Development of Contemporary Leadership Capacity Through Teamwork in an Online Environment: A Pilot Study

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The Internet has emerged as a mainstream communication medium, resulting in the development of new educational opportunities for teaching and learning. This article describes and evaluates a learning opportunity which used a Wiki technology to support an aligned assessment activity which was focused around teamwork and students construction of learning materials. One of the learning outcomes in the unit in which the activity sits is to develop teamwork; consequently, the team product and the team process was the unit of analysis, not individual student product or process. Analysis of student to student communications and individual student reflections identified that students enjoyed the work and that during the exercise they identified aspects such as planning, communication and shared leadership—working to areas of individual strengths—were important in the process. The activity indicates that online technologies such as Wikis may facilitate assessment of affective outcomes such as teamwork and underpin development of students' leadership capacity.

Universities have a critical and growing social and economic role; a highly skilled population is necessary for economic success. A suite of transferable skills associated with employability, including leadership, critical thinking, life-long learning, cultural awareness, teamwork, and communication are included in attributes which many universities aspire to develop within their graduates. With respect to the context of the learning opportunity described in this paper, Health Workforce Australia, a Commonwealth statutory authority—recognizing that leadership capacity is is essential to success in introducing the innovation and change that will sustain the health care system—has recently proposed that leadership development be embedded in undergraduate and postgraduate training (Health Workforce Australia, 2012).

Traditionally leadership has been associated with a heroic paradigm of individual intellectual stimulation, charisma, and individualized consideration, with a sharp distinction between leaders and followers. More recently, globally, the focus has shifted from an individual leader toward the collective act of leadership in complex systems with multiple stakeholder interests in which participants interdependently engage in leadership (Day, 2000). There are a number of representations of leadership which shift the focus from individual leaders to a more systemic perspective of leadership, including distributed, shared, collective, collaborative, emergent, and co- and democratic leadership (Bolden, 2011; Currie & Lockett, 2011). However, it is regarded that, first, in these representations leadership is an emergent property of a group or network of interacting individuals; second, there is openness to the boundaries of leadership; and third, there is distribution of varieties of expertise across the many (Woods, Bennett, Harvey, & Wise, 2004). A key attribute of contemporary leadership is that of *concertive action*—the additional dynamic which is the product of conjoint activity (Gronn, 2002). Leadership is thus less about the individual and more about collective action. In a collaborative environment, team members build relationships and work together to meet a common goal rather than relying on a "traditional" leadership model hierarchy (Raelin, 2004).

Curriculum design includes consideration of learning outcomes and assessment, given that the learning environment is a critical component of learning, design of learning activities and opportunities is also important. Activities which promote students learning leadership in pharmacy programs have been suggested, however not demonstrated, to include didactic exposure to basic leadership theory and practice, observation exposure to identified leaders, exposure to mentor(s) and mentoring concepts, committee membership and team learning activities and experiences, community volunteer activities and exposure to issues, and participation in professional association meetings/activities and service learning activities (Kerr et al., 2009). In medicine (Varkey, Peloquin, Reed, Lindor, & Harris, 2009) it is suggested, however again not evidenced, that leadership is developed through experiential learning.

The imperative for universities is to develop curriculum which enables our graduates to develop and evidence leadership capacity—learning within the relatively neglected affective domain of Bloom's Taxonomy (Anderson et al., 2001). Affective domain includes skills that support relationships with others and the larger professional domain relating to personal affect, integrity and worthiness, self-awareness, and a willingness to contribute, lead, or constructively participate. Bloom's Taxonomy in the affective domain represents a "continuum of internalization" (Anderson et al., 2001). This process has been subdivided into five major areas, which include receiving, responding, valuing, organization, and characterization (Anderson

et al., 2001). Design of any learning opportunity needs to focus on the intended learning outcomes and ensure that activities and assessment tasks align to the intended learning outcomes of the particular learning experience (Biggs & Tang, 2007). The need for active student involvement in learning has been emphasized in the shift from a teacher-focused to a learner-focused curriculum (Cherney, 2008). It has been proposed that active learning approaches such as teamwork in the conduct of a project may facilitate the internalisation of leadership capacity (Stupans, 2012).

