

From Project to Program:

The Evolution of an Alternative Teacher Education Model.

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In 1999 the Faculty of Education at the University of Wollongong trialed an alternative model of teacher education known as the Knowledge Building Community (KBC) Project. With support from the NSW Training and Development Directorate of the Department of Education, 4 local primary schools and the Teacher's Federation, 22 first year students embarked on an unknown journey. Forsaking the traditional model of mainstream education that consisted of lectures and tutorials the students became pioneers in an alternative model of teacher education that was based upon problem-based learning.

This paper will show that attempting to implement PBL in its pure sense in the constraints of our context was a mixture of successes and pitfalls. The research showed that the initial concept was however worth developing. Therefore the original model has undergone major revisions and is now at best described as a "negotiated-evaluation- of-a-non-negotiable-curriculum-based-on-a-constructivist-model of learning-and-knowledge-building". The basic aim of the program is to deal with the perennial problem of contextualising students' professional learning, by linking abstract theory as closely as possible to the contexts and settings to which it applies, ie the primary school classroom.

In 2001 the KBC program is operating across the Bachelor of Teaching Degree with 75 students.

Introduction

This paper reports on an alternative model of teacher education that began as a pilot study in March 1999 at the University of Wollongong (UOW). The project started with 22 students from the first year (primary) intake. Four local schools were involved in the project. Classroom teachers at these schools acted as professional mentors and educational informants about the culture of schools. The New South Wales Department of Education and Training's (DET), Training and Development Unit, the Dean of the Faculty of Education and the NSW Teachers Federation supported the project. Financial support was also provided via an Educational Strategic Development Fund (ESDF) grant, the DET and the Faculty of Education. Associate Professor Brian Cambourne and Dr Brian Ferry coordinated the implementation of the program. It has been calculated that before the pioneer students started their first class in 1999 some 150 hours of formal meetings had taken place between the major stakeholders listed above. Since its inception the KBC project design team has been continually seeking to improve the model and by February 2001 the original model has been the subject of several refinements and adjustments resulting in a major revision of the original concept. In 2001 there are 75 students enrolled across the three years of the Bachelor of Teaching degree and the project has obtained 'program' status within the Faculty of Education. This paper will explore the refinements and transition of the KBC from project to program.

Background

The term or phrase 'learning to teach' is easily said but the literature that is available concerning teacher education suggests that it is a complex process involving a combination of University and practicum experience (Feiman-Nemser & Buchman, 1985; Britzman, 1986; Goodman, 1986; Zeichner, 1986; Calderhead, 1991; Groundwater-Smith, 1993; McCormack, 1997; Mayer, 1999). University preparation programs for teacher education are many and varied. However, researchers have found that teacher education courses are similar in that they tend to lack an "overall coherence" (Fullan, 1991 p. 291). Added to this criticism is that the purposes of many of the courses and subjects that preservice teachers undertake are complex and hazy (Floden, McDiarmid, & Werners, 1989; Lanier & Little, 1986; Kennedy, 1990). Hoban (1999) says that because teacher education courses often present a fragmented view of learning this can hinder a preservice teacher's development into a flexible, progressive teacher. He claims that there are two reasons for this. He states that many teacher education courses split the study of learning into independent subjects focussing on psychological and sociological aspects which can lead to narrow and fragmented view of learning. He goes onto say that the organisation of these subjects is often based on the delivery of decontextualised, theoretical knowledge that has little relevance to trainee teachers.

We are living in a society that demands that our children are well educated. "A basic education is no longer adequate preparation for life" (Ramsey, 2000, p. 9). In an era when new innovations in teacher education are necessary for classroom preparation it is imperative that preservice teachers be equipped with alternative teaching strategies that challenge the telling and rote learning model (Gunstone, Slattery, Baird & Northfield 1993; Loughran & Russell, 1997). In a society that is demanding teaching to be of the highest quality it is imperative that the "systems of teacher education equip teachers with knowledge and skills relevant to the needs of the young people who they are preparing for the transition to work and participation in an ever-changing world" (Ramsey, 2000. p. 9).

