Analysis of reflections of action researchers

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Abstract

Action research blends cycles of social activism with methods of data analysis to develop deeper understanding of change. Although transformational outcomes of action research extend well beyond the individual, our analysis focuses solely on the change in the action researcher. We explore changes in knowledge, skills, and identity at three contextual levels: professional interactions from the perspective of the action researcher, shared experiences of changes in the organisation, and scholarly participation in a research community. We do this for two reasons: to deepen understanding of the nature of the transformative change that new action researchers often report and, second, to use this knowledge to better support the reflective process of new action researchers. This paper describes the learning outcomes reported by 25 university graduate students in their final written reflections from their published action research projects on the Center for Collaborative Action Research (CCAR) website. Reflections were coded at the sentence level to explore how researchers conceptualised their personal change in knowledge, skills, and identity at the professional, organisational, and scholarly contextual levels. The data were used to examine the nature of change experienced by the action researcher and to inform the continual evolution of graduate-level teaching strategies for preparing new action researchers.

Keywords: Action Research; Reflection; Transformational Change; Identity; Practice, Theory, Knowledge

Introduction

Action research is a form of deep inquiry into one's practice, which involves acting to address issues or problems, followed by a systematic process for learning from that action (Kemmis & McTaggart, 2000; Lewin, 1946; McNiff & Whitehead, 2006; Mills, 2003; Reason & McArdle, 2004; Stringer, 2007). Common to most, if not all, approaches to action research is the assumption that understanding is grounded in experience coupled with an analytic approach to evidence, followed by reflective integration (Reason & Bradbury, 2006).

Action research is collaborative in nature and researchers often enlist others as co-action researchers, partners, critical friends, or advisors (Kember et al., 1997). Action research is collaborative with the participants in the social context. Analysing change from the perspective of these partners, co-researchers,

critical friends, and stakeholders is an important part of action research enabling action researchers to generate findings. This process also results in changes to the action researcher. The discourse with others in the social context is one factor that contributes to transformational learning as described by Mezirow (2003). However, equally central to transformational learning is critical reflection on experience (Kemmis, 2008; Mezirow, 1998; Schön, 1983). The experiences that one has in action research can be powerful, but effective transformational learning generally does not take place without a process of reflection (Criticos, 1993; Merriam, 2004). In this study, we focus our attention on this reflective process.

In our initial efforts to understand the change, we examined the written reflections of 25 action researchers whose electronic portfolios had been published, paying particular attention to how they characterised change. This exploratory review of these reflections, and the review of the literature, resulted in the following theoretical framework.

Theoretical Frames for Exploring Transformational Change

Our efforts to characterise change led us to view the change to the knowledge, skills, and identity of action researchers from the vantage point of three contextual levels: professional, organisational, and scholarly (see Figure1). On the professional level, the researcher focuses inward reflecting on the action taken and any shifts in skills, knowledge, and identity. On the organisational level, the researcher attends to the interactions among the participants that result from the action taken. On the scholarly level, researchers engage in transactions where they share their findings with the research community helping others draw possible implications.

Figure 1: Three contextual levels of outcomes from action research
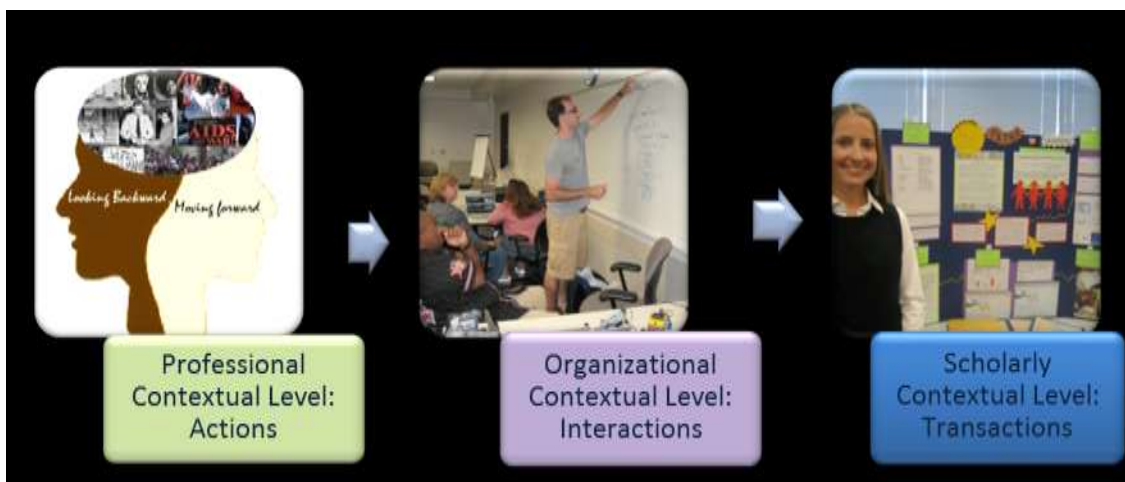
These contextual levels might appear to be similar to Reason and Bradbury's (2006) three broad pathways for action research. They described a progression from individual actions to large-scale implementations that they called first-, second-, and third-person approaches. First-person inquiry describes reflective practice; second-person inquiry involves the enlistment of others in the social setting or community to create change; and third-person inquiry describes a process of patterning behaviours at the macro-level to institutionalise change or to develop a social movement (Wicks & Reason, 2009; Reason & Bradbury, 2006). For these researchers, the first-, second- and third-person approaches described a scaling up of the efforts; the involvement of a larger community with the outcomes of the action solution to create social change. Reason and Bradbury used *I*, *We*, *They* to represent first-, second-, and third-person pathways even though, technically, *we* is first person plural.) While community and policy changes are important outcomes of

action research, in this paper, we are looking specifically at the actions, interactions, and transactions of the action researcher at three contextual levels: professional, organisational, and scholarly.

Our three contextual levels may also appear similar to the three overlapping dimensions of action research—professional, personal, and political—described by Noffke (2009). While her *professional* dimension was used to index the whole profession of teaching, we used *organizational contextual level* to, more narrowly, index the interactive dimensions of the specific action research. Her *personal* dimension is a close match to what we call the *professional contextual level*. Whereas she focused on the person, we use professional context to highlight the context of the person in the workplace—his or her professional identity. Finally, her *political* dimension places action research in relationship to power relationships that control knowledge construction. When we point to the *scholarly contextual level*, we focus on the entry of the action researcher into an arena where the outcomes of his or her action might, hopefully, have political consequences.

Professional Contextual Level: Transforming Knowledge, Practice, and Identity

Action researchers engage in systematic inquiry in their social setting by transforming problems into questions, using the questions to shape actions, and reflecting on the results to create theories that frame new cycles of inquiry (Coghlan & Brannick, 2009). Action research is an iterative approach that takes place across cycles of innovation and reflection resulting in learning from, and through, systematic inquiry into one's practice (McNiff & Whitehead, 2006). Central to this research process is deep reflection, which often generates new avenues for further exploration. Action researchers move past a subjective stance to understand how their actions are viewed from multiple perspectives. Refining actions based on critical assessment of multiple perspectives and reflective insights has the potential to lead to transformational learning (Mezirow, 1998). Through alignment of this reflection with external evidence gained through collaboration, action researchers revisit and refine their theory of action. This process of "progressive problem solving" (Bereiter & Scardamalia, 1993, pp. 96–120) or transformative research moves through cycles of planning, acting, analysing, and reflecting which help researchers use evidence to develop expertise in their work (see Figure 2). Action research, according to Whitehead (2009), is a process of living one's theory into practice.

