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Left in the Dark: Obstacles to Studying and Performing Critical Infrastructure Protection

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Abstract: This paper highlights major methodological obstacles to studying and performing critical infrastructure protection (CIP) in general and CIP governance in particular. The study simultaneously examines a research project on and practice in the context of Swedish CIP. The complex planning approach of interest is called *STYREL,* a Swedish acronym for Steering Electricity to prioritised power consumers. It aims to identify and prioritise power consumers of societal importance, collectively referred to as critical infrastructure (CI), to provide an emergency response plan for the event of a national power shortage. Methodologically, the investigation uses material from document studies, interviews and a survey, which involved many actors from the Swedish case. For the analysis of the methodological obstacles, this study applies an abstracted research and development process that encompasses four steps: data collection, data assessment, decision-making and evaluation. The paper mutually maps the insights from the research project to the empirical evidence from the case study. Through this reflective analysis, the findings contribute to a deeper understanding of the challenges that significantly impede research and practice in the context of national and international CIP, for example, insufficient information sharing and knowledge exchange among parties, a lack of integrated and advanced methods, and uncertainty in policies that induces a variety of local approaches. In addition, since empirical research on implemented CIP plans is limited, this paper addresses this gap. It reveals five general obstacles for both research and practice: a) the access to high-quality data, b) the loss of knowledge over time, c) the interpretation and evaluation of processes and methods, d) the transferability and comparability of data, results and insights; whereas all culminate in 5) a lack of collective intelligence. The accumulation of these obstacles hinders a detailed assessment of decision-making for CIP and its consequences on society. For this reason, this study emphasises the need for enhancing mutual understanding among the various parties in the area of CIP while respecting relevant security issues when inventing novel methods that facilitate collective intelligence.

Keywords: Research methodology, Critical infrastructure protection, Information security, Governance network research, Swedish crisis management, National emergency response planning

1. Introduction

The use of mixed methods is increasing in many disciplines, including the study of critical infrastructures (CI) (Spousta and Chan, 2015; Bentahar and Cameron, 2015). However, previous reviews of methodologies for critical infrastructure protection (CIP) reflects that risk management frameworks mainly constitute the foundation for national plans on CI (Yusta, Correa and Lacal-Arántegui, 2011) and that a large portion of literature in the CIP field contain no description of the actual research process or epistemological position (Große, 2020). Applied methods include simulation techniques to model the dynamic behaviour of CI or estimate risk mitigation strategies as well as rating matrices to describe the current state of the CI. Moreover, information exchange regarding the modelling and implementation of CIP plans is rare but encourages co-operation between public and private organisations to classify and conduct comprehensive inventories of CI (Yusta, Correa and Lacal-Arántegui, 2011). Research has also identfied deficiencies in knowledge management methods for public-private partnerships, such as CIP, which necessitates further studies to improve information integration methods (Cui, et al., 2018). The design of new research method artefacts (Venable and Baskerville, 2012) has over the last decades included configurational techniques such as QCA, Qualitative Comparative Analysis (Rihoux and Ragin, 2009), and inductive approaches such as CQR, Consensual Qualitative Research (Hill, et al., 2005). However, to advance methods such as collective intelligence (Peeters, et al., 2021), there is still a need to understand the methodological proceedings in complex environments, such as alongside public-private cooperation for CIP.

Thus, the purpose of this study is to contribute to a deeper understanding of the obstacles that significantly impede research and practice in the context of national and international CIP, for example, insufficient information sharing and knowledge exchange among parties, a lack of integrated and advanced methods, and

uncertainty in policies that induces a variety of local approaches. Therefore, the present paper aims to highlight some major methodological obstacles to studying and performing CIP in general and CIP governance in particular.

This paper derives from a research project in the Swedish context. First, it addresses the methodological concerns that emerged during the project, which similarly challenged the actors in the studied CIP approach. Second, the study further analyses the impact of these methodological obstacles on the outcomes of both the research project and the examined planning for CIP. Thus, the focus is on the four-step process of data collection, data assessment, decision-making and evaluation that unites the proceedings within the research project and the practices in the Swedish case. Due to the advanced stage of this complex case, a representation of the methodological obstacles is of major interest to research on methodologies for complex systems analysis, policy makers and practitioners in the CIP field and similar contexts, including and beyond the Swedish case.

The following investigation is based on a case study of the long-term process called *STYREL* that concerns an approach for CIP against power shortages in Sweden. Modern societies' increasing dependency on electricity induces the risk that they will be unable to maintain essential societal functions in the event of a blackout or power shortage. Therefore, Sweden has developed the national planning process *STYREL* (Swedish Energy Agency (SEA), 2014). This approach involves a multi-level system of public and private actors from different levels in society, whereas county administrative boards (CABs) co-ordinate between municipalities within counties and a considerable number of national agencies (Große and Olausson, 2018). During the *STYREL* process, the actors sequentially identify and prioritise CI and produce a ranked list of power lines that power grid operators (PGOs) shall prioritise if the power supply must be limited by order from the national operator.

Since CI can be described as a complex system-of-systems (Gheorghe, et al., 2006), attempts to protect CI must also be characterised as complex. Accordingly, such CIP needs to address the systemic challenges that the complex interdependencies among the various system components produce (Große, 2018). The studying of a CIP approach such as *STYREL* speaks to the literature on project management (Blomquist, et al., 2010). The methodology used within the research project situates itself within a process framework and therefore attempted to describe how the process of planning could be understood (Blomquist, et al., 2010). The process framework is reflected in the empirical approach which involved a triangulation of different types of material such as documents, interviews and a survey. Recent research has demonstrated that the complexities of the CI systems pose not only a significant challenge to emergency response planning practice but also challenges traditional methods of analysis (Zio, 2016). However, since empirical research on implemented CIP plans is limited, this paper addresses this gap and reveals certain obstacles for both research and practice. In particular, the study identifies five general obstacles to the studying of CIP: a) the access to high-quality data, b) the loss of knowledge over time, c) the interpretation and evaluation of processes and methods, d) the transferability and comparability of data, results and insights; whereas all culminate in 5) a lack of collective intelligence.

After this introduction, Section 2 provides a brief background to this study and the research in the CIP field. Section 3 describes the interdisciplinary approach of the project and the proceeding of this study. Section 4 presents the methodological obstacles that emerged during both the study and the CIP planning context. Section 5 discusses implications for CIP planning, such as *STYREL,* and for research in the context of CIP and crisis management. Section 6 concludes by emphasising areas for improvement, which could expand the comprehensiveness of the obtained knowledge when studying CIP.

2. Background

2.1 Power supply and critical infrastructure protection

The power supply sector is considered central to the other sectors of CI because it constitutes a precondition for their proper functionality (Rinaldi, Peerenboom and Kelly, 2001; Yusta, Correa and Lacal-Arántegui, 2011). Recent studies have investigated the prevention and restoration of power distribution systems after a failure (Negnevitsky, et al., 2013; Tortos and Terzija, 2012), the cascading effects of technical failures (Hines, Balasubramaniam and Sanchez, 2009; Vaiman, et al., 2013), and the resilience of power distribution systems (Maliszewski and Perrings, 2012). Apart from investigating the economic costs of power outages (e.g. Küfeoğlu and Lehtonen, 2013), other studies have encouraged advances in society's resilience to cope with rare events that have catastrophic potential (Boin and McConnell, 2007; Wright, et al., 2012). Research on power outages in Sweden revealed that actors in municipalities and PGOs expected households to be prepared; however,

households did not clearly understand that they had such a responsibility (Palm, 2009). In addition, since there have been few severe power outages in the past, people responsible for preparedness and response planning in municipalities (Enander, Hede and Lajksjö, 2015) and civil defence in CABs (Wimelius and Engberg, 2015) have limited experience with such events. Previous research in the context of CIP has revealed that inadequate information channels during the process, organisational biases during decision-making, and lack of mutual understanding hamper cross-functional collaboration and coordination during preparation and crisis management (Powley, 2009; Pramanik, et al., 2015; Odlund, 2010; Große, 2019).

2.2 Swedish planning of CIP – *STYREL*

To facilitate a better understanding of the complexity of research and practice in context of CIP, a brief description of the Swedish circumstances follows. In Sweden, power is produced mostly in the North, while most of the power consumption occurs in the more populous southern parts of the country. This could lead to power shortages if the power transmitted cannot fulfil power demand. Considering this risk, the SEA developed the national planning process *STYREL* between 2004 and 2011. This approach aims to produce a plan for directing power to prioritised power consumers during a national power shortage. Similar to the overall Swedish crisis management system, *STYREL* engages a considerable number of actors at local, regional, and national levels from both public and private sectors (Große, 2018). The goal is to protect society from the adverse effects of disturbances in electricity supply. This CIP planning identifies electricity-dependent infrastructure such as buildings and facilities that provide societally important functionality. *STYREL* applies the eight-point scale in Table 1 to identify and prioritise CI. The pilot of *STYREL* run in 2009 and its first and second rounds occurred in 2010/11 and 2014/15, respectively. The plan was to conduct the third round from 2019 to 2021; however, because of the worldwide COVID-19 pandemic, the SEA decided to postpone the third round. However, since the implementation of *STYREL*, there has not been any electricity shortage situation calling for the operation of *STYREL* by manual load shedding. Therefore, it is not possible to evaluate whether the planning system works as intended. Figure 1 demonstrates the proceedings followed in the second run (SEA 2014):

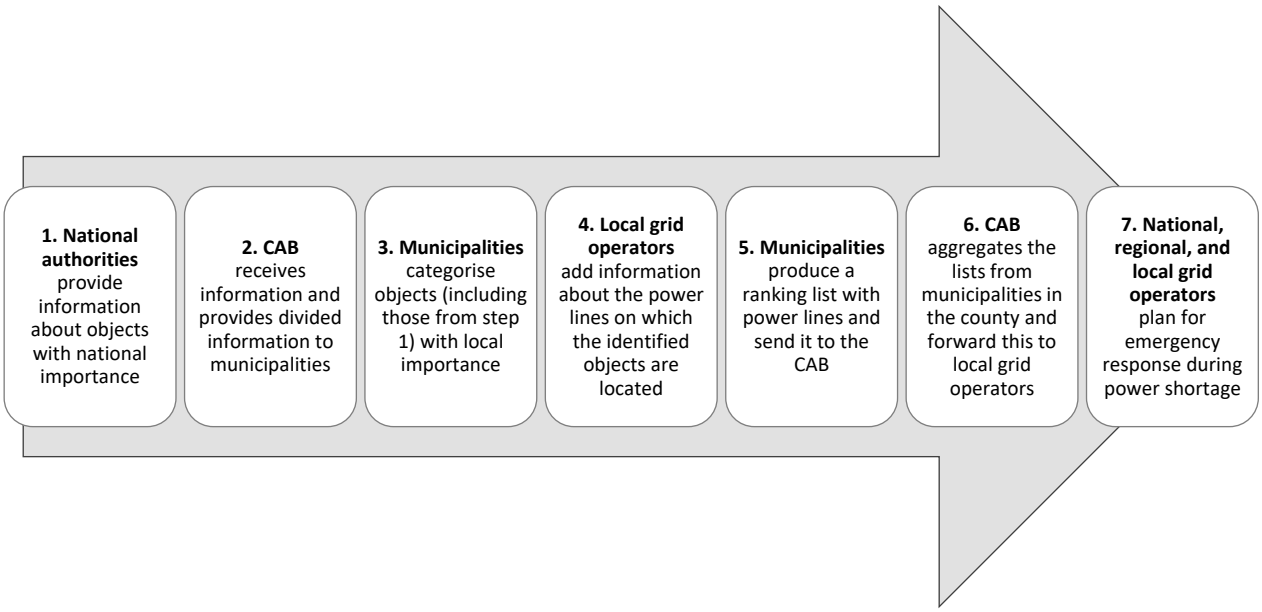

Figure 1: Reference process of STYREL as proposed by the Swedish Energy Agency (SEA, 2014)

First, the Swedish Energy Agency (SEA) invites relevant national agencies to make an inventory of CI that they individually operate across the country. In adherence with the scale shown in Table 1, the importance of each identified asset and its functionality for society apply to each CI. The agencies then provide information about these classified assets to each CAB responsible for the location of the CI (1). The CABs in turn organise the lists from the agencies into sections corresponding with each municipality's geographical area of responsibility (2). CI of national and regional importance is included in the additional local proceedings at the municipalities, which make an inventory of local circumstances to find and classify CI according to the above-mentioned scale (3).

Table 1: Priority Classes of Critical Infrastructure (Swedish Civil Contingencies Agency [MSB], 2010, p.10)

Class	Electricity consumers that have/represent:
1	Significant impact on life and health in a short time frame (hours)
2	Significant impact on vital societal functions in a short time frame (hours)
3	Significant impact on life and health in a longer time frame (days)
4	Significant impact on vital societal functions in a longer time frame (days)
5	Significant economic value
6	Significant importance to the environment
7	Significant importance for societal and cultural values
8	Others

During the local ranking, local PGOs assist with information about how power consumers link to power lines (4). The prioritised CI are then merged in spreadsheets using an additive approach in the ranking of controllable power lines. After their final decision on the ranking of power lines, municipalities return the revised document to their CAB (5). The CAB assembles the lists from the municipalities in a similar manner and compiles their final ranking, which is sent to the national PGO and, in separate sections, to local PGOs (6). Local PGOs must subsequently use these lists in their planning of manual load shedding in cases of power shortage (7). Currently, ten of the 160 PGOs in Sweden are responsible when disturbances occur in the power grid. These PGOs must maintain preconditions that enable them at any time – by order of the national operator – to reduce power consumption based on demanded volume. This consumption reduction must be effectuated within 15 minutes of receiving the order and should adhere to the *STYREL* plan as much as possible.

