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Inverted Hollywood: The Pitch for e-Knowledge Meets Pre-Service Teacher Education

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Abstract

To open this article, I begin with a confession. While I have learned enormously from research articles and scholarly texts, I have also learned a lot from movies. Like most typical pre-service teachers, when I entered my teacher education program, I had ingested more celluloid than I had academic articles. To frame this chapter, I am going to fuse the theme of increasing the use of online resources in teacher education with movie making: I am going to give you a movie pitch for the Public Knowledge Project - The First Installment. I am intentionally choosing a movie pitch script for this chapter to illustrate several points. Not the least of which is that scholarly communication in general (through online or any means) has a problem of Inverted Hollywood. Scholars or academics have wonderfully substantial content to deliver but we often lack the means to motivate users to visit our web sites and to read our articles. Hollywood, on the other hand, can motivate high interest amongst the public but can rarely deliver any substantial content (Norman, 1993, p.5). In this chapter, I intend to make the analysis of the Public Knowledge Project more 'Hollywood' and, in the process, hopefully motivate a few readers to visit the Public Knowledge Project website[1].

The Movie Pitch Structure

A movie pitch structure usually contains the following bolded elements. In order to demonstrate how this structure applies to movies, I draw upon the example of a recent academy award nominee movie, Chocolat. A movie begins with a hero who has a motivation. For example, Vianne, the heroine in the movie Chocolat , is a single mother in the 1950s who wishes to open a chocolate shop in a small conservative French town. She wishes to make this town her home by having a successful business and putting down roots. But, the clock is ticking and the time is beginning to run out for the achievement of

[1] http://pkp.ubc.ca

the goal. In Chocolat, Vianne is being boycotted by the town's mayor, Comte de Reynaud. To the nobleman-mayor, the chocolaterie's vendor represents desire and lust, grave sins that are to be especially resisted during the pious season of Lent. Vianne's time is running out for her business to take hold and for this town to accept her. Or else - if Vianne does not befriend the mayor, the strongest leader in the community, he will continue to dissuade the townsfolk from frequenting her shop or accepting her as a community member. But luckily, the heroine befriends other members of the community and they buy her chocolate and enjoy her company. But luckily, the mayor realises the sensual pleasure of chocolate and is willing to accept Vianne into the community. And, our heroine realised that she wanted to stay in this community and make it her permanent home. So, just in the nick of time, just as Vianne was ready to declare defeat and move on to another town, the mayor begins to tolerate her and stops his active campaign against her. The heroine and the town have learned to compromise and accept one another. The forces of GOOD prevail and all is returned to harmonious order.

The Public Knowledge Project (PKP) movie is not as romantic as Chocolat nor is it fictional. PKP portrays an educational quest, not an epicurean one. However, PKP and Chocolat both strive to convert communities: PKP wishes to demonstrate the rich merits of educational research resources available online to practitioners, beginning or established in their careers, just as the heroine of Chocolat wishes to demonstrate the liberating pleasures of chocolate to a repressed and fearful community. PKP strives to make research an actualized public good just as Vianne in Chocolat strives to make chocolate an acceptable and pleasurable public commodity.

The PKP Movie Pitch

The PKP story begins with a team of researchers, our so-called "heroes"[2] in the faculty of Education, University of British Columbia, Vancouver, Canada. The motivation of the heroes: we want to make academic research and scholarly literature more accessible to the public, integrating it with other sources of understanding and information to which people turn. We want to make university-produced knowledge, public knowledge. We want to contribute more scholarly knowledge for the public's good. In this particular case, we want to contribute more scholarly knowledge to the education of pre-service teachers. We want pre-service teachers to know the value of public access to this knowledge to prepare and assist them for their in-service lives. We want the public and pre-service teachers to know that their tax dollar funding of academic research is going to good use, applicable use.

[2] Note that I am using the term "heroes" in a literary and, somewhat, ironic sense.

But, the clock is ticking and our time is beginning to run out for the achievement of our goal. The Public Knowledge Project, our team of researchers, has to learn how best to support the learning needs and interests of educators (e.g., in-service teachers, pre-service teachers, teacher union members, educational researchers) before our research funding runs out.

