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The QUIPPED Project: Exploring Relevance and Rigor of Action Research Using Established Principles and Criteria

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Abstract

This paper is the last in a series of three manuscripts published in the TQR journal over the past few years. This work is part of a larger program of research that has been carried out by a team of researchers detailing various aspects of a three year action research project carried out from 2005 and 2008. This particular paper addresses issues of quality in action research by critiquing our research against five interdependent principles and criteria raised in the literature specifically by Davison, Martinson and Kock which was published in 2004. Our action research project aimed to facilitate interprofessional education for health care learners in the Faculty of Health Sciences at a Canadian University.

Keywords

Interprofessional Education and Action Research

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The QUIPPED Project: Exploring Relevance and Rigor of Action Research Using Established Principles and Criteria

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This paper is the last in a series of three manuscripts published in the TQR journal over the past few years. This work is part of a larger program of research that has been carried out by a team of researchers detailing various aspects of a three year action research project carried out from 2005 and 2008. This particular paper addresses issues of quality in action research by critiquing our research against five interdependent principles and criteria raised in the literature specifically by Davison, Martinson and Kock which was published in 2004. Our action research project aimed to facilitate interprofessional education for health care learners in the Faculty of Health Sciences at a Canadian University. Key Words: Interprofessional Education and Action Research

Interventions in complex, real world settings are subject to multiple economic, political, and social factors (Murray, 2002) for which it has been argued traditional experimental research designs “may not be adequate, appropriate or reasonable” (Stone, 2006, p. 260). Action Research (AR) is increasingly utilized in a variety of fields as its potential value is appreciated; however, it is still criticized for its lack of rigor. It has become more widely accepted that criteria developed for positivist research are not appropriate for the design and evaluation of research outside this paradigm. One important outcome of this discourse is the need to develop criteria for each form of research which is based on the assumptions and principles specific to that methodology.

Action Research is described as carefully planned iterative cycles to “develop an increasingly detailed picture of the problem situation and at the same time move closer to a solution to this problem” (Davison, Martinsons, & Kock, 2004, p. 68). Action Research has been recognized for the relevance of its results but criticized as lacking in rigor, and while relevancy and rigor in research have often been viewed as mutually exclusive, this need not be the case (Davison et al.). While the word “rigor” suggests “exactness” this concept has also been defined as “the correct use of methods and analyses appropriate to the task at hand” (Benbasat & Zmud, 1999, p. 5).

Davison and colleagues (2004) developed a set of five interdependent principles and associated criteria appropriate to the goals of AR which were designed to be practical and specific to provide guidelines for researchers and reviewers in designing and evaluating the rigor and relevance of AR. They are not meant to be restrictive or rigid but rather to “facilitate the clear and systematic presentation of ideas and findings, at the same time helping researchers to justify their choices of action, their contributions to knowledge and their conclusions” (Davison et al., p. 66). Stringer (2007) suggests that for AR, when considering what is correct and appropriate, issues of context must be considered and that what is necessary is “a detailed description of the context(s), activities, and events that are reported as part of the outcomes of the study” (p. 59).

There is consistency between the sets of principles proposed to guide AR amongst researchers (Davison et al., 2004; Nielsen, 2007; Street, 2003; Gay, Mills, & Airasian, 2009) as illustrated in Table 1 below. However, Davison and colleagues have generated a specific and systematic set of criteria for these principles, 31 in total, which help to clearly outline research and discourse about the quality of AR.

Table 1. Comparison of Principles of Action Research by Author(s)

Davison, Martinsons, and Koch (2004)	Street (2003)	Nielsen (2007)	Gay, Mills, and Airasian (2009)
1. Researcher-client Agreement	1. Participatory and Democratic	1. Roles 2. Control	1. Participatory and democratic 2. Equitable
2. Cyclical Process Model	2. Cyclical		
3. Theory	3. Knowledge in Action	3. Frameworks	
4. Change through Action	4. Issue and outcome based	4. Usefulness	3. Liberating
5. Learning through Reflection	5. Educative, developmental and responsive 6. Credible, sustainable, and transferable	5. Documentation 6. Transferability	4. Enhancing

Criteria to judge the quality of AR are necessary if results are to be accepted, especially in fields such as health care. This paper will demonstrate how each principle developed by Davison and colleagues (2004) was incorporated into the research plan and process for the Queen's University Interprofessional Patient-centred Education Direction project (QUIPPED) and how the criteria necessary to fulfill these principles were monitored in order to:

- Provide transparency for others to judge the rigor of the research by determining if the principles of AR were incorporated appropriately and sufficiently.
- Provide sufficient details of an AR project to allow reader to determine if the interventions used in this project would be suitable for their context.
- To determine if these principles and criteria are effective in assessing the rigor and relevance of AR and therefore their ability to provide credibility for AR.
- Highlight some potential challenges to meeting these criteria as well as some possible solutions.

The five principles and the 31 criteria are listed in Appendix 1.

Application of Proposed Principles and Criteria of AR

Context of the QUIPPED project. Health care providers have traditionally been educated within their own disciplines, with little if any exposure to students in other professions. If health care professionals are expected to work together and share expertise in a team environment, their education and training should teach them how to work effectively in an interprofessional team (Romanow, 2002). Interprofessional education (IPE) opportunities occur when two or more professions learn from, with, and about each other, leading to more effective teamwork and better quality care (CIHC, 2007). It involves health care providers learning to work together, sharing in problem solving and decision making to the benefit of patients, and developing mutual understanding of, and respect for, the contributions of various disciplines (Health Canada, 2001).

