Planning and Conducting a Large-Scale Mixed Methods Research Study: Research Team Experiences and Recommendations

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ABSTRACT

There is growing evidence that mixed methods research (MMR) teams are difficult to manage. We present a reflective analysis of the team functioning of a large-scale sequential MMR study by analyzing the role of group dynamics and examining the challenges that the teams might encounter under different circumstances of research design, team composition, work allocation, funding, and so forth. The analysis demonstrates that even when the team comes from the same discipline area, members bring into the project differing home group identities and the commitment of the team members might be altered by practical arrangements. To overcome these challenges, balance needs to be found between centrally facilitated construction of a shared conceptual and methodological framework and team members’ autonomy. Furthermore, positive attitudes towards the MMR and the lack of epistemological conflicts can pose a hidden challenge because the need for providing means to increase shared comprehension of MMR potential can be overlooked.

KEYWORDS

Mixed methods; project management challenges; research team; sequential design

The potential of mixed methods research to contribute to solving important and complex societal problems has been widely recognized. Using both qualitative and quantitative approaches in a single study or in phases within a series of related studies has become increasingly popular within many fields of social sciences (Mertens et al., 2016). The mixed methods research (MMR) community has produced a vast pool of theoretical as well as practical knowledge to guide designing of MMR studies. However, how MMR projects and teams can be effectively managed so that the challenges that this complexity brings would be handled and the potential of MMR design wholly aroused has not been extensively discussed (Bowers et al., 2013; Curry et al., 2012).

Our article is based on an ongoing large-scale nationally funded mixed methods study that aims to understand how social transformations, on the one hand, and teachers’ life histories, on the other hand, have affected teachers’ professionalism and professionality (i.e., personal concept of professionalism) in Estonia. Because the aims and research questions of the study are complex and multifaceted, demanding integration of macro-level processes with personal micro-level conceptualizations and practices of teachers, we decided to apply a mixed methods research design. We purposefully planned to use a sequential mixed methods design not only to allow the methodological decisions made during the later stages of the study to be informed by the analysis and results from earlier stages, but also to allow the results of earlier stages to be explained and enriched by the analysis on later stages. The design used in this study is depicted in Figure 1.

Having an overall agreement on methodological aspects of the study as well as the practical arrangements of research work and the role of team members, we soon realized that the progression of the project was not as smooth as we had anticipated. The team members recognised the risk of not meeting initial expectation to avail the extra potential from use of the sequential MMR design. This situation elicited the need to analyse our case and strengthen the shared understanding of our project as a MMR study. We chose to collect some data using
semi-structured interviews to enable the *meta-analysis* of the team processes with a focus on the MMR aspect of the study. Eleven members of the team (excluding four junior doctoral students) were interviewed.

In our analysis, we built on the work of Bowers et al. (2013) and Curry et al. (2012), who analyzed the role of group dynamics and provided insight into problems of creating and supporting MMR teams in health sciences. They argued that the research team is a fundamental component of MMR, with MMR teams often comprising members with diverse professional backgrounds and calling for nonhierarchical, shared leadership. This diversity can give rise to philosophical discordance, such as epistemological disagreements, and practical challenges, such as managing power differentials and roles within the team (Curry et al., 2012).

By systematizing and publishing our experience as a MMR team in the field of education and looking for solutions for the challenges that we face, we hope to be able to increase the MMR potential of our study, but, more importantly, to widen the scope of the knowledge on creating and managing MMR teams. Our example bears resemblance to the challenges reported in the MMR studies from the field of health sciences, but brings out also some notable additional aspects that could provide beneficial lessons for prospective MMR teams in various fields of study.

**Challenges in Creating and Supporting a Mixed Methods Research Team**

Mixed methods projects are often complex and multilevel, and require researchers using both qualitative and quantitative approaches to work as a single team. The necessary and significant diversity of researchers’ backgrounds in such teams present multiple challenges (Curry et al., 2012). Creswell, Klassen, Plano Clark, and Smith (2011) argue that the nature of the research questions should shape the nature of the research team constructed to address them, and the skills and outlook of the project leader are critical for the success of the team. Even with this rather top-down linear approach to team building, mixed methods teams need to tackle several crucial issues in supporting the development of a shared vision and practices within the team (Creswell et al., 2011). However, for multiple reasons, research teams are often formed on the basis of initial common interest in a certain topic area, and a non-hierarchical shared leadership model is applied throughout the planning and implementation of the project. In this case, if a mixed methods approach (i.e., methodology that combines elements of qualitative and quantitative research traditions) is selected as being most appropriate for answering the agreed-upon research questions, a team can face extra challenges because the group of researchers might not have the multifaceted methodological and managerial expertise needed for successful implementation of a MMR design.