Or else, the public will continue to see futility, for the most part, when they see academic research. Teachers will view educational research as inapplicable to their professional lives. Or else, scholarly texts will be seen as inutile and anachronistic. Or else, the Great Gap will widen between theory and practice, abstractions and experiences. Or else, someone else will fulfill the public's needs for research. Someone, like a private corporation, will fulfill student teachers' needs for research and the corporation will do so for a price, for profit. Then the goals of research will be of a private company, not those of a public institution.

But, luckily, PKP has assembled a team of researchers and website designers who are ready to experiment and work at this dilemma. And, our heroic team realized that we should use available technologies to create an online repository of filtered texts. And, our heroic team realized that we should make a tool that permits many different types of users (e.g., teachers, pre-service teachers, administrators, parents, scholars) to access many different types of knowledge texts. And, our heroic team realized that we should demonstrate how to connect different types of knowledge such as research articles and reports, classroom practices and tips, policy documents, organizations working to promote change, and, editorial texts reviewing issues. We realized that these knowledges could inform and introduce public users to a breadth and depth of knowledge on one topic that they probably never imagined existed. And, our heroic team realized that we had some ideas that we should shape into website prototypes. So, our heroic team, PKP, made the first prototype of the Public Knowledge Project, the PKP-Vancouver Sun website.[3]

The Set-Up: The PKP-Vancouver Sun Prototype

The first collaborative experiment of the Public Knowledge Project was to electronically complement a series of journalistic articles appearing in the Vancouver Sun newspaper over the course of a week in the spring of 1999. The Vancouver Sun believed it was a critical time for the public to be exposed to the complex issues pertaining to education and technology in British Columbia schools. On each day of the newspaper's coverage, a different issue was explored. The five main issues covered by the journalists and mined

[3] http://www.pkp.ubc.ca/sun/index.html

for online resources by the PKP team included 1) the impact of technology on curriculum and teachers 2) funding issues 3) gender and technology 4) the dangers and advantages of the internet and 5) equity of access. In our first repository of web documents, the PKP team wanted to motivate newspaper readers to go deeper into the issues raised by the journalists and to make connections across these issues. We endeavored to organize a web architecture of knowledge domains related to each issue that would permit this type of cross-pollination of connections. We created and filled with web resources five knowledge domains entitled Research (academic articles and reports), Practices (classroom practices and tips), Policy (examples of policies from different locations and levels of government), Organizations (non-profit groups working on the topic), and Issues (an editorial approach to the topic).

We attempted to encourage and achieve connections for users by offering overview pages under each issue and for each of these knowledge domains. These overview pages summarized each document with a quotation or chunk that encapsulated its intent, stated the bibliographic information; and, hyperlinked the title to the actual document. The user received the document in its entirety inside the PKP frame, thus, PKP acted as a portal or gateway to a contained set of internet resources. We realized that we could offer our view of the best of the web on these newspaper topics concerning technology's impact on education. During the five days in which the Sun article series ran, we averaged close to 100 visitors per day. After six weeks of being on the web, the PKP-Vancouver Sun site received 1881 hits in total with a quarter of these hits coming from visitors outside of Canada.

So, our heroic team now had a sophisticated prototype and we realized that we were not certain as to what the public had gained from our web site. We realized that we had something to offer a more specific audience, such as educators, who might be investigating issues of technology and education. We realized we needed to find a purpose and a test group for our team to observe more closely. We realized that we needed an empirical example of how this online experiment in scholarly communication would work in practice. Or else, our web site would lay unused and unvisited. Or else, educational research would remain inaccessible to those it is meant to inform. Important research findings and probing questions would remain isolated and in applicable for teachers and pre-service teachers. Or else, as teachers are overwhelmed by a plethora of difficult educational decisions in their classrooms, research findings lay dormant and purpose-less.

The Sequel: The CITE Empirical Example

So, our heroic team sought a situation where we could test the utility of our filtered database. We sought a situation where teachers would confront and discuss issues of

educational technology. A sequel to any movie or any web site is always difficult. We decided to continue with the same PKP-Vancouver Sun database but configure it into a different situation. Basically, PKP was the same but instead of setting it inside a newspaper context, we set it inside the context of a university class. And, luckily, we found a rich empirical location, the CITE Teacher Education program at the University of British Columbia. The acronym CITE stands for Community of Inquiry for Teacher Education. It is a one-year program of studies for prospective elementary teachers where the students are actively encouraged to analyze and reflect upon "how learning is personally constructed, socially mediated, and inherently situated" (UBC, CITE, 2001). The central quality that distinguishes CITE from other teacher education programs is "a conceptually and experientially coherent program that encourages: full participation by all CITE community members in all aspects of program design and implementation; and integration of all curriculum areas within and across two distinct learning contexts (campus-based instruction and practica experiences)" (UBC, CITE, 2001).