Figure 2: Action research as a process of progressive problem solving (Riel, 2010)

Progressive Problem Solving with Action Research
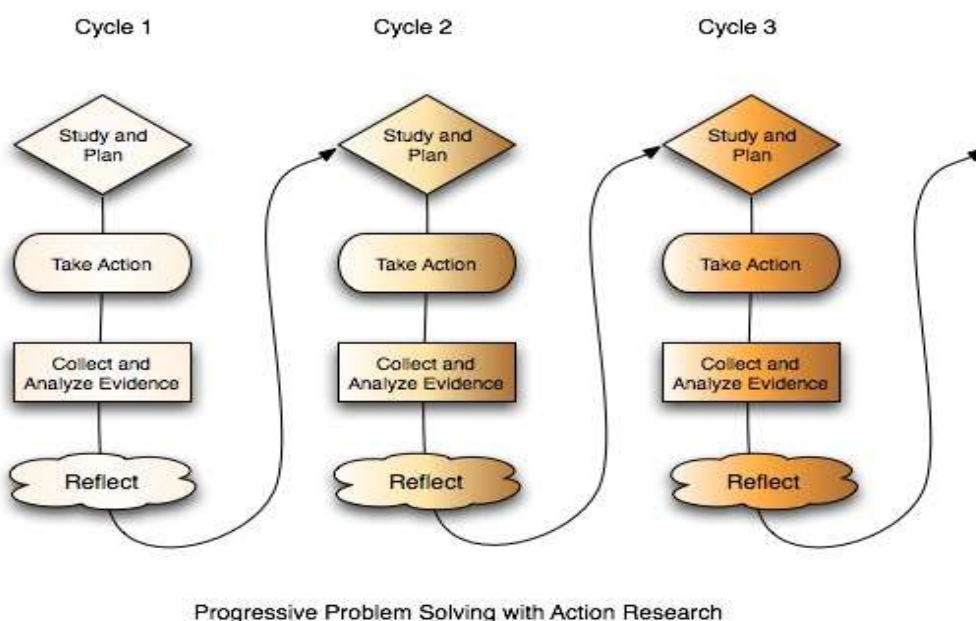
Learning and acting in a social setting is a form of identity management (Engeström, 1993; Gee, 2003). When a new skill is learned, either physical or conceptual, it often changes the person's construction of his or her identity and role in the community (Lave & Wenger, 1991). A person who develops the disposition of continual learning, forms what some have called "adaptive" expertise (Bransford, Brown, & Cocking, 2000; Hatano & Inagaki, 1986). When people use technology to mediate the relationships of others, either through the creation of conceptual artefacts or visualisation of shared cognition, they can take on new leadership roles and identities as community organisers or stewards of digital habitats (Wenger, White, & Smith, 2009).

Organisational Contextual Level: Understanding Complex Systems

Action research is directed at acquiring understanding of the social forces of change that operate in a specific organisational context (Coghlan & Brannick, 2009) through critical dialogue. It is a form of social activism embedded in an effort to understand larger social systems or to understand human behaviour in "fields" (Lewin, 1946). The ability to predict and create change through taking action, tested and developed the action researcher's understanding of the social dimensions in a community or organisation (Miner, 2005). Action researchers often engage their community in knowledge-building dialogue to expand the skills of the group. Lewin suggested that action research was a process to capture the complexity of activity in particular contexts rather than attempting to isolate and study variables out of their context.

More recently, activity theory has been proposed to understand the processes and conditions that lead to organisational change. This approach builds on the Soviet tradition of psychology (Vygotsky, 1978), which placed a high value on understanding the historical, social, and contextual factors that shape behaviour. Activity theory examines change from a systems perspective and Engeström (1987) made use of a set of embedded triangles to indicate the different forces and constraints that operate on change in social contexts. The overlapping triangles represent the "problem space" that can be used to understand human activity.

Figure 3: Activity theory as described by Engeström (1993)
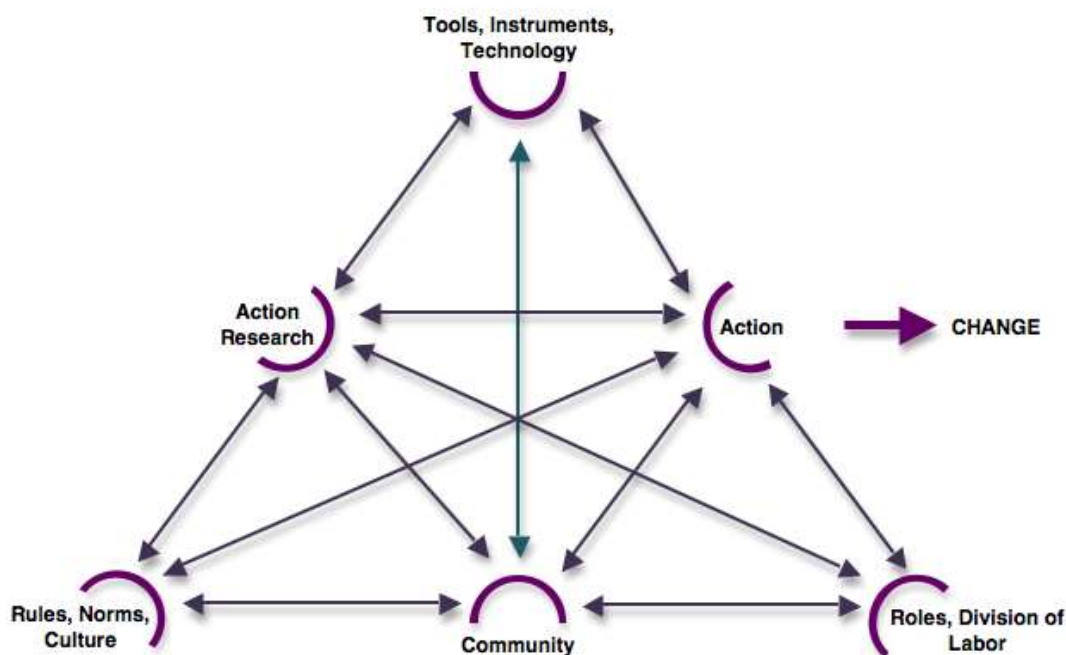
Activity theory predicts that the actions between a person (in this case the action researcher) and a goal will be mediated by a system of relationships and a set of culturally designed tools (Engeström, 1993; Nardi, 1996). The framework (see Figure 3) provides a way to understand how the actions taken by the researcher seeking an outcome are shaped by membership in a community with roles and rules mediated by tools, including technology. The action researcher seeks to understand collaborative, organisational change, which is often directed toward capacity building by fostering collective learning (Heron & Reason, 2006).