The fundamental component of MMR is the research team, and the success of the project is dependent on the ways the team is supported so that possible obstacles and barriers can be unraveled (Bowers et al., 2013; Creswell et al., 2011; May & Burke, 2010). We can witness the emergence of the interest in these issues from the field of health sciences research. Several articles have been published reflecting the mechanisms for putting effective (inter)disciplinary MMR teams into operation, for providing deeper insight into the nature of the team dynamics, and for managing tensions in mixed methods teams (Creswell et al., 2011; Curry et al., 2012; Robins et al., 2008).

The most commonly emphasized challenge is the potential conflict among differing epistemological standpoints or colliding worldviews, deeply rooted in the philosophies of knowledge that researchers bring into mixed methods team and the possible consequent methodological “disrespect” (e.g., Bowers et al., 2013; Hemmings, Beckett, Kennerly, & Yap, 2013; May & Burke, 2010; Robins et al., 2008). In this case disciplinary- and paradigm-level borders need to be converged before a MMR team can effectively operate (see Johnson, 2017 for a useful discussion).

It is important to address the interpersonal aspects of teamwork and the role of the principal researcher or project leader (May & Burke, 2010; Robins et al., 2008). Researchers bring their home group (i.e., organizational, professional, and other representational groups from which each individual comes to join a MMR team) identities to the new group (Curry et al., 2012; Hemmings et al., 2013). If the members of the mixed methods team have not previously worked together and, therefore, had not had a chance to develop a shared vocabulary and understanding of methodological issues, the convergence and operation as one team inevitably involves working outside of one’s comfort zone (May & Burke, 2010). Team dynamics are also affected by interpersonal histories of individuals, which can influence the way team members hear and interpret each other’s words and react to each other’s behaviour (Curry et al., 2012).

Effective leaders for a mixed methods project should be experienced and interested in qualitative, quantitative, and mixed methods research to promote a broad perspective on the utility of different methodologies. They should be able to overcome and bridge differences and create an effective working environment. This can
be achieved by keeping an open dialogue going within the team and by taking into account team members’ responsibilities outside the project while being concrete about their roles and duties inside the team and also promoting collaborative relationships among team members (Creswell et al., 2011; Curry et al., 2012).

Bowers et al. (2013) argued that in fully integrated MMR, a nonhierarchical, shared leadership model might be needed for implementing the full potential of the team. In this model, all activities (e.g., resource allocation and sharing, project and measure design, data collection, analysis, interpretation, dissemination) require collaboration by and active engagement of every member of the research team. Such expectations for new kinds of collaborations, engagement, and commitment pose an additional set of challenges in complex MMR projects.

Robins et al. (2008) pointed out that maximizing the qualitative contribution has been experienced often as a challenge for MMR teams. Therefore, they suggested that qualitative experts should be involved in the design as well as the execution of the mixed methods study as early as possible. Furthermore, issues around analyzing, interpreting, and integrating different data may pose a key problem even if the “creative, intellectually-challenging-yet-supportive team” has been formed and supported by the leader (May & Burke, 2010, p. 3). Although recognizing that it is not necessary or even possible for every member of the team to hold expertise in all methods employed in a specific research project, it is important to make clear the added value of the mixed methods approach and set out the clear division of labour in terms of when and by whom the mixing should take place (May & Burke, 2010).

Hemmings et al. (2013) provided an example of overcoming the challenges and putting into operation a well-functioning interdisciplinary MMR team comprising researchers with different methodological expertise from the fields of nursing and education research. The disciplinary bordered traditions were crossed by team members mutually re-educating themselves through collegial instruction and exchange of literature, facilitated by close bond and mutual respect among the team members. Even in a relatively small team, it was regarded as a time-consuming and frustrating process to become familiar with the theoretical concepts, academic language, and discourses of entirely different research fields. However, this process led to fruitful interdisciplinary discussion and a multidisciplinary theoretical model, while the shifts in team members’ originally strongly discipline-bordered professional identities could be witnessed (Hemmings et al., 2013).

Similarly, Bowers et al. (2013) provided an example of managing diverse methodological viewpoints and power differentials in a large mixed methods team. To meet the challenges that they faced in implementing a non-hierarchical leadership model and creating collaborative and trusting partnerships within the team in an exemplary THRIVE project, the Coordinating Centre and various regular meetings were established in order to introduce relevant literature and theoretical-methodological approaches to the members of the team with different disciplinary and methodological backgrounds, as well as to support the commitment of the whole team.