3. Data and method

3.1 Material: Data collected during the research project

The research project applied a mixed-method approach (Maxwell, 2010). The data collection included publicly available documents, semi-structured interviews, and a survey, which enabled data triangulation (Gerring, 2007). Additionally, partial studies (Danielsson, Nyhlén and Olausson, 2020; Olausson, 2019; Große, 2017; Große and Olausson, 2018; 2019; Große, 2019; 2018), field notes, reflections, internal meeting protocols, and individual experiences of involved researchers along with the progress of the research project enriched the material basis of the present study (Bryman and Bell, 2015).

The document study investigated preparatory materials regarding the planning of the pilot in 2009 (CAB Blekinge, 2009; CAB Dalarna, 2009) and the first round of *STYREL* in 2011 (CAB Stockholm, 2012), which included public investigations and reports, instructions, handbooks produced for the policy-making process, and available evaluations. Initially, the document study also planned to include real municipal-, regional-, and national-level planning documents from the two rounds of *STYREL* to assess societally important objects throughout the different steps of the planning process. However, the results ultimately revealed that their inclusion was not possible due to secrecy, and that the information was lost and obsolete (see 4.2.2).

The interview study selected three counties, one representing the rural countryside, one including heavy industry close to the capitol, and one including one of the three major Swedish cities. The interviews involved four, 47, and 15 participants representing the CABs, municipalities, and PGOs, respectively. Excluding one, all 66 semi-structured interviews were conducted at the interviewees' ordinary workplace and lasted one hour on average. Together with the document study, the recorded and transcribed interviews constituted a valuable source for subsequent analyses and the survey.

To broaden the analysis with particular aspects such as concrete proceedings and coordination at the regional level, the survey involved all 21 counties in the first step. The coordinators received a link to a web-based questionnaire, and 15 responded. The second step extended the data collection and addressed the 10 PGOs that perform emergency measurements to stabilise the power grid during the initial phase of a national power shortage. Representatives of all PGOs answered the survey in a physical meeting.

3.2 Analysis: Four-step model for investigating obstacles

This study applies a four-step model to analyse systematically the obstacles facing research and practice in the CIP context. Since CIP is a developing multidisciplinary research field, the analytical framework shown in Table 2 applies an inclusive perspective on an abstracted research and decision-making process.

Table 2: Analytical Framework

Step	Definition	Methods and Components
Data collection	concerns access to data and textual material	Documents Interviews Survey
Data assessment	involves the possible analyses of data and textual material	Qualitative text analysis Quantitative data analysis
Decision-making	regards adaptation with a progressing process	Selection Prioritising Aggregation
Evaluation	addresses the quality and relevance of results	Validation Development

The reflective analysis concentrates on methodological obstacles to studying *and* performing CIP and its governance. Therefore, the study classified the identified issues according to the analytical framework, arranging them with reference to both processes: the research project and *STYREL*. The combination of qualitative and quantitative materials as well as analysis methods yielded a comprehensive understanding of the obstacles that emerged repeatedly from the study in the CIP context (Venkatesh, Brown and Bala, 2013). The subsequent section details the main obstacles that affected both the study during the project and the actors during the Swedish CIP planning.

4. Methodological obstacles to research and practices of CIP

In accordance with the outlined framework, this section considers the methodological obstacles that significantly impede research and practice in the context of national and international CIP. The analysis highlights the impact of these problems on both the research project and the underlying *STYREL* process.

4.1 Obstacles to data collection

4.1.1 Access to documents and their content

The publicly available documentation regarding the creation and development of the Swedish planning is fragmented. Some documents provide different versions of the priority classes during the development process and others discuss considerations of necessary regulations associated with the planning process. The study found neither records of the development process nor evaluations of the second round of planning. This suggests that such documents do not exist, are classified, or that the owner does not want to share this information or has not considered sharing it.

The handbooks and guidelines provided by the nationally responsible SEA provided an easily accessible entry point into the planning process and templates used by the actors for planning and information sharing during the process. However, the instructions did not elaborate on the concrete proceedings of the planning process. Although the actors had control over their own part in the process, they had limited knowledge and lacked information about the other steps in the process.

Moreover, the document study included evaluations of the *STYREL* pilot run and the evaluation of the first round. Despite the project's goal, it was not possible to include real planning documents from the actors due to information security concerns. The actors were highly uncertain about the classification of the information and documents. In some cases, this information, which has been mostly stored offline, could not be found and was thus inaccessible to not only the researchers in the project, but also the entrusted officials.

However, the available documents have contributed to our understanding of the *STYREL* process from its commencement until now. This includes how and why *STYREL* was designed, which objectives the process targets, and how the pilot and first round were completed. This initial understanding became important for the interview study, for example, for when participants referred to the pilot and the first full-scale run. Notably, the second

round lacks any kind of evaluation, and none of the coordinating actors or any central instance collected any documentation or evaluation from the participants in the process. One obstacle to structured data collection from important documents is the variation in the content of the documentation between the actors. Moreover, some documents were publicly available, whereas other types of documents and information were undetectable. The interview study could not associate any systematic knowledge management with the *STYREL* process. Since knowledge from process developments and earlier rounds of planning is not systematically organised, such incompleteness arguably affects the continuity of the process. This implies that officials, particularly newly appointed ones, need to cope with information scarcity while executing the planning. During the following interviews, the insufficient documentation became obvious (Danielsson, Nyhlén and Olausson, 2020).

4.1.2 Access to participants and their institutional knowledge

The interview study first consulted the coordinators at the CABs in the selected counties. Their knowledge and experience varied based on their individual involvement in the planning process. Two of the coordinators had been involved in both rounds of *STYREL*, and one of them had been in another county during the first round (see Olausson, 2019). The other two coordinators participated in only the second round, and one of them had previously been responsible for the process in one of the municipalities in the county. This implies that while all the coordinators had experience with the planning, the knowledge of one of them regarding *STYREL* in their specific county was limited to documentation from the previous round and hearsay regarding the first round in the county. The subsequent survey discovered that 58% of all coordinators had never participated in *STYREL*.

Two or three years, respectively, had transpired between the first round of *STYREL* and the interviews with the security officers at the municipal level in 2016 and 2017. More than 40% of the interviewees had not participated in any of the *STYREL* rounds, and about one-fifth participated only in the second round. Before the interview, many had contacted their predecessors to acquire knowledge of the process. Staff turnover became an obvious obstacle; in many cases, the predecessors had retired or moved to another position. In some cases, municipalities had engaged retired public officers on a consultant basis to prioritise the identified CI or assist in local processes to mitigate the lack of knowledge. Additionally, some of the security officers gained knowledge through documents of the first round, and others derived their knowledge from colleagues who had limited experience in the two rounds. This implies that knowledge of *STYREL* is based mainly on others' experiences and hearsay about the process. Such deficiencies may explain one reason for the lack of evaluations from the second run.

The interviews with the PGOs involved representatives from national, regional, and local PGOs. At least 40% of the representatives had not participated in any of the *STYREL* planning rounds, and two had been involved only in the second round. Those who participated in both rounds showed considerably different levels of experience. One of the most experienced retired on the day of the interview, which constituted a unique opportunity for the successor to gain first-hand knowledge. Some representatives demonstrated comprehensive knowledge of their local power grid, for instance, by memorising the most critical objects of the grid. Most often, the local PGOs reported good co-operation with the security officers in their municipalities, and information sharing occurred personally between them in already established networks.

During one interview involving both security officers from the municipality and the representative from the local PGO, both actors' limited knowledge and understanding about the other's work with *STYREL* became apparent.

4.1.3 Distribution of survey and participation

Since the regional level maintains a central role as the coordinator in *STYREL*'s top-down and bottom-up approach (Große and Olausson, 2018), the survey focused on perceptions regarding co-operation and decision-making at the regional level. The aim was to distribute the questionnaire at a joint workshop organised by the SEA. Because of poor participation, we emailed a link to an online version of the survey to the coordinators who had missed the meeting. While the participants in the meeting spent time focusing on the planning process and interconnected obstacles in a group setting before filling out the form, the respondents to the online survey may have had another attitude when answering the questionnaire. Furthermore, six of the coordinators did not respond to the survey, possibly because the addressed person had been replaced by someone unknown to the researchers due to staff turnover.

In the second step, the survey was adapted to the PGO's role in the planning process. All addressed PGOs responded to the questionnaire after the survey was distributed during a physical meeting. Currently, only 10 out of 160 PGOs meet the requirements to respond rapidly to the event of a national power shortage, which implies that this might affect the comprehensiveness of the data collection, similar to the proper application of the planning results for CIP during such an event.

4.2 Obstacles to data assessment

The interdisciplinary project aimed to apply a variety of qualitative and quantitative methods to analyse the collected data (Maxwell, 2010). This research design should contribute to our understanding of the proceedings and concerns regarding collaboration in the context of CIP and further our knowledge about the decision-making process and information processing. However, the obstacles to data collection had consequences for data assessment.

4.2.1 Understanding of the planning process

To substantiate the understanding of the process, it was important to depart from the government investigation, *A safer society* (SOU [Official Reports of the Swedish Government], 1995), which identified power supply as one of the critical areas for national security and development in Sweden. Two years later, the *Vulnerability and Security Assessment* issued the report *Security in a New Era* (SOU, 2001), which discerned a change in the common threat scenario and an increased vulnerability of technical infrastructure, both of which would require stronger focus on reliable power supply. First, however, until the aftermath of the blackout in Sweden and Denmark in 2003 and the following evaluation by the Danish PGO, the compilation of a ranking of power consumers to prioritise during such events was encouraged (Elkraft System, 4.11.2003, p.6). Since 2004, the SEA has been responsible for the creation, design, and development of *STYREL*.

The qualitative analysis of *STYREL* documents faced challenges related to language, interpretation, and level of detail. Although the collected data and material are in Swedish, the usage of language differs. For example, regulations use a specific terminology, whereas public documents produced by municipalities often use colloquial language and tend to omit details. Such obstacles illustrate that the qualitative analysis of documents involves both interpreting unclear text passages and modifying the level of detail in accordance with research objectives.

The document analyses revealed that the planning process underwent major changes involving information sharing between municipalities and CABs from the first to the second execution of the process. Questions emerged about the reasons for these changes and their possible consequences for the *STYREL* process and its result. Furthermore, the handbook for the second round provided enhanced clarity and revealed that some process development occurred after the first round. Nevertheless, the handbook describes the process at a general level; therefore, the concrete proceeding regarding the several actors remains unspecified, which raises further uncertainties about the underlying objectives, concrete activities, and governance of the multi-level planning system. These considerations informed the preparations of the subsequent interview study.

The interviews confirmed that experience and knowledge faded between the planning rounds. One major reason for this obstacle is the long period that elapsed between the rounds of the planning process, during which staff turnover contributed to the loss of information. Because of the lack of knowledge management, new personnel lacked information about this planning process until the new process commenced. Another reason is that the documentation from previous rounds served as the foundation for the next one. Security officers often assumed that they could depart from such documents in their planning task. However, it was not possible to assess the quality of these documents. Some of the interviewees displayed a copy-and-paste behaviour rising from trust in the work of their predecessors and a limited comprehension of *STYREL*.

The interviews revealed that preconditions and requirements differed notably among the representatives from the PGOs. Apart from the operation of regional grids, larger companies are responsible for providing electricity to consumers in up to 120 local grids. Additionally, PGOs must ensure a certain level of information security due to legal regulations imposed on operators of CI. The exchange with municipalities impelled PGOs to perform intensive technical and manual processing of information. These preconditions provided obstacles that hampered not only closer co-operation and information sharing between many PGOs and municipalities, but also further analyses by both actors. Such conditions imply that larger PGOs, which are also certainly responsible during a power shortage, depend more on the reliability of public actors' work than smaller PGOs.

4.2.2 Statistics about the process

The restricted access to real planning documents constituted an insurmountable obstacle to mathematical and statistical analyses. Instead, modelling of the process departed from the current implementation at a theoretical level. Moreover, the aforementioned changes between the first and second rounds would have rendered it impossible to trace a prioritised object through the planning process. This scarcity considerably reduces evaluations of the preservation of the initial preferences of decision-makers during the different stages of *STYREL* (Große, 2019).

Another obstacle to the quantitative analysis of the possible consequences of a power shortage for society is that the amount and the particular location of the required power supply reduction will vary based on the particular requirements of a specific emergency. Consequences, in turn, depend on further aspects like the power demand of CI, the implemented preparation measures, such as emergency power aggregates or reserve capacities elsewhere, and the time required to restore power. Taking into account all these highly uncertain aspects for estimating the possible consequences for society was therefore beyond the capacity of the project, which indicates that this obstacle also applies to *STYREL*.

Analyses of metadata from interviews with security officers in municipalities yielded some descriptive statistics about the structure of the dataset, which was obtained through the survey. Furthermore, the analysis of the survey's first application revealed that 58.3% of the coordinators at the CABs had never participated in the planning process, 25% had participated in the second round, and *only 16.7% had participated in both rounds of STYREL* (Große and Olausson, 2018). More than half of the coordinators requested a better process with PGOs, and a similar number of respondents did not know how regional and national CI as well as cross-municipal and cross-regional power lines was handled during the process. Therefore, the second step of the survey study involved a group of PGOs, which confirmed a lack of experience; 44.5% of the PGOs had never participated in *STYREL*. The need for a more structured process with CABs was expressed by 77.8% of the PGOs. Regarding collaboration, the results revealed a considerably higher level of established networks in the realm of coordinators in CABs compared to PGOs. However, the opposite was revealed regarding the expected impact of the actor's work on society and the perceived level of knowledge. This may stem from the fact that compared to the CABs, PGOs possess better knowledge about the power grid but do not participate to a similar extent in the part of the process that identifies and prioritises CI.