However, a dominant theme that emerged from research undertaken by Armour and Booth (1999) showed that preservice teachers were leaving university with feelings of being under-prepared for the transition to life in the classroom. This was reiterated by the schools that employed them when they reported that a majority of graduates were unaware of how school and classroom cultures even operated (Cambourne, 1998). The beginning teachers were unable to see the relationships between what they had studied at university and how it could be translated into classroom practice that produced effective student learning (MACQT, 1998). Armour and Booth (1999) found that most schools who worked with final year primary education students felt that they needed more experience with the day to day operation of schools, and how the daily work of teachers relates to the culture of schools and classrooms. Given that there are a multiplicity of demands that classroom teachers now face teacher education must change.

The Purpose of the KBC Project

The Knowledge Building Community (KBC) project was initiated as a response to research that suggested preservice teachers needed more experience with the day to day operation of schools, and how the daily work of teachers related to the culture of schools and classrooms. In the latest review of teacher education in NSW Ramsey (2000) stated that it is essential for teacher education to undergo reform.

Teacher education cannot continue substantially within present models and structures. Reform is needed which reconnects teacher education and schools. (Ramsey, 2000. p.50).

The purpose of the KBC Project is to provide an alternative model of teacher education that is designed to contextualise the delivery of instruction. Since its inception the program's basic aim has been to deal with the perennial problem of contextualising students' professional learning by linking abstract theory as closely as possible to the contexts and settings to which it applies, in this case the primary school and the primary school classroom. The KBC project specifically achieves this aim because the preservice teachers' education is shared by the University lecturers, school based teachers and principals.

What is a Knowledge-Building Community?

A Knowledge Building Community is a group of individuals dedicated to sharing and advancing the knowledge of the collective. ...What is defining about a Knowledge Building Community is a commitment among its members to invest its resources in the collective pursuit of understanding

(Hewitt, Brett, Scardamalia, Frecker & Webb, 1995).

The notion of students and teachers working together in collaboration has been in educational conversation since Dewey but in the last decade has been taking a more definite shape in various programs (Scardamalia & Bereiter accessed January 2000). These various experimental programs have taken place predominantly in school settings. Scardamalia and Bereiter present the knowledge building community as a means of reforming the culture of the classroom (Hewitt et al, 1995). The adoption of this approach sees the class become a research team aimed at advancing its own "collective, intellectual growth through sustained, collaborative investigations" (Hewitt et al, 1995, p. 1). Based on the principles espoused by Scardamalia and Bereiter (1989, 1991, 1993, 1996) the student teachers involved in the KBC project at the UOW work in a learning environment that supports the continuous social construction of knowledge (Vygotsky, 1978).

To reposition the delivery of teacher education from a 'campus-based-lecture-tutorial' mode to a 'problem-based-learning-within-a-school-site' mode the KBC in operation at the UOW is underpinned by three learning principles.

- Community learning (CL);
- School-based learning (SBL);
- Problem-based learning (PBL)

Community Learning:

Community learning (CL) is a major shift from the traditional teacher education model of lectures and tutorials and serves to strengthen the working link between the University and the participating local primary schools. It requires the development of a community of learners, which is made up of preservice teachers, the school-based teachers and University lecturers who act as facilitators on campus. This community is designed to establish a sense of trust among all of its members who are dedicated to working together to educate and develop competent and sensitive professionals.

School-based Learning:

School-based learning (SBL) is the second learning principle of the KBC project. Schools are more than a conglomeration of buildings and people rather they are a set of individual cultures which have evolved in response to the wider cultural values (Bullough, 1987). To function, and indeed survive a beginning teacher must understand this culture. This component of the KBC structure aims to develop a sophisticated understanding of school-based culture. It is important for preservice teachers to understand how schools do business and how classroom cultures operate and support the learning of all students. It is also necessary as a part of this understanding of classroom culture to know and appreciate how to create and sustain this culture. This part of the KBC project is particularly aimed at reducing the 'reality shock' by increasing preservice teacher's understanding of a teacher's multiplicity of roles in both the school and the classroom.

Problem-based Learning

Although problem-based learning has been extensively used in medical and other health professions over the last 30 years it has not widely crossed over into teacher education. The literature to support problem-based learning in preservice teacher education provides relatively few examples. Higher education has become characterised by structured subject based learning. Subject based learning has at its centre the lecture. The lecture rates poorly as a means to motivate students because the core issue of the lecture is the lecturer's intent to cover set material (Margetson, 1994). However, effective student learning does not necessarily result from the lecturer's presentation of material. It appears that no matter how well the lecturer performs during the course of the lecture, students still sit passively and are seldom involved (Margetson, 1994). Subject-based learning means that subjects are viewed in isolation from each other and it is the subject that is driving learning. This style of learning assumes that the learner is unknowledgeable (Woods, 1994) and the instructor is the source of knowledge.