Changing the way health professionals are educated is key to achieving system change and ensuring that health professionals have the necessary knowledge and training to work effectively in interprofessional teams across the continuum of care, with the patient at the centre of their work. In response to the Romanow report, Health Canada put out a call for proposals for research for Interprofessional Education for Collaborative Patient Centred Practice in the fall of 2004.

The QUIPPED project received funding for 33 months from 2005-2008 to understand and promote IPE in the Faculty of Health Sciences (FHS) at Queen's University, Kingston, Ontario, Canada. Action Research was chosen as the most appropriate methodology to study the transformation of health education to accommodate interprofessional learning opportunities for pre-licensure learners. Two previous papers (Medves, Paterson, Schroder, Broers, Chapman, & O'Riordan, 2008; Paterson, Medves, Chapman, Verma, Broers, & Schroder, 2007) published in *TQR* provide additional background and explore the iterative, rigorous and collaborative process-oriented model of AR, which involves organizational development as well as the generation of knowledge.

The goal of the QUIPPED project was to create an interprofessional educational environment at Queen's University that enhances the ability of learners and faculty to provide patient-centred care, while recognizing the contribution of the health care team within a respectful and collaborative framework. The primary research question was:

How do interprofessional experiences influence learner attitudes/skills/behaviour for interprofessional collaboration in order to contribute to enhanced patient-centred care in future practice?

Discussion of five principles of action research and their associated criteria. The five principles for AR developed by Davison and his colleagues will be used to demonstrate how the QUIPPED project utilized AR over 33 months and the specific criteria for each principle will be introduced.

1. Researcher-Stakeholder Agreement¹;
2. Cyclical Process Model;
3. Theory;
4. Change through Action; and
5. Learning through Reflection

Principle 1: Researcher–Stakeholder Agreement

Criteria:

- 1a. Did both the researcher and the stakeholder agree that CAR was the appropriate approach for the organizational situation?
- 1b. Was the focus of the research project specified clearly and explicitly?
- 1c. Did the stakeholder make an explicit commitment to the project?
- 1d. Were the roles and responsibilities of the researcher and stakeholder organization members specified explicitly?
- 1e. Were project objectives and evaluation measures specified explicitly?
- 1f. Were the data collection and analysis methods specified explicitly?

Since an AR approach is based on the assumption that knowledge is socially constructed and thus dependent upon the values and beliefs of the constructors, it makes sense that those who must rely on this knowledge should be participants in its construction. As a result, AR requires a democratic process and must include all stakeholders (people whose lives are affected by the new knowledge or changes) (Street, 2003; Stringer, 2007). Establishing agreement builds trust which allows for greater contributions from all stakeholders. Stakeholders as co-researchers, participate in the defining and exploring the problem including taking action, decision making and owning the outcomes.

Within the scope of Principle 1, but missing from its criteria, is an inquiry into how participants from stakeholder groups were selected (Stringer, 2007). One of the first tasks of the research was to determine the key stakeholders. The proposal writing process for the QUIPPED project was an inclusive one that facilitated the development of one submission from this university for this funding opportunity and required an open and collaborative approach. The QUIPPED project was a partnership between three schools in the FHS at Queen's University (Medicine, Nursing, and Rehabilitation Therapy which included programs in Occupational Therapy and Physical Therapy). In order to ensure input from each of these perspectives, three co-Principal Investigators (PI) each representing each of these schools were chosen to lead the project. From the initial stage of writing the proposal, stakeholders affected by changes to education in the FHS were identified as senior administration, faculty, learners at the pre- and post-registration level, and patient representatives. In addition to leaders in the FHS, faculty from Engineering, Education, Business, Medical Radiation Technology, and Theology

¹ For the purposes of this paper, we will use the more general term Researcher-Stakeholder Agreement rather than the term researcher-client agreement proposed by Davison and his colleagues as this term is more appropriate for the participants of this research project.

participated. After funding was granted, all these stakeholders were invited to participate on the Steering Committee. To support the work of the project, the PI hired a research team which included a project manager, education coordinator, clinical educator, research associate, and an administrative assistant. Over the course of the project an unidentified but important role for practicing clinicians became more apparent. As a result, this stakeholder group was increasingly invited to be involved in student IPE initiatives and professional development activities.

For the QUIPPED project, integrating the principle of Researcher-Stakeholder Agreement was fairly straight forward with regard to meeting Criteria 1 b, e, and f. During the grant application process, the stakeholder committee developed clear and specific goals and objectives for the project along with a list of tasks for each objective elaborating a plan of action on how to achieve these objectives (QUIPPED, 2005). The evaluation plan included an internal and external component. The internal evaluation focused on individual initiatives and was conducted by the QUIPPED team under direction of the Steering Committee. An external evaluator was hired to provide a global evaluation of the effect of the project on the Queen's education environment and was designed to capture some of the indirect or unexpected effects of the interventions. Both the internal (QUIPPED, 2005) evaluation strategies and external (independent) evaluation included a mix of qualitative (interviews, focus groups, open-ended questions on surveys, email correspondence) and quantitative approaches (electronic and paper surveys) with all stakeholder groups.

Some of the more challenging aspects to ensuring Researcher-Stakeholder Agreement were revealed through reflection on Criteria 1 a, c and d. Stakeholders involved deemed AR as appropriate (Criterion 1a) since change across so many disciplines would require a collaborative approach and involve a transformational change. However, achieving the optimal Researcher-Stakeholder Agreement is challenging even for those who have the best intentions. From the experience in the QUIPPED project, the agreement relationship is one that is constantly evolving and requires ongoing clarification and negotiation. One of the reasons for this is that the research context is dynamic, making continuous agreement challenging.