4.3 Obstacles to decision-making

Since the research project took place between two rounds of planning, some research methods such as observations of collaboration and decision-making were not applicable. Moreover, it is highly likely that experience and knowledge of the process had faded as time passed after the process. However, as knowledge and experience increase during the proceedings, an experienced decision-maker can consider documentations as less important or even highly relevant. Therefore, there is a risk that both researchers and practitioners might overlook relevant information. Furthermore, the comprehensive understanding of the process that participants develop during the planning might differ from the retrospective reconstruction of the proceeding created by the researchers with the assistance of both experienced and new actors within *STYREL*. The *STYREL* reference process motivates adaptation to local requirements, which also includes adjustments to the level of knowledge and information access of specific decision-makers. This lack of clarity regarding local proceedings combined with inadequate documentation of previous planning rounds imposed high demands on decision-makers at all levels (Olausson and Nyhlén, 2017; van Dijk and Wilke, 2000).

As indicated, the research project could not address all uncertainties associated with Swedish CIP. However, the actors in CIP planning must contend with these obstacles, which highlights the relevance of developing metods that enable collective intelligence with cumulative knowledge in the field and inter-organisational learning capabilities, which in turn can improve decision-making under uncertainty. For instance, the interviews and survey revealed that the different actors used divergent and ambiguous terminology, which led to disparate interpretations of *STYREL*. Such divergent understanding because of uncertainty further produces individual interpretation and application of the classification scheme for prioritising CI at various levels, which could affect the results of the planning process. The different interpretations of the actors also relate to their area of responsibility. For example, the PGO interpretation reflects a trained focus on power supply and indicates that they did not identify and prioritise CI to a similar extent as the municipalities and CABs. However, the perceived lack of co-operation and the low rate of completion in terms of the final manual-load-shedding planning (60%

of all 160 PGOs) imply that the PGOs felt hindered when applying the results of *STYREL* to the final decisions on enhancing CIP by ensuring power supply to prioritised CI during a power shortage.

Understanding the complex nature of such decision-making and the systemic consequences that result from it emerges as an essential precondition for the development of appropriate processes and methodologies. In order to enable practitioners to anticipate such critical decisions, more advanced but applicable methods for such systems analysis are required (Peeters, et al., 2021).

4.4 Evaluation and development issues

The collection and assessment of data and the decisions made before, during, and subsequent to research in the project as well as in the planning for CIP provide certain conditions for evaluating and developing the processes. In the *STYREL* context, documentations of previous processes and the current one constitute input to upcoming processes. The review of literature in the field of CIP indicated that the Swedish process seems to be unique in its almost non-technical perspective of electricity transmission and its method of identifying and prioritising CI. This specific nature provides both research opportunities and obstacles. First, *STYREL* is an established process that has been executed in full-scale on two occasions. In addition, the number of participants, the lengthy planning process, and *STYREL*'s position within national and international CIP and crisis management efforts have attracted further research interest. Second, the singularities of *STYREL* are obstacles to comparisons with approaches in other sectors or countries. Similarly, the aforementioned lack of regulation regarding regional and local proceedings during the process resulted in a multitude of approaches, which hampered evaluation and hindered the actors in comparing their proceedings with those of similar actors or the first round. In some cases, minor revision preceded the use of the documents from the previous planning input data, which may also explain why no evaluations of the second round appeared during the initial document study. However, because information quality indicators are absent, it is difficult to assess the extent to which the available input can be perceived as reliable and reflecting reality. This scarcity implies that the built-in removal of information during the planning process creates a notable obstacle to evaluations of the preservation of initial preferences alongside the process, which also raises further obstacles to the integration of *STYREL* in other CIP and crisis management efforts at local, regional, and national levels.

Although the research project provided insights that can support further development of the process, the development of the third round of *STYREL* did not involve researchers or results from this project. The extent to which the results of the partial studies have contributed to the next rounds must be part of a subsequent project that scrutinises the updated handbook and proceedings of the participants. The current project observed a strong conviction among the actors that both CIP and *STYREL* constitute vital tasks for safeguarding daily life, civil protection, and crisis management. Consequently, the majority of the participants willingly provided their time to discuss experiences and obstacles. They expressed strong expectations for the improvement of the approach with respect to the considerations in this paper, which highlighted the apparent obstacles in nation-wide planning for CIP beyond organisational aspects. As mentioned, the document study could not obtain publicly available documentation about further improvements of the *STYREL* reference process. Nevertheless, the project results concerning collaboration, information processing, and decision-making during *STYREL* enable both research and practice to address obstacles to CIP at all societal levels.

5. Implications for Advancements in CIP

The reflective analysis of the methodological obstacles, which mirrors the proceedings of research in practice, highlights that CIP practice and the research in this context must contend with similar challenges. In particular, five general obstacles emerge from the analysis of the case and the research on it. These obstacles includes a) the access to high-quality data, b) the loss of knowledge over time, c) the interpretation and evaluation of processes and methods, d) the transferability and comparability of data, results and insights; whereas all culminate in 5) a lack of collective intelligence.

First, the access to high-quality data is important not only for the CIP practice, but also for the application of mixed-methods in case studies and the development of advanced methods, including artificial intelligence (Peeters, et al., 2021). However, information security appeared to be a crucial aspect in the context of CIP. For example, relevant information regarding power demand and supply is often classified; therefore, it is difficult to share information between organisations or even within the same organisation, which may also build obstacles to international efforts (Fritzon, et al., 2007). Limited access to data built a major obstacle to the research

project. Data and materials that are important for such empirical studies are significantly limited for externals such as researchers due to information security concerns because information can be exploited for severe attacks on control systems (ICS-CERT, 2016). The consequences of such data scarcity are so significant that, in some cases, even actors in the process had no access to relevant documentation or were unable to interpret the data.

Second, the loss of knowledge over time has already started during the CIP planning. One finding from the empirical evidence is that information about the outcomes of the process remains classified. Consequently, actors do not know whether prioritised CI objects will receive electricity in a power shortage, and to which extent. Ultimately, this loss of information may trigger problems in subsequent planning and emergency response. The various layers of information scarcity in CIP may thus cause a paradoxical outcome: a planning system created to reduce uncertainty during emergency response may itself create uncertainty in planning. Consequently, research and practice must rely on qualified guessing to analyse possible outcomes and systemic consequences, which hampers also the systematic design of new methodologies (Venable and Baskerville, 2012).

Third, closely interrelated with the former two, the interpretation of processes and methods becomes a multi-facetted issue. The analysis indicated that the complexity of the approach and the uncertainty about the adequate level of information security resulted in fragmented knowledge. The revealed lack of systematic institutional knowledge management impeded not only inter-organisational information sharing, but also cumulative knowledge generation and collective learning as well as the dissemination of planning results to interdependent operators of CIP and crisis management. However, the actors mainly used established communication paths and reliable collaboration networks with internal and external actors to discuss their interpretations of the proceedings. The remaining obstacle is the variety of interpretations, which challenge systematic comparative analysis of CIP methodologies, both during research and practice.

Fourth, the transferability and comparability of data emerge therefore as another obstacle. For example, the actors did not really comprehend how the process was conducted the first or even the second time due to the lack of continuity throughout the Swedish approach, which questions the representativeness of the interviews. Rigorous analysis, interpretation, and cross-validation of the collected material were required to distinguish hearsay from concrete experiences (Maxwell, 2010). In comparison, the lack of proper documentation implies that important knowledge disappeared in the *STYREL* process. Moreover, problems in accessing documentation throughout the multi-level planning caused difficulties in validating the proceedings and the outcome for both the researchers in the project and the actors in *STYREL*. Some actors tried to mitigate the problem by assigning one dedicated person to *STYREL*, which unfortunately cannot ensure transferability and comparability of data throughout the entire complex system because no systematic data management exists.

Finally, the methodological obstacles culminate in a lack of collective intelligence. In order to develop new types of mixed methods that combine human interpretation and understanding with artificial reasoning in a reliable manner, the systemic nature of complex societal concerns must be understood (Bentahar and Cameron, 2015; Peeters, et al., 2021). Therefore, the discussed obstacles must be addressed in research and practice. The considerable number of actors in *STYREL* and the extent of the CIP context confer noteworthy complexity to multidisciplinary research projects as well as CIP planning. Hence, to match scientific and practical perspectives, a broader dissemination of results is important for further research and development of reliable methods.

6. Concluding Remarks

This paper highlights some general methodological obstacles to studying and performing CIP in general and CIP governance in particular. First, a lack of access to high-quality data, which emerges from a lack of clear definitions and classification criteria as well from information security concerns in the CIP context, constitutes the greatest obstacle to both research on CIP practice and information sharing among the relevant parties in the area. The second obstacle is the loss of knowledge over time due to unsuccessful knowledge transfer between process activities and iterations. Third, the interpretation of processes and methods causes a range of local proceedings due to adaption to particular circumstances, which reflects a lack of detail and hinders the development of cumulative knowledge in both research and practice. Fourth, this variety of approaches constitutes an obstacle when developing a general understanding of the CIP proceedings, because it hampers the transferability and comparability of data, methodologies and knowledge management. Fifth, the accumulation of obstacles into a

lack of collective intelligence complicates not only the detailed assessment of the decision-making process for the identification and prioritisation of CI and its consequences for society during a power shortage but also the development and application of advanced and integrated methods to facilitate the collaborative work of stakeholders concerned with CIP. This study thus contributes to a deeper understanding of these obstacles that significantly impede research and practice in the context of national and international CIP.

Based on the study's findings, we suggest the following to advance methodologies in complex settings.

First, the results suggest combining centralised with decentralised aspects in the approach for CIP. Although the circumstances of each actor vary, and therefore the proceedings benefit from adequate process adaptation, there are actors whose circumstances vary slightly who could learn from each other. In this context, a central instance could collect related documents and maintain a knowledge basis that consists of concrete models, particular methods and cases, excellent examples, and pitfalls. Such an institutional knowledge base could decrease hearsay and facilitate shared understanding among public and private actors while maintaining a certain security level in information sharing alongside and in between process iterations. Second, in addition to such an institutional knowledge basis, guided decision-making under difficult circumstances and assistance when required could inform the maturation of specific methods and processes for diverse stakeholders in CIP planning and research. Engaging responsible persons from different groups in joint workshops could further assist them with reassessing implicit objectives and underlying assumptions and developing a shared understanding about the societal challenge that CIP intends to solve. Third, to enable all actors in CIP to provide insights, recurring surveys could be a tool to identify weaknesses and sources of knowledge. Therefore, a national organisational structure must complement the current approach. The results of the project underlined the methodological pitfalls of the individual studies and the obstacles that decision-makers face in their planning task. Improving the management of *STYREL* could therefore support dedicated research and vice versa.

Prospects for future research should aim to deepen the understanding of the contribution of each actor to the resulting CIP and societal resilience. In addition, there is a need to address information security concerns jointly to facilitate co-operation among actors and between research and practice. Research and practice need to broaden the perspective on the complex CIP system that not only comprises a considerable number of intertwined technical subsystems, but also human decision-makers and their interactions, (inter-)organisational barriers, interdependencies among CI and environmental constraints, and regulations and policies. Emerging challenges such as climate change, natural hazards, global pandemics, or cyber-attacks necessitate collaborative efforts for approaching, analysing, visualising, and comprehending the interdependencies between CI and the impact of disturbances on society. Such efforts could aid in reducing vulnerabilities and increasing continuity that strengthens the resilience of society. By providing novel empirical evidence from a complex case of national CIP management and highlighting general methodological obstacles for research and practice in this area, this study contributes to the evolution of the new methodological concepts such as collective intelligence.

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The Learning History Methodology: An Infrastructure for Collective Reflection to Support Organizational Change and Learning

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Abstract: Organization members often complain about insufficient time to reflect collectively as they grapple with constant significant changes. The Learning History methodology can support this collective reflection. Given the scant empirical studies of this action research approach, the present paper fills this gap by giving an overview of this methodology and by presenting a qualitative study that answers the following research question: How does the Learning History methodology contribute to collective reflection among organization members during major organizational change? To answer this question, an empirical research project was led within five healthcare organizations in Canada during their implementation of the Planetree person-centered approach to management, care, and services. The data set includes 150 semi-structured interviews, 20 focus groups and 10 feedback meetings involving organization members representing all hierarchical levels in the five participating institutions. The results highlight the five types of contributions of the Learning History methodology to collective reflection within the five institutions that participated in the study: 1) a process of expression, dialogue, and reflection among organization members; 2) a portrait of the change underway; 3) a support tool for the change process; 4) a vector for mobilizing stakeholders; and 5) a source of organizational learning. The results also show how organization members' collective reflection is built through the various stages of the Learning History methodology. By demonstrating that this collective reflection leads to true organizational learning, the findings position the Learning History as a research-action method useful both from a research standpoint and as an organizational development tool. In the conclusion, lessons learned using the LH approach are shared from a researcher's perspective. This paper should interest researchers and practitioners who seek research methodologies that can offer an infrastructure for collective reflection to support organizational change and learning.

Keywords: learning history, action research, collective reflection, dialogue, organizational change, organizational learning

1. Introduction

In a knowledge economy where an organization's pace of learning must equal or exceed the pace of change in its external environment (Drucker, 1999), collective reflection has become an indispensable organizational learning lever (Argyris and Schön, 1996). However, it is difficult to devote time to collective reflection given the intensity of daily organizational life (Cotter, 2014; Roth and Kleiner, 1998).

The Learning History (LH) is a powerful action research methodology designed to support collective reflection (Bradbury, Roth and Gearty, 2015). Nonetheless, it is little used in business research, and few empirical papers explore the subject (Ripamonti et al., 2016). This paper addresses this gap by presenting an overview of the LH methodology and by focusing on the ways it allows organization members to reflect collectively during major organizational change. The results presented are from the CIHR-Planetree research project, which took place from 2011 to 2015 in five healthcare institutions that are members of the Réseau Planetree Francophone (French-language Planetree Network), all of which are committed to implementing a person-centered management, care and service approach inspired by the Planetree approach. Developed in the United States in the late 1970s, the Planetree approach aims to implement resources, programs, and tools to promote the well-being and overall health of patients, families, and staff within health organizations (Frampton and Charmel, 2009). The Planetree Group is an international network of over 700 organizations in more than 25 countries.

