An Action Research Inquiry: facilitating early childhood studies undergraduate researcher development through Group Supervision

This paper reports an Action Research Inquiry that aimed to develop research supervision as a learning strategy, in order to facilitate early childhood undergraduates' completion of a primary research project and dissertation in the final year of their degree programme. Researchers in this context are conceptualised as a community of practice where there is a common goal for undergraduates to become researchers. In this community, supervision accompanies students along their research project; it provides opportunities for learning for the supervisor and the student. Communities of Practice are spaces for social learning. The objectives of introducing supervision as a group social practice were to provide a space to develop researcher identity, apply research skills and make sense of the experience of research. Group Supervision represented a shift in teaching and learning practice. Action Research was applied as a research method. Such an approach placed emphasis on the participation and collaboration of lecturers in a strategy for changing practice. The research was conducted in an urban University in the United Kingdom. One cycle of action research was completed. Findings from the study suggest Group Supervision is valued and understood, by lecturers and students, as a social learning process that facilitates students' completion of their undergraduate dissertation. However, findings indicate that tensions exist within the pedagogy - arising from both the epistemic beliefs of lecturers about how students learn research skills and the ways in which the pedagogy privileges oral communication.

Keywords: Group Supervision, undergraduate research, dissertation in early childhood, action research.

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Introduction

The status of the final year research dissertation in undergraduate programmes in Higher Education has been well explored within the academic literature. The dissertation has a place of central significance in the learning process as it provides opportunities for students to demonstrate learning skills acquired throughout their undergraduate programme (Rowley and Slack, 2004). Whilst it is 'substantial and independently worked upon' (Webster, Pepper and Jenkins, 2000, p.72) there are also opportunities for a deep approach to learning as students make choices on the focus and method for their research (Todd, Bannister and Clegg, 2004). Within the United Kingdom (UK) the subject benchmarks for Early Childhood Studies (ECS) undergraduate degrees identify subject specific skills where learners are required to 'initiate, design, conduct and report an early childhood research project under appropriate supervision with a high degree of competence, and demonstrate a highly developed ability to recognise its theoretical, practice and methodological implications and limitations' (QAA, 2014, p.19).

A question that emerges here is what constitutes appropriate supervision? Supervision, as a learning and teaching strategy, will operate most effectively when there is a constructive alignment (Biggs, 1996) between the expectations placed on learners, the form of supervision and the dissertation as the mode of assessment. Central to this inquiry is a consideration of how supervision can be shaped to support the constructive alignment of these elements.

Situated in a post-1992 University in the United Kingdom this Action Research Inquiry focuses on the strategy for research supervision on the ECS undergraduate degree. As an inter-disciplinary field of studies ECS embraces the fields of sociology, education, psychology and social policy. Within the discipline of ECS there is emphasis on students developing a critical understanding of their paradigmatic positions and the positionality within the discipline (Moss, 2019) in order to navigate hegemonic and alternative narratives within theory and the literature about young children, families, communities and early childhood practitioners. Narratives emerging from undergraduate research can reveal new perspectives on issues in ECS. I suggest that such disciplinary characteristics provide layers of complexity for students within their final year research project. Ashwin, Abbas and McLean (2017) argue that

undergraduate dissertations provide creative opportunities for student engagement with subject specific knowledge in order to address specific research questions.

Undergraduate programmes in ECS and many other subject areas, can be conceptualised as a Community of Practice; this theoretical lens is helpful in revealing the social learning practices in this context. Wenger (1998) aligns practice and community through three connected dimensions. Firstly, there is a joint enterprise within the ECS course which is a common goal shared by lecturers and students of students becoming researchers. Secondly, there is a shared repertoire of research methods that are discipline specific. This not only connects the community through common activity but promotes opportunities for dialogue about research methods in the field. Thirdly, ECS undergraduate courses are spaces for mutual engagement where students and lecturers are engaged in research activity whose meaning they negotiate with each other. Such spaces support the sustainability and maintenance of the ECS research communities as lecturers induct students into the practices of research. Wenger (ibid) suggests that, within any Community of Practice, learning is social participation which is 'an encompassing process of being active participants in the practices of social communities and constructing identities in relation to those communities' (p.4). Seen through this theoretical lens the ECS undergraduate course is a social community that aligns the research practice, the research community and the formation of researcher identity. Supervision of research in this context must support the social participation of students in the research community and in research practice in order to maximise opportunities for learning and the formation of identity.

The Action Research Inquiry arose from dialogues between lecturers in ECS about the successes and struggles of undergraduate students as they become researchers. Lecturers shared their perspectives on the existing framework of one-to-one supervision in which they recognised the dependency of the student on their supervisor and the lack of opportunities for peer learning within the student group. Students' evaluation of teaching and learning revealed a perception of inconsistency and inequality in the existing framework of one to one supervision and this echoes findings from an earlier study on students' experiences of supervision (Roberts and Seaman, 2018). In the year preceding the start of the Action Research Inquiry the pass rate for students on the first submission of their dissertation was 78% *(n=129*). Lecturers in the ECS team questioned whether the approach of one to one supervision was sustainable given that it

was not enabling all students to successfully complete their dissertation, leading to the exploration of alternative models of supervision.