There are roughly 36 pre-service students who take their courses together as a CITE cohort. One of the required courses is entitled Education Studies. The course examines how social relations of class, gender, ethnicity, sexuality, and poverty influence educational opportunities. With the leadership of Jane Mitchell (the CITE technology coordinator) and the participation of Linda Darling (the instructor of the Education Studies course), we developed a unit entitled Education Studies Online (or Ed. Studies Online).

In my work with PKP discussion forums and in Jane Mitchell's work with CITE discussions, we had both witnessed a tendency by users to remain in an exchange of opinions and anecdotal experiences inside discussions. In this PKP-CITE experiment, we wanted to move academic knowledge (or formal abstractions) into the pre-service teachers' online discussions. We wanted them to cite sources from the PKP repository to inform their positions and incorporate hyperlinks into their statements. In short, we wanted to motivate the pre-service teachers to incorporate academic conventions of discourse into their online chat. We wanted to help students achieve a virtual discussion where it was no longer as experience or anecdotally driven as a chat room but not as solitary or static as a term paper. We wanted to arrive in a new in-between place where students would employ academic discourse to exchange and build upon ideas with one another and with other teachers. But we didn't want the students to become overwhelmed by the morass of documents that appears when conducting web searches. We wanted them to have easy access to a range of texts and knowledge documents that they would probably be unable to find on their own and that they could integrate into their learning and their talking about learning to teaching.

To attain these goals, we designed a task or purpose that required the students to use our PKP prototype for an assignment. We developed a Webquest project outline, located on a WebCT bulletin board, where we asked the students to consider how social

relations influence the curriculum and implementation of computer technology in schools. In the Webquest, the students were first given the following question: "As a beginning teacher, what do you think are some crucial equity issues pertaining to technology and education and what action do you think schools and teachers can take in relation to these issues?"[4] Secondly, students were encouraged to find accurate and reliable information on the internet to support their positions on the above question. They were encouraged to use the PKP-Vancouver Sun site and a list of links posted on the Education Library's page as these were two hyperlinked resources inside the Education Studies Webquest. Finally, the students were instructed to work in online groups to create a collective text on a WebCT discussion board concerning one equity issue. The students were also instructed to include hyperlinks inside their postings (at least two) to reference or footnote their statements. Each discussion group also included a guest external participant whose purpose was to connect the discussion to sources and people outside the CITE program and the university walls. Of the six external participants, five were university-based professors or graduate students. Only one of the six participants was a classroom teacher. Discussion groups and topics for the externals were designated by the CITE technology coordinator. None of the externals had working relationships or professional contact with the CITE pre-service teachers before this Education Studies forum.

This collaborative venture with Jane Mitchell and the Education Studies course was a field study of how pre-service teachers would use a PKP tool. We designed a task or purpose that required the students to employ the PKP-Vancouver Sun tool. We were testing our prototype with real educators to attempt to track how they acted on the website, what connections they were able to draw between texts and between practice and research, and, which PKP documents they found to be of value.

Generally speaking, the pre-service context of most universities is one marked by a culture of fragmentation between program parts; a perceived split between research and practice; and, a lack of communication and articulation between educators located in schools and educators in universities (Goodlad, 1994; Tom, 1997). For the Education Studies instructor (Linda Darling) and the CITE technology coordinator (Jane Mitchell), the appeal of integrating PKP into a course assignment was to countervail these fragmenting tendencies. The intent of the assignment was to help student teachers substantially engage with their colleagues, with the available web resources, and with guest participants (including school district personnel) from outside the B.Ed. program. Our goal was to help the pre-service teachers make intellectual connections between their coursework and their school experiences, between theory and practice, between foundational and curriculum courses.

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[4] See Appendix I for this Webquest assignment in its entirety.

Movie Scenes: Connections in the Gender Discussion

Online discussions are the equivalent of movie scenes. They are the building blocks of the movie's story. Through connections, questions, and challenges, a good online discussion advances a story, builds community, explores an idea thoroughly, and challenges previously held notions. Exploring some of the key movie scenes or pivotal turning points in one group's discussion provides some important connections as well as dis-connections for the PKP movie pitch.

