

# Authentic Learning Across International Borders: A Cross Institutional Online Project For Pre-service Teachers

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**Abstract:** This paper reports on three iterations of a dynamic and authentic learning experience which involved a learning community of pre-service teachers, teachers and teacher educators from Queensland, Australia and Alberta, Canada. Participants in the online community inquired into real world teaching issues that are present in today's diverse classrooms (e.g., ICT integration, second language learners, cyberbullying and students with special needs). Asynchronous discussions from the online learning experience were analysed to identify the nature and types of interactions pre-service teachers engaged in as they questioned, researched and interpreted a range of perspectives as part of the learning experience. From these meaningful conversations, they continued to build a rich understanding of teaching practice by drawing connections between theories, experiences and realities of teaching in contemporary contexts.

## Introduction

Faculties of education have been frequently criticized as being unresponsive to new demands (particularly those involving Information Communication Technologies for teaching and learning) and remote from practice (Darling-Hammond, 2000, ¶4; McLoughlin & Luca, 2000). Online learning communities provide the opportunity for the establishment of rich learning environments where pre-service teachers can share resources, experiences and also network with practicing teachers. This professional online interaction is not limited by geography, space or time. Rather, it can provide a model and a lived experience for extending learning beyond the classroom walls and that pre-service teachers can use in their future classrooms.

This paper discusses an innovative learning experience where pre-service teachers, with the support of teacher educators and practicing teachers, grappled with new ideas, new knowledge, theoretical concepts and a range of prior and current professional (practical) experiences related to issues confronting today's teachers. Through a four stage process as part of an international online collaboration project, they were immersed in issues directly related to the demands of teaching and were engaged in meaningful intellectual work where they reflected, discussed, questioned, clarified and made judgements. As part of the experience, pre-service teachers were required to move beyond the reproduction of information to creating and exploring new ideas and extending their current knowledge.

The key aims of this project were to provide:

- opportunities for authentic learning experiences,
- environments for authentic discussion between pre-service and practicing teachers,
- opportunities for deep understanding of the issues of diversity, and
- a model for authentic use of Information Communication Technologies (ICTs) in learning and teaching.

## Authentic learning

What is authentic learning and what are the key factors to guide the design of authentic learning experiences? Newmann and Wehle (1993) use the word authentic to “distinguish between achievement that is significant and meaningful and that which is trivial and useless” (p. 8). Authenticity might be characterised as having real world application beyond the classroom and being relevant to the learner. It requires everyday problem solving, sustained over time, and encourages collaboration. Authentic problems mirror problems in real life. They are complex and ill-structured with multiple and contextualized solutions.

Authentic learning requires the learner to actively construct, perform, create, or produce their own responses for an audience beyond that of their peers and the teacher. Herrington, Oliver and Reeves (2003) would add that authentic activities provide the opportunity to collaborate and reflect, and are integrated across disciplines. “Students must be challenged with authentic tasks that drive the need to use, transform, apply, and reinterpret that information” (Woo, Herrington, Agostinho & Reeves, 2007, p. 38). The learning context changes from an accumulation of isolated facts and skills to an emphasis on the application and use of knowledge in the real world. This impacts on the quality and importance of the intellectual work that learners engage in, where the knowledge and skills have meaning beyond ‘passing the test’.

Newmann and Wehle (1993) established the following three criteria to assist with the identification of authentic instruction: “(1) students construct meaning and produce knowledge, (2) students use disciplined inquiry to construct meaning, and (3) students aim their work toward production of discourse, products, and performances that have value or meaning beyond success in school” (p. 8). Constructivist approaches to teaching and learning consider that “an individual learns best from experiences characterized by a high degree of personal relevance” (Lebow, 1993, p. 7). In addition “authentic learning intentionally brings into play multiple disciplines, multiple perspectives, ways of working, habits of mind, and community” (Lombardi, 2007, p. 3). Authentic learning should have value for both the individual and also to a community of learners.

To assess the authenticity of instruction, Newmann and Wehle (1993) generated the following five standards:

- *Higher-order thinking*: Requires learners to synthesize information from a variety of sources and perspectives. Learners need “to go beyond the information given, to adopt a critical stance, to evaluate, to have metacognitive awareness and problem solving capacities” (McLoughlin & Luca, 2000, ¶ 4).
- *Depth of knowledge*: Learners establish complex relationships between key concepts, “translate newly-acquired information into their own terms, connecting it ... with their lived experience” (Henri, 1992, p. 130). Practices such as the following are involved: “identifying problems of understanding, establishing and refining goals based on progress, gathering information, theorizing, designing experiments, answering questions and improving theories, building models, monitoring and evaluating progress, and reporting” (Scardamalia & Bereiter, 2003, p. 1371).
- *Connectedness to the world beyond the classroom*: Learning that is relevant beyond the classroom context (Department of Education, 2002) and can be taken up either by addressing real-world problems or making direct links to students personal experiences (Newmann & Wehle, 1993).
- *Substantive conversation*: Intellectual substance, dialogues, logical extension and synthesis, and a sustained exchange are features of substantive conversation (Department of Education, 2002) which promote shared understanding.
- *Social support for student achievement*: Characterised as “an atmosphere of mutual respect and support between teacher and students, and among students” (Department of Education, 2002) and “involves high expectations, respect, and inclusion of all students in the learning process” (Newmann & Wehle, 1993).

Authentic learning tasks emulate real life; the work is messy, complex and inexact. It requires the learner to undergo a process of inquiry to explore relevant information and multiple perspectives to construct meaning or find solutions to the problem. To accomplish such tasks, learners are required to cognitively engage at a higher level.

## Context

Bruner (1969) reminds us there is a difference between *learning about* teaching and *learning to be* a teacher. The practice of teaching requires a depth and breadth of knowledge and a range of pedagogical skills. It is complex and context dependent, impacted by personal values and ethics. Teacher action is often tacitly and intuitively enacted drawing from one's own theories of teaching and learning and reflective practice.

As teacher educators, in the design of our international online collaboration project, we wanted to give pre-service teachers a rich and authentic learning experience. The project was designed not only to provide authentic discussion between pre-service teachers, teacher educators and teachers but the topics under discussion were authentic or real-world issues faced by teachers everyday in our schools. The use of technology provided the tool for the authentic conversations across geographic and time barriers. Asynchronous environments provide "increased opportunities for reflection and exploration of issues before they respond to a comment or queries" (Woo, Herrington, Agostinho, & Reeves, 2007, p. 38).

To investigate the project, we examined how cross institutional online discussion could provide pre-service teachers with the opportunity to develop deep knowledge in real life issues through authentic dialogue. Findings are reported from three iterations of the project involving pre-service teachers from Queensland, Australia and Alberta, Canada who were brought together for six weeks from multiple classes in different courses in each university to inquire into issues of teaching and learning such as ICT integration and teaching within diverse classrooms. Pre-service teachers engaged in dialogue through online discussions and the use of video conferencing. They were joined by practicing teachers and teacher educators who formed the role of experts in areas such as cyberbullying, second language learners and autism. Postings and reflective responses from the project formed authentic assessment for the pre-service teachers within their courses.

The key questions guiding this investigation were:

- How can authentic online dialogue promote inquiry into teaching about and within diverse contexts?
- In what ways can international online collaboration promote deep inquiry into real world issues in teacher education?

To launch the project, each pre-service teacher read a stimulus novel related to the issues under discussion. This formed a shared experience from which the discussions could begin. Examples of the novels used are *The Curious Incident of the Dog in the Night-time* (Hadden, 2002), *Destroying Avalon* (McCaffrey, 2006) and *A Group of One* (Gilmore, 2005).

From this shared experience, pre-service teachers engaged in a range of online discussions to explore in depth multiple ways of seeing, thinking, being and reading different issues within different contexts. The discussions were divided into four stages, with each stage having multiple online discussion forums. Stage one involved community building activities where pre-service teachers introduced themselves to the group, and communicated with pre-service teachers from other locations. In stage two, the discussion was based around the stimulus books and inquiry questions these books inspired regarding themes of teaching and learning and they began to explore real world connections and share and discuss examples from their lives and work as pre-service teachers. The third stage of discussion expanded the practicalities of these teaching and learning themes as the pre-service teachers and teacher educators were joined by practicing teachers who acted as experts in the themes previously identified by pre-service teachers. The final stage involved reflective posting regarding the participants' learning and the project. Communication within the project was through the use of online discussion within a learning management system. In addition, video conferencing was also used to assist with the establishment of rapport and social presence. It also provided a synchronous aspect to the learning.

## Details and Outcomes of the Project

Data for this project were collected from the archives of asynchronous online discussions, focus group meetings, and artefacts created for the reflective activity. The online dialogue was analysed using Henri's (1992) content analysis model. Henri's (1992) model provided a framework to analyse the postings using the 5 dimensions described below:

- **Participative** – focusing on the quantity of messages posted in each forum;
- **Social** – postings which are of a social nature or are not associated with the formal content;
- **Interactive** – postings which make connections between messages e.g., responding to questions of others, sharing of experiences or resources;
- **Cognitive** – postings which indicate explicit processing of information e.g., exploring strategies, making clarifications and judgements; and
- **Metacognitive** – postings which refer to the active deconstruction of the participants own learning.