The TePP Project

In our ongoing project called Teachers’ Professionality and Professionalism in Changing Context (TePP), we aim to scrutinize how global changes and policy transformations, on the one hand, and teachers’ life histories, on the other hand, have affected teachers’ professionalism and professionality (i.e., personal concept of professionalism) in Estonia. We build on the premise that contradictory demands on contemporary educational systems require that stakeholders continuously negotiate the meaning of professionalism of teachers to understand what the expectations for teachers as professionals are, what the best ways to support teachers are, and so forth. Goodwill and trust are very important, and standardised top-down reforms often erode teachers’ motivations. The lack of knowledge and attention in that respect can help explain the widespread failure of educational change initiatives (Goodson, Moore, & Hargreaves, 2006; Sahlberg, 2010; Wallace, 2003).

A key for successful implementation of educational policies is to understand how teachers experience and make sense of changes (Goodson et al., 2006; Sahlberg, 2010; Spillane, Reiser, & Reimer, 2002), that is, understanding how the changes are reflected by teachers through their personal concept of professionalism—which we call teachers’ professionality. The concepts of professionalism, professionality, and refraction, which elucidate how teachers’ professionality and national educational trajectories vitally influence the fate of educational reform and restructuring initiatives (see Goodson, 2013; Goodson & Lindblad, 2011) were set as the theoretical framework for the TePP project.

Because the aims and research questions of the study were complex and multifaceted, demanding integration of macro-level processes with personal micro-level conceptualizations and practices of teachers, a sequential MMR design was selected. Sequential design was chosen to allow the combining of qualitative and quantitative methods for the purposes of development and complementarity (i.e., seeking elaboration, illustration, enhancement, and clarification of the findings from one analytical strand with results from the other analytical strand),
not only so that methodological decisions during later stages of the study could be informed by the results from the earlier stages, but also to allow the results of the earlier stages to be explained and enriched by the analysis in the later stages (Greene, 2007).

Our ongoing study is divided into four stages (see Figure 1) and currently presented meta-analysis was undertaken after the second stage of the project. We started our project with documentary policy analysis and secondary analysis of existing empirical evidence with the aim of mapping the historical background and changes in theoretical, ideological, and normative concepts of professionalism. To complement documentary analysis, nine expert-interviews were carried out with experienced teachers and educational administrators in the first stage of the study. Content analysis of policy documents (including relevant newspaper articles) and interview data resulted in construction of systemic narratives (Goodson, 2010), which were used to show the historical contextual background and timeline informing data collection, and aid in interpretation of empirical data in the subsequent stages of the project. Secondary analysis of existing quantitative and qualitative databases was undertaken with the aim to reduce the amount of new data needed for answering research questions and to inform the development of data collection instruments in the later stages of the study (see Mikser & Goodson, 2018; Peterson et al., 2016; Sirk, Liivik, & Loogma, 2016).

<table>
<thead>
<tr>
<th>Integration for complementarity</th>
<th>Stage of the study and main output (=&gt;)</th>
<th>Integration for development</th>
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<tr>
<td>Integrate for interpreting survey results (S2) and work life narratives (S3)</td>
<td>Stage 1: Historical and background analysis 1.1 policy analysis 1.2 newspaper analysis 1.3 semi-structured interviews 1.4 secondary empirical sources =&gt; systemic narratives</td>
<td>Use to inform survey development and narrative interviews on S2</td>
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<tr>
<td>Integrate for interpreting systemic narratives (S1) and work life narratives (S3)</td>
<td>Stage 2: Survey =&gt; typology of teachers</td>
<td>Use to inform sampling as well as conduct and analysis of interviews on S3</td>
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<tr>
<td>Integrate for interpreting systemic narratives of public discussion (S1) and (S2) typology of teachers</td>
<td>Stage 3: Narrative life history analysis 3.1 Narrative life story interviews 3.2 Semi structured interviews =&gt; work-life narratives Stage 4: Merged analysis 4.1 Integrated analysis of the results of stages 1-3 4.2 Scenario building =&gt; Scenarios for supporting teacher professionalism and professionality in Estonia</td>
<td>Integrate the results of S1-S3 for informing scenario building on S4</td>
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Figure 1. Sequential mixed methods design of the TePP project.

During the second stage, we used a survey to test models of professionalism to identify possible typologies of teachers by understanding their perceptions of professionalism and identifying the factors they attributed to the changes of professionalism. We also hoped to shed some light on the implications that different concepts of professionalism might have on teachers’ work and teaching practices. Development of the survey instrument and the choice of indicators were planned to be informed and validated by the results of the documentary and secondary analysis carried out during the first stage of the project. It was anticipated that the survey study would provide a generalizable overview and enable reliable comparisons of the factors that teachers attributed to their professionalism in different education sectors in Estonia. To determine the implications that different concepts of professionalism have on teachers’ work and teaching practices, as well as to explore the on-going relationship between concepts of professionalism and professionality, we aimed to construct a typology of teachers based on differences in perceptions of professionalism on the basis of survey data.