As a leader of pedagogy, working with other lecturers, I initiated an Action Research Inquiry that aimed to develop supervision as a learning strategy to facilitate undergraduates' completion of a primary research project and dissertation in the final year of their programme. The inquiry is guided by the following questions:

- How might we develop supervision as a teaching and learning strategy in the context of undergraduate research in ECS?
- How might we support undergraduate students in completing their research project and dissertation through a change of practice to Group Supervision?

In this paper I report on one cycle of the action research spiral, spanning one academic year, recognising that the outcome informed further cycles of action research in subsequent years. Firstly, I provide a rationale for Group Supervision as a teaching and learning strategy. Then I discuss action research as a methodology to guide this inquiry together with a critical consideration of ethical principles and practices. This includes a description of the plan of action for the inquiry. A presentation of the results from the first cycle of action research follows. Subsequently I discuss the findings from this inquiry through the lens of both social learning theory and the theory of communities of practice. Central to this discussion is sharing the learning from this change in research supervision practice. I conclude with recommendations for future cycles of action research.

Our rationale for Group Supervision as a teaching and learning strategy

Planning the change in supervisory practice involved a review of recent research literature examining undergraduate research supervision. As an Action Researcher I found that engagement with this literature was valuable in challenging and extending

my understanding of undergraduate research supervision. Sharing critical perspectives from past studies with the group of lecturers teaching in ECS generated debate and discussion about the way forward for undergraduate research supervision. Whilst the initial literature search did not find studies focused on research supervision within the discipline of ECS there is a more extensive literature within the field of social sciences. This principally focuses on the one to one supervisory relationship between the student and supervisor. Many studies highlighted the problematic area of social relationships within the one to one supervision structure. Del Rio, Diaz-Vasquez and Maside Sanfiz (2018) suggest that supervision is characterised by the conflict between enabling autonomy and providing support for the student. Similarly, Todd et al (2004) found that the key issue for students is the balance between freedom and structure within the supervisory process. Furthermore, Rowley and Slack (2004) emphasise that supervision is a learning process for both the supervisor and the student; including the supervisor developing an understanding of the students' process of learning as they navigate ambiguity and uncertainty inherent in research. Derounian (2011) observes that individual supervision is not universal practice and that in many universities undergraduate supervision is undertaken in groups. Furthermore, he suggests that, whatever the mode of supervision, the management of relationships between supervisors and students at all stages of the dissertation project is a prevailing issue.

Two studies exploring alternative approaches to undergraduate supervision are situated in different disciplines. Akistar et al (2006) report on a shift from individual to the Group Supervision of social work undergraduate dissertations placing an emphasis on learning opportunities in the group context. They found that students in Group Supervision not only had a much higher completion rate but a greater interest in their studies. Significantly, findings from this study suggest that the 'interactive nature of the

small group experience decreases student isolation and encourages the students' aspirations through the sharing and interaction of their peer group' (p.12). Similarly, Baker et al (2014), in a study of nurse education, reported on the introduction of a Group Supervision approach that centred on action learning. They found that students were aware of the learning resulting from listening to the experiences and questions of their peers as well as their own active contributions to discussion. Students in this study also emphasised the importance of the academic contribution of the group supervisor in parallel to the contributions of peers. This suggests the potential for learning arising from undergraduates engaging in research supervision as a group practice.

Informed by the learning from the above studies, as a group of lecturers, we repositioned research supervision from an individual to a group practice, we conceptualised the group as a space where learning arises through social participation. Wenger's (1998) components of a social theory of learning underpin this pedagogy of Group Supervision (see Figure 1). He suggests that any social theory of learning must integrate components that characterise social participation; these are community, identity, meaning and practice. In this way Group Supervision focused on aspects of learning associated with practice (the doing of the research), community (the shared endeavour of the research), identity (developing as a researcher) and meaning (the lived experience of the research).

Figure 1. Group Supervision as a social theory of learning

Based on Wenger (1998) components of a social theory of learning.

The learning space of Group Supervision enables connections to be made between the abstract principles of research and students' individual research projects. This provides the opportunity for students to exercise agency as they navigate entry into Community of Practice of ECS; by becoming researchers students enter the academic research community, develop their researcher identity and learn about the practice of research in ways that are meaningful to them. Within this model both lecturers and students have complex roles as group members. Wenger's concept of 'brokers' (p.109) is potentially helpful here; lecturers and students make connections through participation in peer learning, group activities and introducing elements of research practice. This means that for students learning involves real opportunities to engage in and contribute to the practices of undergraduate research. Following the decision to

move to Group Supervision this strategy was then researched through an action research approach.