Scholarly Contextual Level: Developing the Knowledge, Skills, and Identity of Researchers

When action researchers build their theories of action, methods, and outcomes and make them available for public examination, they are building knowledge that has value for both the local community and for the more extended professional communities (Heron & Reason, 1997; McNiff, 2010; McNiff & Whitehead, 2006).

Action research is very similar to other forms of qualitative research that have emergent, iterative, cyclic, and data-driven properties. These include formative assessment (Black & Wiliam, 2003), constructivist grounded theory (Charmaz, 2008), data-driven decision-making (Mandinach, Honey, & Light, 2006), design research (Collins, 1992; Faste & Faste, 2012; Schön, 1983), and a recent grouping of practitioner–researcher partnerships under design-based implementation research (Roschelle, Knudsen, & Hegedus, 2010, and also see learndbir.org/) that stress relevance to practice as the criterion for rigour (Gutiérrez & Penuel, 2014).

Action research differs from these practitioner–researcher partnerships based on the nature of the relationship. Action researchers play a central role, selecting the research problem and working closely with colleagues in the social context to design change. This contrasts with other partnerships in which the practitioner's role is to assist in research processes defined by researchers who are not participants in the research setting. Action researchers develop an evolving understanding of their setting over time; these other approaches are often completed in a shorter time span.

Action researchers do develop an identity as researcher, which marks them as consumer of research and participant in knowledge construction. While they are not often in a position to offer generalisable findings across settings, they do generate knowledge from their own setting that has value across settings. Many action researchers develop living theories (McNiff & Whitehead, 2006) that account for actions taken and offer interpretations for the changes that take place in context. Their work can either precede and inform experimental or evaluation research, or can follow these studies by exploring the limits of generalised findings. When engaged in this way, action research can provide a path to leadership. The sharing of their research findings with colleagues locally and at a distance is one of the defining characteristics of teacher leadership (Riel & Becker, 2008).

In this article, we explored the learning outcomes of first-time action researchers working towards a graduate degree. Students created online portfolios that captured their work in locating a problem, contextualising the problem in both their organisation and the research literature, planning, and then engaging in cycles of action, collecting, and analysing the data, and reflecting on the process. We chose to use their final reflections, which completed the action research e-portfolios. These research questions guided our research:

1. What does the analysis of action researchers' final written reflections indicate regarding

    a. transformative change at three contextual levels—professional, organisational, and scholarly?

    b. transformative change in knowledge, practice, and identity of the action researcher?

2. How can this analysis support the learning and teaching of reflective writing in action research?

Methods

To arrive at a deeper understanding of the dimension of the change reported by action researchers, we analysed the final reflections of 25 mid-career professionals who engaged in action research in educational, organisational, community, and corporate settings and whose work was published online by the Center for Collaborative Action Research. These peer-reviewed publications represented the 10–15% top-scoring graduate students over the past six years. Because the purpose of the final reflection in their Master's thesis was to report the experiences that researchers thought were most salient, we think these statements are useful in understanding the iterative personal impact of action research.

However, there are limitations to this choice of materials. Because these reports were graded as a part of graduate program coursework, students may have felt some peer and/or professor pressure to report some level of change. However, this pressure does not specify the direction of change. We are not examining the presence or absence of reports of change as much as we are exploring how the change is characterised. It is easy for students to claim change, but it is more informative to examine the evidence they use to explain or support it.

Action Research Projects

While these researchers came from many sectors of work, schools, colleges, museums, organisations, and corporations, they shared in common the use, support, or teaching of technology. Their action research often involved leveraging communication and information technology to create change. This involved the introduction of databases, communication forums, collaborative spaces, or virtual environments into the community. All action researchers designed their projects enlisting the help of supervisors, stakeholders, critical friends, and coresearchers in their research context. They also worked within university level "learning circles" (onlinelearningcircles.org) where action researchers discuss their research methods, analyses, and reflections. The learning circle, as a group, shared the responsibility for the quality of all of the action research projects. Table 1 shows the contexts of the research and gives a brief description of both the problems and projects.

Table 1. Action Research Problems and Projects used in this Study

	Context	Research Problem	Action Research Project
School-Based Action Research			
1	Primary	Computer club was dominated by boys.	Created an inclusive elementary school tech club.
2	Primary	Current student learning did not help students develop their voice in social issues.	Used film and project-based learning to create "student provocateurs" to increase public debate and awareness of local environmental issues.
3	Secondary	Low engagement of computer science students in learning.	Increased student engagement; fostered higher-order thinking skills by creating community work on projects.
4	Secondary	Lack of motivation and engagement in learning a foreign language.	Students used video technology to teach units to each other.
5	Secondary	Students not metacognitively aware of how to understand and direct their own learning.	Facilitated adaptive expertise through a constructivist approach to learning.

6	College	Low student expectations for themselves; some content with "just passing".	Created a culture of multiple revisions with peer and teacher comments; students reworked materials until they received at least a C grade.
7	College	Drop out rate was too high among students in online course.	Focused on a teaching relationship; created a personalised process of review with more guidance for each student.
8	College	Students were learning computer skills but not developing the competence to use them effectively.	Engaged students in authentic technology projects.

Professional Development In Educational Contexts

9	Secondary Students & College Professors	Secondary students have a tough transition to college; college professors needed more technology tutoring.	Created a partnership for learning that involved co-mentoring between secondary students and college professors.
10	New K-12 Teachers	Improvements needed in teacher induction process, with innovative uses of technology.	Created a professional development program with the goal of adding a teacher induction process.
11	Teachers	Technology resources were underutilised in her district.	Helped teachers find and understand how to use technology treasures.
12	Resource Teachers	District resource teachers were working alone in rural settings.	Cultivated a community of practice among itinerant educators.
13	Teacher Program at Museum	Teachers who didn't experience the excitement of historical research didn't share it with students.	Developed a better understanding of the nature of science by using primary sources through teacher interpretation and conversation.
14	Aquarium Educators	Two departments were blended and a new program of learning support for schools was introduced.	Created a program of action learning at a large aquarium.

Administration and Corporate Settings

15	College Administration	Ineffective delivery of student services.	Designed a "one stop" integrated program of delivering student services.
16	Corporate Training	Training in different countries was expensive because the current model was travelling workshop leaders.	Designed a synchronous solution for learning across distances.
17	Corporate Training	Technology trainers used similar tools but did not share their practice or learning with other trainers.	Cultivated a community of practice in a corporate setting.
18	Corporate	The standard training process in an environmental consulting firm was not making effective use of communication technology.	Achieved project management through a community of practice approach.
19	Corporate	Better communication and collaboration practices needed in a corporation.	Developed a collaborative team environment.
20	Corporate	Lack of communication and effective collaboration among software designers.	Built thriving communities of practice with social learning technologies.

Action Research in Organisations

21	Hospital	Multi-state healthcare organisation needed effective ways of integrating streaming media with training.	Developed an on-demand media program for nurses to train other nurses.
22	Research	The help desk in a research unit was overburdened with requests.	Used peer collaboration to build an infrastructure for enhancing technical support.
23	Youth Centre	The children in an island community in Pandytown in the Honduras needed computer literacy.	Develop a program of social entrepreneurship; engineered a movement to increase student access to technology in community centres.
24	Church	More informal spiritual discussion and guidance was needed.	Developed a women-led spiritual group to address the needs of women in the church.
25	Church	A need to train more lay leaders to serve in church ministry.	Developed a program for training of lay leaders supported by online communities of practice.