Current Problem-based Learning (PBL) theory asserts that PBL encourages and motivates students to 'learn to learn' (Duch, 1995). The critical difference in PBL is that it is characterised by instruction, which involves the students working in small groups to solve 'real world' problems. In this process the students develop skills of negotiation, communication and collaboration (Aldred, Aldred, Walsh & Dick, 1997). Problem-based learning is believed to promote life-long learning, making knowledge relevant by placing it in context (Aldred et. al., 1997). Above all problem-based learning challenges students to take charge of their education (White, 1996). The common characteristics of PBL are:

- abolishing the traditional lecture-tutorial format;
- changing the lecturer's role from transmitter of facts to facilitator of learning;
- the facilitator will ask open-ended questions, monitor progress, probe and encourage critical reflection, and make suggestions thus helping students to create a positive learning atmosphere.

Duch, (1995), says that faculties that incorporate problem-based learning into their courses empower their students to take a responsible role in their learning and as a result must be ready to yield some of their authority in the classroom to the students. The transition to a PBL mode of delivery should not be considered as an easy option or a quick fix. Just as the tutor needs to adopt changes to practice the students involved in the transition to PBL also go through certain changes and these need to be understood for a smoother transition to PBL for all concerned. Students involved in PBL need to become self directed learners and it must be realised that the benefits to this mode of learning are neither immediate nor automatic, the learning curve required with such an undertaking is very steep.

The students, whose teachers have been telling them everything they needed to know from the first grade on, don't necessarily appreciate having this support suddenly withdrawn. Some students view the approach as a threat, some students may gripe loudly and bitterly about other team members not pulling their weight or about having to waste time explaining everything to slower team mates. (Felder & Brent, 1996, pp. 1-2)

Initial glitches involved with implementing PBL are both common and natural (Felder, 1995) and if an understanding about them is present they can be overcome without too much pain, panic or discouragement.

The Problem Design

Inevitably the change to problem-based learning requires the facilitator to supply relevant and appropriately structured problems. Problems traditionally found at the end-of-the-chapter, are found to be contrived, narrowly focused, and irrelevant (White, 1995). A good problem has several components. According to the Problem-based Learning Institute, Illinois a problem should have:

- specific curricular objectives: In most cases, problem design begins with the identification of curricular areas where current teaching methodologies are proving ineffective.
- The problem designer should identify an anchor situation related to the curricular objectives. Anchor situations can arise from local news stories or issues of local importance.
- The designer should identify the extent of interdisciplinary perimeters of the problem.
- The designer must test the final problem against a rigorous set of criteria to be sure it contains the essential elements of a problem. The problem must be scrutinised for its maximum power. The problem must motivate the students and at the same time fit the curriculum.

In order to solve these problems students learn to use critical thinking, and problem solving, and as these skills are being utilised the students begin to acquire life-long learning skills which include the ability to find and use appropriate learning resources (Duch, 1995). A good problem will typically engage a group of students for up to a week or more (White, 1995). A common misconception is that the problems used in problem-based learning only deal with aspects that have gone wrong, Margetson, (1994) believes if this is the approach that is always adopted it can have a de-motivating effect on the students. Problem based learning can be described as an apprenticeship for real-life problem solving (Stepien, & Gallagher, 1993).

The 1999 KBC Model:

Although learning can occur from each of the three learning sources described above, it was the expectation of the KBC Project's design team that the PBL component would be the vehicle that would drive the most effective learning. However because the KBC was made up of three learning sources it was represented diagrammatically by three conjoined circles. This model was comprised of three interconnecting circles that represented the three learning principles it was the belief that their intersection would create the formation of the KBC.

Figure 1: The KBC Project 1999

Problem based learning was of course a critical factor for students to understand. In order for the students to be aware of the criteria for PBL they underwent a preparation phase which engaged them in several workshop and assessment tasks where they needed to work in small groups and use self-direction in order to complete given tasks. These tasks used small "fun" problems they carried no weight towards the final assessment task nor did they directly relate to the curriculum. The intention of these workshops task was predominantly to allow twenty-two strangers to form a community, acquire research skills and become familiar with the principles of PBL.