Methodological discussion

Action Research as a collaborative process

The application of action research as a research strategy within contexts of communities of practice is well established within the field of education. Ampartzaki et al (2013) argue that action research and communities of practice both focus on the ways in which participants 'negotiate knowledge, improve situations and find effective solutions to issues and problems' (p.4). In this sense, I suggest that, there is a synergy between these two frameworks through their focus on situated learning as a form of action in practice contexts. The alignment of research and action has the potential to reveal the ways in which an ECS undergraduate degree can adapt in order to improve students' experiences of research. Furthermore, Communities of Practice are social worlds that are constituted through social practices that are in a constant process of transformation and change (Lave and Wenger, 1991). As an action researcher I worked with other lecturers in a dynamic relationship (McNiff, 2017). We anticipated that our understanding of supervision in undergraduate research would change as a result of the inquiry.

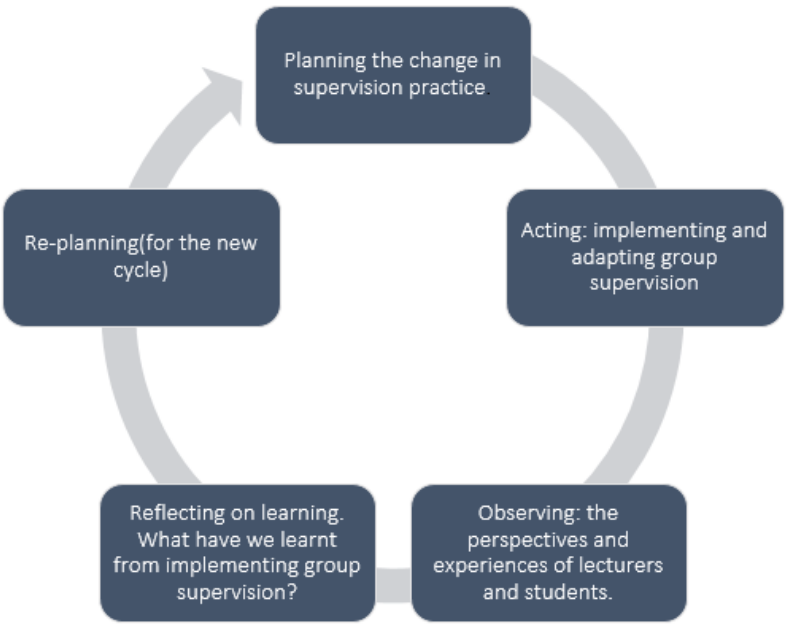
The action research cycle – an overview

Action Research as a methodology in this study is understood as a 'practice- changing practice' (Kemmis, 2009, p.463). My action as a leader of pedagogy in ECS is inseparable from the process of research. Working with a group of lecturers I applied Kemmis' notion that action research aims to change three things: practices, understandings of practice and the conditions of practice. In the context of this study, we aimed to change the practice of undergraduate research supervision by introducing a

group approach to supervision and repositioning the pedagogical environment as a social space for learning. The rationale for Group Supervision is addressed elsewhere in this paper.

An adaptation of Kemmis, McTaggart and Nixon's (2013) conceptualisation of action research as a self-reflective spiral of repeated cycles of planning, acting, observing, reflecting and re-planning was applied in this project and this is represented in Figure 2. Each cycle is viewed as an integrated whole that leads to new understandings and knowledge of practice (McNiff, 2013). The self-reflective spiral is closely aligned with our cycle of planning for teaching and learning in an academic year. I suggest that this further supported the integration of research and action in this inquiry.

Figure 2. Action research cycle



Adapted from Kemmis, McTaggart and Nixon (2013)

Planning and Implementing the Action

The cycle began with lecturers in the ECS team meeting to explore the possible options for changing the model of supervision. The rationale for group supervision emerged from this discussion. Following the decision to implement Group Supervision nine lecturers volunteered to teach on the undergraduate research module and participate in the Action Research Inquiry. A summary of the opportunities, across the academic year, for lecturers to shape and influence model of Group Supervision is included in Table 1.

Table 1. Summary of opportunities for lecturers to collaborate

Pre Semester Activity	Semester A	Semester B	After the assessment period
ECS Team Meeting (all lecturers in early childhood studies)	Two Discussion Meetings for the nine lecturers who volunteered to participate in the Inquiry	Two Discussion Meetings for lecturers	Semi-structured interviews (ten lecturers participated as an additional lecturer had joined the team). Discussion Meeting for lecturers Re-planning meeting for next year