Stakeholders involved in the QUIPPED project took on many roles (Criterion 1d) including developing and implementing IPE initiatives for learners, faculty, and clinicians, providing feedback on the outcomes of action, reflection on next steps in action, and dissemination of findings through conference presentations and publication of journal articles. While all stakeholders were provided a summary of data from the project, analysis of data was handled almost solely by members of the QUIPPED project team and the external evaluator. The reason for this was that the analysis of the data required an extensive time commitment. The initial mandate of the Steering Committee was:

1. To provide a strategic direction for the project to ensure the mandate of the proposed program grant is fulfilled;
2. To provide counsel to the health disciplines to ensure collaborative programming is enhanced for each program equitably; and
3. To track evaluation of strategies and recommend changes in direction as required.

Another role of each member of the Steering Committee was to communicate information from the project back to their academic schools and programs through departmental and committee meetings and newsletters. The PIs and the Research Team meet weekly for at least two hours to assess workload, priorities, and lessons learned. The role of this team was to manage the day-to-day work of the project, and report to the Steering Committee.

The role of each participant in the QUIPPED project was determined based on interests, expertise, and level of commitment to the project. Many roles of researchers and stakeholders were defined early while others emerged as the project progressed. This emergent approach was due to a number of factors. Interprofessional Education is a complex and emerging field and implementation and evaluation is not well defined in advance. Also AR was a new approach to many of the researchers and participants in the project. As the project progressed, time was taken to discuss AR and IPE process, renegotiate roles, and discuss outcomes. In both cases, a better understanding of how to implement IPE and what AR entails evolved over time. This created opportunities for growth but also challenges. Stakeholders, while relishing the opportunity to shape the direction of research and change, may not have realized the amount of work this participation required or may not have realized the consequences of some of these changes. Participation changed over the course of the project due to outside commitments. The level of commitment stakeholders were able to provide was accepted as offered and new members were encouraged to join the project.

Data gathered by the external evaluator in the second year revealed that different professions had different conceptions of what “interprofessional collaboration” meant and how it might be implemented. As a result, the team realized that not everyone may be working toward the same goal and that continuous dialogue about these important concepts was a necessary part of the research process. A discussion day open to all faculty and students in the Faculty of Health Sciences and patient representatives was organized in order to bring people together to begin to share ideas, concerns, and move toward collective agreement for paths forward for IPE at Queen’s University.

While equal participation of all stakeholder groups was the aim of the project, it was realized that achieving this equality required reflection and dialogue. At the beginning of the second year of the project, each consumer representative was invited to comment on her/his experience. The quote below revealed that one of the consumer representatives of the project felt that her perspective was not being included to its full potential:

My experience of working as a consumer/patient on the QUIPPED project has been exciting, disappointing, educational, challenging, frustrating and adventurous...Disappointing because my role as disability consultant was under used ... Frustrating because as a non-Queen’s staff or professional or university graduate, I often felt distant and ill informed and not connected.

Criteria:

- 2a. Did the project follow the CPM or justify any deviation from it?
- 2b. Did the researcher conduct an independent diagnosis of the organizational situation?
- 2c. Were the planned actions based explicitly on the results of the diagnosis?
- 2d. Were the planned actions implemented and evaluated?
- 2e. Did the researcher reflect on the outcomes of the intervention?
- 2f. Was this reflection followed by an explicit decision on whether or not to proceed through an additional process cycle?

On reflection this feedback provided a valuable opportunity to deepen understanding of the consumer role and to make the project more credible. A special meeting between the QUIPPED project team and the consumer representatives was organized to discuss how the project could better draw on their perspectives, interests, and abilities. Consumers continued to be involved in Steering Committee meetings but were invited to participate on some level with almost all activities including co-supervision and evaluation of student research projects; keynote addresses at IPE symposia; participation in discussion forums; planning and implementation of IPE activities for learners, faculty, and clinicians; development of resources; presentations and publications. Feedback from all stakeholders demonstrated that they valued the increased role of the consumer in the implementation of IPE, while the consumers reported that their participation was more meaningful.

Another role which evolved for the consumer representative was the monitoring of inclusive language. During one Steering Committee meeting a consumer representative commented that the use of multiple acronyms and academic language resulted in the exclusion of people who were not a part of this culture. The Committee made a conscious effort to use plain language without acronyms in the meetings and it was stressed that when people did, that clarification should be sought for the group.

Another challenge to full participation recognized was that involvement was at times limited because the consumer representatives did not have a designated space at the university and that they had to travel to attend meetings with mobility and accessibility sometimes being a factor. There is much to consider in terms of making involvement equal.

Principle 2: Cyclical Process Model

Action Research is structured through continuous on-going open cycles or spirals of the research process which enables action to be carefully monitored, analyzed, and evaluated acting as the basis for reflection on the success of the plan and the possibility of modifying it for the next cycle in the spiral of the planning, action, data collection, and reflection (Street, 2003). Each action has an effect on both the complex research context and the perception of the problem by stakeholders in the research. This iterative approach is argued to be a more useful for complex interventions as it aims to help researchers continuously clarify what the problem is and where they are in the research process (Campbell, Fitzpatrick, Haines, Kinmonth, Sandercock, Spiegelhalter, et al., 2000). The sequential and systematic examination of all facets of a problem within a complex and interdependent context through reflective cycles designed to incrementally

orient action and generate knowledge in order to clarify concepts, develop models, and evaluate their effectiveness.