The aim of the paper is to determine how the LH methodology contributed to collective reflection from the perspective of the members of the participating organizations during the implementation of the Planetree approach, a major organizational culture change. The first part of the article presents a literature review on the LH methodology and its evolution over time, with emphasis on its contribution to collective reflection. The second part describes the methodology used for this study. The third part presents the results and discusses the types of contributions LH makes to support collective reflection during major organizational change. The conclusion outlines the limitations of this study.

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2. Literature review

The Learning History (LH) methodology is one of the inductive approaches used in qualitative research (Amidon, 2008). It is an integral part of participative action research (Roth and Bradbury, 2008), and is considered a fundamental approach in organizational development (Bradbury et al., 2015). Since its inception 25 years ago, the LH methodology has attracted the interest of researchers from around the world. Parent, Roch and Béliveau (2007) present an overview of the LH methodology that covers its origins, goals, advantages, challenges, and appropriate contexts. Below is a brief overview of the evolution of the LH methodology over time, with particular emphasis on the contribution of LH to collective reflection.

2.1 Evolution of LH methodology

The LH methodology was developed in 1994 at the MIT Center for Organizational Learning (Massachusetts Institute of Technology). Although this approach was originally designed to promote the transfer of learning between an organization's projects (Roth and Kleiner, 1998) and to help create learning organizations (Senge, 2006), it is increasingly used to support change initiatives (Bradbury et al., 2015). LH allows stakeholders to learn from past experiences and engage in dialogue about actions to take, by providing a narrative that reflects the actors' journey (Gearty and Coghlan, 2018). A unique feature of the approach is that this narrative takes the form of a two-column document inspired by van Maanen's (1988) ethnographic tool called the *jointly told tale* (Bradbury and Mainemelis, 2001; Roth and Kleiner, 1998). The right-hand column contains excerpts from individual interviews in which participants share their perceptions, thoughts, concerns, attitudes, and questions about the change taking place in the organization. The left-hand column contains the analytical comments provided by the team of internal and external contributors (who jointly serve as learning historians), along with questions designed to prompt collective reflection (Roth and Kleiner, 1998). These analyses are combined with participant feedback. They are designed to make the editorial process transparent and to stimulate readers' reactions and reflections on the informal and tacit dimensions of integrating change into the organization. The LH document thus constitutes an artifact, which becomes what psychologist Donald Winnicott calls a "transitional object" (p. 17). This "object" helps stakeholders make the transition from their current situation to the future they desire (Bradbury et al., 2015).

The true value of LH comes not only from the document itself, but above all from the consultation process in which it is embedded. Through focus groups, participants deepen their understanding of the change their organization is undergoing and build collective meaning from their experience (Roth and Kleiner, 1998). These focus groups also serve to validate and improve the LH document. Lastly, they are an opportunity to discuss possible areas for improvement with participants to ensure the sustainability of the change process in their organization.

Although it is considered an emerging approach (Amidon, 2008), the LH methodology is being applied in different intervention areas around the world (Gearty, Bradbury-Huang and Reason, 2015). The literature contains studies led by researchers from not only the United States, the cradle of this methodology, but also from England, Australia, Belgium, Canada, Spain, Kenya, Ireland, the Netherlands, and Hong Kong. Based on a literature search in the ABI/INFORM, Academic Search Complete, CAIRN, Emerald Management Xtra and Sage Knowledge databases, we have identified 31 articles that report on studies published since 2005 that have used LH as a research method. This result illustrates growing enthusiasm for this method in that only 10 articles mentioned using LH as a research method before 2005.

2.2 Contribution of LH to collective reflection

One of the missing links in organizations' learning process is often the lack of infrastructure for reflection (Argyris and Schön, 1996). Organization members tend to reflect and learn in isolation or in small groups, and often have no common spaces to develop and test their ideas (Roth and Bradbury, 2008). From a change management perspective, the act of deliberately attempting to change the way people work together, no matter how small the change, requires a shift away from routines and habits through reflection (Arnulf, 2005). Even if this reflection can be done by one manager, many authors stress the importance of collective reflection to support organizational change (Argyris and Schön, 1996; Beer, 2000; Weick, 1995).

Regarding the advantages of LH, it provides a common learning experience that can be discussed and analyzed at different times and places (Gearty, 2008; Verdonschot, 2006). The authors who used LH as a research method find that the main contribution of this approach is that it provides an infrastructure to stimulate collective

reflection on current action. Bradbury et al. (2015) argue that collective reflection is at the heart of the LH approach. This method has two main objectives: to develop organization members' capacity to reflect collectively (leading to collective learning) and to discover organizational learning principles that can be transferred beyond the organization under study (Lyman et al., 2018). The LH methodology is not intended to provide ready-to-use responses and solutions to organization members, but rather offers them tools to collectively do this reflection themselves and follow up on it (Béliveau et al., 2013).

In short, as Prévost and Roy maintain, LH's action research strategy:

> *has the advantage of placing great emphasis on stakeholders' collective learning in their attempt to introduce changes in their system. It allows significant time for reflection among members of the organization, which is rarely found in conventional research strategies* (2015, p. 119).

3. Methodology

The aim of the CIHR-Planetree research project was to understand how to support the implementation of the Planetree approach, a major organizational culture change, while ensuring lasting desired changes. To this end, we carried out participatory action research using the Learning History (LH) methodology in five healthcare institutions, all committed to implementing the Planetree approach. At the time of the study, the only sites that had begun implementing the Planetree approach in Canada were located in Québec. That is why we chose to conduct this participatory action research at five institutions located in that province, all of which were members of the Réseau Planetree Francophone (French-language Planetree Network).

Two LH loops were conducted in each participating institution over a four-year period. Each LH loop consisted of six stages. Figure 1 illustrates the different stages of a Learning History loop: 1) semi-structured interviews with each participant, coming from all levels in the organization, which were audiotaped and transcribed in full (verbatim), 2) joint analysis of interview data, done by at least one key informant per institution (the Planetree coordinator), and production of the LH document, 3) dissemination of the LH document to participants (while reading the document, participants were invited to note their reflections, comments and questions), 4) focus groups, which were audiotaped and transcribed in full (verbatim), where we introduced a metaphor that emerged from our joint data analysis in order to help collective reflection and prompting participants to play an active role in suggesting possible future actions (for further explanation of our use of metaphors in the LH methodology, see Béliveau et al. (2013), 5) feedback meetings involving all members of the top management team at the participating sites, and 6) knowledge transfer activities, at the end of each loop, intended to convey the results to the five participating institutions and allow them to share their lessons learned with each other.

LH loops derive from action research (Roth and Bradbury, 2008). They can be viewed as iterations of investigation cycles where research results inform action throughout the research project. As Roth and Bradbury (2008) mention, the LH exemplifies the dimensions of quality that action researchers find important, namely the use of co-design, a shared narrative, distillation, and thematic writing, as well as validation and diffusion with participants. In short, LH projects provide an infrastructure for action research by using dialogue and collective reflection to co-construct relevant knowledge with participants and produce new possibilities for organizational action through shared cycles of meaning-making and understanding.

Below we present a synthesis of the main considerations and steps that guided the collection and analysis of the study data.

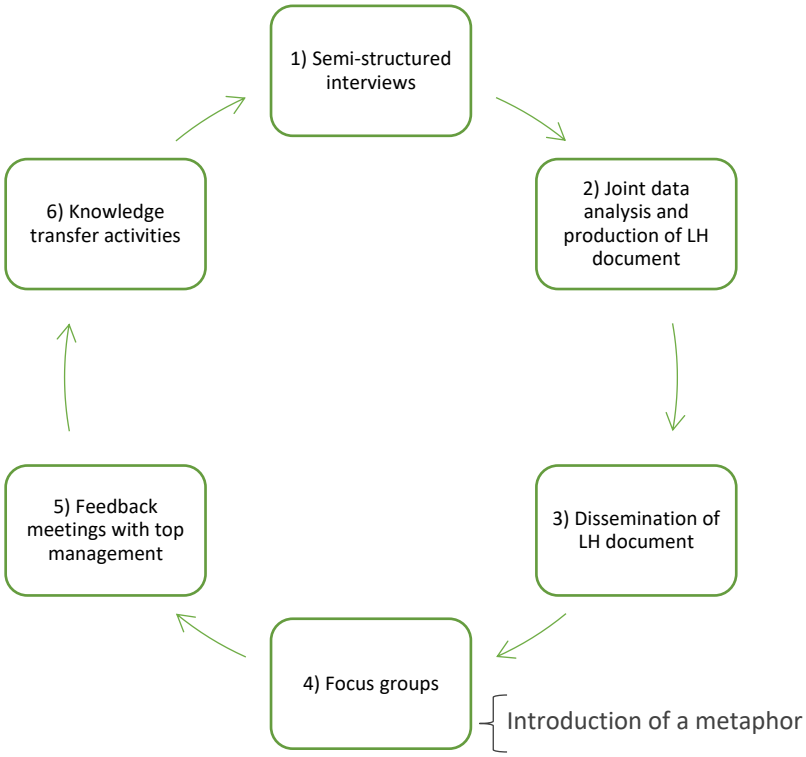

Figure 1: The stages of a Learning History Loop

3.1 The sample

The five institutions that participated in the project were recruited on a voluntary basis. The sample obtained had advantageous characteristics: the institutions notably differed in size, missions, and stages of implementation of the Planetree approach. For example, some institutions were in a start-up situation, while others were in the process of obtaining the Planetree certification (a rigorous process in which the institution must meet numerous criteria pertaining to the philosophy and various components of the Planetree approach).

At each site, 30 participants were selected. This purposeful sample (Patton, 2002) was intended to be representative of the hierarchical levels and the various responsibilities and positions held by staff. To ensure voluntary participation, participants were recruited in several stages. First, facility management was asked to identify 60 potential participants based on two main criteria: 1) the ability to express views about the change taking place, regardless of whether that person agreed or disagreed with the change; and 2) availability to participate in both LH loops of the research project. From this pool of potential participants, the research team randomly selected 30 participants, who were sent invitations to participate by email or mail. Participants represented all levels of the organization, including the top management team, middle management, health professionals and the support staff. Participation remained voluntary throughout the project.

3.2 Data collection

Four data collection methods were used in this project: 1) individual semi-structured interviews with each participant where participants shared their perceptions, thoughts, concerns, and questions about the change taking place in the organization; 2) focus groups, by hierarchical level, to validate and enrich the data collected through interviews; 3) participant observation to ensure data triangulation; and 4) management feedback meetings involving all members of the top management team at the participating sites. This meeting, preceded by the transmission of the final LH document, lasted approximately two hours. The purpose of the meeting was to discuss the results of the process and possible improvements with the top management team. This was a pivotal moment that served to maximize the impact of the LH approach in planning the next steps for implementing and sustaining change in the organization. In total, as part of the two LH loops of the CIHR-Planetree research project, we conducted 314 interviews, 42 focus groups and 10 management feedback meetings. The research instruments used to collect data in this study were informed by theory on change

management and knowledge transfer, and were developed by the research team, in close collaboration with the Planetree coordinator in each institution, following the LH methodology (Roth and Kleiner, 1998).

To give the reader an idea of the scale of management buy-in needed for success using the LH methodology, the time required by each employee to participate in the LH project can be estimated at around 5 hours per LH loop (1 hour for the individual interview, 2 hours to read the LH document, and 2 hours for the focus group), which amounts to approximately 10 hours for the entire research project. Members of the top management teams also participated in feedback meetings, which lasted around 2 hours, at the end of each LH loop.

3.3 Data analysis and interpretation

The LH approach, like other qualitative research methods, generates a large amount of data. To interpret the data in the richest way possible, the analysis was carried out in four main phases. First, following the semi-structured interviews, we performed an initial analysis and synthesis of the data. This phase, known as the distillation phase in the LH method (Kleiner and Roth, 1996; Roth and Bradbury, 2008), consisted of two steps: a content analysis, without a prior analysis grid, carried out using Atlas.ti software, followed by a conceptual analysis based on the coding obtained with Atlas.ti. These steps led to the production of the two-column LH document, which would become the centerpiece of the discussions during the focus groups and management feedback meetings. Table 1 provides an excerpt of an LH document produced during this research. On the right are excerpts from participants' answers to interview questions, and on the left is the analysis of interview data by the research team, which included 3 researchers, 3 research professionals, 2 post-graduate students, and an internal contributor (namely the Planetree coordinator of each of the participating institutions).

Table 1: Excerpt of an LH document produced during this research

What have you gained from your participation in the Learning History?	
The Learning History allowed almost half of the interviewees to realize, in a "non-judgmental way", how things have evolved and improved during the last year and a half.	*"When staff reflects on their process, in a non-judgmental way, it's just really nice to see what you've done and to feel validated in what you're already doing."*
	"You had people from different departments, and I was pleasantly surprised to see that everyone knew about Planetree and they shared experiences how it made a difference to them."

Once all the data collection steps were completed, following the precepts of grounded theory (Corbin and Strauss, 2015), a new phase of coding was carried out to condense the data and identify patterns (key themes) rooted in the data (Kleiner and Roth, 1996). Finally, the data were subjected to intra- and inter-case analyses. To track the change over this period, the intra-case analysis compared the results obtained from the two LH loops in the same institution. The subsequent inter-case analysis compared the pathways of the participating sites with each other to derive more general learnings about the implementation of an approach such as Planetree. During these last steps, the analysis was also informed by theory on change management and knowledge transfer.

