpline-base and technologically e.g Susuan'sblog- *"enjoyed the interaction with the other participants and the transparency that is coming that allows "honest" learning*
- Intensive PD that provided instruction as well as time for teachers to play, learn, create and adapt the new skills to their own teaching situations, to ensure contextual learning.
- Expert consultants that provided instruction targeted at the needs of the partcipants. In both studies the consultants me with the poartcipanstand investigated their current situation and adapted the instruction accordingly, tailoring it to the partcipants needs.
- Ongoing support by the consultant after the PD.
- The participating teachers become agents of change – teaching other teachers

Both projects were successful in implementing change; however there were teachers in both projects who failed to take advantage of the PD. Some of the limitations with both studies include:

- High expectations of time comittment by the teachers – who are already fully committed with full teachingloads.
- High expectations of the change that will occur in the teaching and learning as a result of the PD
- Teachers and the school not appreciating the necessary commitment to take full advantage of the opportunity being provided.
- Teachers' lack of time - in both projects some teachers spent holiday time working on the project.
- Lack of support and recognition by school management by some teachers.
- Teachers level of commitment to ICT

Internal factors include intrinsic motivation and appreciation of the value of technologies in learning. The teachers' abilities to meet the expectations were influenced by their lack of intrinsic motivations and interest in ICT. The success of the programs required teachers to spend significant time at the computer outside the formal training times

The teachers were all enthusiastic about the potential of the projects but have found time to be a major constraint as well as integrating the project in an authentic way, as shown by the following statement:
"It's time but it's more than time, it's having the opportunity to embed it in an authentic way into a learning program that's prescribed, that's difficult."(Rural Project)
No allocation of time was given to teachers for their partcipation in either project, thus creating an unrealistic expectation of achievement. The assessment and curricula demands impinged on some teachers' abilities to change their practice. The external factors include support from school leaders and departments, formal and informal recognition of the value of the time they are spending learning new skills by the leaders in educational institutions, allocation of time and money – for the tuition, investing in the professional, learning opportunities to share their new skills, miscommunication of the intention and requirements of the participation in the PD.

Conclusions

Teachers are experts in understanding teaching and learning but evidence here suggests that they are not always cognitive of their own personal learning. There is a need to value the social interaction, networking and learning from others; however this cohort of teachers in some hubs in the Rural project and in the Web 2.0 project did not develop a good network of communication. The communication breakdown is a critical factor resulting in less feedback and reduced momentum. This creates isolated learners, unsupported and at risk of failure. A lack of motivation to change current practices, reticence to take risks, feelings of isolation and vulnerability of not being as skilled as the students with respect to ICT are factors that need to be confronted.

The programs intentionally integrated the pedagogy with learning the new skills to create meaningful and purposeful activities. It does however require practice and time to develop skills and this can lead to frustrations. Catering for individual needs requires small groups and flexibility and these aspects were intentionally built into both program. Reasons for lack of uptake of the resources are mixed including teachers' time constraints, assessment demands and curricula demands.

Opportunities to celebrate teachers' successes could be included to help to give greater recognition to the teacher for their efforts. Greater recognition by school management and other staff both in terms of time and developing expertise may raise the value afforded professional development programs.

The scaffolding of learning and the sequencing of PD sessions needs to take into consideration, but still maintain a momentum. Both programs intentionally had more than one staff from each school to provide a core of staff to support each other. When these staff are in different disciplines or levels that opportunities for support are minimal, so it would be recommended that teacher come in teams with some objectives in mind so that they have a desired objective, and are focused and working collaboratively.

Learning takes time, effort and practise, yet teachers are not always allocated enough time to learn new professional skills. Both projects generously allowed time for

teachers to learn, but there were no provisions to provide for additional time. This analysis highlights the need to recognise time, support and instruction as significant factors that impact on teachers' abilities to effect change as a result of PD.

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