The discussion concerned with gender equity was the most richly connected of all the PKP-CITE group discussions. There were connections made between past experiences and future action, between conceptual ideas and implications for practice. And there were unique connections made between the pre-service teachers and their external participant, an elementary school computer lab teacher working in the same school district as the pre-service teachers' practicum experiences.

The Gender Equity online discussion began with the following statement by Claire, a pre-service teacher.

> In the GenTech Research Findings Final Report by Mary Bryson and Suzanne de Castell, they stated "evidence from research on gender and access to, and uses of, new information technologies (NIT's) indicates that in public schools, female staff and students (in comparison to male students) are: (a) disenfranchised with respect to access and kind of usage, (b) less likely to acquire technological competence, and (c) likely to be discouraged from assuming a leadership role in this domain."
>
> It is obvious from the references sited in this article that that there is a lot of research out there regarding this statement. I think it would be interesting if we discussed any one of the three areas mentioned. A question that comes to mind is are female and male users of technology using technology for the same purposes?
>
> If you would like to read the final report before responding, here it is:
> http://www.educ.sfu.ca/gentech/research.html

This is a model opening statement for the requirements of the assignment. It begins with a citation that is referenced with the hyperlink. The citation comes from a web resource that had been filtered by the PKP repository. Claire then posits a question for her group to participate in. She is actively attempting to make connections with her online colleagues and she refers them to more literature on the issue. As she was the first participant to make a statement, Claire helped model a type of inquiry (of citation, question, leading reference) for the rest of her group to follow.

The external participant, Caroline, a teacher working primarily in an elementary computer lab, responds to Claire's statement.

Dr. Mary Bryson worked closely with our school to help us identify goals for technology and then to select appropriate software and hardware to achieve them. Conversations with Dr. Bryson helped me to acknowledge the power imbalance that exists around girls and technology, and I tried to ensure that this imbalance did not prevail in my classroom.

By chance, the external participant, Caroline, has had Mary Bryson in her school and in her lab. Mary Bryson is the researcher that Claire's statement quoted and referenced. Not only did Caroline make a connection to Claire's question, she also connected the researcher back to Claire with a real life, practical encounter.

Claire then asks Caroline to extend the equity discussion into more concrete examples and strategies. She specifically wants to know from Caroline how she would judge and recognize power imbalances in the lab and then what the ensuing strategies for action would be. The pre-service teacher, Claire, is asking a theoretically laden question -- how does one recognize power imbalance-- with an appeal to Caroline for specific instances of practice to address issues of power.

Caroline, I am also interested in hearing about the specific changes you made to your teaching style and the selection of models and mentors you made in your classroom. Also who did you allow access to in the computer lab at lunch and recess? Did you permit those students who showed initiative and productive working habits, or did you allow access to those who did not have computers at home? What were your strategies because as a pre-service teacher, I am not all that confident I would recognize the power imbalance you are talking about.

Key Movie Scenes: Disconnections in the Gender Discussion

Every posting in a discussion group sets up the next set of communications like movie scenes in a dramatic chain of action. The movie scenes or communication exchanges between Caroline, the teacher, and the student participants demonstrate some key disconnections for the PKP movie pitch. These disconnections are important dilemmas of scholarly communication and knowledge management projects in a pre-service context.

Caroline did indeed respond to the first student Claire with a continuation of the link of Mary Bryson. However, Caroline did not make this link explicit to the first student of the thread, Claire, nor did she make it explicit to the other members of the discussion. Caroline did not say, "Claire, Dr. Bryson is the researcher who you have referred to in your opening statement." The connection is not clearly established and, given the lapse of three days and the addition of three other comments in the thread, it is questionable to presume that the forum participants have made the connection.

It is also important to note that Caroline, the teacher-participant, did not reveal any specific ideas of Mary Bryson nor did she list any citations or references to Bryson's work. She did not directly relate to the citation that Claire had posted by stating her support of this position or this particular idea's impact on her thinking as a teacher. However, Caroline did state that Bryson changed her thinking, that in talking to Bryson, not in reading her articles, Bryson convinced Caroline of the power imbalances that occur in a school lab, through both the organization of equipment and the use of certain software. Caroline did demonstrate another facet of how research and researchers serve the schools and how the online resources can serve as a point of connection.