Analysis

Written reflections differed in length—from 10 to 150 sentences with an average length of 78 sentences (SD = 35). Across the 25 reflections, there was a total of 1,953 sentences, with 58 sentences that were not coded. Non-coded sentences included short, ambiguous expressions, quotes from others, or sentences used as section headers.

We first coded each sentence as describing change in one of three contextual levels: professional, organisational, or scholarly. The level was assessed by determining if the focus was on (1) the professional transformations of the researcher, (2) changes in the collaborative setting or partners in the action research, or (3) the process of doing or sharing their action research. While it was not difficult to distinguish these contextual levels conceptually, a single sentence could begin discussing professional growth, then tie this to collaborative work, and end by sharing an insight about doing action research. Because our rules were that each sentence was coded in only one contextual level, we established coding rules and examples in a codebook to help make these decisions. After training, the two researchers were able to achieve an average rate of intercoder reliability of 87%.

Once coded for level, we then assigned a second code for knowledge, practice, or identity. While some sentences clearly fell in one of these categories, other sentences fell into the intersections of the categories. For example, the sentence, "I am a different person now because I listen more carefully to my students and use constructivist theories to help design effective learning contexts", addresses identity, practice, and knowledge. This was coded as identity because the first verb, "to be", suggested identity. We attended to verb forms to help with coding reliability—"to know" or "to think" for knowledge, "to do" for practice, and "to be" for identity. Although we established coding rules, the average intercoder reliability for this secondary level was 74%. Once these levels of reliability were established between the two coders, the same person coded all of the essays to increase consistency and reliability. The sentences were grouped into the nine categories below.

Professional level—Reflections on self as the object of change, including changes to:

1. Professional knowledge

2. Professional practices

3. Professional identity

Organisational level—Reflections on changes in the collaborative context, including changes to:

4. Collective knowledge

5. Collaborative skills or teamwork

6. Roles and identities within the community

Scholarly level—Reflection on role as researcher, including discussion of:

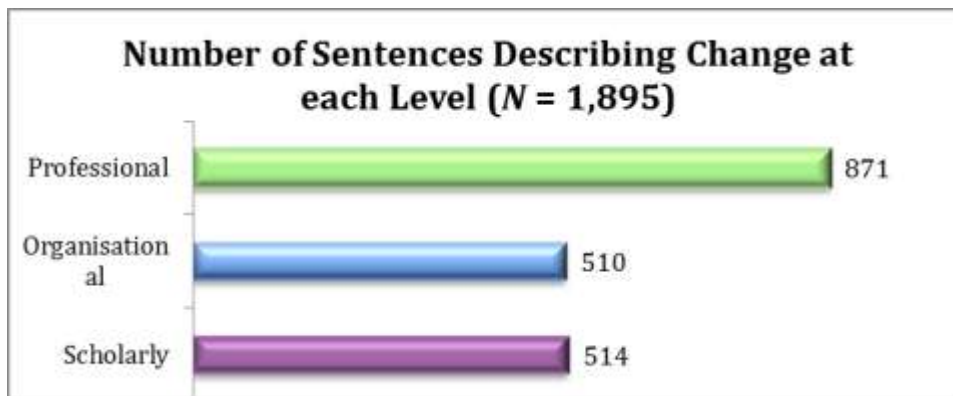7. Research knowledge

8. Research methods

9. Research identity

Finally, for each of the three levels, we used a secondary level of analysis to characterise the content of the reflections. These are described in each section. For the more detailed focus on change at the organisational level, we used the activity theory frame to understand what parts of the system the action research identified as changed.

Results

All 25 action researchers had at least one sentence coded at all three professional, organisational, and scholarly levels. Of the total number of sentences (N = 1,895), 46% were coded as describing change at the professional contextual level with equal frequency (27%) for changes at the organisational and scholarly levels (see Figure 4).

Figure 4: Number of sentences coded at each of the levels (N = 1,895)

Most of the sentences coded in the professional and scholarly contextual levels described changes in knowledge (see Figure 5). This may be an artefact of university-based action research. Students are exposed to a number of ideas and are encouraged to apply these ideas to their action research in the field. Also, they entered the program with minimal knowledge of action research and developed this knowledge as they worked. The discussion of changes in professional knowledge suggests that students used what they learned to help them organise action in their place of study.

Figure 5: Distribution of types of action research changes
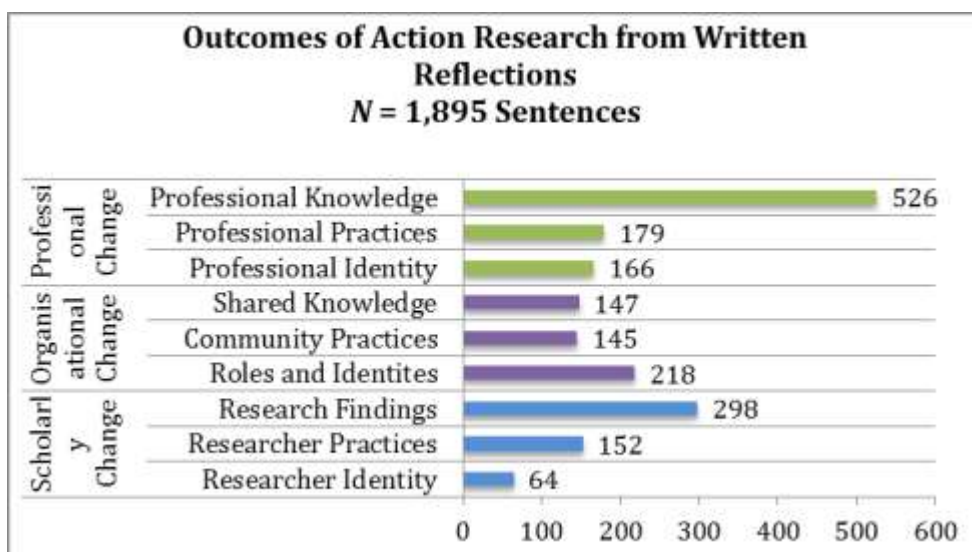
The evidence in Figures 4 and 5 indicates that students did reflect on changes in identity, practice, and knowledge and did so at professional, organisational, and scholarly contextual levels. This finding addressed our first research question.

We examined the students' writing about knowledge, practice, and identity changes to determine what these action researchers said about professional change, their understanding of classroom or organisational change, and their membership in the research community.

Professional Context: Professional Transformation of the Action Researcher

Action research places a central focus on professional change and the reflections highlighted some aspect of this change. Deep learning generally involves identity management; therefore, we expected to see some evidence of change in identity in the reflections. As shown in Figure 6, we found the focus was clearly on knowledge shifts (60%) with a lesser but similar number of sentences describing changes to identity (19%) and practice (21%).

Figure 6: Percentage of sentences on knowledge, practices, and identity in professional change

Professional Knowledge

The largest category, change in professional knowledge, was further analysed into sentences that contained insights, ideas, strategies, and metacomments (see Figure 7) as follows:

- Insights—what appeared to be described as an idea of the researcher

- Ideas—citation of the ideas or theories of others

- Strategies/plans—thinking about how or why a strategy worked

- Metacomments—reflections on their knowledge or thinking.