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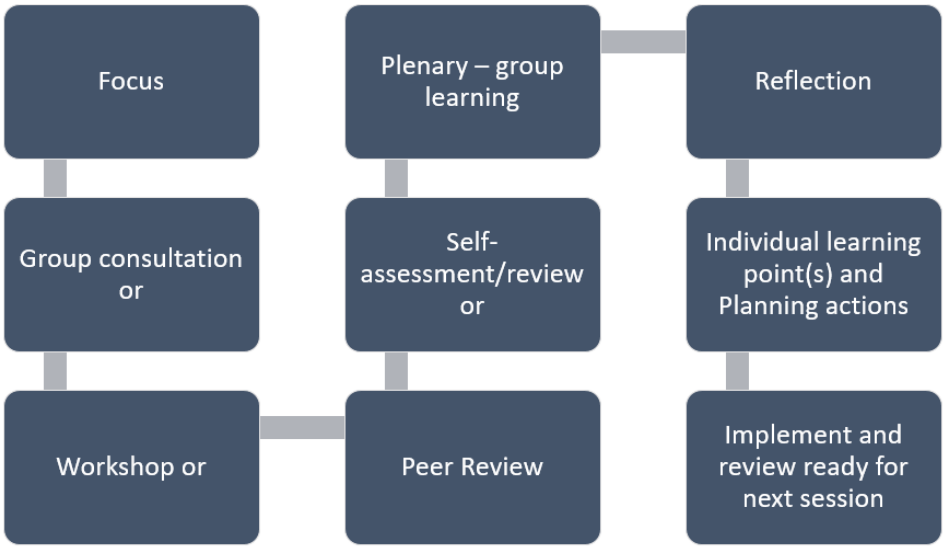
In Semester A the nine lecturers who had volunteered to teach on this module, participated in two discussion meetings where they explored the pedagogy together with the structure, focus and resources for each supervision session. In order to ensure the alignment of the pedagogy of Group Supervision, learning outcomes and the assessment task, a structure of 9 Group Supervision opportunities was planned across the two semesters of the module; each semester lasted 12 weeks. A Group Supervision session lasted for one hour and thirty minutes and was focused on a distinct phase of the undergraduate research project. Group Supervision 1, for example, focused on framing a topic, title and research questions. Each Group Supervision session aimed to create opportunities for social participation and engagement in learning by establishing a rhythm of tasks and activities (see Figure 3). The process of students' reflection on their learning about research skills and their own project was central to the group supervisory process. We applied Schon's (1983, 2016) structure of reflection in action which encouraged students to question all aspects of their research project and their understanding of research concepts and practice. In doing so students were encouraged to apply theoretical knowledge of research methods in ECS introduced in the lectures and extended through independent reading.

Figure 3: A visual plan of Group Supervision



During this extensive planning stage lecturers further refined the model of Group Supervision. This extended to planning the physical arrangement of the learning environment where students and the lecturer sit in a circle or horseshoe arrangement to promote social participation. All the resources were available to lecturers on a dedicated section of the virtual learning environment for the module in order to promote collaboration.

In the action phase of the cycle, during Semesters A and B, we arranged the students into 18 groups of between 10 and 15 students. The nine lecturers each facilitated supervision for two groups of students. Each group had nine supervision sessions distributed across 24 weeks. During this phase of action, I had informal discussions with individual lecturers after each supervision session as part of a pro-active strategy of gathering their perspectives. Two further discussion meetings for lecturers took place in Semester B. They provided the opportunity for sharing experiences and suggestions for change. During these meetings lecturers considered and responded to the anonymised student evaluations of teaching and learning on the module. Through this dynamic process the model of Group Supervision was modified during the phase of action.

I observed my own action as a pedagogical leader through a reflective journal and this provided a confidential space to reflect on the perspectives of my colleagues as well as my own experience of leading Group Supervision. The observation phase enabled me to further explore with lecturers, through semi-structured interviews, their experiences of Group Supervision and recommendations for change. Similarly, I sought to gather the experiences of students through semi-structured interviews. The interviews concluded the observation phase and were conducted only after assessment was completed and the students were awarded their degrees. The lecturers then entered a phase of re-planning Group Supervision for the next academic year through a further discussion meeting; this was informed by the anonymised data from the interviews and my reflective journal. During the re-planning phase lecturers made recommendations for the modification of Group Supervision and for other aspects of pedagogy on the module.

Ethical practice, data collection methods and participant voice

Throughout the project I was concerned about my positionality as an Action Researcher in relation to lecturers who were collaborating in the research; McNiff (2016) argues for clarity in relationships at different stages in the research project. I position myself as open to the views of others and willing to learn from them. As the study was conducted within a Higher Education Institution, ethical protocols had to be observed; ethical clearance was sought and obtained from the University's Research Ethics Committee. Anonymity is a significant issue in action research particularly in work-based contexts; McNiff (2013, 2016) highlights that some colleagues may wish to be named in recognition of their contribution to the process whereas other colleagues may request anonymity. However, the University Research Ethics Committee granted ethical approval on the condition that there was anonymity for the institution, students

and lecturers. The committee specified that no quotations could be used from data as there was a risk that people could be identified by their tone or phrases. However, this practice potentially limits the voice of participants in the reporting of the study and risks researcher bias in representing the views and perspectives of participants. I adopted an ethical praxis that McNiff (2013, p.113) frames as morally informed action. In the writing of this paper I aimed to incorporate the perspectives of participants shared in our group discussion meetings and the semi-structured interviews. I recognise that this approach cannot convey participant voice in the same way as quotations.