The actual PBL problems that made up the assessment component for the session caused many students to question why they had volunteered to be part of this alternative model. The silence that befell the room with the issuing of the first problem package was eerie. The issuing of the first PBL assessment task resulted in severe intellectual unrest. Some students immediately began asking questions while other students tried to guess what the facilitator was thinking. Several students voiced disapproval at having their questions returned with a question. Even though the students were aware of the criteria for PBL they needed to be reminded about its structure.

At the culmination of the first problem (which had a literacy focus), students stated the following:

I can't say I 'm sorry that it's over as it was huge! But I have learnt so much and I have a teaching resource, which I can keep Skye 4/5/1999

When I go back over what we have done in our group work and also what I have done myself I am just amazed at how much I have learnt and how far we have traveled. Linda 4/5/1999

However some students felt that the problem was too big and lasted for too long they felt that it overshadowed and dominated their life! Siobhan although a competent student who produced a high quality assessment task for problem one felt tired and drained at the four week mark:

I'm slowly dying. I am just so tired that I cannot think anymore. I am a zombie. This whole literacy thing is just so enormous. I hate assignments and I am so sick of this problem. Siobhan 5/5/1999

The combination of several new factors for the students i.e. being new to the school environment, the role of a teacher associate, preparing classroom lessons and the

combination of the problem assessment tasks were all factors that contributed to the students' intellectual agitation, as did the group work situation. PBL requires students to work in groups to solve problems; and it would be misleading to suggest that the groups all functioned effectively. As the KBC students grappled with the demands of the actual problem tasks they also learnt that working in a group is not always an easy task.

The role of group work in PBL cannot be underestimated, as it is a central and vital component to the success or failure of each member of each group. To combat what could only be seen as a decline in community moral the facilitators brought in an outside consultant to take the students through the fundamental differences between groups and teams. The students were alerted to the fact that when they understand each other's roles in their particular groups then the chances of them functioning more efficiently were greatly improved. When the teams were able to appreciate what each of them had to offer they opened up and voiced their opinions. What this illustrates is that for effective functioning teams there needs to be input, guidance and structure by the facilitating staff as well as commitment from the students in each of the respective teams. Each member of each team has to be willing to take a risk and show honesty and openness.

As previously illustrated the KBC project was diagrammatically represented by three connecting circles each of which represented the three learning sources of the KBC project. It was stated that a knowledge building community would be formed if the three circles or learning sources intersected. At the end of the session the students were asked for their input concerning the three learning sources of the KBC. Figure 2 represents the reconfiguration that the majority of the pioneer KBC students developed and agreed upon:

Figure 2: Student Configuration of the KBC Project Week 14 Session One 1999

In an interview with Fran and Claire they stated that the reconfiguration of the KBC model was a portrayal of where they finished their first session. Fran stated that the decision to draw the model in the above way for her was based on a number of factors.

I think that drawing the 3 circles already connected was wrong I think that you should show the circles connected but say that this is the goal. By putting up the 3 circles we expected that it would simply happen – we were never told that it may not – or that the circles can in fact move. At the moment PBL is not in the picture. Our community, our school group, are working well in the school learning context but it is not performing PBL because of the problem that we were given. The model must be explained as a dynamic moving thing. The

intersection of the three circles is the goal. And it needs to be explained that if you don't get there its okay! Fran 1/6/99

Claire reiterated this comment when she said:

The circles may overlap they may come close, two may connect three may even come together but we shouldn't have been told that this is what will happen, because when it didn't it simply added to our stress load because we thought we were doing something wrong. Claire 1/6/99

The students quoted above raised some very poignant points and issues that needed to be examined more closely. The intersection of the three circles must be seen, as the goal for the KBC students, this aspect cannot be disputed. The students said that the learning source of PBL needed to be placed as a single circle because the design of the problems had actually prevented them from carrying out PBL. In the preparation phase the students researched PBL they understood about its origins and the theoretical manner in which it should be conducted. As a result of this research they expected to be doing 'textbook' PBL. However the design of the problems prevented the students from carrying out this style of PBL. Of the three learning sources presented to the students it cannot be denied that PBL proved to be the most problematic.