During the proposal writing stage for the project, the committee performed an environmental scan (Criterion 2b) of the educational activities within the FHS to determine which IPE activities existed and also to determine where there was potential for new IPE interventions (QUIPPED, 2005). While some educational opportunities existed for learners from different disciplines to learn together, the majority of students in the FHS were not exposed to an IPE experience during their academic program. The lack of opportunity to engage in IPE was identified as the issue for this research project. Some of the causes of this problem initially identified were cultural differences between disciplines, curriculum developed in isolation from other programs and based on traditional teaching approaches, logistical issues such as lack of shared time in academic schedules among the four programs, lack of appropriate space for large groups of students to engage in interactive learning, lack of awareness of IPE, and limited research in best practices for IPE.

Rather than having one focus for change, the QUIPPED project took on a multilayered approach because change needed to happen on many levels and involve a number of stakeholders, in order for the transformation of the educational environment to be sustainable. Interprofessional activities have taken place ad hoc over many years at Queen's University and this has helped in the development of the QUIPPED project. In keeping with working in a naturalistic setting, QUIPPED wanted to support IPE initiatives that were already in existence. QUIPPED also worked to bring together and support people who had an interest in implementing IPE initiatives but who may not have had the resources, knowledge or partnerships to assist them in the development of these ideas. In addition, the researchers responsible for the QUIPPED project used their knowledge of models of IPE from research and practice to develop new IPE initiatives to model to others and to evaluate effectiveness. The use of multiple interdependent, iterative cycles allowed the QUIPPED project to experiment with a number of models for change to see which were the most suitable for the specific context. Each intervention involved one to three cycles of the AR process over the 33 month period (Medves et al., 2008; Paterson et al., 2007). The initiatives were linked to the objectives of the project which were reviewed and reported on regularly throughout the project by the project team, and the Steering Committee based on feedback from a number of stakeholders.

The AR cycle allowed the researchers to propose methods to teaching that are more integrated, adaptable, sustainable, and reflective of the collective needs of the FHS. Evaluation of change from one iteration to the next informed change for the proceeding iteration and guided the mapping of the curriculum and programs to influence learner outcomes (Criterion 2a).

A balance between what was ideal and what was possible in light of the current situation evolved over time taking a pragmatic approach (Criterion 2c). The logistical issue of lack of shared time within the schedules of the four pre-licensure programs was identified early on as the major problem for creating IPE opportunities (Criterion 2b). It was determined that if each program was to protect a shared block of time in their schedules, then an opportunity to bring all students together at the same time to learn with, from and about one another using appropriate pedagogy, IPE could be achieved. Agreement from each school of a regular time slot in the program schedules had been

negotiated and the planning of various IPE modules was well underway and dates for implementation chosen. As the time drew near, an unexpected change for one school caused this agreement to be rescinded. Since the goal for students in all schools to participate in educational activities at the same time was no longer feasible, a return to the planning stages had to be undertaken before completing the entire cycle of the process (Criterion 2a). It was through this experience that the researchers learned that the problem was multifaceted and went beyond simply logistics.

In order to better understand the problem and to assist with planning the next cycle of the process to create a time in the schedules of each of the four pre-licensure programs for shared learning, the QUIPPED project coordinated an IPE discussion forum and invited all interested faculty, students, and consumer representatives to participate. This event provided opportunity to learn more about the perceived challenges to this goal of integrating shared IPE learning into academic program curricula; facilitate networking between faculty within and between schools who had a shared interest in IPE; allow new members of the identified stakeholder groups to be involved in collaboratively creating the vision for change; and bring about increased momentum for change. In the meantime, the project team focused on other elective and extracurricular interventions which allowed the project team to implement, test, and refine various models of IPE in various settings which still met the objectives of increasing awareness and exposure of IPE for a large number of students and faculty.

Each initiative was evaluated (Criterion 2d) and involved one or more of the following: pre/post surveys, focus groups, and individual interviews (Medves et al., 2008; Paterson et al., 2007). The external evaluation was designed to capture a more global impact of the QUIPPED project and therefore, while it included stakeholders who were involved in the project, it did not necessarily focus on specific initiatives. This evaluation included 420 administrators, faculty members, learners, community members, representing the professions of Medicine, Nursing, Occupational Therapy, Physical Therapy, Theology, Education, and Medical Radiation Technology; patient representatives and QUIPPED team members.

The QUIPPED Project Team and the Steering Committee were involved in ongoing reflection on the outcomes of all activities in an effort to inform the next iteration of each initiative, but also, to inform the design and implementation of other initiatives (Criterion 2e). Stringer (2007) notes that stakeholders who have the same facts and information interpret them differently according to their experiences and world views and thus engaging stakeholders in collective reflection provides the opportunity to recognize differences in interpretations and promotes joint construction--construction of the situation that makes sense to them all. At the conclusion of each intervention collective reflection on the process allowed for new or emerging knowledge of what interprofessional education to enhance patient-centered practice would involve in the FHS at Queen's University. The external evaluator attended project team meetings approximately four times a year, to report back on findings and to facilitate group reflection on these findings.

After evaluation the team decided which IPE activities should receive continued support (Criterion 2f). These decisions were made after assessing the effectiveness of design, human and/or financial resources required, sustainability of funding, level of student and faculty interest, and continued agreement by stakeholders involved.