Figure 7: Change in professional knowledge
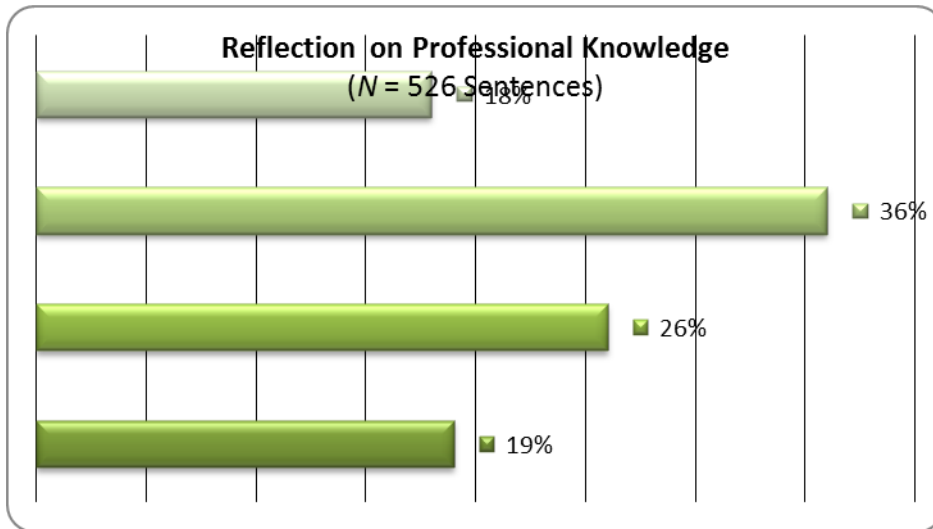
Most of the insights centred on how deeper listening, as seen from the perspective of others or shifting from a central role to a supporting one, had initiated more changes than the researchers originally projected. Some researchers were very clear about how their thinking had shifted from an initial goal of changing others to an understanding of how their own behaviour was inhibiting the change they sought. The largest group of sentences in the professional knowledge change category focused on coming to terms with how ideas of others had shaped the way they now think about their own practice or change in their practice. Some examples are:

- As an educator, I reread the works of these theorists with a different set of eyes; and I found myself marvelling over my own embodiment of the ideas that they proposed.

- Indeed, I have come to appreciate Carl Bereiter and Marlene Scardamalia's view of expert knowledge being the property of a group rather than the property of the individuals composing it (Bereiter & Scardamalia, 1993, p. 21).

Professional Practices

The changes to practices were coded into eight categories. *Theory shaping practice* was used for statements that simultaneously indexed change in knowledge *and* in practice. Many researchers described past practices that were now changed. *Changes to teaching*, *changes to assessment,* and *changes to leadership* were used when a practice was described as new or as a shift from what had been done before. Many of these discussions of change involved a movement away from transmission models toward constructionist models. Changes in practice that were not tied to education were coded as *changes in workplace practices*. The term, *description of practices,* was used for descriptions of skills, without any comparison with the past. Often these were practices such as learning to listen to others, and developing strategies to create the context for thoughtful community dialogue. *General change* was used for sentences that said their practice had changed but no details were included. Sentences that were coded as *plans for the future* described plans to use new practices. The frequencies of these codes are shown in Figure 8.

Figure 8: Number of sentences describing different aspects of professional practice
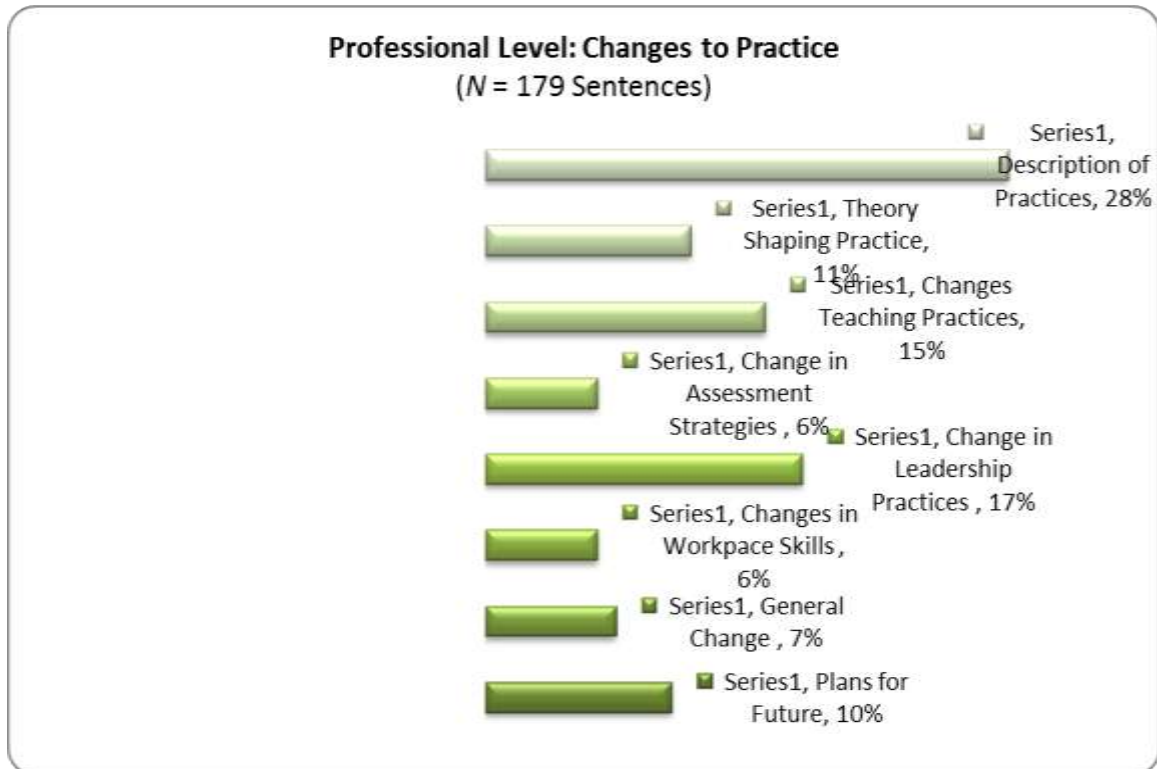
Because these action researchers were students in a learning technologies program, one might have expected a large number of the reflections to centre on the use of technology. In fact, fewer than 10% of the statements directly mentioned the use of technology—generally, online forums, blogs, and community websites. In most of these, the statements focused on a shift in thinking about technology as subsumed under changes in learning, teaching, or leadership. For example, one researcher wrote:

- Rather than incorporating technology lessons into my curriculum because they are "fun" or the "latest thing", I have learned to match my performance tasks with content standards and goals.

Taken as a whole, the sentences regarding practice focused on strategies to create contexts where people could interact in ways that fostered a community approach to learning, a service approach to leadership, and more effective ways to listen to others.