The preliminary research showed however that the students had through the other two learning sources developed a profound understanding of teaching, schools and their culture that was well above the expectation of first year students at the end of their first session of University. This aspect was reiterated by several of the in school staff who had acted as professional mentors for the students.

The students' questioning resulted in me being motivated and stimulated to learn or revise theories. The students' questions reinforced to me that the teaching methods I was using were relevant. Margaret (mentor teacher) 8/8/1999

The students were making comments and asking questions that as a teacher I have longed to hear because what it did was reassure me that as graduates they were going to be effective teachers Jan (mentor teacher) 8/8/1999

The students although exhausted from their experience with PBL had observed that for their own personal learning they needed to take an active role. It was the belief that the KBC Project had an authentic potential to make a difference in preservice teacher education because of its ability to provide students with a link between theory and practice and an appreciation of the complexity of teaching and schools.

The 2000 KBC Model

In light of the research and experiences of 1999 the KBC model underwent a series of revisions that in hindsight proved too conservative and which still placed a reliance on PBL to drive the students' learning. The students' advice regarding the diagrammatic representation of the KBC was however heeded. This resulted in the three interlinked circles that represented the three sources of learning being separated.

Figure 3: The KBC 2000 model

The conjoined circles were replaced by a series of interconnecting lines that attempted to place an equal importance on the three learning sources and to show their interdependence on each other as well as their fluidity. A simple definition of each learning source was provided. The centre KBC circle illustrated how to be a part of the KBC process was being involved in the activities of the three surrounding learning sources.

As part of the revision and refinement process for 2000 it was recognised that the students required much more emphasis on whole-group support and knowledge building. It was agreed that the problems that were presented in 1999 as part of the PBL learning source had created much anxiety among students and facilitators alike. Therefore it was agreed that the problems for 2000 would force the students to use skills and strategies inherent in effective working teams. To do this a greater emphasis was placed on team building and

team skills. Weekly workshop activities were planned that would provide the students with a greater understanding about how teams work, the evolution of teams and the role/s each member of a team plays. It was thought that if the students had these skills under control then when they were faced with problems to solve they would have the group cohesion to deal with the challenges that they would meet.

This strategy proved quite successful and the students displayed and vocalised a greater awareness of team skills than their predecessors however it was still the PBL assessment tasks that caused the greatest concern. A second revision of strategy in 2000 was to deemphasise PBL. Unlike the 1999 KBC students the 2000 students were not given the task of researching PBL from the numerous sources available. Instead, they were told that the version in operation at the UOW was a hybrid that was based on the principles of PBL in other universities throughout the world. It was thought that this would prevent the students from having preconceived ideas or expectations about what they should or should not be doing. This was a successful strategy but unfortunately the problems that were written for the students were again too large. The ironic point to be noted here was that the problems actually restricted the students from undertaking the kind of learning that PBL espouses. The students found themselves faced with insurmountable odds; preparation for teaching in the classroom and the onerous task of trying to research and force fit contrived problems. Although the problems were generically based on common school issues they did not suit all contexts.

The assignments do not match in with our teaching experience. At the moment we have huge assignments and because we are teaching in the schools we also have all the preparation that goes with that and we are putting in very late nights. So maybe next year could the schools help write what our assignments are so that there is a connection between what we are doing in the classroom, the school context and the theoretical component. Shona 19/5/00

As a response to the students' concerns the KBC facilitators approached the eight in school coordinators where it was confirmed that they wished to have the assessment tasks that the KBC students were assigned fit in more congruently with their school context. This obviously became a priority for the 2001 planning.

Again the research conducted in 2000 with both first and second year KBC students showed that as a group they were extremely empowered as learners. The level of professionalism and enthusiasm demonstrated by the students' impressed the school-based coordinators and University facilitators once again. The KBC students relished the opportunity to discuss and voice their opinions. Being a part of the KBC had provided them with personal feedback, friendship and support networks where they knew their opinions mattered. The students stated that they felt valued as a person in this learning environment. The KBC students identified that what they required as learners was a link between the theoretical and the practical components. However they still needed processes in place that would enable them to take a much greater control of their own learning. To date the problems that they had been presented with had forced their learning to concentrate on only solving the assessment problem as such they became focused on this issue and did not widen their learning focus. Because the students were so focused on solving just the problem it was as if they could not see the forest for the trees!

