Problem-based learning and critical analysis of practice in online news media

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Continuing assertions that undergraduate education must improve, in order to meet the needs of today's news media, challenge journalism teachers on two fronts: deciding what students need to know so they can serve as the next generation of journalists; and working out how to help students transfer their learning to real world situations. This paper examines the power of problem-based learning (PBL) as a teaching strategy. It demonstrates how PBL was applied to present students with a challenging problem, rooted in the real world of online news reporting, for which they did not have all the information needed to develop a solution. A positive outcome of this PBL episode was the depth of student reflection on their role (as future journalists) in responding to issues such as gender representative reporting.

Venus and Mars – journalism is like that. At times it seems our profession's two arms, the practitioners and the educators, are from different planets. One side bemoans the quality of undergraduate education, asserting that it must improve in order to meet the needs of today's news media. The other argues that it is doing its best to turn out high quality graduates. Is there a solution? Teachers can respond to industry signals when they decide *what* their students need to know so they can serve as the next generation of journalists. Also, teachers need to work out *how* they can help their students transfer their learning to real world situations. A solution could lie in a teaching strategy known as problem-based learning, or PBL.

PBL – background and definition

Problem-based learning is not a new approach to student learning. It has been around for more than 30 years and has its roots in medicine where it is well known and reported in the literature. PBL has since been taken up, to varying degrees, in architecture, engineering, dentistry, nursing, law, social work, public relations and journalism. In the last-mentioned field of study, though, the small body of literature on Australian and overseas experiences may reflect a view among journalism teachers that problem-based learning is just another name for problem-solving or for learning by doing. If so, real life experiences or tasks may be seen as so much a part of journalism education that teachers find nothing remarkable or novel in them. Sheridan Burns (1997: 59) highlights the likely confusion over definition.

So, let us look at the jargon. PBL is an approach in which students are presented with a challenging problem for which they do not have all the information needed to develop a solution (Pedersen and Liu 2002). The core of the PBL model consists of the following characteristics (Barrows 1996; Savin-Baden 2000):

(a) learning is student-centred;
(b) students work in groups or teams to solve or manage situations;
(c) teachers are coaches or guides;
(d) problems form the organising focus and stimulus for learning;
(e) problems are a vehicle for the development of problem-solving skills; and
(f) students acquire new information through self-directed learning.

PBL can be incorporated in a variety of settings. It can be the exclusive vehicle for learning in a program, a discipline, or a course. Or it can be used through "post-holes" which are "short problems that can be used when teachers do not want to design their entire course around problems but do want to introduce one occasionally" (Stepien,

Gallagher & Workman 1998: 35). The problem is presented to the students *before* the material has been learned rather than after, a feature that distinguishes PBL from the problem-solving approach. A second difference is that PBL problems are presented in the context in which students are likely to encounter the given (or a similar) problem in real life. Wilkie (2000) argues this contextualisation of material makes PBL an attractive strategy for the education of professionals. Another attraction is that in seeking a solution, "the paths of the students' search criss-cross domains of knowledge that relate to the problem, replete with connections" (Stepien, Gallagher & Workman 1998: 112). Just as in real life, identifying, addressing and solving a seemingly domain specific problem requires interdisciplinary knowledge.

In PBL students are not expected to acquire a predetermined series of right answers. Instead, they are expected to decide what information and skills they need to handle the situation effectively. PBL gives students the opportunity to explore a wide range of information, to link their learning with their own needs as learners, and to develop independence in inquiry. Duch (1995) says students soon see that learning is an ongoing process, and that there will always be learning issues to be explored. In "pure" PBL, the focus is on "organising curricula content around problem scenarios rather than around subjects or disciplines" (Savin-Baden 2001: 381).

Problem-solving learning is different from PBL. It is the type of teaching where students are given a lecture or an article to read and then a set of questions based on the information given. Students are expected to find answers (solutions) to the questions (problems); answers they bring to a tutorial for discussion, or put in an essay, or learn for an exam.

Problem-solving learning offers students an approach to learning that is different from just reading and regurgitating or memorising the work of others. But the problem with problem-solving lies with both the problem and the solution.

1. The scenarios are limited to a discrete subject or disciplinary area.
2. Students often are not trained in problem-solving techniques.
3. This kind of learning focuses largely on acquiring answers expected by the lecturer and gleaned from information supplied to the students.