Professional Identity

The statements that referred to changes in professional identity are displayed in Figure 9. We coded three types of statements about identity that described (1) characteristics of identity that existed before engaging in action research, (2) identity changes that resulted from conducting action research, and (3) anticipated changes in the future. Figure 9 shows that 75% of the responses focused on changes that stemmed from the process of doing action research, with 11% looking back in time and 14% looking forward to the future.

Figure 9: Number of sentences describing changes to professional identity

Changes to Professional Identity
(*N* = 166 Sentences)
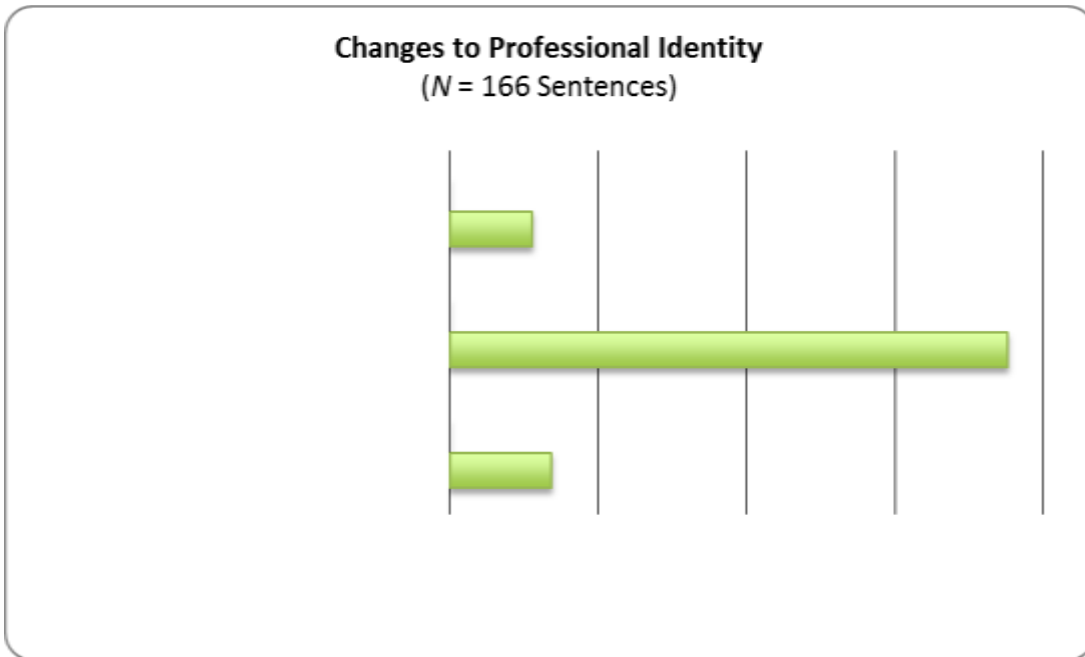
The following two sentences are characteristic of focus on past changes. These sentences generally set up the discussion of current change:

- When I was hired by my organisation to spearhead the streaming media department, I was a soloist alone on stage, playing to an empty house.

- In the past, I acted as an instructor directing the stop-motion film, leading students through worksheets that taught them how to use a computer application.

Of the descriptions of change that took place, during or after the action research, over half centred on shifts in researchers' role responsibilities. These often described a decentring move into a role of supporting the participation of others. While many described the role changes in positive terms, others expressed doubts about the change in identity:

- In my action research project, I was forced to accept certain things about myself.

- Thoughtful reflection has caused me to gain insights, which were nonexistent before my research project, into whether or not my practice was consistent with my values. As with all change and visionary thinking, one must begin with the self.

The researchers also projected change into the future and these tended to be quite optimistic:

- Indeed, it has been a rich, rewarding, and transformational experience—one that will continue to have a long-lasting impact on me both, professionally and personally.

- For me, this realisation makes the future a very exciting prospect.

- Throughout my career, I will wear many hats. I will be a leader in terms of managing the technology, designing learning opportunities, developing strategic plans, and setting a vision for the future, but I will also be a mentor in terms of facilitating staff growth and development among educators.

Organisational Change: Deeper Understanding of the Activity System

There is a different pattern in the analysis of the social setting; 43% of the reflections centred on changes in roles and identities of others or of the whole group (including the researcher). There was an equal focus on changes in the knowledge of others (29%) and changes in group practices (28%) as shown in Figure 10.

Figure 10: Change in organisational knowledge, practice, and identity


For this section, we used the activity theory framework (see Figure 3) to see what types of changes were captured in the reflections. We combined the 510 sentences that focused on identities, practice, and knowledge and coded them all for content related to the double-sided arrows in the activity theory model. Using the 12 possible paired relations, each sentence was examined for any of these relationships. If a sentence contained information about more than one relationship, it was coded for each relationship mentioned. There was an average of 1.75 coded relationships per sentence, with 893 codes from the 510 sentences.

The numbers following the relationship was the number of times that relationship was mentioned in the reflections at the organizational level.

- Action Researcher–Rules, Norms, and Culture: 21

- Action Researcher–Roles and Division of Labor: 83

- Action Researcher–Community: 148

- Action Researcher–Mediating Tools: 49

- Community–Mediating Tools: 147

- Community–Roles and Responsibilities: 111

- Community–Action: 117

- Community–Rules, Norms, and Culture: 79

- Action–Mediating Tools: 26

- Action–Rules, Norms and Culture: 11

- Action–Roles and Responsibilities: 15

- Action–Action Researcher: 86

Figure 11: Reflections about organisational change mapped onto the activity theory model (Engeström, 1993)
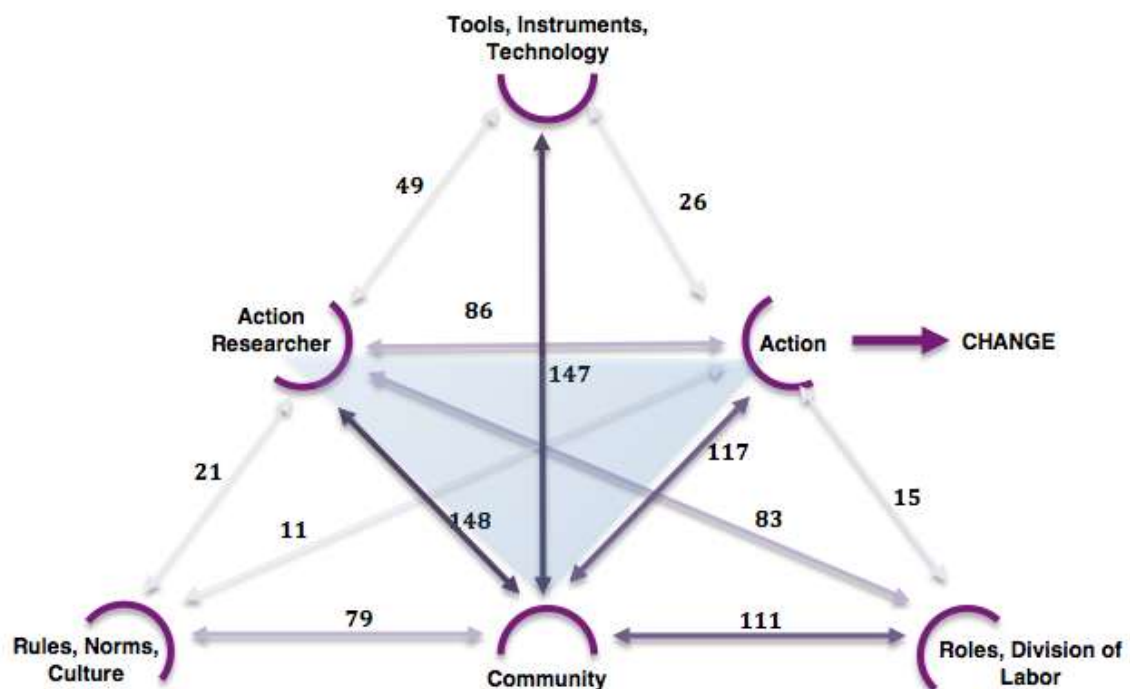
The number of times a relationship was coded is also displayed in Figure 11. Darker, thicker arrows denote greater frequency. Because this set of sentences from the reflections focused on community, it is not surprising that over half of the codes (67%) were anchored on one end to the community. The most frequently mentioned paired relationships were community to action researcher (148 instances), and