The majority of Faculties that operate PBL provide their students with hypothetical problems that although based on 'real-life' scenarios do not have to be solved in the real setting. It was the expectation that the KBC students would use the setting of the classroom to work through their PBL task. The constructed PBL problems were based on everyday scenarios

of a school or classroom but the students often found that the problem could not be solved in the context where they were situated. Thus the students would force fit their research to fit their learning.

Together with the design of the problem tasks another contributing barrier to the successful implementation of PBL has been the context of the University itself. As part of the rules and constraints imposed upon the KBC by the University the students are compelled to enrol in certain compulsory subjects for which they must obtain a grade. Attempts to date to provide students with a ranking of either 'pass' or 'fail' have been vehemently denied. Therefore the assessments tasks must carry a percentage ranking and thus this conflicts with the idealism of PBL.

The 2001 KBC Model: Back to the Drawing Board!

The research undertaken in 1999 and 2000 showed that the attempt to combine PBL in its pure sense as the literature suggested was a bittersweet mixture of success and failure. While working in groups had provided the students with opportunities to experience and develop team and research skills the experience of PBL over the last two years has predominantly provided insights into the pitfalls of trying to implement what might be called a "pure" PBL model. Yet still the students who have been part of the KBC despite the constraints and overburdensome tasks that have been issued have developed a deep sense of understanding about schools, classroom work, and the multiple roles of a teacher.

The results to date confirm that the change in delivery has allowed the KBC students to develop a strong pedagogical and professional understanding. What has been learned from the last two years from the students, the school-based teachers and the campus based research is that the KBC students have been predominantly learning through individual and collaborative problem solving. This learning was mediated and delivered in a professional context (school) and complemented by collaborative problem solving and community knowledge building in the KBC homeroom at the university with a facilitator/s. Therefore the revisions that the model needed to encapsulate in 2001 was a contextualising of the current University curriculum and further deemphasis of PBL. It was essential to design a model that captured and maintained the learning traits of collaborative teams but one that allowed the teams to develop their own learning tasks that were specific to their particular school context. The KBC facilitating team were convinced that this way the students would continue to make connections between theory and practice without the distraction of the PBL problem.

The evolving model of 2001 is more along the lines of:

"a negotiated-evaluation- of-a-non-negotiable-curriculum-based-on-a-constructivist-model of-learning-and-knowledge-building" (Cambourne 2001)

When one unpacks all the pieces of this over-nominalised phrase, it captures what KBC facilitators and students should be able to do in KBC. The program is still delivered along the original guidelines of the KBC ideals ie the three sources of learning. However the three original learning sources are now encompassed into four 'pillars' or domains of teacher "know-how" which recent researchers and theorists argue are central to the development of effective professionals (Ramsey, 2000).

In the 2001 KBC model the constructed or hypothetical problem, has been removed. Problem based learning principles guide the students as they negotiate to complete

assessment tasks. The students devise assessment tasks based on collaborative evaluation and analysis of the non-negotiable curriculum ie the compulsory subject outcomes. The students then undertake negotiations with the mentor teacher of the school where they are a Teacher-Associate to ensure that the tasks they have devised are appropriate and achievable their setting.

'The four 'pillars' of KBC are:

- taking responsibility for own learning.
- learning through professional collaboration
- identifying and resolving professional problems
- becoming a reflective practitioner

Figure four (below) is a diagrammatic representation of the 2001 KBC model currently in operation at the UOW.

Figure 4: The Four Pillars of KBC 2001

The four 'pillars' of the KBC are a set of complex interactions that are interrelated. When these interactions are working they will serve to drive the task that is to be investigated. It is timely at this point to fully investigate what activities the students need to undertake in each of the four pillars of the KBC.

1. Taking responsibility for own learning:

Within pillar number one it is expected that the students will:

- Demonstrate that they understand the importance of becoming autonomous, self-directed, independent learners

- Demonstrate that they know how to make effective, productive, learning decisions
- Identify a set of learning "strategies" and/or "tactics" that responsible, self-directed, independent learners can use and/or draw on
- Apply some of these strategies and/tactics to their own learning.