During the third, currently on-going, stage, two-step narrative life history interviews are conducted with the teachers to provide detailed understanding about the paths that teachers have followed to develop certain views on professionalism and about the perceived changes and influences forming teachers’ professionality. To ensure that the teachers having different conceptualizations and understandings of their professionalism would be interviewed, it was initially planned that teachers from different educational sectors and age cohorts would be selected for narrative life history interviews based on the typology of teachers constructed as a result of the survey study. However, during the course of the study, the initial plan was altered so that information from the analysis of survey results could be fed into the second round of interviews. It was decided that the first round of
life history interviews would be open without a pre-defined interview guide. Unlike in the first round, the second-round interview questions are developed on the basis of all previous stages—documentary analysis, survey results, and preliminary results of the first round of interviews that asked for interviewees’ personal interpretations of their life-course and work. We assume that the interview results will contribute to explaining the results of the quantitative survey study and add a new dimension to the historical grid by showing how teachers’ personal life paths had shaped their perceptions of educational changes and societal demands on their professionalism.

In the final stage, which has not started at the time of the current reporting, we plan to closely interrogate the juxtapositions between teacher professionalism and teachers’ professionalism. In this stage, the scenarios for future development of teachers’ professionalism will be constructed, to explain and to clarify possible policies and choices for actions. In scenarios, the set of factors, identified in the earlier quantitative as well as qualitative stages of the study, that are structuring the teachers’ professionalism, will be integrated.

Because our five leading team members represented three educational sectors—general education, early childhood education, and vocational education—we aimed at covering all three sectors in our study. Even though some of the leading team members had stronger backgrounds and experience in qualitative research and the others in quantitative research, everybody welcomed the MMR approach and believed that it would be useful to share the workload not by the quantitative and qualitative stages of the study, but to divide the team into three workgroups (WG) according to educational sectors mentioned previously. This resulted in a two-level shared leadership model where the leaders of the workgroups were given relatively high independence, but also responsibility for daily management of the research activities in their groups. The role of the project leader was seen most importantly as the conceptual leader and coordinator of the team. The core team also includes an MMR expert who took the leading role in plotting the methodological design of the project and supports all three workgroups in methodological aspects of the study. Thus, the conceptual and methodological leaders can be seen as intellectual-methodological level and the workgroup leaders as executive level leaders in our project. The team composition is depicted in Figure 2.

All workgroups implemented the same general MMR design. We agreed that some details like the sampling principles and data collection instruments might vary according to the needs of the educational contexts of the three sectors. We consider it important to make comparisons among different educational sectors and to draw joint conclusions from our large-scale project. Therefore, we centrally coordinated methodological issues like instrument development to ensure compatibility and high-quality data and results for all the educational sectors.

The Challenges in Conducting the TePP Study

The project was demanding, but the team started optimistically about the success because the team members shared a positive attitude towards MMR. We did not expect conflicts grounded in epistemological or disciplinary differences (Bowers et al., 2013; Robins et al., 2008) or the need to significantly facilitate building up the network and trust among the team members (Curry et al., 2012). Developing trust was considered relatively easy because all of us came from the field of education and most of the team members had already developed long-term collegial relationships. All team members had some experience with both quantitative and qualitative research and seemed to be comfortable with implementing the MMR design used in the TePP study. According to the conceptual and MMR leaders of the team, the theoretical framework and methodological aspects of the study were well depicted in the proposal and were approved and shared by all team members.

The practical arrangements of research work posed some challenges that needed to be solved. The team had the privilege to work under the guidance of a leader who had extensive experience in leading international research projects and had a prolific publication record in the field of our interest (Mikser & Goodson, 2018). It was agreed that the team would work with the leader mostly from distance and would grant him with access to translated data that were collected during the project. By forming three workgroups—general education, early childhood education, and vocational education—the two-level leadership model was established (see Figure 2). Each workgroup took responsibility for inner arrangements of work allocation, scheduling, and so forth.