Each individual posting or message was the unit of analysis for the purposes of coding using Henri's dimensions. When a unit or message exhibited the indicators of more than one dimension the unit was coded-up to the highest level. This judgement was made because messages at a higher level (e.g., cognitive and metacognitive) include elements of the lower levels. In addition the data were coded by categories based on each of the stages of the study. The constant comparative method of data analysis was used in the construction of themes to capture patterns in addition to identifying inconsistencies from the reflective activity and focus group interviews. Categories and themes were analysed looking for similarities and areas of conflict found in the data.

The pre-service teachers' online postings were analysed by the two researchers independently using these 5 dimensions. If there was a disparity in coding, discussion occurred to resolve the differences through justification and negotiation. The researchers were also designers and teacher educators of the project.

Data from the 2006, 2007 and 2008 implementations of the project will be provided, compared and discussed within this section. Pseudonyms have been used to protect the identity of the pre-service teachers and teachers when quotes have been included.

### Stage One: Community building

Given the pre-service teachers were working in an online text-based environment, it was necessary to establish a climate of trust and rapport so that participants could feel free to communicate openly. If pre-service teachers are to have cognitively productive conversations to co-construct meaning and confirm their understanding of complex concepts, the learning community needs to create a "climate that supports and encourages probing questions, scepticism and the contribution of more explanatory ideas" (Garrison & Anderson, 2003, p. 50).

In this stage pre-service teachers were establishing a social presence within the online environment. Through introductions, sharing of personal images or stories and responding to those from different locations, pre-service teachers were beginning to interact with new colleagues and to establish familiarity with and acceptance of others. The number of posts per pre-service teacher in this area increased from 2.68 in 2006 to 4.47 in 2007 and then dropped in 2008 to 3.64 (Table 1). An emphasis on the discussion of community and engagement by the teacher educators may have caused an sharp increase in average postings per pre-service teacher from 2006 – 2007.

**Table 1:** Frequency of Pre-service Teachers Online Postings in the Introduction Discussion Forum

Year	Number of Participants	Participative	Social		Interactive		Cognitive	Meta-cognitive
			No.	%	No.	%		
2006	22	59	18	31	41	69	0	0
2007	57	255	51	20	203	79	1	0
2008	17	62	57	92	5	8	0	0

It is not surprising that Henri's (1992) social and interactive dimensions carried all but one of the postings given the nature of the forum and the task completed by pre-service teachers. The pre-service teachers felt that the nature of the tasks achieved an effective social presence outcome. Mandy commented that the social presence online created

“an intimate atmosphere, even though we had never met, as [we] were able to understand other students’ perspectives and get to know their personalities”.

### Stage Two: Learning from a shared experience

Pre-service teachers created a novel overview for the stimulus novel they read. In addition, they identified key themes from the books and made links to both pedagogical implications and to their respective curriculum documents. Finally, pre-service teachers developed inquiry questions from the themes and teacher educators selected several of these questions to drive the inquiry discussion forums. For example: *It is interesting to see the world through somebody else’s eyes. From this novel, you gained an insight into one person’s view of the world. How does perspective change the way we see other people? How does the way we see children affect the way we teach?*

Beyond the shared experience of reading the books, topics from the books themselves were planned as a dilemma or to trigger a sense of dissonance. This dissonance is part of the process of authentic learning and requires the learner to gain various skills and information to address the problem. Anthony’s comment suggests this did occur: “the novel opened my eyes to issues I had not previously considered”. Another pre-service teacher, Kane, revealed that after reading the book he spent time researching further information on the themes, and this continued throughout the project. However, it was found that most of the dissonance came from the fact that pre-service teachers were part of a large and international online project as Pam revealed “I have to admit when this project first started I was not overly enthusiastic” supported by Greg’s comment “This online project gave me mixed feelings”. As the project progressed however pre-service teachers were enthusiastic. Dennis remarked that “once I got involved in reading the posts and seeing how others were able to interact with one another I began to warm up. I even began to really enjoy engaging with others and learning from their experiences”.

**Table 2:** Frequency of Pre-service Teachers Online Responses in the Novel Study and Inquiry Questions Forums

Year	Number of Participants	Participative	Social	Interactive		Cognitive		Meta-cognitive	
				No.	%	No.	%	No.	%
2006	22	104	0	71	68	27	26	6	6
2007	57	350	1	215	61	131	37	3	1
2008	17	94	0	50	53	39	42	5	5

Table 2 indicates that the average number of posts per pre-service teacher within the novel study and inquiry forums increased from 4.72 in 2006 to 6.14 and 5.52 in 2007 and 2008 respectively. Again we had a increase in the number of postings per pre-service teacher from 2006 to 2007 with a drop off in 2008. This may have occurred because in 2007 and 2008, the teacher educators emphasised the importance that the pre-service teachers engage online a number of times each week to post and respond, rather than post once. Effective conversation can occur when participants move from a post and run type of engagement to a post and response cycle over time.