2. Learning through professional collaboration

Pillar number two expects the students to:

- Demonstrate understanding of the value and power of collaborative learning.
- Demonstrate ability to work productively and professionally as a member of a team.
- Demonstrate the ability to deal with inter-group conflict in productive ways.
- Understand how "group dynamics" work and be able to apply principles and "know-how" to maintain group cohesion.
- Demonstrate that they can collaborate in the generation of professional knowledge which all who are members of the KBC community can share and use
- Understand the difference between "competitive" and "collaborative" learning and know when either is appropriate.
- Actively support each other's and the whole community's learning.
- Be honest, "up-front" and professional with each other, especially with respect to opinions and behaviour of others in the community. (Even if you don't like them, show you know how to deal with this in ways that will not destroy or destabilise the learning or problem solving that the group/community is involved in)

1. Identifying and resolving professional problems

Pillar number three encompasses the principles of PBL and therefore expects that the students will:

- Demonstrate the ability to identify and articulate professional problems, which need to be addressed and resolved.
- Demonstrate the ability to analyse the key elements in a range of professional problems
- Make explicit and apply a set of problem-solving strategies and tactics which can be used to address and resolve such problems
- Demonstrate the ability to identify resources that might be needed to address and resolve a problem, and subsequently find and use such resources.
- Demonstrate the knowledge and ability to use time effectively in the problem-solving process

4. Becoming a reflective practitioner

The fourth and final pillar of KBC learning engages the students in reflective practice, therefore the students will be carrying out the following activities:

- Demonstrate the ability to engage in the process(es) inherent in reflective learning
- Students will be expected to make regular, honest, and systematic judgements of the degree to which they believe they have demonstrated the four broad specific outcomes of KBC in the various settings (School, KBC home-room, Self-Directed Learning) by completing self-evaluation reports at regular intervals.

The previous KBC models had overarching problems that had been written in an attempt to meet the requirements of the compulsory subjects. These problems proved cumbersome

and in the end served only to hinder the learning of the students. Although the problems were written to meet specific curricular objectives and were anchored to current school issues they had not been tested. In fact it was the situation that the problems were trying to cover too many curriculum objectives. After the initial enthusiasm of the students had waned the problems no longer motivated the students. Instead the problems had the opposite effect, as the students became increasingly frustrated trying to force fit or resolve them in their various school settings.

In the place of the designed generic problem are a series of questions that have been designed to guide the students in their quest to master the outcomes of the compulsory subjects in which they are enrolled. This is a four stage approach. At each stage there is a question that has been written to guide the students as they work towards designing their own assessment tasks. The questions at each stage are written as a means of ensuring that the students are satisfying the requirements of the compulsory subjects. The four guiding questions are:

- Stage 1 "Let's identify exactly what we are expected to learn in each of these subjects"
- Stage 2 "Let's see how we can reduce our workload by integrating and combining what we find out in Stage 1"
- Stage 3 "How can we make best use of our time in school to support what we're expected to learn?"
- Stage 4 "What sort of assessment tasks can we design and submit that will convince those who are going to assess us that we have achieved what we're supposed to have achieved?"

The students use the four pillars of KBC learning to support their work through each question at each stage. The principles of PBL are still in use because the students do not attend lectures, are constantly asking questions and are engaged in problem solving research activities. The students work in small teams. Another area of improvement in the KBC project is the facilitators' management of these student teams. This management has improved from the 1999 assumption that because the students had read a chapter pertaining to group work that they would know what to do. All KBC students are given team building and workshop activities that are designed to give them an understanding about how teams evolve. Each first and second year KBC team in 2001 have a policy and procedure document for their daily undertakings. These student documents serve to keep each team on track as well as list their own rules for operation.

Are we on the right track? Student insights concerning the four pillars of KBC learning!

The observations of the students together with the feedback they are providing are very strong indicators that the latest revision of the KBC model is allowing for independent problem solving, collaboration and reflection. The following KBC students' insights are samples that provide the KBC design team with confidence that the four pillars of KBC are proving to be effective.

One of the most important things I've learnt so far is that this program is about helping each other and reflecting on our ideas so that we can learn from each other.