As a result, the solutions are also linked to specific curricula content that is seen as vital for turning out competent and effective practitioners. Because the solutions are bounded by the content, students explore little extra material other than that provided in order to discover the solutions (Savin-Baden 2000).

How is learning by doing different from PBL? Learning by doing may be common in journalism education but "doing alone doesn't guarantee learning" (Sheridan Burns 1997: 59), even when the doing mirrors the reality of everyday working life. While the main question for teachers framing PBL problems is *what* do students need to learn and know, students also have to be able to integrate the elements of knowing what and knowing *how* (Poikela & Poikela 2001). Thus, in PBL, learning is achieved by the conjunction of knowledge acquisition and competence development. Nor is learning that is measured "as the ability to actively demonstrate knowledge, through the student's ability to apply learning to a new and different situation" (Sheridan Burns 1997: 59) truly PBL. In PBL, the final phase of the problem episode involves critical analysis of process and self-evaluation of learning by the students (Edens 2000).

From problem development to problem solution

PBL is a cyclical process and Edens (2000) describes three distinct phases: problem development; initiation of PBL events, inquiry and investigation; and problem solution.

Problem development: Despite its title, this phase concludes with setting and presenting the problem(s) to students. The first step then, according to Henri (2002: 130), is for teachers to commence planning for learning with a discussion about learning targets, not with a discussion about activities: "… the question is 'what do I want the student to learn?' Only when this fundamental question is placed on the table is it appropriate to think about 'what should be assessed?'" A third question is "how to assess accurately the extent to which students have met the learning objectives of the course?" After Edens (2000), Allen, Duch & Groh (2001), Duch and Groh (2001) and Henri (2002), the following summarises selected issues relevant to quality assessment of student learning in PBL.

PBL teachers who expect their students to be able to demonstrate that they can think critically, evaluate evidence, analyse information, and justify conclusions, will need to think beyond standard testing practices. Learning objectives should focus on broad concepts and skills. Asking what students should know, value and be able to do by the end of the course, and what evidence will indicate that students have reached these goals helps teachers find the appropriate assessment tools (Duch and Groh 2001).

As well, students should be informed about the general course objectives and how their progress towards meeting each of them will be assessed. Allen, Duch and Groh (2001) argue that this approach – progressing from general to specific detail – works well to preserve PBL's student-centred nature and permit authentic assessment:

> As they work on individual PBL problems, students will have the opportunity to identify the learning issue that will help them move towards the problem resolution. Then as each problem reaches its resolution, the instructor can provide a more specific description of objectives and assessment mechanisms linked to that problem. That way students can be made aware of what the course designer had in mind when choosing the particular problem (2001: 107).

Group learning is a central aspect of the learning process in PBL. It can be factored into the total grade given to students through methods such as grading group problem summaries, assigning a proportion of a student's grade to ratings by group members of the individual's contribution to the group, and grading group presentations (Duch and Groh 2001). In assessing the course, teachers should elicit two points of view. They should gain students' feedback two to three times during the course, including an end evaluation, on satisfaction with the course and group work (via questions such as: How satisfied are you with this course? What helps you learn in this course? What hinders your learning? What could you do to make this learning experience better for you?), and respond with comments in class. Teachers' critical self-reflection should assess what worked well in the course and how it might be improved (Did the problems focus student learning on the course objectives? Which problems worked well, and which need to be improved? Were the problems suitable or of sufficient complexity for groups to solve? Was the instructional role in the classroom satisfactory?).

The final passage of phase 1 is where students meet an ill-structured problem set in a context they will be likely to encounter in real life. Potts (1994: 3) asserts that knowing how to identify a problem is "one of the most important practical thinking skills one can acquire", yet students and teachers alike have complained that the format of classroom problems bears little resemblance to the way problems look in real life. PBL tasks should be framed so as to be solvable, but without stating "explicitly which variable or aspect of the problem will constitute or enable a solution" (for a problem statement example and discussion of alternatives, see Potts 1994: 3). Appropriate problems are difficult to define, ambiguous, are likely to change, and have many possible solutions. They can be derived from real problems, current and/or past events, or a topic, theme, or central issue from the curriculum. Other problem sources are the media and daily life (Edens 2000).

