

1-1-2005

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Recommended Citation

Hoban, Garry and Herrington, Anthony J.: Why teachers are reluctant to use new technologies: Supporting teachers' action learning within a web environment 2005, 2581-2588.
<https://ro.uow.edu.au/edupapers/807>

Why Teachers are Reluctant to Use New Technologies: Attempting to Support Teachers' Action Learning with a Web-environment

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Abstract Action learning involves a small group (6-8 people) who meet regularly to share reflections and discuss ideas that they try out in practice. Key to the process of action learning is the sharing of personally relevant issues or problems in relation to the action being attempted. In this study a web environment was designed to support the sharing of strategies by teachers which also included a discussion space to provide feedback on the strategies attempted. One web environment was designed for an action learning team in a high school and another site for a team in an elementary school. It was anticipated that the web environment would become a growing repository of teaching strategies and provide a public forum for feedback and reflection. However, teachers in both schools did not use the web site. Interviews with key facilitators in both schools identified multiple reasons why the technology was not used. Considerations for the development and use of technology in schools will be discussed.

What is Action Learning?

Teacher professional learning is seen as a critical component in producing quality teaching and learning outcomes. With the diversity of teachers' knowledge, experience and training, professional learning is necessary throughout a teacher's career occurring along a continuum from initial undergraduate education, through school practicum, internship, induction, to ongoing lifelong learning (DEST, 2003; Ramsey, 2000).

Over time, a wide variety of professional development strategies have been attempted. However, the value of these various formats of professional learning has been questioned by a number of educators. Feiman-Nemser (2001) suggests that traditional forms of professional development such as mentoring, one-off workshops, conferences and summer institutes do not provide a cohesive and planned approach, and are problematic in achieving desired outcomes. In addition, the content of many programs reflects the interests of outside presenters rather than allowing ownership of the issues faced by teachers in various stages of development.

Action learning (Revans, 1981; 1982) is a commonly used approach for professional learning in business organizations and focuses on the personal concerns or interests of the participants. It involves a small group of colleagues reflecting and sharing experiences about their personal issues and problems of their workplace on a regular basis (Cusins, 1995; McGill & Beaty, 1995; Miller, 2003; Pedler, 1991; Wade & Hammick, 1999; Zuber-Skerritt, 1993). This collaborative type of workplace learning has been explored by groups in various contexts: executives in a textile company (Lewis, 1991); managers in a private hospital (Miller, 2003); supervisors in an electronic firm (Boddy, 1991); doctors in a hospital (Winkless, 1991); insurance agents attempting to improve the quality of their service (Schlesinger, 1991); and university students in health care education (Wade & Hammick, 1999). Action learning is now increasingly being used in educational contexts such as schools to support the process of teachers reflecting and sharing their instructional strategies (Yuen & Cheng, 2000). However, finding time to document and discuss these strategies is an ongoing problem which technology can sometimes address.

Using Technology to Support Teachers' Professional Learning

Technology, and the internet in particular, is becoming a useful tool in teacher professional development. Bransford, Brown and Cocking (2000) in their summary of research into school learning noted 'Opportunities for continued contact and support as teachers incorporate new ideas into their teaching are limited, yet the rapid spread of Internet access provides a ready means of maintaining such contact if appropriately designed tools and services are available' (p. 27).

Accordingly, there has been a growing trend to utilise the internet to develop 'communities of practice' as a focus for professional development. The concept of communities of practice evolves from Lave and Wenger's (1991) theory of situated learning where professionals learn through increasing contribution and participation within their community. Communities have developed to provide support and professional development for teachers generally, (e.g., *Tapped In*); within particular disciplines such as mathematics teachers (e.g., Herrington, Herrington & Omari, 2001) and in particular career stages such as beginning teachers (e.g., *Novice Teachers Support Project*). Generally, however, these communities are structured around particular themes, topics or events and lack the facility to engage in sustained research of an issue or problem specific to a particular school or teacher. Nevertheless, one can envisage the use of the internet to support such action research, especially for the process of identifying and sharing teaching strategies that are being developed and tested in the classroom.