One outcome of the first year external evaluation with faculty and administration was that at times the QUIPPED project seemed to be involved in too many initiatives and that the project appeared to be too “scattered.” As a result, the team members decided to focus on the most effective and sustainable interventions. In addition, they shifted their focus to play a consulting role for those who wished to design and implement IPE activities, especially those that would be integrated into program curricula. Reflection on this change in role helped others to take more leadership for developing and implementing IPE, thereby supporting sustainability, while the team concentrated on collecting data for research and developing a sustainability plan for IPE at the university.

A second finding by the external evaluator which was supported by the reflections of the Project Team, was that QUIPPED needed to assist faculty by preparing them to deliver IPE to their learners. The first interprofessional faculty development workshop was on the topic of loss and bereavement which was offered to faculty and clinicians. While the workshop was very well received because of the relevancy of the content for all participants, the interprofessional objectives for the workshop were not achieved. Understanding that the interprofessional objectives needed to be explicitly taught to faculty, a five day program that focused specifically on the knowledge and skills for designing and delivering IPE rather than focusing on a specific topic area (such as loss and bereavement) was developed. Critical to design of this program was an interprofessional planning committee that collaboratively planned the program and collaboratively delivered workshop sessions in order to incorporate multiple perspectives and model interprofessional collaboration. Many changes were made to the second iteration of the program based on feedback from the first iteration.

The final report by the project’s external evaluator (QUIPPED, 2008b) demonstrated that the project had met all of its objectives (Criterion 2g). A sustainability plan was implemented and infrastructure funding to support an Office of Interprofessional Education and Practice (OIPEP) was obtained from the provincial government. In the final year a plan to transition the initiatives and knowledge to this new office was put into place.

Principle 3: Theory

Criteria:

- 3a. Were the project activities guided by a theory or set of theories?
- 3b. Was the domain of investigation, and the specific problem setting, relevant and significant to the interests of the researcher’s community of peers as well as the client?
- 3c. Was a theoretically based model used to derive the causes of the observed problem?
- 3d. Did the planned intervention follow from this theoretically based model?
- 3e. Was the guiding theory, or any other theory, used to evaluate the outcomes of the intervention?

Action Research has the dual responsibility to provide practical solutions for specific problems for society and to make contributions to theory and bodies of knowledge (Davison et al., 2004). By articulating theory in advance, a diverse group of stakeholders can engage in critical dialogue about theories and the values and beliefs inherent within them. Reflections on the outcomes of action can then be used to further develop knowledge and theory. In addition, theories frame problems, guide interventions, and help to define the scope of data collection and analysis, keeping the researcher from getting lost in a sea of data (Davison et al.). Theory is essential for communication within the research community and allows for discussion of the transferability of results (Nielsen, 2007). Through the collaborative communication process, meaning is constructed which leads to social action; reflection on these actions then lead to the construction of new meaning (Greenwood & Levin, 2000). The results of action can then be related to existing bodies of knowledge.

Prior to the funding for the QUIPPED project, there were a number of individuals and small groups of faculty at Queen's University who were interested in developing more collaborative education opportunities between professional health care programs (Criterion 3b). Recently, there has been a focus internationally on developing theory to support research in the area of interprofessional education and practice. In 2003, Health Canada set a number of goals including the achievement of an integrated and interprofessional approach to primary care and further identified that changing the way health professionals are educated is a key component of health system renewal. In this year, the Federal Budget allocated 80 million dollars over five years to improve Human Health Resources (HHR; Herbert, 2005) which included research in "interdisciplinary education for collaborative patient-centered practice" (IECPCP) as one of its three initiatives. Prior to the call for funding, the government organized a team of health researchers to explore current national and international trends impacting interprofessional approaches to primary health care, review existing models of interprofessional education and collaborative patient-centered care practice frameworks, and provide an analysis of their findings (Herbert, 2005; Oandasan, D'Amour, Zwarenstein, Barker, Purden, Beaulieu, et al., 2004). A conceptual framework was developed (D'Amour & Oandasan, 2005) to define the essential features and determinants for IECPCP at various levels; micro (teaching), meso (institutional), and macro (systemic). At each of the levels within the conceptual framework, there have been many theories proposed to assist with understanding IPE, guiding development and evaluating the effectiveness (Reeves, Suter, Goldman, Martimianakis, Chatalalsingh, & Dematteo, 2007).

The QUIPPED project was one of 21 projects which were funded nationally to build upon these frameworks and evidence (Criterion 3b). These frameworks were used to develop the goals, objectives of the QUIPPED project with a focus on the micro and meso levels of IECPCP (Criterion 3a). The mandate of the QUIPPED project was to create change by implementing sustainable collaborative interprofessional education within the FHS at Queen's University, as well as to contribute to the emerging frameworks of and evidence for IPEP.

Socialization of health care providers was highlighted (D'Amour & Oandasan, 2005) as one of the major components that must be addressed as it is the cultural beliefs and attitudes which develop among health professionals that can affect their willingness

to collaborate with other health professionals (Perkins & Tryssenaar, 1994; Zungalo, 1994). Through socialization, learners from each profession acquire specific conceptualizations of patients, the patients' needs, and the type of response needed to address the patients' complex health care situations (D'Amour & Oandasan). Within each of these isolated professional cultures, distinct and fragmented systems of organized knowledge develop (D'Amour & Oandasan) which individually are inadequate for collaborative practice settings. In order for collaboration to be possible, health care providers must become aware of their cognitive maps as well as those of other disciplines (Hall, 2005).