The Internet is now a mainstream communication medium, resulting in the development of new educational opportunities for undergraduate, postgraduate and continuing education. Considerations for development of learning opportunities include the intended learning outcome, appropriate learning tasks, and assessment; however, in design of online opportunities, consideration of learning technologies is also critical. There are a number of recognized requisites for successful team learning experiences including appropriate grouping, student interdependence, individual accountability, social skills interaction, and group monitoring (Cottell & Millis, 1992) regular and timely feedback between team members and multifaceted assignments which require decision-making among team members (Michaelsen & Sweet, 2011). In traditional tertiary education environments student to student, face to face interaction may occur in seminar rooms, the library or laboratories. In distance education, an increasingly important aspect of higher education, students' interactions with other students are considered to be of critical importance (Garrison, Anderson, & Archer, 2001) and, rather than occurring face to face, may be enabled through online technologies. It is important to acknowledge that distance education models are also increasingly being adopted for students studying on campus. For both distance and traditional tertiary students' team interaction and learning can be facilitated by Web 2.0 technologies such as Twitter, Facebook, MySpace, Wikis, and Google Docs, which provide tools enabling communication, collaborative authoring and knowledge building by multiple users. Technologies such as Wikis are relatively simple for students to implement and can be used to collaboratively produce web pages that can be written and re-written multiple times. Wikis also provide functions which enable monitoring of document revisions and comment functions enabling student to student and staff student interaction and feedback (Chu & Kennedy, 2011). Access to Wikis can be provided through a learning management platform and restricted to closed-group communities such a class or class group.

With regard to assessment and its alignment with design of learning activities a recently proposed model (Stupans, 2013) advocates two aspects to assessment of a piece of work completed by a team: team product and team process. Additionally, assessment of students' writing reflecting on their own individual performance may be incorporated to provide students with additional scope for learning. Assessment of the teamwork process refers to the team's performance as a whole and to its collective success: the team is the unit of analysis not individual students. This approach is in contrast to papers which emphasize the need for a balance between teamwork and "fairness" and report on approaches to awarding assessment grades which incorporate peer grades for an individual team member's contribution to team projects, for example (Oakley, Felder, Brent, & Imad, 2004; Willey & Gardner, 2010) or indeed complex schemes which incorporate a team member's contribution in the form of an individual weighting factor (Nepal, 2011). This paper presents and analyzes the design of a learning activity based on team work facilitated through online collaboration utilizing Wiki technology. One of the learning outcomes of the unit in which this task sits is to develop teamwork skills.

Method

The data for this study were collected from a 4-year program, available in both an on campus and off campus (i.e., distance) mode, in a small regional Australian university. Learning in teams was adopted in a third year unit (31 students). Students were provided advice regarding the context of the assessment item (i.e., that team work was often required in a work environment, that it was an increasing requirement for health care professionals, and that there was generally no choice in team composition). Consequently, students were randomly allocated (the university's learning management platform Moodle includes a provision for random allocation to groups) to small teams, which included a mix of on- and off-campus students (seven teams, four to five students per team) and assigned individual team topics. The task outlined was to produce a Wiki: Study Notes. A brief overview of the areas to be covered within each topic, an assessment rubric, an overview of the importance of team work in health (see Appendix) and guidelines for reflection on their team's, and their own, teamwork in undertaking the activity. Students were provided with information regarding process, to be assessed on the basis of written student-to-student commentary interactions. Access to the individual team Wikis was enabled for only the team during the construction period, and after the assessment deadline had passed, the Wikis were accessible by all in the class.

The data for this qualitative study consisted of the following: first, a summary of assessment data for the team process; second, the students' messages and

comments on the Wiki (written and asynchronous); and third, students' reflective writing. Students were provided with advice that postings could be used in research but that individual responses remain anonymous.

Student-to-student commentary in the Wiki was collated and evaluated for evidence of process as outlined in Table 1. Student-to-student commentary in the Wiki and student reflective writing was analyzed using qualitative content analysis, a method that involves breaking down data into smaller units and coding or naming these units according to their content and/or concepts they represent. The majority of codes were derived from students' own words and required minimal interpretation. The rigor of this study has been enhanced by employing the following strategies authenticity, credibility, criticality, and integrity (Whittemore, Chase, & Mandle, 2001). Selected quotes which illustrated these categories were identified and are presented.