Prior to commencing the Action Research, the informed consent of the gatekeeper (the Head of Department) and my colleagues (lecturers leading undergraduate supervision) was sought. This was achieved through a process of oral presentations and the provision of written information together with the opportunity for one to one discussion. Whilst the lecturers delivering Group Supervision had on-going opportunities to contribute to the project, I tentatively suggested that semi-structured interviews may provide additional insights into their diverse experiences of Group Supervision. I adopted semi-structured interviews in order to provide colleagues with the opportunity to share individual accounts of their experiences of group supervision; this depth of description might not have been possible had I opted to hold focus groups. Interviews took place with 10 lecturers as an additional person had joined the team in the middle of the academic year. Although students were not collaborators in the inquiry their experiences of Group Supervision were central to understanding the implications of this change in practice. Accordingly, I sought volunteers from the 211 students who had experienced Group Supervision and had submitted their dissertation. Nine students volunteered to participate in the interviews; this was a convenience based approached based on the availability and willingness of students (Robson and

McCartan, 2016). However, a potential limitation is that the students in the sample would not necessarily reflect the diversity of experience and perspectives of all students on the module. Students who had not yet submitted their dissertations could not be included in the sample as their assessment was in progress.

In the semi-structured interviews with lecturers and students dialogue was prompted by a series of open questions focused on perspectives on and experiences of Group Supervision as well as improvement suggestions. I recognise that interviews are shaped by the contexts in which they take place (Alvesson, 2002). In this context where I was an insider leading action research and there were complex ethical considerations. I obtained informed concept from lecturers and students through the provision of participant information sheets and invited them to give formal consent to the interview. I was aware that power relations also arose from my relationship with students. As a lecturer I held responsibility for assessment of dissertations. For this reason, students were invited to volunteer to share their experiences only after the assessment of their dissertations. The risk of a perception of coercive practices was mitigated by this action. Through these strategies I strove to counteract the potential issues of power relations that arose from my own position as a researcher (Kvale, 2006). The interviews with students and lecturers lasted between 45 to 60 minutes and were recorded, with consent from the interviewee, and then subsequently transcribed by a professional transcription service. At all stages oral and transcribed files were anonymised as all participants had been allocated a code. Files were also password protected.

Further data was collected through a reflective research journal where I differentiated episodes of action (what happened in the Group Supervision) from episodes of learning (my learning) (McNiff, 2017). The focus of the journal was my action as a lecturer and did not include reference to the actions of students. I adopted a

disciplined process of reflection in action (Schon, 1983, 2016) during each session of Group Supervision supporting my focus on learning. By shifting my position from the 'tacit knowing in action' (Schon, 1983, 2016, pp.49-50) to a position of reflection in action I began to question the basis of my knowledge, understanding and actions in facilitating Group Supervision.

Strategy for analysis of data

The interviews and my reflective journal were subjected to qualitative analysis through a coding procedure. Codes are understood here as 'as labels that assign symbolic meaning' to the data (Miles, Huberman and Saldana, 2014, p.71). Here I applied Saldana's (2013) stages of first cycle and second cycle coding. In the first cycle I assigned descriptive codes linking sections of data with the dimension of the social theory of learning (meaning, identity, practice and community). In the second cycle of coding I adopted a strategy of pattern coding; this enabled the identification of emergent themes to provide a deeper level of understanding of the experiences within and perspectives on Group Supervision. The pattern codes were derived from the data but related to the perspectives on and experiences of Group Supervision. Coded text could be individual words, phrases and sentences that exemplified the meaning of the code. Emergent themes from this second cycle of analysis of data were then shared with the lecturers, as collaborators in the research, who were invited to respond and consider ways in which Group Supervision could be modified in the next academic year. This strategy of member checking acted as a counterbalance to the potential domination of my voice (Miles, Huberman and Saldana, 2014) and was consistent with the collaborative and participatory principles underpinning this action research inquiry.

Findings

The first cycle of action research began in the September with the introduction and implementation of Group Supervision as a teaching and learning strategy. The cycle concluded 12 months later when the lecturers met to engage in re-planning for Group Supervision ready for the next academic year. I present the findings from the first cycle of action research including the outcomes for students and the themes emerging from the analysis of the perspectives and experiences of Group Supervision. I use the term 'supervisor' in reporting the interview data to represent the pedagogical role of lecturers. I use the term lecturer when reporting the data from the planning, discussion and re-planning meetings.