In this study an effort to support teachers sharing strategies in their action learning teams with the use of a web environment will be discussed. This involved two settings, one high school and one primary/elementary school which were invited to trial the use of the web environment in the second half of 2004. In both schools, teachers had been using a new model of pedagogy developed for NSW schools (DET, 2003). It consisted of three dimensions of learning, each with six elements. The first dimension, 'quality learning environment' contains the elements of explicit quality criteria, high expectations, social support, students' self-regulation and student direction. The second dimension, 'intellectual quality' includes the elements of deep knowledge, deep understanding, problematic knowledge, higher-order thinking, substantive communication and metalanguage. The third dimension of 'significance' includes background knowledge, inclusivity, cultural knowledge, knowledge integration, connectedness and narrative. A web site was designed for each school for the purpose of assisting teachers to document and share their teaching strategies in regard to the particular elements that the teachers nominated would be the focus of their professional learning over the next few months. In addition to documenting the strategies, a section was provided on the web site for teachers to reflect upon and give feedback on each particular strategy.

However, six months after the schools had access to the web sites that had been designed to support them documenting and sharing their teaching strategies, it was realised that teachers in neither school had used the site. The key facilitator in each school was interviewed to ascertain why. This paper documents causes for this disappointing outcome for both the primary school and a secondary school involved. It is hoped that analysing why the sites were not used will provide insights into considerations for using technology for professional development. A brief case study will be provided using data from key teachers in each school.

Case 1: Attempting to Use Technology to Support Action Learning in a High School Setting

Conventionally, the pedagogy of high school teaching is usually driven by the content in each subject (Brookfield, 1986). For example, teachers usually think about the content or knowledge they want students to learn and then present the subject in sections accordingly. A different section of content is often presented each lesson or across several lessons and then it is sometimes demonstrated in a subsequent lesson. Ways of learning are considered, but these are usually a minor consideration in relation to the sequence of content presented in a busy school term.

A more comprehensive view of school pedagogy is to view it as a dynamic relationship between teaching and learning (Hoban, 2000). This means that teaching needs to be presented in a more flexible way, as some forms of instruction need to be adapted to the way in which students are best learning. However, when teachers develop their strategies, it often stays within their own classroom as there is little opportunity for teachers to share strategies in a busy school week. A web environment, however, can be developed as a data base of teaching and learning ideas and is a medium to share these ideas with other teachers. When some teachers gain a deeper understanding of how students learn, they may modify their pedagogy, meaning that *learning drives teaching* rather than vice versa. For this shift in relationship to occur, a framework is needed that views teaching and learning as a dynamic relationship. A web site was designed to support teachers in participating in action learning to facilitate this process.

Design of the website

The conceptual framework of the web site is an adaptation of a university website that shares strategies for developing graduate attributes across different university faculties (Hoban et al. 2004). A group of teachers in each school involved selected five elements or aspects of teaching for which they devised particular teaching strategies and documented these on the website. The five elements at the high school included:

1. developing a metalanguage for common meanings
2. developing explicit quality criteria for tasks

3. developing high expectations
4. developing knowledge integration across subjects
5. demonstrating “wow” or creative behaviour

The home page of the school-based project was similar to the university project in that it provided descriptions of the five elements or aspects of teaching as shown in Figure 1.