Initiation of PBL events, inquiry and investigation: This is the brainstorming phase. Learning begins when students clarify terms and concepts for understanding, define the problem (write the problem definition statement), build hypotheses that launch an investigation, and list what is known and what they need to know and do in order to solve it. Listing "what we know", "what we need to know", and "what we need to do" is an important component of the process because the content that needs to be learned to solve the problem and the possible sources of that new knowledge are identified through group discussion. New information is collected outside the group, then fed back to the group at subsequent meetings. As students acquire, share (report on) and synthesise new information, the group updates its "what we know" and "what we need to know" lists (Edens 2000).

Problem solution: In the final phase, students generate possible solutions or recommendations, evaluate their propositions, and propose (present and support) the most appropriate one. As noted, this phase also includes a final performance assessment (mirroring the tasks performed by real problem solvers placed in the same situation as the students), and debriefing to help students build their understanding of the concepts and skills encountered during the problem cycle.

PBL in *Journalism Publication*: a case study

The following episode is not "pure" PBL. Wilkie (2000: 18) says so-called "'hybrid' forms of PBL which do not meet all of the pure characteristics also have much to offer". It was not possible to give over the entire course to problem-based learning, so a problem was post-holed or inserted into the existing content.

"Online reporting of the Commonwealth Games 2002" was designed for students in *Journalism Publication*, a final year undergraduate course for journalism majors (n = 14). In planning the project the following characteristics of problem-based learning, as set out by Savoie and Hughes (1998: 73), were observed:

1. Begin with a problem.
2. Ensure that the problem connects with the students' world.
3. Organise the subject matter around the problem, not around the course.
4. Give students the major responsibility for shaping and directing their own learning.

5. Use small teams as the context for most learning.
6. Require students to demonstrate what they have learned through a product or a performance.

Problem development and its real world connection

The idea for the problem sprang from two sources: reports that online media audiences were gaining on and, in some cases, matching or outstripping traditional media audiences; and the issue of gender representation in news coverage, particularly the Australian Broadcasting Corporation's performance in this area against its Code of Practice and Editorial Policies.

My own research culminated in an M.A. (Hons) thesis on the treatment of elite Australian athletes in the new sports media. A content analysis of Sydney 2000 Olympic Games bulletins on ABC News Online indicated atypical coverage (a relatively equal amount for Australia's sportswomen and sportsmen). The study found female athletes were "piggy-backed" to prominence on the web site via Cathy Freeman's dominance of coverage. Descriptions of sportswomen's athletic achievements often contained stereotypical or trivialising language. While the study indicated an improvement in both the extent of women's sports coverage and the range of sports covered, it suggested that biased practices, reported in studies of traditional sports media, might have migrated to online sports journalism (see Jones 2004).

The problem for the students was to determine if, and if so to what extent, national broadcasters in Australia and overseas gave disproportionate coverage to one gender in their reporting of the 2002 Commonwealth Games. The problem had three essential characteristics. It was authentic in that it connected to both "the larger social context within which the students live" (Savoie & Hughes 1998: 74) and the larger professional context within which the students would work. Also, the problem was "rooted in the subject matter of the course" (1998: 74); in this case, the study of news events and editorial decision-making as they affected online news reporting. The problem addressed an interesting and relevant issue in contemporary journalism. It featured sport, a round that is highly valued by many potential employers. It featured the media's treatment of sportswomen and their sports – an issue with a history spanning several decades in Australia and overseas. The problem asked students to judge how online news media performed as providers of a diversity of information, ideas and opinions.

The problem was introduced with a project description. It advised that students would work in teams to determine the extent to which coverage of the 2002 Commonwealth Games, on four national broadcasters, complied with the individual broadcasters' guidelines for the presentation of news. A list of "Suggested references" was attached to the project description. Atop this list was a notation urging students to conduct research on their broadcaster's service obligations. The list included, but did not draw particular attention to, the URLs for each broadcaster's Charter or Code of Practice.

The project description also gave details of who was in what team. The decision not to allow students to select their own teams was based on two considerations. The students represented a mix of print and broadcast journalism majors. Some students had formed friendships. Others were merely acquainted or meeting for the first time. Male

students were outnumbered by more than three to one. Three of the four teams were set up to include one male student, and friends were assigned to different teams.