Outcomes for students

At the end of the first action research cycle 90% (*n=191*) of students, who submitted their dissertation, passed at the first submission opportunity; an increase on the previous year where the pass rate 78% (*n=129*). Robust marking arrangements were put in place to minimise the risk of bias on the part of the lecturers. Arrangements were aligned to the university's assessment policy and included, for example, the application of a rubric in order to grade work against the learning outcomes and moderation of marks by an External Examiner. Whilst a larger proportion of students passed at the first submission opportunity some caution needs to be exercised in attributing this improvement to Group Supervision as the profile of student cohorts varies across academic years. In my journal I reflected on discussions amongst the supervisors about the outcomes for students and concluded that the reasons for dissertations not reaching the benchmark for a pass were complex and multi-layered, for example, some students had not secured a research setting. There was also a small proportion of students (*n=10)* who had not submitted the dissertation at the first opportunity. Supervisors found that students who had not participated in Group

Supervision or other learning opportunities in the module were the same students who did not submit the dissertation at the first submission opportunity. In my reflection I noted that the process of Action Research had generated this discussion about student completion and participation. The close monitoring of student participation in Group Supervision had also led to the module leaders prioritising students for individual consultations regarding their research projects and signposting students to pastoral services or academic skills support offered by the University.

Perspectives and experiences of students and supervisors

In this section I report the themes emerging from the analysis of the interview data, meetings and my reflective journal as a way of sharing the perspectives and experiences of Group Supervision in this first cycle of action research. It is important to note here that the reporting of this inquiry is significantly affected by University Research Ethics Committee's requirement that quotations from lecturers or students should not be used in any dissemination. Whilst this ensures anonymity and confidentiality this practice limits the voices of people who collaborated to this Action Research Inquiry in the communication of the project to a wider audience. In presenting the analysis of findings I am aware that caution needs to be exercised as this is a small-scale inquiry. The themes are arranged within the four dimensions of the social theory of learning (meaning, identity, practice and community) that underpin the pedagogy of Group Supervision and are presented in Table 2.

Table 2. Summary of themes: perspectives on and experiences of Group Supervision

Code	Themes
Meaning	APPLIED RESEARCH SKILLS (supervisors and students)

	The research cycle took on meaning through the experience of completing the research activities in Group Supervision. However, some students experienced a disconnect between the stage of their research and the focus of the supervision session, particularly if the student had been absent from the Group Supervision sessions. RESEARCH DIALOGUES IN GROUP SUPERVISION (supervisors and students) Dialogues focused on research methodologies and the research topics; this supported problem solving and enabled students to make sense of their research. GROWING AS A RESEARCHER (supervisors) Supervisors were prompted to reflect on their experiences of being a researcher and what they had learned from the dialogues within the Group Supervision particularly regarding their understanding of research methodologies.
Practice	RESEARCH FRAMEWORKS (supervisors and students) Experience of research frameworks (e.g. ethics, analysis of data) during Group Supervision supported engagement with research skills and subsequent application in the project. ACTION ORIENTATED (supervisors and students) The focus on planning and action within the framework for Group

	Supervision supported students in sustaining impetus in their project. However, some students lost momentum with their research project if they did not attend Group Supervision. ALIGNMENT OF GROUP SUPERVISION AND RESEARCH PRACTICE (supervisors and students) Group Supervision practices (e.g. self-review, problem solving, reflection, action planning) were aligned with the research skills needed for the dissertation.
Community	PEER LEARNING (supervisors and students) Group Supervision provided an opportunity for mutual engagement in research topics in early childhood and in peer learning. However, not all the students had developed the skills and confidence to engage in peer learning. For some supervisors there was a strong alignment between their epistemic beliefs about how students learn and the Group Supervision. There were pre-conceived ideas about the practice of Group Supervision, and this impacted on the way students and supervisors approached Group Supervision. Circle or horse-shoe seating arrangements promoted social learning and peer relationships. This changed the relationship between the student and the lecturer. RESEARCH STORIES (supervisors and students) Students created their own research story; they applied research methodologies and methods drawn from the shared repertoire of research skills and practices with the field of ECS.

	RESEARCH COMMUNITY (supervisors and students) Students gained the sense they were part of research community including past and present students.
Identity	INDEPENDENT RESEARCHER (supervisors and students) The balance of leading learning and research shifted from the supervisor to the student, supporting the autonomy and independence of the student as researcher. However, some supervisors consequently felt removed from the detail of individual student projects. AGENCY (supervisors) Students exercised agency in their research projects; whether they were protagonists with the group or through silent reflection. However, not all students had developed skills of reflection or communication to participate in whole group conversation. PROJECT MANAGER (supervisors and students) Group Supervision is action orientated; this supported students in developing project management skills, enabling students to plan and implement their project. The Group Supervision structure encouraged students to be flexible and respond to barriers and opportunities that may occur in their research project.

Discussion on learning from the first cycle of action research

In this section I analyse the learning that emerged from this first cycle of action research about Group Supervision. Although this new practice was experienced as supportive of the majority students in completing their research projects, there were aspects of the pedagogy that supervisors and students viewed as problematic. By reflecting on the problematic issues as a group of lecturers we made modifications to the model of Group Supervision.