community to mediating tools (147 instances). Community linked to the outcome (117) and community linked to division of labour or roles were also frequently mentioned.

If we look at triangles of relationships, the most frequently mentioned relationship is the triangle in the middle (highlighted in figure 11) of the community to action researcher to action (412). Other triangles that were frequently mentioned were the community–action researcher–tools/technology (344), and the community–tools/technology–action (290), and community–action–roles (243). These relationships highlight how the action researchers, working within communities mediated by technology, took action that led to specific outcomes. The stronger focus on shifts in the way roles were defined, in contrast with the changes in culture and rules, suggests that the change discussed was more likely a shift in the way work was accomplished rather than change in the culture or rules of the organisation. What is learned from the whole chart, is that action taken by the action researcher engaged the community, was mediated by technology, and resulted in shifts in roles, expectations, and behaviour.

Scholarly Change: Participation in the research community

Overall, 27% (514 sentences) of all of the writing was coded as describing scholarly level outcomes (see Figure 4). As shown in Figure 12, action researchers focused most of this writing on the knowledge gained from doing action research (58%), then on research practices (30%) and on their growing identity as action researchers (12%).

Figure 12: Reflections about scholarly change to knowledge, practice, and identity
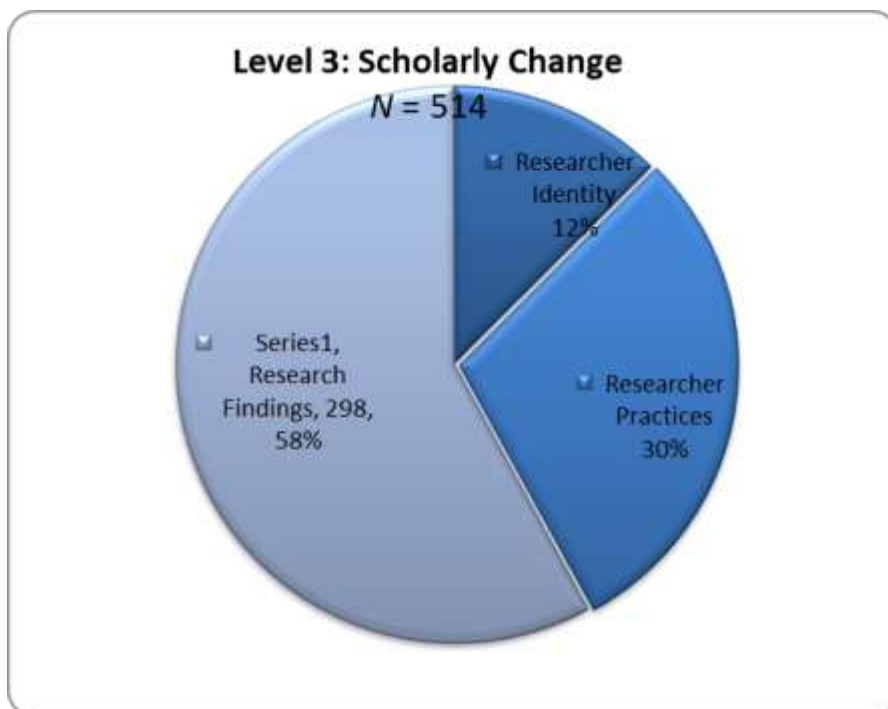
Scholarly Knowledge

Statements about findings, insights, ties to research literature, future plans, and metacomments about the process and the collection of data dominated discussions about scholarly knowledge. Two examples suggested actions that might apply across settings:

- Learning at its best will be in an environment where relationships are formed, dialogue occurs, fun is involved, reflection is encouraged, and the learner has choice in what is learned.
- I think that this demonstrates the value of integrating social learning theory in an organisation's training programs.

Many researchers indicated that their learning had just sprouted, and projected ways that it would continue to grow with future action research projects:

- With the tools I have gained through this past year of research, action, and reflection, I feel prepared and ready to continue the journey.

Scholarly Practice

Some identified specific ways in which their practice changed:

- My action research project allowed me to form a community of practice that encouraged expert thinking and progressive problem solving through the use of streaming media technology.

Most of the 25 researchers stated that they had gained a better understanding of how to apply what they had learned into their communities of practice. Many recognised workplace-specific problems that could now be resolved with their newly acquired skills:

- I found that without research, a plan, careful preparation, and reflection, serendipitous events such as being given district money for teacher technology training would only lead to more unproductive professional development that would not shape change.
- The action research process has not only provided for new ways of doing things, it has caused me to be much more intentional about finding connections among what used to seem disconnected and unrelated events and experiences.

Scholarly Identity

Changes to identity at the scholarly contextual level was the only change not mentioned by everyone (20 researchers of the 25 discussed this change). The smaller number of sentences (64) suggests that their identity as a researcher is not a central focus when reflecting on action research. However, some of the students did describe their growing identity as an action researcher, and their developing membership in the research community:

- Certainly, my action research experience lacked characteristics of professional research, but in some ways I assumed the role of an understudy—a legitimate peripheral participant (Lave & Wenger, 1991) in the community of professional education research.

Others equated their identity with their role of change agent:

- Until this year, I had a hard time thinking of myself as a change agent.

Summary and Discussion

This report is about action research and about doing action research. More specifically, it is about an important process in action research—reflection. We have examined the content of the reflections produced by a set of action researchers to learn more about what changes occur when people engage in action research. This examination produced a framework composed of three contextual levels—professional, organisational, and scholarly—on which to understand changes in knowledge, practices, and identity. By employing systematic and rigorous qualitative research methods, we sought to provide valid evidence to inform the larger research community.

We are also engaged in a process of action research to shape our thinking and teaching practices to support students' reflective processes. The final section is a reflection on how this analysis extends our process of inquiry.

Transformational Change: Professional, Organisational, and Scholarly

Action research involves changes throughout the system. In this paper, we focused on the changes reported by the action researchers who initiated the change process. Often they began with the notion of fixing a problem by changing others' practices and then discovered that they needed to change their own practices and, in fact, their own identity before the change could take hold. Acknowledging the multilevel outcomes of action research, we examined data reflections on change to the action researcher at three overlapping contextual levels: professional, organisational, and scholarly.