During the study, we soon realized that the progression of the project in terms of implementation of the sequential MMR design (shown in Figure 1) was not as smooth as we had anticipated. Most importantly, it struck us that we had only surface-level agreement about MMR principles and the team members had very different understandings of MMR and its potential. The reflective interviews with the members of the team revealed that many challenges had to be addressed in order to function as a successful MMR team.
Dialoging With Differences

In contrast to a strict central planning ideology, the intellectual-methodological leaders of the project promoted flexibility and loose regulation to allow the three workgroups to maintain motivation and to comply with a mixed methods premise. In her interview, the MMR leader reflected:

Anna: ...There should be openness—mixed methods should always leave room for ... additional ideas and re-thinking. However, the frame should be clear enough so that the team members would feel themselves safe.

It became evident quite early in the project that this loose regulation frame resulted in significantly different trajectories for the vocational education group compared to the general education and early childhood groups. The fact that one of the groups had chosen a different path in building up the survey questionnaire from the other two was critically mentioned in the interviews by the members of all groups, as well as by managers and doctoral students, as exemplified by the following quotations:

Jane: We went with TALIS [Teaching and Learning International Survey], but the others said that they weren’t interested in that, it is something that has been done, but they are not interested in it.
Alan: I think I know very well what Emma as a leader of that working group wants to do; she has her own agendas.
This diversity was seen as an indicator of deeper problems, and issue of mutual understanding was brought up on numerous occasions. Even though all the members of the team had the same general background (i.e., educational sciences), it was pointed out that the field of expertise differed and this made it difficult for members to understand one another. It was also perceived by team members that we were not building up a coherent understanding of the theoretical frame of the study, and this made team members believe that we were talking about same concepts in different languages; this made cooperation difficult:

Alan: Sara has been working with these communities of practice and I feel that because of that she does these things [studies of teacher professionalism and professionality] differently [...] She [Lisa] has background in early childhood education, and that can be sensed of how much or not she can actually contribute to the discussions in general education.

Intellectual-methodological-level team leaders who had contributed much in writing the project proposal assumed that the frame of the project, both theoretical and methodological, was set in the proposal. Getting acquainted and grasping the frame was considered to be a personal responsibility of every team member. When it became evident that the workgroups take different paths, doctoral students were given assignment to seek the common core by juxtaposing the theoretical approaches used in different working groups and to ensure that the agreed-upon conceptual framework would be implemented in all three survey questionnaires, but the results of their work were not given enough attention by the team members:

Tina: I remember that at one point we made this effort, where I and Julia and Paula were given an assignment to sit down together and try to integrate the theoretical frameworks of general education and vocational education ...

Paula: Anna asked us to do that because it was that moment when we actually still could have done things more similarly ...

Tina: And in reality there was actually no fundamental gap between these frames that couldn’t have been bridged [...] and we wanted to present it and then we were told that what’s the point, we aren’t going to change anything anyway.

Differences in methodological and home group backgrounds seemed to alter the implementation of the study. In the proposal, the quantitative stage was planned to be built up for filling in the gaps of the documentary and secondary analysis and to provide information needed for supporting narrative interviews. However, it became evident that the survey questionnaires became longer than expected covering wide range of conceptual issues. This was mostly because the questionnaires were seen as autonomous data collection instruments, as well as giving the opportunity to make comparisons with some previous surveys by several team members who were having a strong commitment to using quantitative methodology. This made it difficult to reduce the length of the quantitative survey questionnaire and to include only the questions benefiting the needs of our sequential MMR study.

According to the team members, there were several personal interests played out in the project that were not directly connected to the TePP project. This was not viewed as a fundamental problem or obstacle because it was understood that people had different backgrounds and parallel research interests, and it was acceptable to bring them to the project. Some team members saw this as a way to optimize their resources. The intellectual-methodological leaders accepted the individual interests as long as a common mission for the project was also present:

Robert: Project is bringing together different little empires. And every federal project is difficult to coordinate and to create cooperative teamwork in because people are human, people have histories, and some people like other more than others ... a difficult task of any project leader is how far to push the federal or the common against the specific needs of particular teams, and I have tried to be respectful of these specific needs of teams as well as tried to push the common.

These reflections indicated that the differences that team members brought to the large-scale MMR project can be a challenge even when the researchers came from the same overall disciplinary area. Finding the balance between letting people maintain their home group identities, background, and interests on the one hand, and facilitating the construction of a common framework on the other, is a key issue in managing and facilitating MMR teams.
Creating a Shared Understanding of the Mixed Methods Research Design and its Potential

By the time of the interviews, all team members, regardless of quantitative or qualitative backgrounds, maintained positive attitudes towards the mixed methods approach in general and regarded the methodological design of our TePP project as fitting perfectly with the study aims:

Sara: I really like this approach. I actually don’t see any other way to handle large projects in educational field.
Lisa: It is very legitimate to use it with such a big sample ... It is such a perfect approach, not only one or the other (method).