Given that the purpose of this article was to determine how the LH methodology could contribute to collective reflection from the perspective of the members of the five participating organizations, we conducted intra- and inter-case analyses using data obtained from the second loop of LH, where we asked questions to this effect. Thus, the corpus underlying the production of this article is based on 150 interviews, 20 focus groups and 10 feedback meetings. To perform the intra-case analysis, we coded the data from each case to identify the different contributions of LH for each participating organization. Our in-depth analysis of each case was supplemented by an inter-case analysis to identify trends, similarities, and differences among the five cases (Yin, 2009). We thus used descriptive and observation matrices to analyze each of the cases, and comparative or meta-matrices to carry out our inter-case analysis (Miles, Hubermann and Saldaña, 2020).

4. Results and discussion

This section presents a synthesis of the results obtained from members of the five participating organizations during the second data collection loop (individual interviews, focus groups, management feedback meetings). The participants were asked about their experience with the LH method. The results are intended to depict the LH experience as experienced by members of the five participating organizations as accurately as possible. The organization of this section reflects the main families of codes that emerged during the intra-case and inter-case

analyses. Thus, the section is divided into five sub-sections, which represent the types of LH contributions to collective reflection within the participating organizations: 1) a process of expression, dialogue, and reflection among organization members; 2) a portrait of the change underway; 3) a support tool for the change process; 4) a vector for mobilizing stakeholders; and 5) a source of organizational learning. To deepen the discussion, the results are cross-referenced with the literature on collective reflection, organizational change, and organizational learning to highlight the contributions of the LH methodology in these areas. In this section, we have coded our data sources to preserve the anonymity of the sources cited. The first and second letters indicate the respondent's institution of affiliation (from A to E) and hierarchical level (T= top management; M= middle management; S=staff). The number that follows distinguishes respondents within each participating institution.

4.1 A process of expression, dialogue, and reflection among organization members

The LH approach offers several opportunities for organization members to express themselves, exchange ideas and reflect together. They include individual interviews, reading of the LH document and the questions asked in it, the holding of focus groups, and presentation of metaphors.

First, LH allows the participants to vent, to verbalize what they are experiencing:

> *"It just made me vent about how we live it here."* (CS_12)
>
> *"It allowed me, personally, to have a place to express how I saw the implementation and then to come and say [...], without being judged, what we should have thought about so that other organizations could benefit from our experience."* (AM_3)
>
> *"This is the place to name what works and then what doesn't, so we can improve the situation."* (BS_2)
>
> *"There is something therapeutic, quote unquote, in this approach."* (AT_1)

Second, LH lays the foundation for a dialogue between the various levels of the organization:

> *"I've seen [in the LH document] different perspectives that [my staff] never expressed. Even the department heads never expressed. This is something that I gained."* (EM_4)
>
> *"We must present this information [...] and ask the people involved for their ideas for the future, and how they want to continue to cultivate this garden."* (ET_2)

This dialogue is fostered when management is ready to hear what staff members have to say and to welcome criticism:

> *"We are ready to hear, so are the teams, both positive and negative. That's important, to welcome and then to acknowledge. [...] It's a success factor. Otherwise, it's not a credible approach."* (DT_4)

The multiple opportunities for dialogue that the LH approach creates prompted personal reflection for several organization members interviewed:

> *"It's a good way to reflect and, from the questions that you ask, it helps for me to notice things as I'm on the job. […] To keep me aware."* (ES_8)
>
> *"This leads me to reflect. [...] What more have I done in the last year and a half, two years? What more did it do? I thought about it before I came to see you and it really lets me take stock, to have a more objective look."* (BM_4)
>
> *"It allowed me to make sense [...]. Being in the research project, [...] it's an awakening, I would say. An awakening and awareness that we are changing things, and then how we are changing it. I wasn't just experiencing it; I had a bird's eye view of it. It was like I was standing on a balcony saying: Well, this is how we got there as an organization. But if we hadn't been in a research project, I would have lived it, but I wouldn't have seen myself living it."* (DT_8)

The individual reflection is informed by discussions taking place during focus groups, and thus quickly becomes a collective reflection where organization members can express themselves, hear others' perceptions, better understand their realities, confirm, or add nuance to certain perceptions, and work together to plan future actions.

> *"It allowed me to verbalize what I was thinking, but at the same time to see what others were thinking. When we did the focus group, I found it interesting to hear, because we had never really had the opportunity to share it."* (BM_2)
>
> *"I realize that I'm not the only one who noticed things. [...] It allows us to share and to better understand the realities that others are experiencing."* (DS_2)

> *"The focus groups also allowed me to see the perceptions of other stakeholders, other actors, and to compare them with my own, and to validate certain perceptions that I had that were incorrect, to confirm certain perceptions."* (CS_7)
> *"The focus groups were important. […] We all have our individual ideas, but when you hear somebody else's opinion, work on it, that's the best thing about this research project. […] I enjoyed the interviews, but I really enjoyed listening in the focus group and working together as a team and say: "yes, we can do this" or "this is the way to go maybe.""* (ES_3)

This is also true during management feedback meetings, which are prime opportunities for management teams to engage in transparent dialogue. The meetings prompt managers to "talk about real things," to ask real questions and to face the issues present in the organization. Overall, the LH approach allows management teams to pause and take a more distant stance. This helps them stay focused on the meaning of the change:

> *"LH lets us take a step back from the choices we've made, to be able to see our successes, [...] and how we can divide it up to keep going. [...] We may want to reorient ourselves if necessary." (*BT_1)

These moments of collective reflection enabled organization members to realize that they rarely take the time to stop and think, as Roth and Kleiner (1998) and Cotter (2014) recommend.

> *"I don't have the chance sometimes to reflect and go back and say what Planetree did as a whole or to myself. You're asking questions about management, upper management, staff, I don't even think of these things until you ask me those questions. […] It gives me the time to reflect, to verbalize it."* (EM_3)
> *"It gives me a chance to press pause and think about the change, something I probably wouldn't have done today if you hadn't asked me the questions."* (AM_4)

In some cases, this pause has unified the management team and grounded it more firmly in the change process, by imparting a common vision and language.

> *"I am not ashamed of our results; they are opportunities to improve. If we fail, we will say yes, we failed, now we will try to do better, but we will try to do better together. If everyone has the information, everyone also becomes responsible for doing something with it." (CT 1)*

In the LH methodology, the researchers' questions encourage organization members to consider other perspectives, to look back and to articulate the meaning they attribute to the change (Gearty and Coghlan, 2018; Roth and Kleiner, 1998). The questions allow them to clarify their position about change, and often to advance their position by considering those of others (Bradbury and Mainemelis, 2001; Gearty and Coghlan, 2018). The questions posed through the different stages of the LH methodology also enable organization members to add nuance to certain perceptions, to question their perspective and to observe their environment differently (Ferguson-Amores et al., 2005; Gearty, 2008).

4.2 A portrait of the change underway

The participants view the LH document as a rich source of information in that it provides an accurate representation of what they see and hear in the organization regarding the implementation of the Planetree approach. Even for organizations that are equipped with various survey results, the LH document provides added value by confirming these data, while granting access to information that would otherwise be inaccessible, what many have called the "informal pulse" of the change underway in the organization. The LH document becomes a kind of diagnosis anchored in the reality of the organization, as experienced by its members on a daily basis:

> *"To have a mini diagnosis, a snapshot of how people understand it, how people lived it, how they saw it, to validate: Was it just me who lived it in a certain way, did I read the environment correctly?"* (AT_1)

Through the portrait it presents, the LH document is seen by several organization members as an opportunity to track the evolution of the change and reposition it accordingly. By providing direct quotes from members of the organization, and following two LH loops, the document allows the actors to track change over time in a structured and non-judgmental way:

> *"When staff reflects on their process, in a non-judgmental way, it's just really nice to see what you've done and to feel validated in what you're already doing." (ES_14)*
> *"I liked the evolution that we see, to see the image at the beginning, what Planetree was for people versus what it is today." (CT_4)*

In several cases, the two LH loops have allowed us to see the evolution of the understanding of the objectives pursued by the change and the extent that different groups took ownership of the change within the organization. In addition, because change generates movement in the organization, the LH offers "light as we go forward", as one participant said, and highlights how far the actors have come at various levels of the organization. Thus, many say that the LH document allows them to take stock, to step back by offering an integrated reading of the situation, which goes beyond "background noise." Even when the document confirms what the leaders thought, it is still adds precision:

> *"I think that it truly reflects our reality [...], but I still learned things that surprised me when I read it. [...] These are things that we feel, that we hear, but now I understood it more clearly and it appeared even clearer to me." (BT_1)*

For new employees coming into the organization, the LH document helps them understand the history of the change underway and get on board more quickly:

> *"I think it's going to be a very interesting input for the new incoming CEO, to get insight into where people have gone." (CS_2)*

Members of the management teams recognized the richness of the LH document as a source of feedback on what is happening in their organization, yet many admitted that they sometimes found it difficult to read. It takes considerable humility and courage to accept that change may not necessarily happen the way you want it to, or that its relevance may be questioned by some groups in the organization. The document sometimes forces people to recognize that they still have a long way to go to demonstrate the added value of change, and to understand its objectives and means to make sense of it. A director expresses this idea well:

> *"We got it right in the face. Middle managers [...] often see it as work overload. [...] I find it difficult. I would have wanted it to come out better, but that's what people felt." (BT_3)*

The fact that the LH is piloted by researchers facilitates openness among the top management team because the intermediaries are seen as neutral and rigorous:

> *"I find that the support of the LH helped us with the person-centred approach, [...] it allowed us to objectify something we had observed." (DT_1)*

4.3 A support tool for the change process

The LH methodology also serves as a support tool for the change process. First, the LH document helps participants identify the barriers to change along with the change facilitators, as perceived by stakeholders, and to make the necessary adjustments:

> *"The first LH document allowed us to say, well look, this is where we need to focus […]. OK, let's try to adjust a little bit […] to always make connections. The research project allowed us to...well, here's the intent that we had, here's what we did and then here's how it's perceived, and then make the adjustments."* (DM_3)
>
> *"I think that from this document [LH document], from these comments, we need to go and look for the main levers and continue to work with that and with people."* (ET_1)

LH thus encourages the questioning and reframing of change, and supports subsequent decision making. In a very tangible way, LH prompts the organization members to propose solutions, often innovative, which inform the change action plan. Therefore, LH not only informs management's reflection, but it also helps initiate action.

> *"Some of those little changes, you see them, but you don't realize that it's based on feedback. […] because of these focus groups and those meetings and those individual interviews and the recommendations and feedbacks […], there's a lot of little things that have been put into place."* (ES_11)

The LH approach is also a tool for developing and supporting management teams' change management practices:

> *"We have a lever to pursue the change process. The challenge is the communication plan, how we are going to explain, communicate, and transmit our desire, our motivation to continue. It really gives us great tools to get back on track."* (BT_4)

As an example, the documents resulting from the research project, such as summary tables and diagrams, are viewed as practical tools to explain the roles of each change management participant. The fact that LH is based

on a scientific approach also reassures the management teams about the reliability of the results. The participating organizations appreciated the support the researchers provided:

> *"I thought to myself: There's someone who will guide us and appreciate us, and that's great. Participating in a research project is a gift that we give ourselves."* (ET_3)

However, this gift comes with challenges. For example, the LH approach sometimes forces management teams to recognize that there is still a long way to go to demonstrate the added value of change, to clarify their objectives and means so that they can make sense of it. The results of LH can also generate pressure on the organization given the diversity of solutions proposed. The challenge remains to prioritize actions according to the organization's objectives and means:

> *"I find it stressful because I say to myself: Oh my God, do we have the means to achieve all these ambitions?"* (CT_3)

The pressure also comes from the fact that stakeholders have spoken out and expect their words to be taken into account in the change process.

> *"I only hope that after that, it will have an impact in the sense that [...] it leads people to know: we have a small problem here, there it's fine. [...] I think it's important to have the employees' point of view."* (CS_17)

In short, the participants describe the LH approach as a genuine change management process that offers tools and opportunities to step back, take stock, and refocus the change project around one's objectives, while considering the reality experienced by the different stakeholders in the organization.

4.4 A vector for mobilizing stakeholders

By involving organization members in collective reflection, the LH approach becomes a vector for mobilizing stakeholders.

> *"When you're heard it gets you excited about what you can do more, what more you could do."* (ES_14)
> *"It lets me express myself, to share my ideas [...] it's good for my self-esteem. You feel that you are listened to."* (DS_14)
> *"Our people are interested in participating. They appreciate being given a voice. And even though it takes time, we see how much we gain in the long run, in terms of mobilization and commitment. It makes all the difference."* (DT_2)

The LH was seen by many as a way to renew their motivation for change, realizing how far they have come and that others are also motivated to support the implementation of the Planetree approach.

> *"It helps put it all together. […] it helps me to see that we're getting there. It gives us hope. […] it helps to reinforce the efforts we make to do that."* (EM_1)
> *"It let me take a step back and see: "hey, it's true there are changes, we've made some nice changes."* (AS_7)

When they become more involved, stakeholders consequently feel that they have power over the situation, together with an opportunity to influence it and contribute to it (Wildemeersch and Ritzen, 2008). Moreover, one of the most frequent shortcomings in change management is often to overlook recipients' perception (Bareil, 2013). Accordingly, a management team may believe that the change has been implemented, although the stakeholders have not yet made it their own or are still reluctant to accept certain dimensions of the change. The different stages of the LH methodology serve, on the one hand, to illustrate where the stakeholders stand in relation to this change and, on the other hand, to highlight what is often implicit or even hidden (Roth, 2000). Indeed, the collective reflection generated by the LH methodology clarifies consensus and contradictions while identifying possible solutions for the future (Bradbury et al., 2015).