The Professional Level

Professional change focused on changes within individuals as they explored strategies to improve their practice. In examining the reflective statements of 25 new action researchers, we found that most of the descriptions emphasised change in knowledge. Since this action research took place within a higher education program, and many of the college courses were designed to be lenses into the action research process, it is not surprising that conceptual change was highlighted. This finding suggests that when practitioners are engaged in action research, they become consumers of research and professional literature.

The Organisational Level

Action research is a process of understanding systems of interactions by seeing how change in one part of the system affects other parts. Here, action researchers deepen their understanding of activity systems, specifically, how roles, practices, and knowledge building interact. Understanding organisational change is part of understanding the reactions to the change initiated. Activity theory provided a heuristic tool for thinking about how systems change. The reflections of these action researchers emphasised changes perceived in the roles of the action research participants. Shifts in interpersonal skills and issues of community development dominated the knowledge, practice, and role discussions. While technology was an important part of the story, in most cases these action research projects involved a process of learning to use technology in the service of other goals. In other words, students moved away from a focus *on* technology integration to a focus on learning or leadership activities mediated *by* the technology.

The Scholarly Level

Research is a social activity where one is drawn into a community that values knowledge building and the sharing of research skills and findings (Cochran-Smith & Lytle, 1999). This activity entails the development of the practices, knowledge, and identity of an action researcher. The developing identity and role of an

action researcher is tied to theories of evaluation and methods of data interpretation. Students appeared to have accepted and internalised their role in the action research community, but they felt less welcomed in the larger educational research community. This was particularly true of students who worked in university settings. It is unfortunate that those who engage in large-scale experimental research sometimes reject the validity of deep inquiry over time. All forms of research have strengths and weaknesses, and knowledge building benefits from the development of "living theories" of learning generated by practitioners engaged in inquiry over time (Whitehead, 2009).

Reflection on Knowledge, Practice, and Identity

We used the concepts of knowledge, practice, and identity to look across all three levels of change in order to determine what we could learn from students' reflections about the process of doing action research.

Knowledge

Over half of all of the statements in the final reflections were about knowledge. And over half of these (58%) were about professional knowledge tied closely to their context. The researchers discussed generalised findings and made comparisons of their findings to research theories, models, and concepts (31%). The rest of the knowledge discussion described the changes in community knowledge. At the content level, both the professional and scholarly knowledge gave evidence of a move toward more social constructivist theories of learning, assessment-driven instruction, and theories of service leadership. This evidence of movement back and forth between theory and practice validates an important dimension of action research.

Technology was reconceptualised as a mediating tool. Those students who discussed technology in their reflections described how their focus had shifted from merely using more technology tools to one of learning, leading, or community building with technology.

Practice

Statements about practice accounted for 25% of the data that was split almost equally across the three levels. The most common shift in practice centred on listening to others and facilitating a process of dialogue where others were also challenged to listen and build on what was shared. In the classroom setting, the change involved giving students more voice and ownership over their work. Teachers wanted to be more involved and engaged in solving problems. Students working in corporate and organisational settings reported learning how to foster a community of practice so that participant-researchers felt a sense of ownership and leadership consistent with what they read in work of Wenger, White, and Smith, 2009. The major change in practice centred on actively listening to others, which often changed the nature of the problem they were investigating.

Identity

A quarter of the reflections discussed changes in identity and role expectations for themselves and their collaborators. Almost half of these sentences described how roles and identities in the social setting had shifted. Another third of the sentences described shifts in their professional roles and identities. The rest (about 14%) described changes in their roles and identity as researchers. The most consistent shift in identity resulted from their surprise at the power of their own agency in initiating change. The progressive cycles of action research often increased the reach and size of the change. This process led to changes in the way the researchers saw themselves and in the way others saw them. In classrooms, this was often a shift away from being the provider of knowledge to the facilitator of assessment and feedback. In the

workplace, the shift was from advocacy leadership to distributed leadership, with increased effort to involve the community in shared decision-making and goal-setting processes.

A Meta-Reflection on Reflection

The first author of this paper engaged in this analytic process for two purposes: to understand better the outcomes of action research, and to evolve new strategies to support reflective writing. Students often return to university with keen observational skills from years of experience and, some, with strong descriptive writing skills. But most need help with developing reflective writing skills. Reflective writing helps action researchers focus on themselves and their role at the centre of their research. Reflective writing explores what is meant by holding oneself accountable for everyday learning. Without a good record of daily or weekly learning, it will be hard to understand change over time. This analysis of the work of past students has helped the first author to evolve a framework to help new action researchers learn how to reflect. Based on this analysis, the following advice is now offered to those who struggle with reflective writing.

1) Personal Change: Think about any personal changes during this cycle. Maybe you tried to address an issue at your workplace. Is this how you expected things would develop? Why do you think it did or did not turn out as you expected? Do you see yourself as a problem solver? What has been some of your experience in solving problems in the past? Are you different in different contexts? For example, would you have been more likely to have solved this problem if it was located outside of work? In your past, how have you oriented toward problems or issues like this? Do you normally wait for others to solve them or would you have done it in a different way? When you and others came up with this plan, was there a time when you worried it would not work? Was there something that you can point to that you learned about yourself that helped make it work? Have you changed the way you look at problems or at least at common ones? Do you see any difference in the way you approach others? Do you think that others see you differently?

2) Local Change: Think about how this action affected others. Do you think they understood the goals in the same way as you did? Do you think that they might have wanted a different plan? Were you surprised by their reactions? Did they appreciate your efforts to solve the problem or did they feel left out of the process? Who owned the problem at the beginning? Who owns the problem now? Why do you think this is the case? What are the norms—the unspoken rules—that shape behaviour? Did this project challenge any of these norms? Did you see any evidence of norms shifting? What about the division of labour within the group—has this shifted? Do you have a better understanding of the forces for change in your workplace?

3) Conceptual Change: Metacognition is thinking about your thinking. Have your ideas changed in anyway? Maybe you expected that it would be easy for others to learn a new system, but you realised that not everyone approaches a learning task in the same way. Maybe you understood something about the way ownership of the problem, or your identity as a problem solver, interacted with learning. Maybe there was something about leadership that you read and were able to put into practice in this cycle. Were there any principles of learning, change, or interaction that you see in a different way that you would like to share with others? Think back on what you read; look back on your notes. Did you see any good examples of theoretical concepts? Maybe you saw an example of Vygotsky's zone of proximal development in practice or saw how Lave and Wenger's legitimate peripheral participation works in a community of practice. Think about how these ideas might become a part of your action research presentation.

In this way, the analytic framework of knowledge, skills, and identity shifts considered on professional, organisational, and scholarly levels helped students to examine their own experiences. This analysis of the reflective process of past students and the framework developed may help current students attend to experiences that they might have missed. In this way, this analysis serves as a conceptual tool that we use

in cycles of action research to help improve university-teaching practices. The evidence that we are being effective in helping novice action researchers develop their reflective writing skills will be in the reflections written by more students. So, the analysis in this paper serves as the material for the first of ongoing cycles of action research focused on improving the teaching of reflective writing.

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