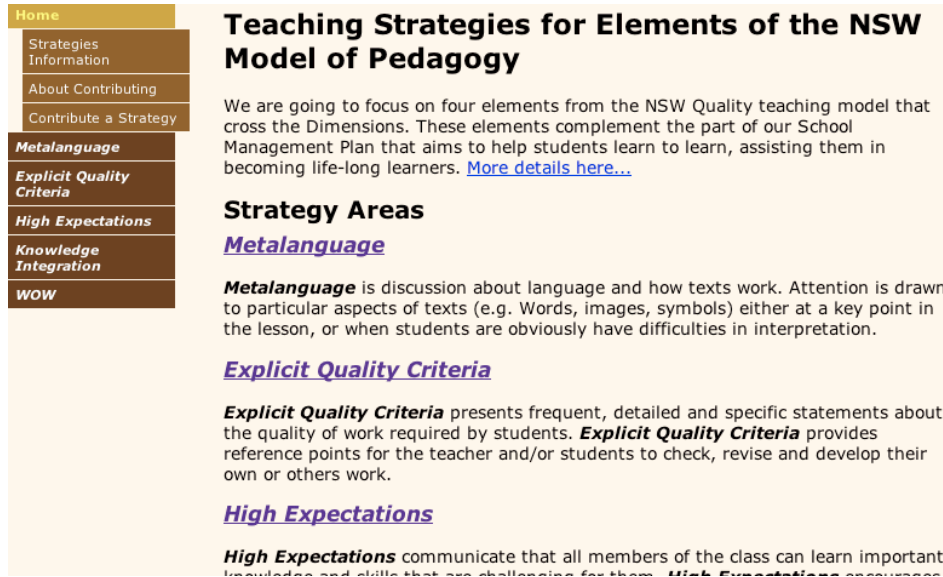


Figure 1. Homepage of the High School Site

When a teacher clicks on one of the elements, it is linked to dialogue boxes to document a teaching strategy as shown in Figure 2. Table 1 provides an example of a strategy developed by a teacher for Personal Development, Health and Physical Education for the element of Metalinguage which assists students in understanding the meaning of terms.

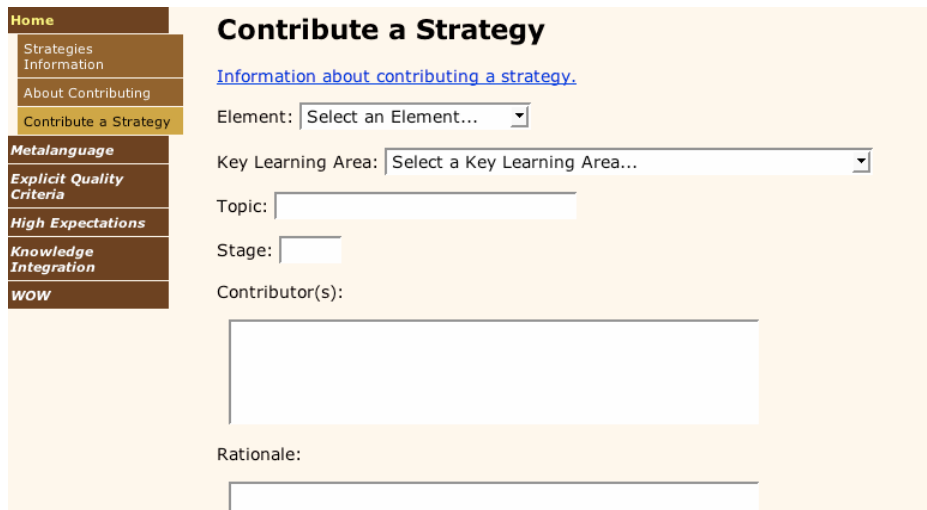


Figure 2. Example of Dialogue Spaces for documenting Teaching Strategy on the Website
 Table 1. Example of teaching Strategy

Quality Teaching Element: Metalanguage

Key Learning Area: PDHPE

Stage: 4 or 5

Topic: Contributor/s

Date: 2/4/04

Rationale: Introducing a new topic and specific vocabulary/language that will build to concepts. Want the students to work with new vocabulary/concepts moving from recounting in their own language to using new vocabulary/concepts accurately.

Teaching Strategy:

1. Select an appropriate overview passage, be conscious of the vocabulary/ language that needs to be mastered and be ready with explanations.
2. Read the passage to the class.
3. Students re-read the passage in pairs and briefly discuss so that they can give a recount in their own words.
4. Teacher begins an oral recount of the passage using colloquial language. Students continue taking it in turns to recount in their own words the main ideas of the passage. They need to listen and follow on from one another.
5. Class discussion about the recount focusing on the language used by the students compared to the language of the passage.
6. Write own recount of the passage or complete a cloze passage using specific vocabulary/language.