The fact that Bryson worked in a school with a group of teachers to develop a technology plan and organize a computer lab for greater gender equity is advantageous enough. The fact that a computer lab teacher could name a scholar as someone who had changed her practices through conversation is an inspirational model of scholarly impact for new teachers. However, Claire's response to Caroline was a question for specific strategies or tips. It was not a desire for closer examination and discussion of Dr. Bryson's central ideas or theories. Ironically, once the teacher Caroline entered the discussion, the overall rate of citations and references in the forum dropped to almost null. The students became focussed on Caroline's personal experiences, her professional practices and classroom observations. Still, here were signs of at least an initial integration of teacher experience and research knowledge working in close proximity.

This instance of Caroline's participation, its anecdotal and personal account discourse was not a unique stance in this online discussion. Unlike the students fulfilling the requirements of the assignment, most of the other external participants did not use quotations or cite resources from PKP nor did many externals refer students to other web resources outside PKP. For the most part, the external participants tried to push broader thinking for the pre-service teachers by asking the students more questions that sought to expand the examination of the issues. They served as another order of knowledge to complement the site’s other resources. The externals would respond to the pre-service teachers' statements with more questions rather than experiential examples from classroom observations. The gender discussion was unique in that the questions originated with the pre-service teachers and they were directed almost entirely at the external teacher, Caroline. These questions were focussed on the practical implications of what had been well established in the research literature, helping the participants to focus on and identify the problem in need of strategic interventions.

The external participants fulfilled the role of expanding and enlarging the university classroom walls to include more than just the pre-service teachers and their instructor in this community of inquiry. But, in this experiment, five out of six of the externals were university-based professors or graduate students. The externals did not represent an active perspective from inside a classroom or school. For the most part, the externals represented other institutional spaces of the university rather than this particular

course or degree program. The externals were in other university locations, pursuing other disciplines of inquiry in education, or graduate students establishing their academic identities. But, the externals did validate the discussion of this topic and validated the use of an electronic forum. In their positions as professors and graduate students, they were also in the best position to validate the use of citations and references to web documents. The effect was a much richer information environment in which to consider the process of becoming a teacher than what was occurring in the typical teacher education classroom.

In any movie or story, the heroes usually receive help in their quest. This help often comes from external sources such as a gypsy, a magical wind (such as that appeared in Chocolat), an elder of the community or a mentor. The external mediators in the PKP-CITE experiment were "helper" characters. A helper character is a person who has special knowledge and special skills that can assist the heroes. In the story of PKP-CITE, we knew that the externals had mentor type qualities that would help the pre-service teachers' in their understanding of the complicated implications of technology's integration into education. However, we didn't fully comprehend the extent to which the externals could assist us, the PKP team, with our goal of making academic research more accessible and meaningful to the pre-service teachers.

Assistants to the Heroes: The Pivotal Role of the External Mediators

In one topic group inside the Education Studies discussion, a different dynamic existed between the external mediator and the pre-service teachers than the one that developed in the Gender Equity group. I was the external participant in a group discussing the role of big business and corporate sponsorship for technology in schools through technology initiatives and funding technology's high costs. The group was debating the futility of using corporate funds to buy equipment when there was a greater need to support teachers to become more comfortable with computers.

In my role as external and researcher, I was curious to see how other groups were progressing in their intellectual engagement and use of web resources in the chosen topics. In one of the other Education Studies discussion groups, I observed an exchange between three or four pre-service teachers where they excitedly exchanged information about a new corporate program of environmental education. I felt it was an important example to bring back to my group's attention as it concerned corporate sponsorship and a delivery of curriculum for teachers and schools, and so I wrote to the group about a program that was much admired:

Subject: re: This may be off topic but:

In speaking about big business involvement with schools, I was struck by an example right here in the CITE forum. I noticed one group excitedly discussing the Grizzlies' Environmental Education curriculum for classrooms. I went to the Grizzlies site to check it out as I wrote my MA thesis on environmental education. Go take a look at it INCITE people and tell me what you think.

http://www.nba.com/Grizzlies/grizz_ed_index.html

As I gave the free corporate offering my critical reading, I was struck by a few things….

I asked my discussion group, the INCITE group, to investigate the situation for themselves by visiting the Grizzlies[5] website address and giving me their opinions. My comments and questions were then intellectually amplified by Brenda Trofanenko, another graduate student external participant in the Education Studies discussion.