Pre-service teachers were also encouraged to move to from statements such as ‘I agree’, or ‘xxx is what I feel/think’, or ‘xxx has been my experience’, to a higher cognitive level of engagement where they purposefully questioned each other, shared examples and resources, supported comments with statements from literature, made connections to concepts from other posts, literature, and experience etc. Alison commented that “the criteria for the posts encouraged participants to create considered responses to others and publish intellectually valuable material.”

This encouragement and modelling by the teacher educators had a positive outcome over the three iterations as the average postings per pre-service teacher coded as cognitive postings increased twofold: from 1.12 in 2006 to 2.29 in 2007 and 2008. The decrease in the proportion of interactive postings and the subsequent increase in the proportion of cognitive postings over the 3 years was one of the goals of the teacher educators. The data indicates that the modifications in the design and teaching of the project from one year to the next supported students to increase postings at the cognitive level when participating in the novel study and inquiry question forums.

This increase in the depth of engagement in terms of the quantity of cognitive posts is supported by one of the pre-service teachers, Tom, who commented that “The discussion was informative, and it was personally enriching to

hear real-life experiences on particular issues. It was great to have an opportunity to learn through other people's experiences with topics surrounding inclusion, instead of just learning everything from a text book." Jillian's comment "[a]ctually a lot of research was required to participate in any forum" indicates that the pre-service teachers took the time to contribute in an informed manner rather than only sharing their perspectives or experiences.

### Stage Three: Learning from teachers as experts

Pre-service teachers and teacher educators were joined by teachers from Australia and Canada who took on the role of experts. Forums were established in areas such as cultural diversity, second language learners, Autistic spectrum disorder, teaching in an inclusive classroom, ICT integration, and cyberbullying.

**Table 3:** Frequency of Pre-service Teachers' Online Responses in Expert Discussion Forums

Year	Number of Participants	Participative	Social		Interactive		Cognitive		Meta-cognitive
			No.	%	No.	%	No.	%	
2006	22	30	0	0	20	67	10	30	0
2007	57	318	7	2	212	67	97	31	2
2008	17	92	0	0	49	53	43	47	0

Table 3 indicates that again, the average number of posts per pre-service teacher increased from 1.36 to 5.57 and 5.41 over the three years. The pre-service teachers tended to use the expert forums to ask for resources and strategies. From the information provided by experts the pre-service teachers were willing to share their experiences in-depth, and continued to question to gain deeper knowledge of the key concepts and issues. Interestingly, the pre-service teachers also kept linking the discussion with the concepts from the stimulus books.

A favourable outcome over the three years was an impressive increase in the average number of cognitive postings per pre-service teacher from: 0.45, in 2006, 1.7 in 2008 and 2.25 in 2009. From 2007 to 2008 there was an increase in the proportion of postings at the cognitive level and a decrease in the proportion of interactive postings. These results mirror the results in the novel study and inquiry forums and have been a positive result of the alterations made as a consequence of reflective practice by the teacher educators.

It was disappointing to see the results from Henri's (1992) metacognition dimension. Metacognitive statements are those "related to the general knowledge and skills and showing awareness, self-control, and self-regulation of learning" (Henri, 1992, p. 125). From the data, it appears that the project did not encourage metacognitive postings from pre-service teachers. Perhaps the researchers were expecting too much when coding at this level or perhaps in both online and face-to-face environments pre-service teachers do not overtly make their metacognition visible.

However, there was positive feedback from both pre-service teachers and experts in relation to Newmann and Wehlege's (1993) standard for connectedness to the world beyond the classroom. Jack revealed that having ready access to experts, as part of his learning experiences was not a regular part of his learning experiences: "the input from 'experts' was very helpful. It was a method of learning that I have not been involved in before." Many pre-service teachers indicated that they lurked in expert forums (and others) that were not connected to their stimulus book and found that they gained ideas and information from these forums.