Results and Discussion

The assessment data for the team process, students' messages and comments, and reflective writing indicated that the majority of student teams displayed features of distributed leadership and that the majority of students were able to self-identify key features associated with good teamwork. Compiled data for assessment of process are displayed in Table 1. Communications between members in all teams were polite, and all students offered assistance to one another. Five of seven of the teams displayed shared leadership, and team members built relationships and worked together to meet a common goal rather than relying on a "traditional" leadership model hierarchy. A selected quote from the student-to-student communication illustrates this:

> Hi all, I was just having a read of the comments and realised that no one has mentioned covering

the treatment plan section. Can I assume that this may be left to the fourth member of our group who hasn't put a comment up yet or should we organise something separately? (student 2, team 4)

Three of seven of the teams checked each other's work and provided feedback. One of the teams organized a "buddy system" to facilitate this checking process. Checking and feedback is illustrated in this quote:

> Hi, I like the way that you have organised a lot of the information into the two tables. I have made sure that all the medications you have listed are covered in my section.

> The only question I have is what does (acronym) stand for in the second table? Perhaps an * could be placed next to and an elaboration placed under the table? (student 3, team 3)

Individual students' reflective writings were also analyzed, and a number of themes were evident. The first theme that emerged was that students regarded the activity as enjoyable: "Overall, working as a team to complete the Wiki assessment on xxxx was a positive experience and thoroughly enjoy[able]" (student 1, team 7). Although the focus of this paper is development of leadership capacity and an aligned curriculum, it is acknowledged that positive emotions such as enjoyment relate positively to intrinsic motivation, self-regulation of learning and academic performance (Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011). In fact some students commented on the quality of their Wikis: "a thoughtful Wiki and a good end product" (student 4, team 7) and "[We] produced an excellent final Wiki" (student 1, team 6).

Secondly, communication was regarded as being of critical importance to success of teamwork:

Table 1
Assessment of Team Process

Assessment Criteria	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7
Shared leadership	X	No	X	X	X	No	X
Checking on each other's progress	No	X	X	X	X	X	X
Offers of assistance to other team members	X	X	X	X	X	X	X
Checking of each other's work and giving feedback	No	No	X	X	No	X	No
Polite, clear communication	X	X	X	X	X	X	X

Note. Students had been provided with a rubric detailing assessment criteria for the team process. X indicates that the criteria were evidenced in written student-to-student commentary interactions.

Overall I was content with the contribution each member made to this assignment and was convinced that we all had the same end goal. Everyone contributed to the comments page throughout the process making it easier to rectify any problems. (student 2, team 3)

Thirdly, it was viewed that planning of the task and associated timelines were important to success, in some cases this was identified as an important learning for students for future assessments: "I have learnt how important it is to organise responsibilities and set deadlines early when given a set task. Had this occurred our group may have finished the Wiki earlier, allowing more time to review and evaluate" (student 1, team 1).

Lastly, with respect to teamwork it was identified that individual students led at times during the work, and that individual students contributed in areas of strength, such as grammar, spelling or online formatting of materials:

> [D]ifferent people [took] the responsibilities based on their skill attributes and personalities. For example, [name] liked to be organised and took leadership early ensuring everyone knew what was required of them at the beginning. Both [name] and [name] had completed Wikis before and took leadership in terms of formatting and referencing the Wiki. (student 1, team 3)

Many, but not all, students in their reflective writing of their own contribution to the activity, teamwork, and shared leadership identified with the concept, "I am a leader" (Komives et al., 2009, p. 18), consistent the highest level within Bloom's Taxonomy in the affective domain.

With respect to leadership, only one student reflection identified the lack of a team leader as a concern for the project. In another case there was resentment regarding a team member who imposed leadership on their team. In this case an interesting analogy was made with respect to teams in health care: "The team was dominated mostly by one member. . . . This ties in with patient compliance; if the patient is involved in the discussion and decision-making regarding their medications, they are more likely to comply with the regimen" (student 4, team 6; shared leadership was not evident in team 6).