Some areas of focus for the QUIPPED project were experimenting with models of IPE developed based on a number of pedagogical theories (micro level of the conceptual framework) such as adult education (Knowles, 1980), experiential education (Kolb, 1984), cooperative education (Biggs, 1999), and reflective practice (Schön, 1987). The relationship between these theories and their effect on IPE is in the early stages of evaluation. The QUIPPED project used these theories and modifications of models of IPE from the literature to structure various initiatives (Criterion 3c). These theories and frameworks were used in the planning, implementation, and evaluation of all educational activities (Criteria 3d & e).

QUIPPED initiatives focused mostly at the micro level (pedagogical and socialization theories) and meso in order to keep the project manageable. Once progress had been made in implementing theory at the micro level, some of the issues at the meso and macro level became more apparent - which had an effect on advancement at the micro level and were critical to long-term success. For example, putting into practice some of the pedagogic theories revealed issues of inadequate space, challenges of scheduling shared time for different groups of learners and issues related to academic accreditation. The latter issue extended beyond the university and the scope of this project. Theories of organizational change and policy need to be better understood within the context of health sciences education to address some of these challenges. Through involvement in the QUIPPED project, participants became involved in provincial and national committees and working groups to address change at these macro levels. It will be important to focus on both organizational theory and action at the meso and macro level to address issues such as curriculum development and accreditation.

Principle 4: Change through Action

Criteria:

- 4a. Were both the researcher and stakeholders motivated to improve the situation?
- 4b. Were the problem and its hypothesized cause(s) specified as a result of the diagnosis?
- 4c. Were the planned actions designed to address the hypothesized cause(s)?
- 4d. Did the stakeholders approve the planned actions before they were implemented?
- 4e. Was the organization situation/research context assessed comprehensively both before and after the intervention?
- 4f. Were the timing and nature of the actions taken clearly and completely documented?

Action Research is aimed to specifically address practical issues of concern to a number of people by context-specific solutions, knowledge and strategies to improve the current situation. Greenwood and Levin argue that “validity, credibility and reliability in AR are measured by the willingness of local stakeholders to act on the results of the AR ... and the degree to which the outcomes meet their expectations” (2000, p. 96). Action Research is based on the belief that knowing and doing are inseparable and that we learn-by-doing or that we create knowledge-through-action. As a result, AR develops over time as skills develop and communities become established. In order for the change to be sustainable, this new knowledge must be passed on, through doing, to others. Perhaps implied in the criteria above, but not explicitly stated, is the continued action based on new knowledge after the research has ended.

Over the course of the project, there were those who were early adopters as well as individuals who were neutral, and even resistant to IPE and the goals of the QUIPPED project. At the completion of the project many more people had recognized the importance of IPE and began to adopt a more positive attitude towards IPE (Criterion 4a). The project goals influenced practice outside the education programs. This awareness, interest, and knowledge has allowed the Office of Interprofessional Education and Practice to shift its role to one of promoting networking, coordination and consultation which draws on leadership from many stakeholders and participants from the QUIPPED AR project who gained the knowledge for action through their involvement.

As a result of the QUIPPED project, almost every learner in each of the professional programs in the FHS participated in at least one IPE intervention and some would have had the opportunity to participate in several. Some of these interventions are mandatory for all or some programs; some are elective, while others are extracurricular.

Throughout the project, many committed stakeholders demonstrated enthusiasm and leadership by voluntarily offering to take on extra work and responsibilities to make change toward an interprofessional approach to education and practice (Criteria 4a & 4d). One activity provided small financial grants for students to participate in self-directed, extracurricular team research projects; other students voluntarily took part in interprofessional placements which involved additional responsibilities beyond the usual program requirements. Many students voluntarily took part in IP workshops and activities that took place outside their regular program schedule without credit. Faculty involved in the development and implementation of the IPE initiatives for students received no formal recognition or compensation from the university for these efforts.

A number of participants took action as a result of the outcomes of this research project and their new knowledge. For example a number of students involved in IP courses, placements, and research chose career paths after graduation based on their experience and interest in IPC. A program requirement of a professional development program was the development of curriculum for a workshop, class, or module. Participants in the program brought with them their interests and needs of their educational context and the program provided them with the tools to implement change in their own setting (Criterion 4c). Hence the knowledge creation process was purposeful and based on the inquirers’ norms, values and interests (Greenwood & Levin, 2000). A number of the participants in this program have taken leadership roles by becoming involved in additional IPE research and education initiatives. At the organizational level, key stakeholders from each of the three schools in the FHS have committed to creating a

framework to guide the integration of IPE into the four academic pre-licensure programs. The guiding concepts, principles, and model for this framework have now been endorsed by the FHS Academic Board.

In the QUIPPED experience, when challenges to implementing action arose, it was sometimes difficult to determine if these challenges were preexisting and the initial assessment was not adequate to reveal the issue, or if due to the dynamic nature of naturalistic settings, the research context had changed since this assessment. Generally a problem has a number of “causes” or facets, all of which may not be immediately obvious. As one aspect of the problem is addressed or “solved” other aspects come to the fore; or resolving one problem may led to the creation of new problem which impedes the desired outcome of action. Davison and his colleagues (2004) stress action researchers, while committed to a particular outcome, should not be overly committed to a particular plan of action as flexibility is needed so the plan can be adapted to the emerging or changing circumstances. Further, AR must focus on the “interconnections, interdependencies and the dynamic of a total functioning system rather than isolated factors” (Hult & Lennung, 1980, p. 75). This adaptive nature of AR is one reason that documentation is perhaps more important than for other scientific forms of research.