4.5 A source of organizational learning

The LH approach, which comprised various stages, was a source of learning for the participating organizations. First, the questions asked during each stage allowed organization members to learn through reflection, which fostered integration of the change underway.

> *"Your questions helped me reflect on my feelings and my opinions and […] people learn through reflection. So, there is an integration that happens when you reflect on something."* (ES_17)

> *"Hearing about these things makes me always think about them. As soon as I get ready to do something, I'll think about it first. Is this in line with Planetree?"* (BM_7)

Second, for many organization members, participating in the LH process allowed them to learn more about Planetree and to stay informed about its implementation in their organization.

> *"It's making me aware of what's going on everywhere else. […] We tend to live in our own little cocoons and it's just making me more aware of how many people are involved in Planetree quite frankly."* (ES_9)
> *"I found it interesting to be included in the process, it gives access to a lot of information, and information is the basis of understanding, so in fact, when we had the different summaries, the different transcripts [...], it allowed me to see the process differently."* (CS_7)

Third, the detailed account of the change journey grants the organization a structured review of its actions, decisions and their impacts, which allows it to learn from its successes and missteps:

> *"We can benefit from using the experience we have lived through, and it has been recorded with the LH. [...] It's like a recipe book, and the tool should be used for the next round."* (CT_4)

These learnings can be reinvested into enhancing the ongoing change process.

> *"That's something we can continue to do, ourselves in our organization, to say in a year's time, we'll take stock. What can we do, where are we? Do we have any new ideas? So that we can rekindle the flame."* (DM_1)

Some members of the management teams interviewed went further, stating that LH has had a "pedagogical effect" that has not only provided an opportunity to learn about the change under way, but will also serve as a reference process for monitoring and driving future changes, for example, during institutional mergers:

> *"I am convinced that we can do a process like this [LH] on many things in the organization."* (AT_1)

LH is then seen as a powerful approach that has facilitated extensive learning and in-depth questioning about how to execute change.

Being part of a multi-institutional research project was also identified as an opportunity to learn from others, particularly to avoid making the same mistakes or to discover best practices proven in other settings.

> *"It's very pleasant to put into words what is being done and also to compare it with other institutions. So yes, when we look at ourselves, we can see where our gaps are, but also our strengths. Also, make sure that we learn from others."* (AT_5)

Some participants were also pleased to be a source of learning for others by contributing to the emergence of a model for implementing a person-centered approach that can be used by other institutions.

> *"If it can help other organizations not to relive the same pitfalls in the context, that I find relevant."* (CM_4)
> *"[The research project] will allow us to extract a kind of knowledge transfer model and how to perpetuate a Planetree model in an organization, and this will be useful for the new people who are getting involved in it."* (CT_4)

LH has also made one leader aware of the true meaning of a learning organization, by experiencing the learning process that unfolds as the organization moves forward with its change project:

> *"I think that we have just experienced something concrete where we are all going to be learning something"* (CT_2).

Another leader sums up the process well:

> *"It's really a collective learning journey"* (DT_3).

Thus, all the stages of the LH leave traces of the path taken by the organization (Wildemeersch et al., 2008). Evidently, these artifacts include the LH document, but also synthesis documents, scientific posters, and diagrams, which provide evidence of the learning achieved by the organization, both in terms of change and the processes that drive this change. Transformed into communication, consultation and change management tools, these artifacts become new references for the organization, which, by adopting them, is transformed once again (Amidon, 2008; Gearty, 2008).

Argyris and Schön (1996) have shown that the lack of infrastructure for reflection hinders organizational learning. As Figure 2 illustrates, analysis of our research results shows that LH is much more than a research methodology: It also provides the participating organization with an infrastructure for reflection, together with support for organizational learning. Each stage of the approach helps to initiate reflection, first individual, then collective, which then informs subsequent stages, generating a genuine feedback loop, essential for sustainable and transformative organizational learning (Argyris and Schön, 1996). In addition, LH breaks the isolation of organizational and management team members by creating common spaces for collective reflection (Roth and Bradbury, 2008). LH thus fosters transformation at two levels: 1) regarding the change it concerns, and 2) regarding the organization as such, by prompting it to question its practices in general. It then becomes an effective organizational development strategy (Bradbury et al., 2015).

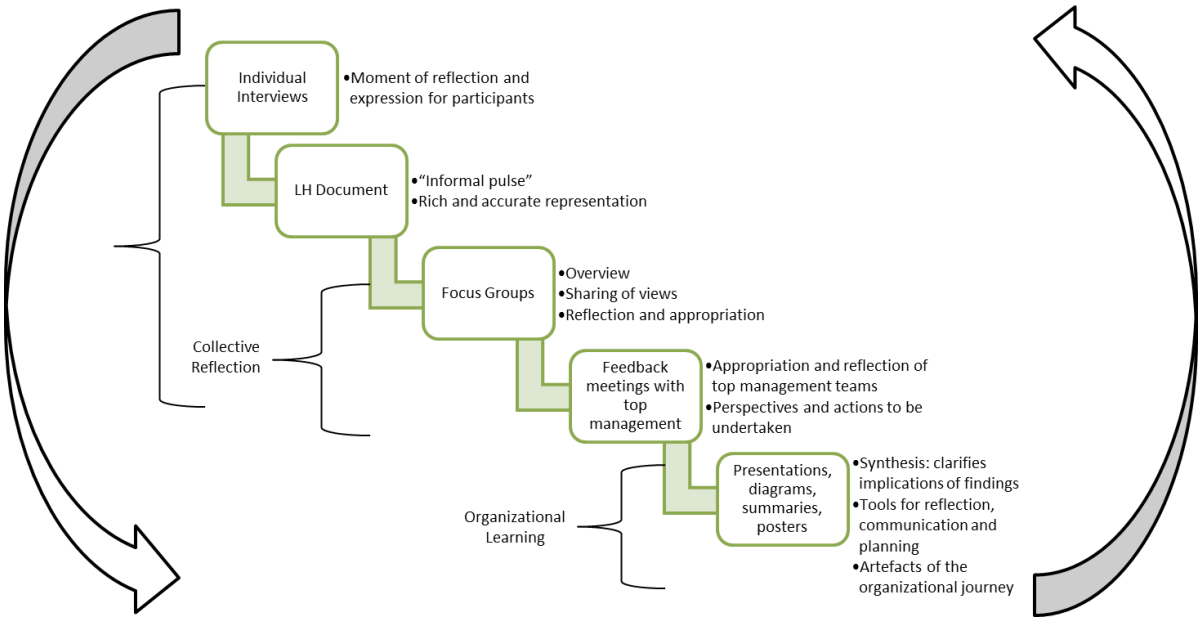

Figure 2: The infrastructure for collective reflection provided by each stage of an LH loop

5. Conclusion

Given the challenges they face, organizations need, more than ever, to better understand the various organizational changes they are going through, while freeing up time for collective reflection and organizational learning. This challenge is illustrated by the research project discussed in this article. More specifically, this paper demonstrates that the LH methodology initiates a genuine process of collective reflection among organizational members, whose learning contributes to the development of the organization. In addition, this reflection encourages member mobilization and the reframing of change. LH was thus seen as a powerful tool for accompanying and supporting change, allowing for learning as the action unfolds, and gradually adjusting. It is a useful research approach to highlight the social dimension of the organization, and to create spaces for dialogue and collective reflection, which are considered essential to allow members of the organization to engage in dialogue about the change and to really take ownership of it. It is through these discussions that a common understanding can be established among the organization members.

Many lessons learned using the LH methodology can be shared from a researcher's standpoint. The main lesson learned in this research project concerns the framing of the expectations of the participating organizations. It is essential to clearly explain the steps of a LH loop and to specify the nature of the deliverables at each step, in order to properly frame participants' expectations. For example, during a focus group on the first LH loop, one of the top management teams expected to get recommendations for the rest of their journey and comparisons with the LHs of other institutions. In fact, these elements are provided only at later stages. Some were disappointed to find that the focus group stage was primarily intended to validate and enrich the LH document and discuss next steps. In addition, to avoid ambiguity in the participating organizations' expectations of the researchers, it is important to clearly explain their role as learning historians and facilitators of the process. This facilitates identification of future actions originating from the participating organization as it progresses in its reflections and learning. In this sense, the LH is truly an organizational empowerment approach (Kleiner and

Roth, 1996). Moreover, the LH is demanding for the participating organizations. In order to ensure their "buy-in," they must be prepared for these requirements, which involve time and costs on their part, but also openness to receiving the results that emerge from the various data collections, some of which they might find surprising (Milam, 2005; Roth & Kleiner, 1995). To get the most out of the learning history process, the organizational climate has to welcome contradictions, uncertainty, and conflict as learning opportunities (Milam, 2005). Finally, the LH is demanding for researchers, who must both drive the methodological dimensions of the project and take on the roles of learning historians, facilitators, and presenters (Gearty & Coghlan; 2018).

Granted, the results presented in this article reflect only the views of the members of the five participating organizations at the end of the second data collection loop of the CIHR-Planetree project. It would be interesting to document, in hindsight, what learnings emerged from this process that truly changed the trajectory of the organization. Further, this research suggests that, from a management perspective, the LH methodology can meet the challenge of contributing both to the advancement of scientific knowledge and to the improvement of management practices in organizations (Gearty and Coghlan, 2018; Prévost and Roy, 2015). From a researcher's standpoint, the LH approach can draw insights by allowing for learning *within* practice and for a better awareness of managers and researchers' roles in shaping organizational realities and knowledge (Ripamonti et al., 2016).

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Fast-tracking Research Methodology Immersion for Students: Experiences from a Project on Fairwork in the Gig Economy

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Abstract: This paper showcases an innovative student research project in a South African taught Masters programme, where students learnt to apply a sound research methodology in the real world, and align their work with a global research project. The Fairwork (https://fair.work) project assesses the extent to which gig work platforms in a number of countries conform to 'fair work' principles for their workers. The Fairwork project has a clearly defined and rigorous research methodology used by senior academics around the world to rate labour-broking platforms such as those in e-hailing (Bolt, Uber) or delivery services (UberEats) to rate their adoption of fair work principles for their workers. The University of Pretoria adopted this research methodology in the context of a student-based group project in a taught 2020 "Digital Economy" Masters programme. Student groups used the same methodology and interviewed South African platform workers to score seven different platforms. The key motivations and intended benefits were that the research methodology was already tried and tested, students should able to apply the skills taught in an earlier (theoretical) research methods course, subject specific knowledge around the gig economy had to be researched and was internalized, each group had the freedom to select its own platform, results could be validated against publicly available ratings, students engaged themselves in real world empirical research, and their research outputs had a real world relevance. In addition, this project turned out to work well under Covid19 partial lockdown circumstances. The student submissions exceeded the expectations of everyone involved, and some groups produced research results which matched the level of highly experienced researchers. This project also provides a strong contribution to the academic community, not only because it provides a validation benchmark and alternative research approach to the Fairwork project, but also because this project is easily portable to similar courses in other country contexts.

Keywords: teaching research methods; research methods education; project-based learning; active learning; authentic learning; fair work principles

1. Introduction

Teaching research methodology in the social sciences is challenging, partly because research methods are a complex domain (Strangman and Knowles, 2012; Saeed and Al Qunayeer, 2021), even more so in contexts where educator resources are scarce relative to the number of students and the student body is diverse in educational background and preparedness (Longmore, Dunn and Jarboe, 1996). Most importantly, the educational value of "learning by doing" i.e. project-based research, has proven to be best way to way for students to improve their performance and enhance their learning experience (Aguado, 2009; Earley, 2014; De Lima, 2021).

This paper presents a model adopted in a post-graduate masters student cohort of 35 part-time, professionals that combines the benefits of active learning, problem-based learning, cooperative (or group) learning, service learning and 'learning by doing', all the while by being embedded in a full online learning environment forced on the group by Covid-19 lockdown. Students not only apply a sound research methodology in the real world but align what they're doing with a global research project. The project used was the Fairwork (https://fair.work) project, that seeks to assess to what extent selected "fair work" principles are adhered to by gig work platforms by research teams in almost 20 countries around the world, including UK, Germany, India and South Africa. This project has a clearly defined research methodology developed and used by senior academics, research fellows and postdoctoral students around the world to rate labour-broking platforms such as those in e-hailing (Uber) or delivery services (UberEats) on their adoption of fair work principles for their workers. The University of Pretoria decided to see if this methodology could be adopted in the context of a student-based group project in a taught 2020 "Digital Economy" Masters programme. Student groups used the same methodology and interviewed South African platform workers to score seven different platforms.

The key motivations and intended benefits were that the research methodology was already tried and tested, students were able to apply the skills taught in an earlier (theoretical) research methods course, subject specific

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knowledge around the gig economy had to be researched and was internalized, each group had the freedom to select its own platform, results could be validated against publicly available ratings, students engaged themselves in real world empirical research, and their research outputs had a real world relevance.

The approach is easily replicable, and especially suited to remote teaching environments (Covid-19!), larger class sizes (30-60 students) and lecturer-resource constrained environments as is typical in the Global South. In addition, the student learning and experiential outcomes are arguably better than those of a traditional lecturer-driven course offering. We are convinced that this approach could be adopted quickly and easily by other lecturers seeking to integrate research methodology in a subject-specific domain and achieve a win-win situation by reducing lecturer workload and increasing student satisfaction and learning.

2. Literature review

Earley (2014) provides an encompassing synthesis of the literature on research methods education, based on 89 studies. He looks at the typical student profile in a research methods course, noting the issues of student perceptions of (ir)relevance, anxiousness and misconceptions about research. He also provides an in-depth pedagogical assessment of the different types of creative teaching modalities to make research courses more effective and interesting, including active learning, problem-based learning, cooperative (or group) learning, service learning and on-line learning, concluding that "there is a need for this sort of research to continue. The benefits of discussing […] how we teach and assess, and what content we teach in these courses has far-reaching consequences for improving the educational experience of countless students" (Earley, 2014, p 249).