Michelle 7/3/2001

What an exhilarating, fun day I had working within my group. I thoroughly enjoyed myself breaking down the Curriculum and Pedagogy subject that we are to learn. Within this group we are all very much equal with input and this is what made this group's collaboration so enjoyable. The facilitators entered into our discussions and provided some insight and assistance. You learn without realising that you're learning. Dianne 12/3/01

I think the benefit of the group work is that we are less focussed on the outcome and more focussed on the learning. Therefore gaining real knowledge through action and experience rather than just cramming in the theory in order to move onto the next subject - which we may forget Julie 15/3/01

I think we've learnt a lot about pillar #3 of the KBC, "identifying and solving problems", which is really good. The last exercise on the board today was also helpful in making us pro-active conflict resolvers. Hopefully we will be able to cool issues before they erupt. The work we did today with the assessment tasks was very worthwhile for me, because I could see the overlapping and underlying themes in all the subject assessment tasks. I thought those to be, understand theory, observe practice and link those together. This exercise has laid out ground rules and a process for when we go into schools. Thanks everyone! Michelle 4/4/01

The major themes to emerge from the above quotes show that the students have realised that learning from each other is a powerful tool. The 1999 students stated that the KBC model proved allusive. They said that the structure of the model compared to where they completed the session made them feel that they hadn't achieved pure PBL because their circles had not "linked". The 2000 KBC students like their predecessors gained deep and valuable insights into the school settings but due to the nature of the PBL problems focused all their energies onto solving them and they unfortunately neglected a lot of incidental learning. The 2001 students however have had no trouble working under the four 'pillars' and using the four 'stages' as a guide. Michelle spoke about pillar number three encouraging the team to be proactive. Julie stated that the benefit of the group work had enabled learning to occur because the "focus has been removed from the outcome". She went onto to say that they had learnt by doing, and this is of course a primary aim of PBL.

The benefits of the 2001 model far outweigh the 1999 and the revised 2000 model because it allows the students the chance to apply the principles of PBL without the domination of an overarching generic problem that does not suit all school sites. The four pillars of the KBC are traits that will stand in good stead when the KBC students are beginning teachers. The ability to identify and act on professional problems in a collegial manner and then have the ability to reflect upon the course of action taken are qualities that will serve the profession well. Future colleagues and pupils alike will appreciate the benefits of these skills, because the preliminary research is certainly showing that the 2001 KBC students are benefiting by having these pillars underpin their learning.

A Project No Longer

Prior to the start of session one 2001 the KBC project was granted program status by the Faculty of Education at UOW. The word "project" alluded to a temporary undertaking, removing this terminology demonstrates permanence. The decision to give the project, program status was also a reflection on the results obtained by the students to date.

Program status is a means of qualifying for a formally appointed Director. Program status allows for a transparent budget in terms of both financial and personnel resources and it formalises the perception, both within and outside of the university, that the program is subject to the same principles of academic, professional, resource, and fiscal accountability as all other programs within the faculty. Some, (not all) of the assumptions inherent in KBC are radically different from those that underpin the mainstream Teacher-Education programs. The ripple effect of these assumptions have the potential for generating conflict unless everything about the KBC is transparent and all members of the faculty are kept informed of what the KBC program is all about.

The journey from project to program, from three interlinking circles to four pillars of KBC has been an intense journey. Yet it has been very rewarding for all the major stakeholders. As facilitators the rewards have been in seeing the development of the preservice teachers involved in the program. Across the three levels of the Bachelor of Teaching degree there are 75 preservice teachers who trusted a new and for some of them untried alternative model of teacher education. Their reward has been that they are 75 of the most empowered preservice teachers who by their own admission each possess a deep level of understanding about the school and classroom culture. One of the most impressive facets to emerge however has been the establishment of a positive working relationship between the University and the eight participating schools. Together these two stakeholders have been able to overcome some of the documented difficulties associated with the early attempts of establishing a PBL program in schools. However the patience shown on all sides was testament to the results of the students themselves. They were working with difficult problems yet were managing to link abstract theory to the classroom. The undisputed winner is teacher education itself. The KBC program is proving itself as a credible alternative to mainstream teacher education a factor that did not go unnoticed by the latest review into teacher education in NSW conducted by Ramsey (2000). This report stated that teacher education could not continue substantially within the present models and structures. The report stipulated that reforms were needed that would reconnect teacher education and schools. In 1999 the KBC program at the UOW established such a reconnection. The KBC program through a series of model revisions has designed a way to link abstract theory to classroom application and at the same time strengthened the link for joint responsibility of teacher education between the University and the participating schools.

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