The workgroup leaders stated that the groups, in general, followed the methodological framework that was stated in the initial project proposal:

Emma: I can say from our group’s viewpoint. We have followed as it was stated in proposal. In other words, it means that we make the clustering and based on these clusters design the sample for narratives.

However, the methodological leader of the project had some hesitations and indicated with self-criticism that the project team had not been very successful in following the initial frame or exploiting the potential of the sequential MMR design:

Anna: While the initial design was inclined towards the interviews on the third stage ... the quantitative part of the study became larger than initially planned. On the other hand, the input from the first stage has remained vague ... we haven’t used the full potential in terms of mixing or the potential of the quantitative data set.

Therefore, perceptions about the potential of mixed methods in general and implications of our MMR design in particular were not fully shared within the team. Detailed analysis showed that team members, when talking about what makes a study genuinely MMR, tended to stress different features, and believed that they had not reached a common ground regarding the importance of integration in the different stages of the study.

Figure 1 shows that our sequential MMR study was supposed to include integration of results across stages to facilitate the development of subsequent stages. However, development of the survey instrument (i.e., the second stage of the study) actually started before the first stage analysis was completed and, therefore, there was not much input from the first stage into the design of the second stage. The interviews indicated that the why and how of integrating stages was not clear for many team members. It was assumed that the documentary analysis was not urgent:

Tina: We started to prepare the questionnaire and it seemed to me that ‘Hey! Why are you rushed? Shouldn’t we have documentary analysis first and then start prepare questionnaire?’ ... I was surprised when we started to prepare the questionnaire and I wasn’t very far with these things [documentary analysis] ... but somehow the attitude was ‘No problem! …’

Also, between the second and the third stage of the study, the originally planned integration was altered. In the first and the second workgroup, the interviewing started before clustering on the basis of quantitative data being completed; this occurred because the core team members felt time-pressure to push towards the new stage without finishing the current one:

Mary: We planned to take those interviewees based on the clusters. However, because it took so long, we simply were in a hurry [...] perhaps it would have been more interesting to do it by clusters, but we can do it later ... to look at it by clusters, how they divide into clusters.

In the third workgroup, clustering was carried out before the interviews of the third stage. However, because the questionnaires had been anonymous, direct linking of the samples could not be made. Instead, snowball sampling, looking for the teachers based on the criteria originating from the clustering, was implemented, in order to maximize the possibility that all the clusters would be represented in the interviews.

Although the linkages among different research stages (documentary analysis, survey, and narrative interview study) were outlined as being necessary, not all linkages were applied in practice as was initially planned. The
potential of integration was not fully implemented in practice, perhaps because it was not understood in detail and/or regarded as important. Not engaging in building linkages between stages of the study was supported by the fact that several team members emphasized the strong role of the expert methodological leader as responsible for designing and implementing the mixed methods aspects of the project. Motivating the workgroup leaders to become acquainted with mixed methods possibilities in detail and take responsibility to implement the full potential of the sequential design was a key challenge that the team leaders had to resolve.

Some steps were taken to facilitate better understanding of MMR principles, resulting in reflection by team members on the advantages of the MMR design. Some team members mentioned the MMR seminar as helping them appreciate and make sense of mixed methods:

Sara: I cannot say that it would have been such a big information from there but a certain shift in mind-set that it starts from the planning phase, that it should be theoretically justified why you mix methods, ... exactly, ... how I would put them together.

Robert: I have only later realised how the second interviews can be *strategically focused* more by using the quantitative.

The team members repeatedly stated that it would have been more useful and rational to have the seminar on mixed methods earlier to help them make sense of the MMR design that was introduced in the proposal. It appeared that some of the doctoral students had not been exposed to the proposal in the beginning of the project and, for them, it was especially difficult to grasp the logic of mixing:

Tina: From some text I recognized the term mixed methods, but today I can say that I understood it incorrectly. I understood that we have quant [quantitative] and qual [qualitative] and that’s it.

The doctoral students were, in general, well appreciated in their working groups and were praised for their alacrity. They were viewed as being highly motivated to acquire new skills and knowledge about the theoretical and methodological frameworks:

Anna: I have positive experiences with the experienced doctoral students who understand the mixed methods side nicely and are showing real interest.

The interviews confirmed that the integration of data and results in the last two stages of the study were viewed as being the most challenging steps both in the methodological sense and in terms of constructing the consistent argument on the basis of the results of different stages of the study. Visions about how to integrate quantitative and qualitative results for creating future scenarios of teachers’ professionalism and how to make comparisons between the educational sectors appeared not to be clear at the time that the reflective interviews were carried out:

Sara: At certain point, we need to give a product that does not consist of small fragments but involves a stronger force for making generalizations. At the moment ... I may not be enough informed how it forms, I don’t have a vision of my own how the big picture will be put together ...