For students to develop real competence in research methods, they have to gain practical experience of the research process that is as realistic as possible (Burgess, 1990). Although theoretical lectures are necessary, real understanding and consolidation comes from 'learning by doing'. Students need exposure to real-life contexts as "research is not only a technical process" (as depicted in textbooks) "but also a situational, personal and political process" (Bækgaard and Lystbæk, 2019, p 334). Bækgaard and Lystbæk (2019) further urge that students should be given the chance to descend into the swampy lowlands of real-life messy practical contexts, which is where the best learning takes place.

Where research methodology courses embed a practical component, typically the common approaches are located at one of two opposite extremes of the spectrum. At the one extreme, students are given isolated exercises at the end of each module e.g. determining the sample size for a particular study; at the other extreme individual students are tasked with executing up an entire research project from beginning to end, in effect writing up a thesis or research article by themselves (Tashakkori and Teddlie, 2003). However, letting student groups replicate a significant but relevant portion of a real-world ongoing research project can in some ways be the best of all words: the individual student load is limited, students learn from best practices, they go through the entire research life cycle in just a few weeks, this model can be used for medium-sized classes where student numbers are between 30 and 60, students experience the messiness and trade-offs of real-world research, less experienced students can get support from more experienced or knowledgeable peers, they have a basis for comparison and evaluation of their own findings, and they feel that they can make a meaningful contribution at the level of professional researchers. This literature review looks at supporting evidence for this model.

An early study demonstrated the value of teaching research methods by letting students participate in a commissioned research project (Winn, 1995). This case study described the value and motivational aspects provided by letting students participate in a real-world project instead of an artificially created exercise or a student-generated one. As she puts it: "Teaching research methods to social science [students] presents a number of dilemmas, including the development of effective means of providing students with practical research experience and the difficulty of engaging the interest of students in a subject which for many is not intrinsically appealing and to which some have a long-standing aversion. One way of addressing these issues is to enable students to participate in a 'real' research project" (Winn, 1995, p203).

Longmore, Dunn and Jarboe (1996) focus on the practical and organisational benefits of group research projects, especially where the class sizes go beyond the small classes e.g., 30+. At that stage, asking students to engage in practical research experience is often limited by the lecturer resources required to plan, coordinate, guide or evaluate the student work. Gitanjali and Raveendran (1998) similarly points out the benefits of a group research project over individual student work, although a reduced workload on staff cannot be taken for granted (Panelli

and Welch, 2005). Group-based work can assist in this, but only when the group project has been carefully designed; for which they make several experience-based practical suggestions.

However, a project-driven approach should not just be driven by pragmatic resource considerations; in the end, pedagogical considerations such as the student learning and experience should be the key decision criterion for curriculum design (Wagner, Garner and Kawulich, 2011). A study at master's level social science found groupwork to have a positive effect on learning experience, as well as performance (Barraket, 2005). This study was interesting because this particular course aligned very well with the context of our circumstances: it was also mainly composed of full time employed professionals in their field and, although it was a relatively small course (only 23 students) it had students from very diverse backgrounds. This study emphasizes that active learning through group work represents a move towards student-centred learning, and can be seen as an enactment of constructivist learning theory.

The student-centred, project-based model does not just require the students to be engaged with the actual execution of the research, but students should have a relative autonomy in the project planning and management, and the presentation of their own findings before the entire class is an important component to avoid the passive lecture format: The "[project should] involve students in design, problem-solving, decision making, or investigative activities, provide students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations. Other features include authentic content, teacher facilitation but not direction, and explicit educational goals" (Braguglia and Jackson, 2012, p.348).

The additional advantage of a group project is that students tend to divide the tasks internally according to their skills sets and experiences, thus enabling the group as a whole to benefit maximally from their internal strengths: "When project groups divide tasks at each stage of the project, they can do a more thorough job and produce a more professional report" (Longmore, Dunn and Jarboe, 1996, p87). Additionally, 'real' or 'hands-on' field practice, especially in a group learning approach, increases student satisfaction and enhances the student experience (Panelli and Welch, 2005). These benefits of an 'active learning' approach were also borne out in another master's course where students reported that, through the project, "involvement was meaningful, promoted understanding of research, strengthened relations among students, and made learning more exciting" (Lundahl, 2008, p. 273).

Interestingly, Panelli and Welch (2005) used a categorizing framework (Kent et al., 1997) with the dimensions of autonomy versus dependency, and observation versus participation, to classify field-based research as being most desirable (high on autonomy and participation). However, they also point out the potential issues of group study including the potential for disharmony/personality clashes, uncertainty around the group assessment, unequal inputs by the different student members and that staff workload is often not reduced.

Finally, the Covid-19 pandemic presented lecturers in 2020 with an additional challenge: traditional classroom presentations had to give way in many cases to a blended or even purely online environment because campuses were closed due to lockdown situations. Teaching research methods in an internet-based blended-learning setting presents even more challenges in terms of student motivation, anxiety and the amount of learner-instructor interface time that can be accommodated (Schober et al., 2006). This, again, is an added rationale for, and benefit of, a student-centred group research project.

The next section introduces the global study on which the student group project was based.

3. Using a global research project as model: The Fairwork Project

Digitisation – in particular, growth in broadband access and online platforms – is enabling the emergence of new forms of work and income generation that challenge our common understanding of work and employment. This new platform economy (also termed the digital gig economy, sharing economy, uberisation, etc.) is already employing tens of millions in the global South (Heeks et al., 2020). Its size and rapid growth mean it forms an important constituent of the future of work, and it has been embraced by governments, development agencies, social enterprises and others as a key means of addressing the high levels of unemployment in the global South. While delivering livelihood benefits to workers, platform work has also been evidenced as falling far short of ILO decent work standards (Heeks 2017). While the platform economy has widened access to work for some, it is

also circumventing the rights and standards associated with employment by denying the status of "worker" to those who supply their labour (Galperin and Alarcon 2017). Unless action is taken, this insecure, "unfair" work will become the new norm for growing numbers of workers (and especially vulnerable workers) in the South (Graham et al., 2020).

The global Fairwork project (https://fair.work) attempts to evaluate and improve the working conditions of digital platform workers by rating digital gig economy platforms on their adherence to a subset of decent or fair work standards. "Drawing inspiration from the Fairtrade and Living Wage campaigns, it aims to create pressure on platforms to improve working conditions through a public ranking system which scores selected platforms according to their record under five broad principles: fair pay, fair conditions, fair contract, fair management and fair representation" (Graham et al., 2020, p.237).

By end 2020, the Fairwork project had assessed and rated platforms in Germany, South Africa, India, Chile and Ecuador, with some platforms in the former three countries already adopting changes in response to the published ratings. The South African pilot of the Fairwork project was initiated in 2018 with the first round of data collection and rating was done in early 2019 for 10 platforms (Fairwork, 2019). In the meanwhile, data for a second year was collected on an extended selection of platforms with the results being released early in 2020 (Fairwork, 2020).

The methodology for the empirical component of the Fairwork project is aimed at obtaining defensible data for rating each platform according to the five principles or 'pillars' of fair work: fair pay, fair working conditions, fair contracts, fair management and fair worker representation (Graham et al., 2020; Heeks et al., 2021). Figure 1 shows the principles used in evaluating a given platform and a sample score for a South African platform (Howson et al., 2020).

The first step is the platform selection: choosing which platforms are to be rated. Three guiding criteria are to find the platforms with the most workers, to include platforms that have been rated in previous rounds and, ideally, to have at least two representative platforms in any given sector (e.g. e-hailing). The empirical data collection consisted of three sources. Firstly, desk research was used not only to select the platforms but also to collect whatever pertinent data could be useful such as ongoing disputes, extra worker benefits or online contracts. A second source of information was platform owner or manager engagement. Meetings with platforms were sought to inform them about the project, request any data that was pertinent but also later to build up a dialogue around further engagement e.g., suggesting how to improve their scores. In some cases, platforms elected not to engage, and a number of platforms just communicated via email or electronic meetings.

The third and most resource intensive method is interviewing platforms directly with a target sample of 6 to 10 workers per platform. Although this cannot be seen as 'representative samples', especially not for earnings or communications, the interviews were not intended to be that. They allowed for the scoring of most of the principles (e.g., only one example of a contract is needed) or for negative data (if two out of five workers are paid below the threshold). This data is pulled together, and only positive evidence used towards awarding the final scores. A 0 score either indicates negative evidence (i.e. the platform does not comply with the principle) or a lack of data. When provisional scores have been awarded, they go through an internal peer-review process.

Provisional scores are communicated to each platform, who are then invited again to provide the researchers with missing or correcting information prior the final release of ratings. Figure 2 shows the 2020 scores for the 11 South African platforms. The seven groups of the MIT845 selected one of these platforms each and compared their scores/ratings to the official 'Fairwork' rating.

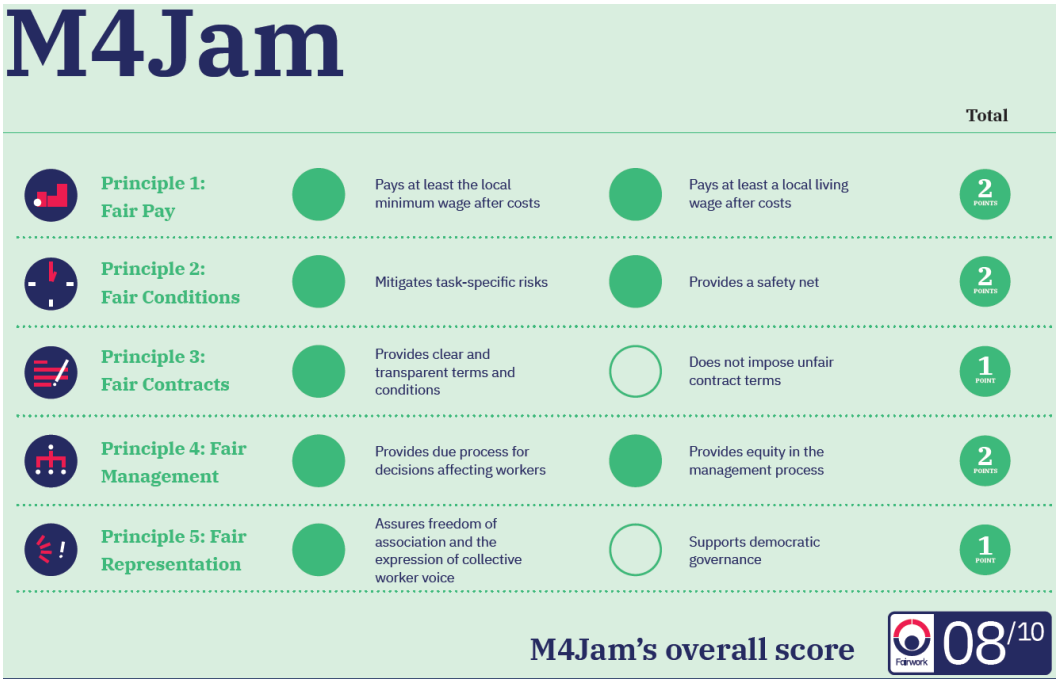

Figure 1: Sample score calculation for M4Jam, a South African mobile cloud work gig platform (Fairwork, 2021a)

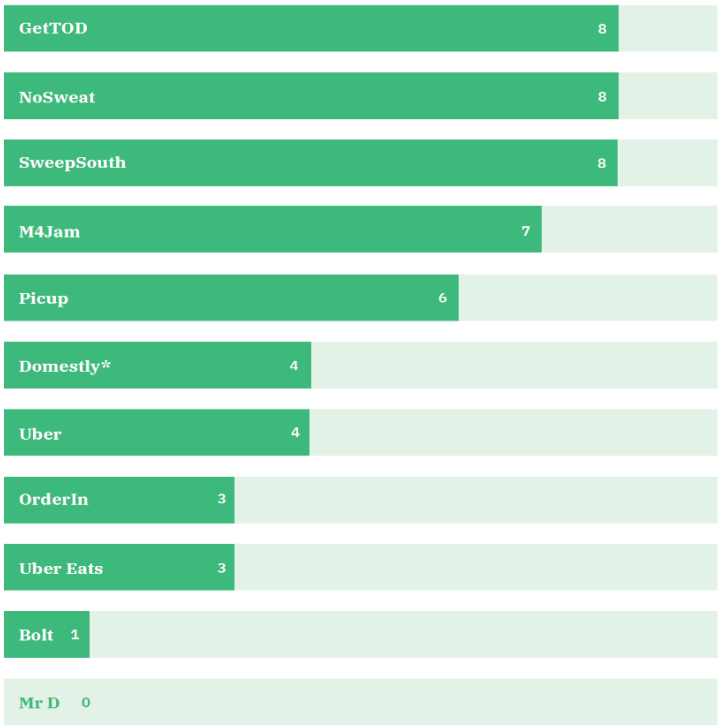

Figure 2: The official 2020 Fairwork ratings for South African platforms (Howson et al., 2020)

4. The MIT845 student research group project

The MIT845 course is part of a taught Master's in Information Technology (MIT) degree programme, where half of the degree is coursework and the other half is a mini-dissertation. The degree is informally referred to as an "IT MBA", equipping students for the management and leadership of IT- related initiatives in organisations. Students are selected to enrol for the degree if they possess relevant qualifications and work experience. Since it is a selection programme, the calibre of students in the class is relatively high. One of the first courses presented as part of the MIT programme is research methodology, which introduces students to research methods from the management and social sciences that are applicable to the IT field, as preparation for their

mini-dissertation. The research methods course is theoretical and does not allow space for application or empirical work. Hence, at the onset of the MIT845 course, students have book knowledge of research, and may have had previous exposure to executing research but this is not a given.