Public sites of knowledge, including the actual sites such as aquariums and museums along with the virtual sites offered on the web, posit themselves as educational. Yes, they certainly are. But you need to ask yourself what is it that they want you to learn and why is it being presented in such a way?

Certainly, each corporation has a mandate for financial viability. My concern is how education is being employed as one way in which to show a profit. While it may be great to have the learning packages each corporation provides, I would advocate you be critical of the package, the intended learning, and the ways in which it has come into your classroom.

Whew! Who knew I could get so incensed about a grizzly bear, real or otherwise.

Brenda, on Denman

At this stage in the discussion, the pre-service teachers were placed in a position of response to an example that had incited enthusiasm by their cohort members but had now evolved into a forum of intellectual criticism by two externals. As the external responsible for the corporate sponsorship discussion, I had put my participants in a position of heightened response. I was no longer on the spot to answer their questions or interpret the reality of schools in conjunction with theoretical ideas or academic frameworks. Instead, I had put the students on the spot asking them to visit specific websites and respond to my critical interpretation of an education program. Bravely, four out of the six pre-service participants did respond and they responded in a similar fashion.

[5] The Grizzlies were a Vancouver based National Basketball Association team.

In response to the issues that Lisa raises in her comments on the Grizzlies' environmental ed program. I was working for the Green team when the B.C. Ministry of Environment was in negotiations to create a Grizzlies environmental ed team and we discussed the pros and cons of working for and with the Grizzlies'. In my mind, corporate sponsorship cannot exist in blatant opposition to an educational system that it funds. What is the point of an environmentally unsustainable company funding an environmental education program? Should we use the word hypocrisy here?

The pre-service students recognized the "hypocrisy" of the Grizzlies program but they found this position of critique "disturbing". A couple of them still believed the Grizzlies' environmental program to be valid and inspirational for students' exposure to and thinking about environmental issues. The pre-service teachers understood their cohort members' enthusiasm for the program, but they were also confronted with academics critically reading this enthusiasm inside an assigned discussion. It must have been a difficult and precarious position where cohort members are looking for affirmation of a curricular idea while academics are simultaneously criticizing it. The position did force my group's members to think, but, perhaps it was uncomfortable thinking coerced by my chosen type of participation and intellectual engagement. In this instance, the external was taking control of the discussion's direction and the discussion's agenda. My use of citations and URLs was meant to challenge the pre-service teachers to form an opinion of their own accord on a topic of my choosing.

In the gender equities discussion, a dynamic developed whereby the pre-service teachers were more in control of the thread's agenda and direction. Cohesion between participants developed with the introduction of the external, Caroline. All the pre-service students in the gender thread wanted to specifically hear Caroline describe and analyze her classroom observations. Alongside this external, the pre-service teachers wanted to actively participate in the interpretations of classroom observations and strategies to recognize and promote gender equity. The gender thread's pre-service participants immediately and intuitively recognized Caroline as their bridge between classroom experience and strategic interpretations. They directed Caroline to speak by asking her specific questions. They also directed her to give them practical pedagogical interpretations of gender equity for classroom application. This advice was an extension of the concept of gender with which the students found themselves unfamiliar. They understood the complexity of the issues involved with gender and technology but they did not know where to begin to address it inside a classroom as a teacher. Whenever Caroline answered the pre-service teachers' questions with tips, strategies or practical interpretations, the pre-service teachers were greatly appreciative.

When Brenda and I challenged the pre-service teachers' enthusiasm, we were guided by a similar bridge metaphor. We were searching for ways of making our critique a point of connection for practice in a classroom. Asking students to examine the environmental costs and balance in order to develop ethical criteria for corporate

participation in educational programs appeared to be a practical, pedagogical interpretation of corporate sponsorship. However, the pre-service teachers' responses to our critique were cautious, whereas, the responses to Caroline in the Gender online discussion were overwhelmingly positive.

> Caroline,
> Thank you so much for responding to all my questions. Your ideas and strategies are amazing, and I know I will remember them when I am teaching. I am going to be teaching computers in my practicum starting next week, so I will be conscious of the power struggles that may be going on, and how I can help facilitate a more equitable environment.
>
> Caroline, I want to thank you again for being such an inspiration, and for contributing to our discussion in such a meaningful way. I can't wait to see what else everyone has to say.