Lisa: And how the fourth stage will come, I really cannot say it right now, how to design it and make generalizations.

Based on our experiences, we had no obvious conflicts between quantitative and qualitative camps and sensed that team members’ positive attitudes towards MMR can be sporadic and misleading. Even though the team members had experience in quantitative and qualitative research and came from the same disciplinary area, they tended to emphasize the part of MMR design that seemed most relevant for them. The team members did not perceive the logic of the MMR design in the same way and they did not emphasize all of its steps, nor did they attribute equal importance to all MMR aspects automatically. To achieve the full potential of a sequential MMR design, early and continuous action is needed to obtain a shared understanding of mixed methods principles and strategies for integration of quantitative and qualitative stages for developmental and complementarity purposes. Taking initiative and responsibility by the intellectual-methodological leaders was essential for producing a deep understanding of the process of MMR.
Leadership, Team Commitment, and the Use of Resources

The interplay between leadership and autonomy was ongoing. In several interviews, it was emphasized that planning and designing a MMR project required strong central leadership. A successful project requires that someone takes leadership responsibility and allocates specific responsibilities for the team members. As described earlier, we attempted to create a shared leadership model for the overall project, but some team members saw that it had not worked out as well as expected:

Sara: I don’t believe that self-organization takes place and that everyone will take the responsibility where he or she is most competent. Actually, it does not work like that.

The need for detailed planning and time management was emphasized. Especially from the doctoral students’ perspective, the issue of time-management required understanding of the logic and sequencing of the phases of the study and the related research tasks:

Lisa: Well, the organisational and practical activities could certainly have been prepared in more detail and well-grounded. We do and learn all the time.
Jane: Actually it [the sequential design and related time-schedule] should have been introduced ... we should have had some visualisation of how it goes on ... I think some visualisations should have been on how it works, setting deadlines for these, and these dates. We had time and we hurried, but we haven’t had any clear time schedules.

Cooperation within the groups was seen as unproblematic by most senior members of the team and the role of doctoral students was appreciated, but cooperation among the workgroups was not viewed as being smooth and intensive. There was a severe lack of cooperation with one of the workgroups, which limits the possibility of comparing the results and co-writing articles:

Emma: ... cooperation should start from the very beginning, from the writing of the proposal, but in the beginning it was weak.
Jane: [About the surveys] I understand that there hasn’t been much of cooperation among these working groups. We went with TALIS, but the others said that they weren’t interested in that direction.
Alan: Mary said it right at the beginning, and I agree 100%, that if we use a jointly constructed survey, it gives us a better opportunity to juxtapose our findings and analyze those findings together.

Although a stronger leadership role was sometimes desired, autonomy also was respected and enjoyed by the workgroup leaders:

Emma: ... but the other thing is that it actually has its perks that this project is so de-centralized – the good thing is that, at least in our working group, we can move on autonomously ... so I have actually liked it that we have that kind of relative autonomy.
Sara: ... that’s a good thing for sure, that we have relatively large amount of freedom.

It was suggested in the reflections of team members that difficulties arose not because of applied leadership principles, but because of the practical arrangements and consequences that these arrangements had on team members’ commitment. The two-level shared leadership model caused some confusion because of diffusion of responsibility within the team. It appeared that while working in their workgroups, the doctoral students were not well aware of the general mission of the research team or about the roles of the intellectual-methodological-level leaders in the project:

Julia: At the beginning I didn’t understand at all that she [Anna] is also somehow involved in this project. To me, the one who did that work was Alan. And to whom I turned with my problems, it didn’t even occur to me to try to connect with Robert. Now, I think I should have, because he is leading this project.

The need for extra time is often listed as a challenge for mixed methods teams. In our case, the lack of time was mentioned as a central barrier as well, even though the project period itself was not perceived as being too short. The issue of time restrictions caused some practical challenges. For example, not all members of the team
were paid from the project budget; it was agreed that several members of the teaching staff at the university would participate in the project as a required research activity. However, the reflective interviews indicated that team members not working on project-paid positions found it difficult to keep a balance among different work roles, and they tended to take less responsibility for the research process, research decision making, and producing project results:

Lisa: The lack of time is the main reason ... It needs a lot of time ... It is a praiseworthy work, this research, in addition to teaching I mean. These time resources set the limits. We would like to contribute more.