For the QUIPPED project, there have been many changes to the educational context in the FHS in response to various actions taken and all of the project goals stated in the research proposal were achieved. However, one plan that involved the integration of IPE into the four pre-licensure programs, discussed previously, that was not successfully implemented was due to obstacles that were not realized or did not exist when agreement between research group and stakeholders was established. This lack of change revealed that there was much more to the problem of developing shared mandatory IPE activities than issues of scheduling and logistics; the problem went much deeper to include issues such as changing curriculum and accreditation. As a result, it was realized that while membership on the Steering Committee included high level administration from each school this committee did not include the key people who had influence over decisions about curricula and scheduling. The Office of Interprofessional Education and Practice that developed out of this research project as part of its sustainability plan, was careful in selecting a Steering Committee whose membership includes more of these key influential players. This committee is in the process of working together to create a framework for IPE for the FHS at Queen’s University which will guide the integration of IPE into the curricula for learners of all professional programs in the FHS.

Principle 5: Learning through Reflection

Reflection on learning is important to the practical problem to be solved, and the advancement of knowledge for the research community (Davison et al., 2004). What is learned through reflection must be communicated to both the stakeholders in the research and to the research community. The QUIPPED project used informal and formal methods of communicating the formative and summative outcomes and reflections on action. These included monthly reports to the Steering Committee, widely disseminated quarterly newsletters, a project website, annual reports, conference presentations, and publications in academic journals (Criterion 5a). Faculty, learners, patient

representatives, and clinicians have been involved in conference presentations and publications.

Criteria:

- 5a. Did the researcher provide progress reports to the client and organizational members?
- 5b. Did both the researcher and the client reflect upon the outcomes of the project?
- 5c. Were the research activities and outcomes reported clearly and completely?
- 5d. Were the results considered in terms of implications for further action in this situation?
- 5e. Were the results considered in terms of implications for action to be taken in related research domains?
- 5f. Were the results considered in terms of implications for the research community (general knowledge, informing/re-informing theory)?
- 5g. Were the results considered in terms of the general applicability of CAR?

While Davison and colleagues (2004) did not identify a separate principle to match the positivist principle of generalizability, it is implicit in Criteria 5d and 5e. This issue seems to be an important determinant for the demonstration of rigor, and has been addressed by a number of other authors (Nielsen, 2007; Street, 2003; Stringer, 2007). The criterion of generalizability is based on the assumption that principles can be abstracted from a context and applied to other settings. Since knowledge is considered to be context specific in AR, it has been argued by the above authors that the concept of transferability is a more appropriate. Stringer notes that what is necessary to explore the possibility that the outcomes of an AR study may be relevant elsewhere is a “detailed description of the context(s), activities, and events that are reported as part of the outcomes of the study” (p. 59).

Nielsen (2007) similarly argues that the criterion of recoverability is more appropriate than that of reproducibility for AR: “the consumers of research should be able to see on which ground the action researcher claims a successful outcome...AR process should be recoverable by anyone interested in subjecting the research to critical scrutiny” (p. 360). This documentation provides the context necessary to determine if the research was rigorous, and to determine if the findings are transferable. Since we may learn as much from the process of other AR projects as we do from the outcomes produced, outlining the process helps others who wish to learn how to conduct AR.

The QUIPPED project invested time in preparing a comprehensive report at the end of each year, along with a final report at the end of the project (QUIPPED, 2008a), which provided a description of the initiative and evaluation, a summary of the data analysis, lessons learned and future plans (Criteria 5a & 5c). These reports included a section completed by the research team and another section completed by the External Evaluator for the project. The documents provide the context that can be used by other researchers to determine the rigor of the project and what aspects might be transferable to the reader’s context. Further, meetings to reflect on the outcomes outlined in these reports were organized with the Project Team, its Steering Committee, and the external

evaluator (Criterion 5b). These reports were posted on the website, sent to each identified stakeholder, and submitted to Health Canada, the funders of the project.

The final results of the project were used to plan for future action following the end of the research project (Criterion 5d). One key learning outcome of this project is that the people overseeing the development of curriculum and accreditation standards must be on board with the concept of IPE and involved in its development. As a result of the learning of this project, there is now organizational restructuring to integrate IPE across the curricula (Criterion 5d) and a permanent Committee in place in the FHS. The members include those who oversee academic programming and are committed to integrating IPE into these programs. Learning opportunities must be carefully designed to address the current needs of the learners. A framework to guide learning experiences at the exposure, immersion, and mastery levels throughout the length of each program has been initiated. The number of interprofessional learning opportunities integrated into the curriculum is growing and are lead by faculty members independent of the research project. An interprofessional forum series has been established to sustain and build the community initiated by the QUIPPED project. As QUIPPED transitioned into The Office of Interprofessional Education and Practice (OIPEP), members of the team continue to be involved in a consultation and research to increase the number of people who are willing to teach IPE. The research from this project has contributed to models of and resources for IPE, including faculty development, IP placements, IP student research projects, and involvement of the patient in IPE, which would be useful for educational practice in other settings and have been communicated through conferences presentations and manuscript publications.

The QUIPPED project contributed publications to support the development of the IPE and IPP literature (QUIPPED, 2008b). Two have explored the common competencies within the professional programs using the CANMeds roles (Verma, Broers, Paterson, Schroder, Medves, & Morrison, 2009; Verma, Paterson, & Medves, 2006). The Principal Investigators of the QUIPPED project argued that health care professionals share common competencies and so teaching and learning together makes sense. A discursive analysis of the core competencies followed by a “harmonization” of these competencies has been distilled into a framework for interprofessional education.