> Caroline,
>
> WOW! Thank you for all the information. I especially appreciated all your real life experience. It is very obvious that you have serious thought about gender equity and technology. Do girls struggle more in technology or is this just a myth? If girls do struggle more, what do you think contributes to this?

It is apparent from these responses that the users, the pre-service teacher participants, had greater need for Caroline's classroom experiences than for the PKP document hyperlinks. Or at least, the documents only provided a starting point that Caroline could help extend through its relevance to the classroom. Caroline, the only in-service teacher in the Education Studies discussion, provided a bridge between the students' academic work on the topic of gender inequities. She provided practical interpretations and strategies for making technologies more equitable in the classroom. After a minimum of five years in the university with myriad essay assignments demanding a certain number of citations, the pre-service teachers seemed saturated with certain academic conventions (e.g., academic sources of refereed journals, citations in a particular style, citations to support an argument). But, the pre-service teachers did not readily transfer these conventions of scholarly discourse into their online discussion. The students' primary criteria for referring to web documents and incorporating hyperlinks were to fulfill the requirements of the assignment. What appeared novel and inspirational to them was an insider, a classroom teacher, revealing conventions of classroom practice and identity formation as a teacher.

It was only after all the discussions had closed that the collaborative research team, PKP-CITE, realized the pivotal and powerful role the externals such as Caroline could have in the discussions. In hindsight, I realized how we, the assignment designers, could have helped instruct the externals to model qualities that would have helped us attain our

research goals and motivate the students to integrate PKP as an important knowledge source in their teaching. If the goal of this experiment had been to create an electronic essay or a collaborative writing piece, we needed to communicate to the externals the need to model and direct that type of writing for the discussion participants. If the goal had been to help students internalize norms of academic discourse, then we needed to emphasize to the externals to link references inside their statements (i.e., continually refer to web documents in PKP with full footnotes of the title, author, and publisher). If the PKP research goal had been to link different types of knowledge together to more fully inform the PKP user, then we needed to incorporate criteria into the assignment to make two or more citations, each representing a different type of knowledge. We also needed to ensure that the external mediators stated the types of knowledge they were drawing upon and they needed to defend how this knowledge worked to answer the student's or the collective's questions.

To summarize, the collaborative research team needed to make its goals more explicit and transparent to both the external participants and to the pre-service teachers. We needed to distinguish what type of a discussion we envisioned through this assignment, as it moved between documents and people, and as the integration of themes from these different sources could have been encouraged. In the online and asynchronous forum, participants can go beyond simply sharing their experiences to sharing them reinforced with sources of information. Not only can they build upon each other's ideas, applying the ideas of a larger research community, but they can also develop an interpretive framework with the external mediator for future experiences. "For it is not shared stories or shared information so much as shared interpretation that binds people together" (Brown & Duguid, 2000, p.107, emphasis mine).

The Difficulty of Shifting Knowledge Needs

What I am attempting to point out with the example of Caroline and the gender discussion is that technological tools and their particular features can be easy to modify but culture, or the specific knowledge needs of a particular group, is much harder to define or change or shift. In the culture of teacher preparation programs, pre-service teachers are highly motivated to learn from practical classroom tips and from established teachers. In the context of the Education Studies assignment, the pre-service teachers were highly motivated to learn from practical ideas and strategies for the classroom developed in response to scholarly notions. The bridging work between the domains of scholarly research and classroom practices was one that we did not actively design the PKP tool to develop. We did not realize this Hollywood factor of motivation, of connecting the students' academic experience with a practitioner actively working to translate the academic into practical strategies for the classroom.

For the PKP design team, we believed the user would make those connections and bridges for themselves in moving among the various knowledge domains. However, the act of bridging and connecting between types of knowledge was one not successfully facilitated by the PKP site for various reasons. The site did indeed offer a knowledge typology including research and practices repositories. But, the irony is that the pre-service teachers never realized the content of the Practices section. For example, the gender equity discussion had a total of 32 messages with 11 containing hyperlinks. Six hyperlinks referred to research articles, three referred to issues (a more editorial approach to reviewing issues), and two referred to organizations (non-profit groups working on the particular issue). As the researcher, I am the one who has categorized these texts into these knowledge types because the pre-service teachers did not refer to the typology in their statements. Surprisingly, consistent in all of the discussion threads, there was a predominant tendency to refer to research documents located in PKP, not to practices documents.