My first research question focused on changing supervision from an individual to a group practice. Whilst the outcomes for students, in terms of passing their dissertation at the first submission, had improved: this is not the complete story. The action research explored how the change to Group Supervision has supported students and supervisors in achieving this goal. At the outset of this action research inquiry I argued that learning practices can be better understood by conceptualising ECS undergraduate degrees as Communities of Practice. I now discuss the findings through Wenger's (1998) three dimensions of a Communities of Practice: joint enterprise, shared repertoire and mutual engagement.

Group Supervision, as an intervention in teaching and learning, facilitated supervisors and students in engaging in a joint enterprise aimed at the completion of research dissertations and the formation of undergraduate researchers. Group Supervision is a pedagogy that structures a complex process of mutual engagement amongst students and between students and their supervisors supporting this common goal. The structure supported many students in negotiating actions to progress their project as each Group Supervision session focused on a different phase of the research project. However, students and supervisors commented that a minority of students, who were at a different stage in their individual project, experienced a lack of alignment and a disconnect between their project and the focus of the supervision session. Participants

observed that, in this context, students' ability to make sense of the research practice was affected. All participants reported that, where students were absence from a Group Supervision, this not only affected the impetus of their project but also their engagement. Where students attended each session, they became members of a community and they understood the research stories in the group. Supervisors commented that the pedagogy was highly dependent on the continuous engagement of students and that Group Supervision was only one of a range of learning opportunities open to students on the module. For example, the learning offer on the module included live and recorded lectures, independent study tasks, opportunities for formative feedback and one to one consultation opportunities.

Through reflection on their experience in this inquiry lecturers repositioned the practice of research as a journey that is experienced differently by all students. Such a joint enterprise is not without tension; as students and supervisors navigate the research frameworks, e.g. the ethical approval process, they interpret aspects of accountability and requirements for researchers and integrate them into own research projects. Wenger argues that an 'enterprise is a resource of co-ordination, of sense-making, of mutual engagement; it is like rhythm to music.' (p.82). In joining this research enterprise students reconceptualise their experience and draw on the frameworks of research to support the progress of their individual research project. Wenger argues that this process is an aspect of becoming a member of the community and, in this case, an ECS researcher.

Group Supervision introduced students to early childhood research methodology; this formed a shared repertoire that connected the undergraduate students studying diverse topics. In my own facilitation of Group Supervision, I found that this shared repertoire promoted dialogue about research because it established a vocabulary

through which students could engage in problem solving in relation to their own projects. Students stated that the questioning by the lecturer and their peers supported them in refining their research topic, title and questions in order to arrive at a feasible research project. Supervisors suggested that the pedagogy enables students to be critical of their own project and engage critically with the projects of other students. Students and supervisors understood the ways in which Group Supervision engaged them with the practice of research; participants gave examples of how the process shifted from the abstract principles of ethics to applying ethical principles within their own research project. Students commented that this developed their confidence to apply the frameworks in their independent study. Wenger suggests that a shared repertoire is characterised by ambiguity and this allows for the negotiation of new meanings. Group Supervision provided a structure for students and supervisors to examine the challenges, choices and problems in the individual research projects. In this way students created the story of their research as they navigated a complex and multi layered project.

Group Supervision aimed to support the mutual engagement of supervisors and students in the process of making meaning about research practices. In line with Wenger's theory, Group Supervision provides opportunities for mutual engagement in order to support the development of relationships, however, my experience suggests this is a complex process. Group Supervision was affected by the epistemic beliefs of supervisors about how students learn. Some supervisors experienced a tension between the practice of peer learning and their belief that supervision involves individual advice and guidance. Supervisors recognised that this led to a tension between promoting independent learning and supporting individual research projects. Some supervisors expressed frustration at not having a detailed knowledge of the topics for individual research projects as the emphasis in Group Supervision was on knowledge and

understanding of research skills. This was subsequently addressed by introducing a formative task where students shared a succinct outline of their topic, title and research questions. Wenger suggests that differences in experiences can be explored with an outcome of increased participation.

My second research question focused on how we might further develop Group Supervision as a teaching and learning strategy. Here I arrive at some tentative suggestions through reflection on the findings. The recommendations are framed through the four interconnected components of Wenger's social learning theory: community, identity, practice and meaning. Wenger suggests that within the Community of Practice learning occurs through social participation. Whilst the findings suggest that the pedagogy of social learning was experienced both by students and supervisors as positively supporting the completion of the dissertation there were some areas that were problematic, and they form the focus for future recommendations.