By the end of the first session, and based on the limited information provided, each team had written a problem statement, formulated exploratory hypotheses, and compiled lists of known and needed information and what needed to be done. In several areas, the project description was intentionally vague and ambiguous. For example, individual teams had to define the problem and formulate original hypotheses, and make decisions about goals and the steps required to reach those goals. But students did receive explicit direction about the sampling period and the project's methodology. They were instructed to conduct a content analysis, examining ABC, BBC, CBC and TVNZ coverage of the Manchester Games via five indicators – word counts, story position, hyperlink counts, photograph counts, and photograph content.

Organising subject matter around the problem

Our PBL project was going well, or so I thought until I looked again at our progress in the first session. I had mistaken the students' interest and conjecture for understanding. Savoie and Hughes (1998) report a similar setback in their first PBL experience. Their solution was to provide a range of learning resources enabling students to shed more light on the problem. I distributed copies of journal articles about gender representation in sports reporting in traditional media. Students were asked to consider each study's methodological strengths and weaknesses.

Students did use a variety of learning resources. First, and obviously, they turned to the Web sites of the ABC, BBC, CBC and TVNZ. They also combed online databases for journal and other articles about sports coverage in traditional media, consulted Web sites for statistics on national sports participation rates, and read texts on journalism theory and other relevant concepts. But the teams were denied the scope to design an instrument (based on limited, formulated "Representative reporting criteria") to obtain systematic data on sports coverage on their online broadcaster.

Student-directed learning

The students made important decisions during several phases of the project. While the four teams were directed to study online sports reports across three successive days of Games competition, each team functioned independently of the other three. Each team determined the roles of its members and the questions asked about sports coverage. Within each team, members assumed specific tasks, including data collection and data analysis, and were accountable to their team for completion of tasks.

A dilemma with PBL, in my limited experience, is when does the teacher (coach) let go? Obviously, my students were not "totally responsible for directing their own learning" (Savoie and Hughes 1998: 76). I had selected the problem, distributed the initial learning resources and even steered their investigation when I felt they were marking time. On reflection, a better coach would provide more freedom for the students to set their learning agenda and decide how to pursue it.

Demonstrating their learning – presenting the problem solution

The students had been aware, since their introduction to the problem, that the teams would present the findings from their investigation in a seminar on a specified date (during the final two weeks of the semester). They had been examining the problem for approximately three weeks when they were reminded of the amount of time allocated to each team presentation and that *every* member of the team would be expected to share equally in the presentation. Teams were limited to 40 minutes – a realistic constraint that forced them to think about their priorities (Edens 2000). Each student now realised she/he would have to stand up and present to an audience of her/his peers for up to 10 minutes.

Each team compiled a complete report. Their presentations also allowed up to 10 minutes during which questions could be fielded across teams. During these sessions "questions reflected higher level thinking, focusing on explanations and justification for decisions and conclusions" (Edens 2000: 6). Examples of questions included, "How did you define passive and active [shots] when you looked at the photographs?" and, "You said women were pictured competing in non-traditional female sports like discus. What other sports aren't traditional female sports? And how did you decide on the female and male classifications for sports?"

The reports of teams contained similarities (such as the use of audio-visual supports) but their content differed substantially. One team, for example, constructed a three-pronged standard for assessing equitable coverage. They presented data on national sports participation by gender in Canada, the gender make-up of the Canadian team for Manchester, and medals won for Canada by gender. They then compared these figures with the percentage of coverage by gender on CBC. The team reporting on TVNZ coverage examined the possible reasons for New Zealand's female athletes receiving quantitatively more coverage than its male athletes on the Web site. Although sportswomen won 10 more medals than sportsmen, the team looked beyond Games success to a wider social context – noting the "increased profile of women in key areas of government, the judiciary, education, religion and the media in New Zealand". They suggested TVNZ's coverage of sportswomen's achievements could reflect "the greater acceptance and integration of women in New Zealand society".

Two of the three teams recognised and reported that the results of their study were inconclusive, given the small sample and three-day timeframe. Only one team reflected on their sampled broadcaster's performance against its Code of Practice. The same team reflected on the role of the media in modern society, concluding that "through who and what they cover, the media tell audiences who and what is held in esteem".

What did I learn?

An informal evaluation of our PBL episode was conducted after the teams' presentations. Students were asked to rate the project (orally) as an effective instructional tool. Of course, it could be argued that students "would tell me what they thought I wanted to hear". Against this legitimate concern, here is a selection of their responses:

- "I enjoyed the challenge of analysing stories and photographs for differences in the treatment of each gender."
- "We had to make professional decisions. I hope our presentation was a reflection of that."
- "At first I thought it was a little strange because we weren't told what to do a lot of the time. I haven't had much to do with them before [other members of the team] but we made decisions and it worked out well."