Sara: I have this luxury in a certain sense that I am formally not connected to the project other than assigned to be a member of the team. I have the freedom not to take responsibility that can be asked of the principal investigator ... or do something that is expected from the paid employee.

The shortage of financial resources also resulted in the situation where one of the workgroups (WG2) had fewer people working for it as compared to the other teams (see Figure 2). Regardless of the internal arrangements to compensate for a shortage, the situation was experienced by the work-group leader as being unequal:

Mary: The problem is that we don’t have many people. Others have more people and more paid employees.

These experiences suggest that large-scale mixed methods studies with shared leadership require a lot of communication and collaboration in order to establish shared understanding of the responsibilities of all team members. Communication is also important to allow members of the team (especially the junior staff) to learn to know other team members, their competence profiles, and their roles in the project. A high level of autonomy allows sub-teams to maintain their home group identities and interests. However, complex mixed methods projects also need central regulation, time-management, and clear communication patterns to support networking. Team-member commitment is also affected by practical arrangements such as being paid directly from the project or not, proportion of work devoted to the project, and other duties.

**Discussion**

It is widely acknowledged that combining quantitative and qualitative research approaches can provide better understanding of complex social phenomena, and mixed methods designs are increasingly used for this purpose. At the same time, there is growing evidence that large MMR teams are difficult to manage, and extra attention has to be paid to acquiring the necessary skills for coping with daunting challenges that teams routinely encounter. Silence on these matters has been broken by researchers from the field of health sciences who have presented several reflective reports on the challenges of managing mixed methods teams, and they have provided valuable suggestions for establishing practices that help to solve emerging difficulties (e.g., Bowers et al., 2013; Hemmings et al., 2013; Robins et al., 2008). These researchers recommend the conduct of additional research to explain how to address the challenges of managing MMR teams under various circumstances of research field, topic, funding, mixed methods design, and so forth.

In this article, we have presented a reflective analysis of the team development and functioning of an on-going large-scale sequential mixed methods study from the field of educational sciences. The first goal of this exercise has been to articulate the challenges of running a successful mixed methods project with multiple sub-teams, and to offer some solutions for others to consider. We hope that this article serves that goal.

Our TePP study was divided into four methodological stages and was implemented concurrently in three workgroups—WG1 focused on general education, WG2 on early childhood education, and WG3 on vocational education. All workgroups shared the same aims of the study as well as the theoretical and methodological framework; however, some differences in research trajectories emerged. The analysis of reflective interviews demonstrated that team members brought into the project different home group identities and experiences even though they came from the same broad discipline of education. This, in combination with a multilevel leadership model, seemed to result in the desire for work group autonomy that maximized emergent understandings and within-group environments that allowed varied interpretations of the conceptual and methodological aspects of the study. We determined that a fine balance needs to be found between the autonomy of the work groups and centrally facilitated construction of a shared conceptual framework. Also, because of the complexity of mixed methods teams, ongoing communication and collaboration among all team members (within workgroups and across workgroups) are important for project success. Communication should include...
learning about the competencies of all members of the project and also understanding and adopting of project leadership roles and activities.

Our experiences also indicate that different attitudes towards mixed methods research and epistemological conflicts and confrontation among researchers from quantitative and qualitative backgrounds can pose hidden challenges to obtaining a shared comprehension of the mixed methods potential and the importance of integration in a MMR project. Therefore, mixed methods projects require educating team members about MMR on theoretical and practical levels, continual dialogue about the added value of combining approaches, and developing understanding and agreement about how to produce integration through the use of the mixed methods design. It is important that members of the project are motivated to step out of their comfort zones and engage in the challenge and possibilities for lifelong learning and professional development.

Finally, development of a successful MMR project requires an awareness of the consequences of practical issues such as being paid directly from the project or not, agreeing about the allocation of project work, balancing the duties and commitments that the team members might have outside the project, and so forth. These issues can impact the commitment of team members. Administration of large-scale MMR projects also is improved by skilful time-management and the establishment of clear communication patterns to produce the networks that are crucial for project success.

Note

1. The article is part of the national research project IUT18-2 “Teachers’ professionality and professionalism in changing context (1.01.2014–31.12.2019),” supported by the Estonian Research Council.

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Goodson, I., Moore, S., & Hargreaves, A. (2006). Teacher nostalgia and the sustainability of reform: The generation and development in a MMR project. Therefore, mixed methods projects require educating team members about MMR on theoretical and practical levels, continual dialogue about the added value of combining approaches, and developing understanding and agreement about how to produce integration through the use of the mixed methods design. It is important that members of the project are motivated to step out of their comfort zones and engage in the challenge and possibilities for lifelong learning and professional development.

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