All participants were concerned about the experiences of students who found participation in peer learning challenging. Students commented on how the pedagogy was different to their previous experience in Higher Education because it relied on social engagement. Within the small sample interviewed some students found this peer learning enjoyable whilst other students did not feel confident to move from listening in the group to other modes of contribution. Supervisors understood there to be a continuum of participation in the group. This meant that listening was viewed as a form of active participation and valued in the same way as students who were contributors or initiators of dialogue. By repositioning community as a place where there is a continuum of participation; opportunities are provided for students with varying preferences for modes of participation or communication to be equally valued. This means that Group Supervision can be modified to create opportunities for active

listening. In the future, there could be a choice of modes of communication for students who are less confident in oral skills. For example, contributing through the virtual learning environment by framing a post rather than speaking within the group. In this way students have diverse opportunities to develop their identity as researchers and make meaning of their research. In addition, students and supervisors suggested, in their interviews, that students needed to be inducted into the practices of Group Supervision. In the re-planning meeting for the next academic year lecturers agreed that induction into Group Supervision was an area for development.

As previously stated, the epistemic beliefs of students and supervisors about how students learn research skills affected the supervisory relationship. Supervisors consistently experienced and observed students exercising agency in their projects. This was understood by supervisors as students taking responsibility for and owning decisions relating to all aspect of the research. Agency was seen to be exercised on a continuum with some students exercising agency over all aspects of their project whilst others remained tentative in their approach seeking reassurance or permission from the group supervisor. For supervisors the ability for students to exercise agency was considered a key aspect in the formation of researcher identity. This extends understanding of the supervisory relationship emerging from earlier studies, (Todd et al., 2004) where the supervisory relationship is conceptualised as a balance between structure and freedom. I suggest that within the supervisory process there needs to be structured opportunities for students to exercise agency. I reflected that the process of action research led to supervisors examining beliefs related to practices in the community and as Wenger (1998) suggests this may result in opportunities for increased participation. I suggest that in future academic years there could be

opportunities for supervisors to individually and collectively consider how their epistemic beliefs may affect the formation of the students' identity as a researcher.

Similarly, the interviews revealed that supervisors and students could further examine the development of their own identities as researchers. Supervisors placed emphasis on their personal learning about research that arose from the process of supervising undergraduates. They reported that the process of Group Supervision prompted them to reflect on their own experiences of being a researcher and their membership of research communities. However, this learning may not be visible to students and it raises the question as to whether supervisors share their own learning within the group. In the discussion meeting after the assessment period, lecturers identified that Group Supervision could provide opportunities for supervisors to reflect on their own research stories. Students were aware of the benefits of learning in a community; they felt connected to a wider research community by reading around their topic and reviewing examples of past students' work. Supervisors and students considered that Group Supervision reduced isolation and promoted a shared understanding of the challenges common to research projects. The pedagogy focused on the practice of research; all participants recognised that this led to an action orientated approach where students were engaged in personal action planning for their project. Students found that the research dissertation moved from an abstract concept to a practical task. Autonomy was promoted; students saw this as an opportunity to make decisions and set targets for their own projects, thus they developed and applied project management skills. Supervisors in their interviews shared the perspective that leadership of the project shifted from the Group Supervisor to the students as the project progressed. In the discussion meeting after the assessment period lecturers recognised that the structures and resources of Group Supervision could be reviewed to give

tangible opportunities for students to reflect on what it means to be autonomous in their research projects. Similarly, they suggested that the structures of Group Supervision could be amended to provide opportunities for lecturers to reveal aspects of their own learning about research arising from their engagement with undergraduate research projects. This would build on findings from Rowley and Slack's (2004) study which constructs supervision as a shared learning process for both the supervisor and the student.

Recommendations for future action research

Combining Action Research as a methodology and Communities of Practice as a theoretical framework has enabled a critical approach to the implementation of a change in supervision practice in undergraduate research in the context of ECS. The alignment of research and action through this dual framework has revealed ways in which the social context for learning in undergraduate supervision could be further developed through future action research. McNiff (2017) suggests that action researchers position themselves in dynamic relationships with the research setting and participants. I argue this means the researcher scrutinising their research practice. A key limitation in reporting this study arose from the requirement of the research ethics procedure to exclude quotations or specific examples from the data in order to maintain anonymity and confidentiality for lecturers and students. Whilst anonymity and confidentiality are significant principles, in the context of work-based research, the practices adopted to uphold them have limited the representation of participants' voice and the social world of the Community of Practice (Lave and Wenger, 1991). Given the emphasis on collaboration and reciprocal relationships between researchers and participants in action

research ethical practices, that enable participant voice, will require consideration in any future inquiry.

I conclude with two tentative recommendations for future cycles of action research: firstly, that Group Supervision could include an opportunity for supervisors and students to reflect on their epistemic assumptions about how undergraduate researchers learn research skills. This may lead to a greater understanding of the pedagogy as a theory of social learning operating within an ECS Community of Practice. Secondly, social engagement within Group Supervision could be reconceptualised to include diverse modes of communication and participation. By making these changes the potential arises for supervisors and students to value the different ways in which students can engage in social learning.

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