From the experts' perspective, two items were evident. First, experts were surprised how in-depth the pre-service teacher engagement was which reflects the authentic learning standard of substantive conversation. One expert, Louise, noted that the pre-service teachers "were not just posting but were putting their hearts into it and it felt after a while you were getting to know them". This was surprising given that the experts were online for only 7 to 10 days in an asynchronous online environment. Second, it appears that the experts also thought the experience was valuable with statements such as: "I loved the different perspectives", "it was personalized participation", and "the discussions were pretty meaningful". Pre-service teachers echoed these comments; Fred added "the idea of this project was great. I think that it was an innovative way to deepen my understanding as a student on the topics of diversity, special needs mainly autism, humanity, and inclusive practices".

### Stage Four: Critical reflection

The key data for this stage were gathered from the assessed reflective postings and focus group interviews that occurred after the project. As part of stage four, pre-service teachers were asked to develop an action plan indicating their short term and long term professional learning goals. From the focus group interviews, seven critical themes were evident. First, multiple perspectives provided diversity in knowledge and experience. Jillian shared that “I think that it forces those in the discussion to consider ideas and beliefs beyond what they already hold.” Second, the novels provided a shared experience that triggered online dialogue and provided an anchor that pre-service teachers could keep linking back to when new ideas or concepts were introduced. Sam observed that “I found the story very real and got me thinking about bigger issues in teaching.” Third, the learning experiences provided an increased awareness and a model for how ICTs might be used for learning in the classroom. John suggested that “[e]xposure to new ways to implement technology is fantastic as an aspiring teacher because it helps to develop confidence within us. I definitely found a new confidence in regards to the implementation of technology in a classroom.” Jill explained that “I can definitely see the advantages of using this type of project in my own classroom one day”. Fourth, the diversity of participants provided a range of resources that pre-service teachers would not previously had access to and also acknowledges the diversity of today’s classrooms. Fifth, pre-service teachers valued the authentic conversations. Kent offered that “it was valuable to have authentic conversations with other pre-service teachers and experts”. Whereas Kelly believed “it provided a model of what teachers do as professionals, it encouraged collaboration”. Sixth, pre-service teachers gained deep understanding from the authentic and meaningful assessment. “I got so much more out of this – well beyond reading papers and or listening to lectures etc” remarked James. Seven, authentic issues for teaching became central to the conversations. “Talking especially to students from Canada made me realise that they are facing a lot of the same issues that Australia is facing in education” commented Peter. Sarah revealed that “[t]he information I have learned from here will impact my pedagogical practices because the topics covered affect today’s society significantly”.

## Conclusion

The international online collaboration project provided an opportunity for pre-service teachers to “makes sense of experience within the context of his or her current world” (Lebow, 1993, p. 9). This learning opportunity enabled pre-service teachers’ experiences to be valued in addition to providing access to the experience of multiple participants who have a range of backgrounds. One of the pre-service teachers observed that “I have had opportunities to hear the view of many different people about inclusive education in a way that would not normally have been possible.”

Through a disciplined inquiry, pre-service teachers developed greater depth of knowledge and engaged in higher order thinking as part of this authentic learning experience. The use of the novels as a stimulus and shared experience, the encouragement to consider multiple perspectives, the sharing of resources and the authentic dialogue with experts provided pre-service teachers with the means, motivation and model to inquire deeply into teaching *about* and *in* diverse contexts. In addition, the international and online collaboration enabled not only authentic conversation but also authentic inquiry into real world issues for teachers.

From pre-service teacher feedback, it appears that authenticity and depth of learning challenged them to understand both theory and practice of teaching within today’s classrooms. The conversation and concepts explored “will impact beyond the present to my future” stated Janice. Mark verified that the learning experience “[a]ssisted me in building capacity to teach in a diverse classroom in the future”.

For the next iteration of the project, consideration must be given to enhancing the metacognitive aspect of learning. This will require changes in the design and facilitation to ensure there is alignment among metacognition as an objective, curriculum, pedagogical approaches and assessment. Further research is required to investigate how teacher educators might promote and make visible metacognitive outcomes from authentic learning tasks. To aid in the development of authentic tasks, teacher educators need to examine more case studies or examples of both successful and not so successful authentic learning experiences. By having such cases or examples, it could assist in forming a clearer image of what is possible and what is happening today. Such a vision may assist them in the application of authentic tasks in the assessment, teaching and learning of others.

Authentic learning experiences “expose the messiness of real-life decision making” (Lombardi, 2007, p. 10). Pre-service teachers “must be challenged with authentic tasks that drive the need to use, transform, apply and reinterpret” (Woo et al., 2007, p. 38) multiple sources of information because within their professional lives they need to be “able to deal with ambiguity and [be] capable of higher order analysis and complex communication (Dede, Korte, Nelson, Valdez, & Ward, 2005, p. 3). This will enable them to respond in ways which are knowledgeable, reflective, thoughtful, intentional, and situational.

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