Criterion 5g stipulates that the results must be considered in terms of the applicability of AR. Not only the outcomes of the project, but the collaborative nature of the AR process itself established and developed a collaborative community necessary to support the transformation of the culture to support interprofessional education and practice. This approach to research is consistent with the conceptual framework identified in the Interprofessional Education for Collaborative Patient-Centred Practice (IECPCP) Final Report which describes interprofessional education as collaborative, egalitarian, group-directed, experiential, reflective, and applied (Oandasan et al., 2004). Like AR, collaborative learning is both an end and a means. It is through collaboration with others that knowledge is constructed for that particular setting. Collaborative learning is a means of constructing the knowledge necessary to continue to provide proper care. The educational initiatives developed and implemented through the QUIPPED project have been based on this theory of education to allow learners to develop the skills to work collaboratively and respectfully in the practice setting to provide optimal care to their patients.

The use of AR in Health Sciences education and practice is not widespread. Publications from this project demonstrate the value of AR for the complexity of interprofessional education and practice (Criterion 5f; Medves et al., 2008; Paterson, Chapman, Medves, Schroder, Verma, Broers, et al., 2008; Paterson et al., 2007).

Summary

In keeping with the emergent approach of AR, the principles and criteria developed by Davison and colleagues are intended to be practical and measurable but not necessarily deterministic. The adoption is intended to be “sensitive to prevailing local norms, cultures, and values” (Davison et al., 2004, p. 78). While this set of principles and criteria may not be definitive, they are offered as a foundation on which to cultivate a systematic approach for designing and evaluating AR and to stimulate further discourse (Davison et al.). Nielsen (2007) provides some critique to this set of principles and criteria and offers another set which provides some overlaps but also introduces some new ideas. One criticism Nielsen suggests to these principles and criteria is that they are directed at the review or evaluation AR but that “they suffer from a static view on the intrinsic relationship between action and research” (p. 360). He further comments that to be relevant for reviewing journal articles, AR criteria should be applicable throughout the endeavor, from designing, engaging in action, to making sense of the findings and evaluating. In using these criteria to evaluate the QUIPPED project, some of the criteria seemed to be repetitive and other times, there appeared to be gaps in terms of what was important to consider for a particular principle, however, these criteria provide a useful list which could be refined through further discourse.

The authors were not aware of these principles and criteria developed by Davison and colleagues until after the completion of the QUIPPED project. While they can be used by a reviewer to evaluate the relevance and rigor of this project, in retrospect understanding of principles and criteria such as these in advance can assist researchers in planning, implementing, and evaluating sound research and thereby increase the credibility of AR in the future. This paper was structured around these principles and criteria to demonstrate some of the challenges of designing, implementing, and evaluating an AR project with the aim of assisting others in the planning of AR and further to stimulate dialogue to promote the reflection on and refinement of criteria of rigor in the design and evaluation of AR.

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APPENDIX 1 : Principles of Canonical and their Criteria AR (adapted from Davison Martinsons & Kock (2004))
Criteria for Principle 1: Researcher-Client Agreement (RCA) Criteria
a. Did both the researcher and the stakeholder agree that CAR was the appropriate approach for the organizational situation?
b. Was the focus of the research project specified clearly and explicitly?
c. Did the stakeholder make an explicit commitment to the project?
d. Were the roles and responsibilities of the researcher and stakeholder organization members specified explicitly?
e. Were project objectives and evaluation measures specified explicitly?
f. Were the data collection and analysis methods specified explicitly?
Principle 2: Cyclical Process Model (CPM) Criteria
a. Did the project follow the CPM or justify any deviation from it?
b. Did the researcher conduct an independent diagnosis of the organizational situation?
c. Were the planned actions based explicitly on the results of the diagnosis?
d. Were the planned actions implemented and evaluated?
e. Did the researcher reflect on the outcomes of the intervention?
f. Was this reflection followed by an explicit decision on whether or not to proceed through an additional process cycle?
g. Were both the exit of the researcher and the conclusion of the project due to either the project objectives being met or some other clearly articulated justification?
Principle 3: Theory Criteria
a. Were the project activities guided by a theory or set of theories?
b. Was the domain of investigation, and the specific problem setting, relevant and significant to the interests of the researcher's community of peers as well as the client?
c. Was a theoretically based model used to derive the causes of the observed problem?
d. Did the planned intervention follow from this theoretically based model?
e. Was the guiding theory, or any other theory, used to evaluate the outcomes of the intervention?
Principle 4: Change through Action Criteria
a. Were both the researcher and client motivated to improve the situation?
b. Were the problem and its hypothesized cause(s) specified as a result of the diagnosis?
c. Were the planned actions designed to address the hypothesized cause(s)?
d. Did the client approve the planned actions before they were implemented?
e. Was the organization situation assessed comprehensively both before and after the intervention?
f. Were the timing and nature of the actions taken clearly and completely documented?
Principle 5: Learning through Reflection Criteria
a. Did the researcher provide progress reports to the client and organizational members?
b. Did both the researcher and the stakeholders reflect upon the outcomes of the project?
c. Were the research activities and outcomes reported clearly and completely?
d. Were the results considered in terms of implications for further action in this situation?
e. Were the results considered in terms of implications for action to be taken in related research domains?
f. Were the results considered in terms of implications for the research community (general knowledge, informing/re-informing theory)?
g. Were the results considered in terms of the general applicability of CAR?

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