High School Interviews

The Deputy Principal (DP) was interviewed at the end of 2004 to ascertain why the site had not been used by the teachers. He was a keen supporter of teachers using the site. In particular the site was designed for a small group of year 7 teachers who were trying to get some coherence in their teaching for their students:

In the high school, a small group of year seven teachers called a “year seven learning team” formed to help students in year 7 have a coherent transition into high school. The team has continued to function throughout the year and have focused on a linkages program for primary children which is a very good transition program for the school. So the team was there but they did not enter strategies and documented but I don’t know when you get time to do them.

Although the site had been designed to target the particular elements of teaching that they nominated, the DP stated that teachers’ increasing workloads do not allow them time to do these extra things and there are not enough computers in the school as there is only one in each staff room:

One reason why the site was not used is that the workload for teachers is getting higher and higher and higher. This is not a negative but just a reality and so anything else that comes along just doesn’t get a run, even if it only takes a few minutes. I would say that for most teachers, professional learning is not high on their agenda and I think they are in survival mode. They have given all their energies. There also could be some more need for training in terms of how to use the site, to open it up and how to get in there so it is more accessible and if everyone had a computer on their desk to address their own needs. If you had to go to the faculty computer then why would you bother? So it is systemic as well as individual. The individuals are worn out teaching well and the second one is that they just don’t have the facilities or the resources. There is probably only one computer in each classroom and it is choc-a-bloc with people entering outcome results in our reporting system. They have to take turns and every free period they are doing the reports. They have eight outcomes to measure and document as well as write comments. So the French teacher would have up to 300 reports to do. You also have some teachers who avoid computers like the plague, it is still foreign to them. They would only use word processes to write a title page or letter, they wouldn’t go into much depth.

Another reason why the site was not used is that the three key facilitators for the project either went on leave or had to do a new job in the school:

So we probably need a bit more time and give teachers more training so that at a staff meeting we would have a battery of computers there. You would need to explain it, let people try and then revisit it on staff development days. It hasn't failed but it is just one of those things that hasn't been a priority. Keep on going. It also needs a key driver and the three of us changed our role at the beginning of term 3. Adele was on long service leave and James was seconded into the deputy principal's role and I went into the Principal's position so we were all tied up with out new positions.

One particularly interesting comment from the DP noted that for many years teachers have only had access to short term workshops so they do not have a vision for long term professional learning:

We need to emphasise that professional learning is important. We were given money based on our professional learning plan and we have stacks of money left over at the end of this year. We have been saying for years that we don't have enough and now we don't know how to spend it. We have gotten used to not having the resources and we don't follow it on. We go to a course, we do the course, we come home and that's it. The web site is set up for long-term professional learning but we have to use it. I think we work in isolation. We only have a wall between us but we don't work together. I am a PE teacher and so I work outside in front of everyone. But as I was driving to work today I was thinking of what stops something great from being great. I couldn't work out why but now I know. There are a lot of factors in place here all at the same time that caused this to be the result now. I don't think we should give up now because professional development is very important.

One point that the DP kept mentioning was the need for time to use new ideas and to have it as part of a long-term plan:

At the end of this year we have two days with no children and we are going to use that for professional development. This time we are going to do professional development in quality teaching and so the rest of the time is quality teaching work. We don't have to race off to class and don't have to plan for next week. So the priority is to get strategies for quality teaching from this plan. Once we are through I'd say about 80% of staff on side. There are usually three groups in our school. One group will run with anything, one group will come on board after they see it out for a while and about 10% won't do anything. They should have tried another profession, they are OK but just OK. The big group will be OK. They are so used to the department changing a policy after they have put a lot of effort in and it is rather disappointing.