On reflection, the end evaluation was flawed. I should have sought written responses to a series of written statements. Also, I should have invited open-ended responses about the most and least useful aspects, or benefits and difficulties, of the students' PBL episode. Written peer evaluations of problem-solving skills helped me to assess individual team member's use of these skills when assessing the team as a whole. The evaluations also allowed students to make additional, open-ended comments about their peers.

I encountered several pitfalls during the project, some of which were echoed in the students' peer evaluations. As Edens (2000) notes, features inherent in the PBL process (for example, an ill-structured problem that is intentionally ambiguous and changing) can create difficulties. Our project was semi-structured, sometimes ambiguous and sometimes changing. For example, only two weeks into the project, three students left the class – two to study externally and one for full time employment. I discussed options with the remaining members of the depleted teams. Their solution, after consulting other teams, was to dissolve one team. The ABC study was abandoned. The students without a team separated and joined the three remaining teams. The enlarged teams were then forced to adjust and redefine tasks to include their new member(s).

As a result, one relocated student wrote, "Worked well as a group, considering the setbacks of chopping and changing groups." Another relocated student said, "Given the small amount of time I was a member in this group I feel everyone worked hard to accommodate me." A member of one of the enlarged teams wrote, "[The new members] joined us late in the project and therefore were mainly required to prepare for our presentation. This is why some of their marks are lower than [an original member] who really led the team and put in a lot of effort towards the final project."

I was teaching an undergraduate class and I had made assumptions about "qualitative differences such as their experience, expectations and learning style" (Russell 1999: 107). I was reluctant to loosen the apron strings and let the students truly construct their own meaning. When the problem was initially introduced, several students were overwhelmed. One student said "more detail was required" while another felt a fellow team member "didn't understand the task, even when it was explained". Edens (2000: 8) reports a similar reaction from honours students who wanted to be shown "exactly what you want us to do" or asked for "more structure and guidance". Writers (for example, Lawe Davies et al 1998) point out that PBL is not a laissez-faire environment. Yet teachers, attempting to balance withdrawal from the process (to allow students' independence to develop) and being able to monitor group dynamics, may encounter another problem:

> There is always the danger that group work will revert to authority roles and thereby subvert the dialogue. If it is not the tutor who is looked to for authority, it may be a dominant student. Beware this danger. (1998: 3).

I did not foresee that one student would "really [lead] the team". PBL teachers or tutors attempting to enable student-directed learning and problem-solving are advised to gradually decrease their overt participation through "modelling", "coaching", and "fading" (1998: 3). On reflection, I should have anticipated the risk of a dominant student and formulated a counter-strategy. Such as strategy could have been implemented during the modelling stage – those early sessions when the teacher demonstrates "the reasoning process for students", or the coaching stage – when students' independence is developing but sometimes a re-focusing of their analysis becomes necessary (p. 3).

Conclusion

Against these outcomes, my sense of problem-based learning as an instructional tool is that its strengths outnumber its weaknesses. Newmann and Wehlage's (1993) five standards for authentic instruction (quoted in Savoie & Hughes 1998: 77) provide a useful index for evaluating PBL's effectiveness. Teachers should reflect on their emphasis upon higher-order thinking and in-depth knowledge, the subject matter's connection to questions of the human condition, and the inquiry's focus and coherence. Finally, teacher and students should be committed to mutual respect, strong effort and good performance.

I believe our PBL experience opened all these doors. It was certainly a steep learning curve, hard work, and a bit overwhelming for all of us. Students' responses and my own critical reflection indicated areas of the PBL cycle, such as my instructional role in the classroom, that require revision and refinement. I learned that PBL is flexible – you do not need to accomplish everything at once. And PBL forgives – just as in the real worlds of newsrooms and classrooms, you do not need to be an expert in everything you do.

I also saw students who were determined not to let a problem get the better of them, students who "chewed over" alternative solutions, students who understood that in life not all questions have correct answers, and students who were thinking more critically about their reporting practices. As Sheridan Burns (1997: 70) notes, it is clear PBL "is not the solution to all problems in professional education … [however] PBL encourages, even requires, would-be journalists to recognise the assumptions and attitudes that underlie their practice and to reflect on the ways they, as individuals, work".

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