When I interviewed a group of five CITE pre-service teachers, representing different discussion groups and topics, I discovered that the students had had no idea that there existed on PKP a whole category of filtered documents that focussed on teacher and classroom practices. When I presented them with photocopies of the Gender-Practices Overview (Appendix II), they were stunned that they had not realized that the site contained this type of practical knowledge.

The Frailty of the PKP Prototype

At this point, I can attempt to hypothesize a few factors to explain the tendency on all the pre-service teachers' parts to have predominantly used research citations. The nature of the CITE discussion was one of an assignment where students were required to make two citations. They were also aware that their instructor, the external participants, and their cohort members would be reading the messages. No qualifier was given as to what kind of knowledge would be valid for this assignment. As the normative requirement for most university essay assignments in the social sciences and humanities is refereed journal citations, it is understandable that the pre-service teachers would presume this is the category that would best suit the discussion requirements.

Another hypothesis for understanding the pre-service teachers' reliance on research documents is due to a design feature of the PKP-Vancouver Sun site. In the line of knowledge buttons located beside the topic title, the Research button appears first in the line. In this case, a design issue could have interfered with the utilization of the knowledge typology. Even though there were buttons that indicated a range of knowledge types and even though the heading on the abstract/summaries page would read Practices, more steps could have been taken to reinforce the knowledge typology.

More design features could have been strategically situated to continually reinforce the different knowledge categories available through the PKP site. But, perhaps, the problem in realizing the potential range of knowledges available in PKP was not a navigational or design frailty of the site. Perhaps the pre-service teachers did not find the Practices section of PKP because they couldn't conceive of a Practices or classroom tips domain inside a university endorsed and university created website.

In hindsight, it is easy to see that the pre-service teachers were not motivated to peruse all the knowledge categories. We at PKP had taken a website tool that was not user-driven, not driven to understand what would motivate users to enlist our site as one of their regular sources of web-based information. The PKP-Vancouver Sun site was a tool for which we had imagined a group or a public of users. It was not a tool specifically designed for or tested with a group of pre-service teachers and their experiential needs. We at PKP are what Donald Norman refers to as "early adopters" (1998), meaning that we are regularly reading and interpreting websites and foraging and retrieving knowledge from web based tools. We also have different needs in pursuing technological tools from our position of researchers. We are making tools for public knowledge and we consider them important. Whereas our users, pre-service teachers in the context of a university course, wanted a website that was convenient to use, with technology that had already proven itself. They wanted a good and easy experience in the confines of this course to serve their particular course requirement needs at a particular time. They did not want a Swiss Army knife experience of too many blades with too many purposes that do not serve the immediate task at hand.

The Final Pitch

To conclude, I return to the Public Knowledge Project movie pitch to determine if we, the research team, had reached our goals with the CITE experiment. Our PKP team has made a first attempt at electronically delivering substantive knowledge to a group of pre-service teachers. However, we have done so without asking or understanding what these users want or what would motivate them to use this type of tool outside the confines of an assignment. We realized our PKP-Vancouver Sun tool is great on providing substantial content, but lacked motivation for these users. Our research has culminated in a Hollywood inversion: we have substantial content to support the professional working lives of teachers, but they are not yet enticed to thoroughly investigate it. We failed in convincing these educators to see its full potential, its application to their teaching, or to integrate our site into their favorites' list as an important source of knowledge.

But, just in the nick of time, we have learned important lessons. Our research confirms that teachers are the critical link or bridge for the success of technology's implementation in the classroom (Pea, 1998). And we confirmed that teachers need a

collaborative community of educators to share, connect and confront ideas on how best to make that implementation serve students' learning (Grant, 1996). PKP is committed to the idea that the internet and our website prototypes can serve teachers in their professional development by our offering them both a contained library of filtered resources as well as a tool of inquiry and collaboration to put the resources to the test of the classroom context.

We discovered that the role of the externals (the mentor, experienced professional peer, or academic) is crucial in the creation and cohesion of an online community of inquiry for teachers examining new issues. They are the participants who can bridge different worlds: experienced with novice, academic with practical. We now know that the sequels of the Public Knowledge Project need to address this role of the 'helper' or mentor. Like many academic research projects, we are in the process of creating the conditions for sequels. We are committed to reiterative design and the participation of our users. We are confident that we will be able to demonstrate to educators our prototypes' contributions, and, along with other contributing scholars, we will win the prize of the Public's continued support and endorsement for research.

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