In summary, the deputy principal identified 12 factors that inhibited teachers' use of the web site to support their action learning:

- Time
- Other Priorities
- Access to computers
- Onerous Reporting procedures
- Teachers who can't use computers
- Key person/facilitator in the school (three key people changed)
- No Vision for long term professional learning
- Teachers working in isolation in a high school, not use to sharing
- Resistance to something new
- Criticism of teachers doing something "new"
- Three groups of teachers in the school who respond differently to change
- Changing departmental policies

Case 2: Attempting to Use Technology to Support Action Learning in an Elementary School Setting

A web site was designed for the teachers at the elementary school who decided to document teaching strategies for the following four elements of the model of pedagogy: engagement, connectedness, higher order thinking, social support, as well including their own preference for cooperative learning and WOW (any outstanding strategy that did not fit in to other elements). The home page for the site is shown in Figure 3.

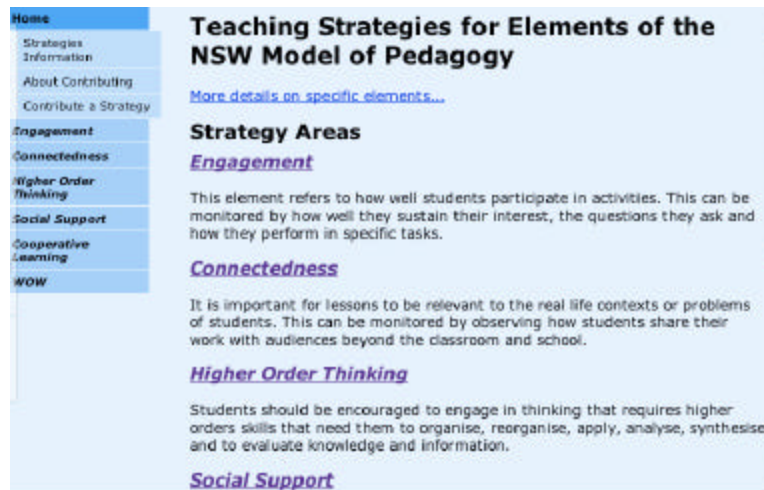


Figure 3. Home page for Primary School

Elementary school interviews

A team in the school had been involved in action learning for two terms and at the beginning of term 2 2004, five mini action learning teams were formed across the school. The teacher (T) tells how the staff planned to work in teams but she went on leave and other whole school priorities occurred:

People from the original team spilt up so that there was one member from the original team. So we planned to have staff meetings each fortnight and we had planned for when we would have meetings and casuals booked. Unfortunately in the middle of the term 2 I went on leave for the rest of the term. I came back at the beginning of term 3 and I know we got one meeting in but then other things happened. We had a major performance, a variety of different aspects, child protection, we had a CPR. So our fortnightly meetings were not able to continue and we did not have any more after your workshop. The elements matched what we wanted to do and we were keen to try it but it was a matter of timing and by when the web site was up we did not have any more of the team meetings and the whole thing stopped. Had we had our fortnightly meetings teachers would have talked about what they would have done and what they would like to try and then lets put this on the web site. So the web site has to become part of our learning process and put it down in a way that other people could use it.

She explained how some teachers are more ready to use technology than others but they needed the help of an in-school facilitator and the meetings where they had planned to use the web site did not occur due to other school priorities:

Also some people are more ready to use technology than others. So that is what happened, lots of other things got in the way. The performance was on in term 3 and other things happened. So the whole action learning thing faded away and so the web site faded as well. We were planning to alternate our weekly meetings from staff meetings to action learning meetings but in term three we had several staff meetings in a row about school matters and then we didn't get back to the action learning meetings. Also I drive the technology in the school so when I am not there people don't use it. By term 4 because we lost the momentum in term 3, we were coming into term 4 and there wasn't the interest there in term four and then people were thinking end of school assessments, reports, several staff meeting with other things like a meeting with our local high school.