This learning opportunity illustrates active student learning. Team work between students was facilitated through online collaboration utilizing Wiki technology. Analysis of students' written student-to-student commentary interactions revealed shared leadership of the team and a concertive effect whereby the overall quality of the Wiki was enhanced as an outcome of the team process in five of seven teams. Many researchers have stressed that collaborative learning can have disadvantages. Teams may not work well: problems such as the "'free rider' effect," the "sucker effect," the "status sensitivity" effect, and the "ganging up on the task" phenomenon have been described (Salomon & Globerson, 1989, p. 94-95). This was not evident in the Wiki commentary, the Wiki version analysis, or the individual student reflections in this learning opportunity: individuals recognized that the work was shared equitably between members of the team:

> At no point during the assignment was I concerned about my group members not pulling their weight. . . . In previous group assignments this has not been the case, I have often found that one or two group members often have to do more work (student 4, team 4)

Although assessment of collaborative learning through Wiki functions (e.g., versioning, tags, comments, linkers) to support the monitoring of the students' activities and their level of contribution to the collaborative work (Trentin, 2009) has been described, the assessment of the activity in the work described in this paper aligns with the learning outcome of teamwork.

There are two limitations of this work that need to be highlighted. First, much of the teaching and assessment in higher education focuses on cognitive skills, articulation of learning outcomes associated with the affective domain and their assessment has received little attention. A question of indoctrination versus education has been identified as a potential issue in the case of the affective domain (Krathwohl, Bloom, & Masia, 1964). Secondly, the learning opportunity described in this paper involved small student numbers, but the activity could easily be built for larger student cohort.

The learning activity described in this paper was focused around active learning, with alignment of the activity and assessment with the learning outcome. The aspirational nature of affective outcomes such as values, attitudes, behaviors, and related attributes or dispositions is recognized (Shephard, 2009), and these are not readily assessible through traditional assessment approaches. The use of Wikis to facilitate a wide variety of authentic collaborative activities has been reported (Lai & Ng, 2011). However, specific pedagogical insights into how Wikis may be used effectively for assessment—not only *of* and *for* learning, but also *as* learning—are limited (Davies, Pantzopoulos, & Gray, 2011). The work described in this paper indicates that the use of online technologies such as Wikis may support assessment processes of affective outcomes such as teamwork and support development of students' leadership capacity (i.e.,

assessment for learning). Students' reflections indicated learning of features that are considered to be critical to effective teamwork processes such as planning, feedback and good communication (Michan & Rodger, 2000). It is important to recognize that this learning opportunity was undertaken between students who had not necessarily ever met face-to-face, thus preparing them for work in virtual teams.

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Acknowledgements

Appendix
Abbreviated Guidelines on the Importance of Team Work in Health

Modified from Ingram and Desombre (1999), Salas, DiazGranados, Weaver, and King (2008), and Fransen, Kirschner, and Erkens (2011)

Teamwork and collaboration are essential for the delivery of health services. Individual health care professionals must build networks and maintain ongoing rapport with others. There are several key factors that are essential to effective teamwork in delivering quality health care services:
1. Shared leadership: Effective teams share leadership among all the team members, rather than having one person leading the team. Shared leadership means that all team members work together to plan their work, review results and solve problems. It also means that team members coordinate their work and accept responsibility for outcomes.
2. Cross training: In effective health care teams, team members anticipate the needs of other team members and step in to help one another when needed.
3. Shared Mental Model: Effective health care teams have a shared mental model based on a set of deeply rooted values and assumptions that define the team's work and how the members interact to complete the work.

Assessment Exercise – to observe and analyze teams in action

Observe the teamwork which occurred in response to your assignment. Pay attention to your role in the team. You should take notes.
1. Recount (i.e. describe) what happened in chronological order.
2. From your observations and recount, what have you learned? You may find some of the following questions a useful starting point when writing your reflective account.
   • Did the team have a clear focussed vision?
   • How did each member contribute to the team's task? Did each member on the team have a clear role? Did team members have a clear understanding of other team member's roles?
   • Did the leadership of the team change? How was leadership determined? How was it shared? Was leadership contested?
   • What was the climate for the team's functioning? Was it constructive and open?
   • Was it closed and dominated by one or two people?
   • How were specific objectives generated and agreed upon for each task?
   • What was the team's communication pattern?
   • How did the team make decisions?
   • How did the team review and evaluate its progress and decisions?