The teacher made a particular comment that some teachers do not have computers at home and that in-school training needs to occur in an ongoing way:

The staff at the school have come a long way in terms of using technology but some teachers are still reluctant to use new things in technology. And they need help and they wait for someone like me to get it organised in terms of training. They are very used to learning together, learning in groups and in pairs. So not all staff have computers at home and not all staff are comfortable with web sites and some don't have the internet on their computer. So for it to work it will have to be school based rather than home and to get people really trialling the web site we will need

some training and development so that people work together with support and have some time with friends and me so we work this through together so that people feel comfortable with it and then eventually the staff will have the confidence to work with it on their own but that will be an endpoint, not a beginning point.

A particularly interesting comment by the teacher was that an innovation such as a web site needs to be designed to fit into what teachers are doing and be part of a professional learning plan:

For the web site to have a long term place for the school it will need to fit into what we are doing so that it becomes a part of our learning process rather than something that just records something at the end because teachers just don't get time. So if it is inbuilt part of the action learning process itself and utilised in this way, it becomes part of the process of the learning so it will help people clarify, help people think about what they are doing and how to explain it to other people. People will start to make suggestions to use it like this or adapt it like that and change it so that it might be in stage 3 or fit in stage 1. That will come through people working together.

In summary the teacher identified 11 key factors that inhibited teachers' use of the web site at the elementary school:

- Key facilitator of action learning on leave (who was also the technology person)
- Other school priorities (school performance,)
- Department policy deadlines (child protection, CPR)
- Fortnightly action learning meetings stopped
- Time to talk
- Different teacher readiness for using technology
- After a break (term 3) teachers lost interest
- Term 4 other things became a priority
- Some teachers reluctant to use technology
- Some teachers do not have a computer at home
- Need ongoing training and development

Conclusion

The failure of these two web-based innovations has implications for the *development, use* and *evaluation* of instructional products that use technology. First, although the teachers had commenced the professional development process of action learning in their schools, the idea for the web site came from the two academic researchers, not from the teachers. The only input that the teachers had into the design of the web site was nominating the 4-5 elements or foci for strategies as content for the site. As such the web site was developed with minimal consultation with the teachers and was presented as a final product for them to use. This "we have a good idea for you" approach often does not lead to successful use of an innovation. In hindsight, it would have been better to negotiate with teachers what they perceived their needs were and how technology could address them. Not only does this involve teachers in the development of innovations, but gives them some ownership and interest in the product which may influence their participation.

As reported in the interviews by the teachers, there were several key school-based factors that inhibited teachers' use of the new technology in both the elementary school and the high school. These included a lack of time, key facilitator leaving the school, different skills of teachers, lack of infrastructure to encourage use of the site, no ongoing professional development, lack of computers at home and other school priorities. Although the elementary school designed an in-school structure to support action learning such as the development of new mini-action learning teams, as soon as the structure was not in place then the web site fell into disuse as well. A pertinent point for the high school was that they did not have a vision for long term professional learning as they have not had an appropriate 'mindset' to use tools to complement long term learning.

Clearly, the evaluation of the web site, which consisted of monitoring teacher use of the site and interviews with key staff, suggested that the site was a failure. Even though teachers at the elementary school suggested that they intended to use the site in 2005, this has still not occurred. Perhaps a meeting with the teachers needs to occur to discuss whether the site can be redesigned to make it more relevant and useful for the teachers.

Technology is now all around us and is increasingly becoming a part of our everyday home and work lives. For technology to also assist in the professional learning process for teachers, it needs to become infused into their work habits. That means providing more time for this to occur and an infrastructure for ongoing workplace learning.

Importantly, technology needs to be developed *with* teachers, not *for* teachers. In addition, as long as schools remain so busy with little time for professional learning, teacher learning will be minimised. The design of school organizations needs to be reconsidered so that they are also learning environments for the teachers as well as the students. Technology will not play a major role in teachers' professional learning until such an environment is fostered which includes teachers having more 'say' in the development of technologies to support their learning.

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