The 'MIT845 Digital economy' course aims to provide students with the tools, skills and an understanding of the technology, business concepts and issues surrounding the emergence of the digital economy. Key topics in the course are the digital economy, the platform economy and the disruptive technologies of the Fourth Industrial Revolution (4IR). Apart from understanding these topics at concept level, students need to understand the opportunities and implications they hold in a South African business context. In addition, students need to understand the opportunities and challenges of the digital economy, platform economy and the 4IR in a developing country context.

In the previous years that the course was presented, it was found that students benefited from having a larger, challenging group project where they had to apply and integrate their theoretical skills and pool the diversity of their capabilities to produce an innovative set of deliverables. The idea of basing their 2020 group assignment on the international Fairwork project, arose when the students of 2019 responded very enthusiastically to an invited guest lecture on the Fairwork project. A Fairwork related applied research project would not only allow for the application of theoretical knowledge gained on the MIT845 course, it would also allow students to apply the skills learnt during their research methodology course. In addition, practically engaging with the fair work principles would be very relevant in the South African developing country context. A Fairwork inspired group assignment was therefore formulated with the involvement of a colleague from the South African Fairwork team. The student project was however ring fenced from the 'real' Fairwork project, to allow for a learning opportunity with no reputational implications to the actual Fairwork project. The group assignment instructions are detailed in the remainder of this section.

This group assignment focussed on South African-based digital labour-broking platforms and the extent to which they adopt 'fair work' principles for their workers. Each student group first did a desktop (literature) research on the platform economy, fair work and then adopted one specific platform to further investigate their selected platform's current status in the South African economy, conduct some minimal empirical research using a prescribed research methodology by interviewing workers in terms of their experiences, specifically relating to the fair work principles and synthesize their findings –partly comparing them to prior ratings accorded to the platform.

The assignment objectives were to let the student research the platform economy in-depth using both local and global perspectives; to understand how platforms change the nature of work and necessitate new conceptualizations around work, ethics and the social contract; to experience empirical field research using a standardized research methodology and interview protocol; to analyse interview data and write up a structure summary report.

Each group consisted of about 5 students. These groups were self-selected and then they chose their own unique platform (i.e. only one group chose Uber, one group chose Bolt etc.) Preference was to be given to 'location-based' platforms i.e. where the work provided by the worker requires the worker to be specifically present and 'in location' (e-hailing, domestic, services rendered etc.) although a 'cloud-based' platform could also be selected i.e. where the work provided is of a digital nature and location of the worker pretty immaterial. After doing desk research on the platform economy in general, and one pre-selected platform in particular, this group then looks at the Fairwork Foundation's (https://fair.work) principles for decent platform work – which incorporate ILO decent work standards – by assessing to what extent these principles are adhered to by local digital platforms in South Africa. Empirical data had to be gathered from workers on a selection of local platforms using semi-structured interviews but using the formal Fairwork methodology and suggested interview protocol. The groups did both a class presentation (using e-meeting software) and submitted a final report under the following headings:

- Brief description of the platform type (e.g. "e-hailing") and specific platform (e.g. "Uber" globally and South Africa)
- A critical academic literature review on the socio-economic impact of the given platform type (e.g. e-hailing) and the platform itself to the South African economy from a micro- and macro perspective.
- A concrete Fairwork rating: to what extent does the platform adhere to the fairwork principles – award a x/10 score using a table format with detailed motivation in the form of substantive quotes (or other

evidence). This rating was compared to the latest 'official Fairwork' rating the platform achieved with possible explanations of deviations.
- A qualitative assessment of how workers actually experience their work (subjectively) adding in both positive and negative aspects and experiences. This section gave students an opportunity to be critical.
- References
- Appendices: interview transcriptions.

Before commencing the group project, the MIT845 students received an individual assignment where they had to read literature and answer questions on the theory and constructs underlying the digital and platform economies, as well as on the Fairwork initiative. They also received a guest lecture on the Fairwork project. Because of this, all students entered the group project with a contextual orientation.

5. The group project outcomes

In this section, we discuss how the students presented their group assignments and, based on a feedback survey, how the students experienced their projects.

5.1 Student deliverables

The seven student groups had to present their projects by means of an online presentation as well as a final report. Online presentations were done on the e-meeting platform that formed part of the university's Learning Management System (LMS). Except for a small number of connectivity and technical challenges, the presentations went smoothly, with lively participation (in the form of chat box comments) by the rest of the class. This is seen as a major achievement, as 2020 was the first year that all contact sessions had to be conducted fully online. The lively class interaction, which contained a large amount of humour, was seen as a particular bonus, since constructive class interaction and participation was historically one of the highlights of the MIT contact sessions. The presentations were of a very high professional calibre, and students took effort to summarise the considerable amount of work they performed to stay within the allocated time slots.

In addition to impacting the class presentation format, the lockdown restrictions also presented challenges to the students in terms of group meetings and empirical data collection. However, all groups successfully rose to the challenge of finding mutually suitable means to conduct group meetings and field work.

The assessment of the presentations and final reports were jointly done by the lecturer and expert guest lecturer. As with the presentations, the final reports were mostly of a very high quality. Five of the seven groups received distinctions despite high marking standards. By and large, the class exceeded the lecturers' expectations in terms of the enthusiasm and positive attitude with which they completed the projects despite various practical challenges. Lecturer expectations were also exceeded in terms of the professional manner that the groups executed their projects, leading to overall high-quality deliverables.

5.2 Student learnings

At the end of the MIT845 course, a feedback survey was released to the students, with the aim of getting feedback on the Fairwork inspired group assignment. The survey included open ended questions inviting feedback on what students found most valuable of the assignment, least valuable, most challenging, suggestions for improvement as well as general feedback.

Feedback was largely positive/complimentary, in line with the positive spirit that was experienced during contact sessions. Under the question of what students found most valuable, gaining research experience emerged as a strong theme:

> *"Interviews and data analysis…that served as a warmup to my research next year"; "When you ask open ended questions you get more detailed information. I was able to gain experience on conducting interviews"; "Having real world interviews and discussions"; First time experience conducting an interview"; "Analysing the data was awesome". Interestingly, various aspects related to data collection and analysis also featured strongly under the most difficult or challenging aspect of the assignment, with responses such as: "Getting willing participants was a challenge"; "Getting participants to agree to interviews and feel comfortable"; "Having to interview … face to face"; "We really struggled with the interviews…" "Gaining the trust of the respondents and making them feel comfortable … participating in the research"; "Getting information from some of the participants and those that were very open to*

answering questions sometimes struggled with understanding the question, so … finding a different way of asking the question without losing the essence of the question was tricky"; "Data analysis and writeup".

A second theme that strongly emerged under the most valuable aspect of the assignment, was the learning that took place around the working conditions of platform workers: *"Learning about the real working conditions of various platform workers"*; *"Learning about the platforms and how the workers are treated. We often only think of ourselves when using this platform and neglect to understand that the worker could be neglected or ill-treated by both customer and owner/producers"*; *"Getting to understand the lives that others on the other side are living and the challenges they are facing, instead of ordering something and having it delivered by someone and not thinking any further. I am now inspired to use services in the future that have better Fairwork Ratings."*

Under the question of the least valuable aspect of the assignment, most students had nothing to comment. Similarly, there were not many suggestions for improvement, however a few students suggested receiving more time to complete the assignment.

Interestingly, a handful of students voiced their frustration with learning about the challenges of the platform workers without being able to improve the workers' situation: *"Once we had interviewed these people, there is no clear next steps for the drivers. we leave them in the same situation, there is no continuation in helping resolving some of the issues they face."*; *"Not having tangible solutions to the problems that the interviewees raised"; "Interviewees wanted to know if their feedback would make a difference".* These comments speak to the research ethics of descriptive research, where the researcher enquires about people's problems without being able to help them. Students were warned upfront that workers' expectations should not be raised as a result of the interviews. However, this is a general dilemma of empirical research that the students were exposed to.

Under general feedback or comments, the following feedback was received: *"Great exercise"*; *"The experience was eye opening and I earnt a lot from it"*; *"Great assignment, liked the practicality in it"*. From these comments it is clear that the practical exposure that the students received was regarded as valuable to them.

One of the concerns carried by the lecturers were the practicality of executing this assignment under the Covid-19 lockdown restrictions in South Africa, both in terms of executing groupwork and doing data collection. However, only a small number of students mentioned lockdown as a constraint, with comments such as the following: *"Due to lock down the aspect of being able to meet and discuss findings as a group but this is the new normal and online discussions are also effective."* "*Working in groups was not easy as we had to do everything online"* "*Doing it under lockdown came with many challenges."* Overall, lockdown challenges did not emerge as a strong theme in the student feedback and did not seem to prevent the groups from doing good work. As the one student remarked, having to meet online has indeed become the 'new normal' across all aspects of people's lives; it was a general everyday challenge and not limited to this assignment specifically. As mentioned in section 5.1, all groups successfully rose to the challenge of meeting online, collecting data under lockdown restrictions and presenting their findings online.

6. Critical reflection on lessons learnt and contribution

6.1 Benefits for students

From the student feedback received, two main areas of learning emerged. The first was the value that students gained from performing 'real life' interviews and data analysis – something they simultaneously reported as most challenging and most valuable. This finding is consistent with the research of Aguado (2009), Earley (2014) and De Lima (2021) who found that "learning by doing" is the best way for students to gain knowledge.

The second area of learning, was about the working conditions of platform workers, where several students attested to the project being an eye opener for them, and that they started thinking differently about using the services of a platform business. This finding aligns with the results of Lundahl's (2008) study, where students experienced the real-world involvement as meaningful. It further confirms that "research is not only a technical process, but also a situational, personal and political process" (Bækgaard and Lystbæk, 2019, p 334).

It is therefore evident that this project, which simultaneously allowed for active learning, problem-based learning, cooperative (or group) learning, service learning and on-line learning, as advocated by Earley (2014), complied with the ideals of the effective teaching of research methods discussed in Section 2.

6.2 Contribution to the Global Fairwork Project

During the assessment of the group projects, a significant portion of the marks were awarded to the rating of the platforms, including the motivation for the rating score. Because of the high quality of the work performed by the students, their ratings had potential practical significance beyond just the education aims of the group project. It was found that these outputs could be used to validate the ratings exercises performed by the professional Fairwork team. One of the aims of the 2020 group project was to see whether university Masters students were able to deliver work of a calibre that could in future contribute to the Fairwork project, and this aim was achieved. Therefore, in addition to the academic contribution of the project to the students' learning, the project had potential practical value, to be replicated in other developing country contexts, which could add a multiplier effect to the current Fairwork initiative and its global impact. In particular, these student projects could also serve as pilots in countries (or country regions) where currently no dedicated Fairwork researchers are active. Thus, this project presents an example of how a student project can be used to align with a real-world ongoing research project in the social sciences, as advocated by Winn (1995), to not only enhance student learning but also make a practical research contribution.

6.3 Success factors

A number of factors are believed to have contributed to the success of the group project. Firstly, students were equipped with sufficient domain knowledge on the topic at hand during the course, as well as a more theoretical knowledge of research methods in a prior module. Indeed, the project served as a real-world illustration of the curriculum content of the module allowing for a two-way benefit: it deepened the students' understanding of the theoretical curriculum content, but the theoretical readings informed the practical work. Secondly, in the context of the Covid-19 restrictions moving the course online, it was vital that the assignment instructions were comprehensive and clearly communicated. Furthermore, the students had an appropriate level of capability to execute the project by virtue of being mature Masters students who went through a rigorous selection process. Most importantly, the scope of the project was realistic in terms of i.e. a ten-week period was allowed for, and each student had only one or two interviews to conduct. The financial costs associated with procuring or engaging a very few gig workers is relatively small. Luckily, interviews could be conducted not only face-to-face but also using electronic channels e.g. WhatsApp. But, importantly, the project proved to be non-trivial i.e. it was intellectually as well as practically challenging, providing students with sufficient motivation to produce quality work. Finally, lecturer guidance was available throughout.

6.4 Replicability in terms of potential extension to other contexts or projects

The logical but important question is whether a student group research project is replicable to other contexts namely other domains or other countries. Firstly, it must also be noted that the Fairwork project is currently being conducted in more than twenty countries around the globe, successfully using the *same* methodology and *same* principles; and the number of participating countries is increasing fast. Thus, academics around the world should feel comfortable adopting the project as described above, i.e. using the Fairwork methodology as it stands, in their own home country. If one's country has insufficient location-based gig work platforms, one could also consider using the global cloudworking platforms instead, although these have slightly different versions of the principles (Fairwork, 2021b). A first step would be to liaise with their local country Fairwork research team who would, no doubt, be very glad to assist with the work. However, an official affiliation with the Fairwork project, given the difficulty in quality controlling student work, may be more difficult to pursue.

However, it is the authors' belief that, if most of the success factors listed in 6.3 are in place, there should be no reason why the student research project has to be modelled on the Fairwork research. Indeed, any global research project with an explicitly articulated research methodology, a clear and useful scope, and requiring empirical evidence that can be gathered from multiple independent and relatively small sub-samples (one per group), is suitable for this type of student group-based research approach. Indeed, the methodology could require quantitative (survey-based) or qualitative (interview or focus-group based) data collection, and required analysis methods could range the gamut of available statistical or qualitative methods. In either case, the authors will be pleased to share any materials such as assignment, background readings, methodology details and presentation slides.

7. Conclusion

This paper reported on an innovative student research project in a South African taught MIT programme, where students applied a sound research methodology in the real world and were able to align what they were doing with a global research project. The project had the unplanned constraint of having to be executed during a national Covid-19 lockdown, where all teaching and learning occurred online, and students had to present their work online. The class consisted of 35 full-time professionals divided into seven groups. Each group chose a different South African platform company on which they had to perform a fair work rating by means of interviewing platform workers. The student work generally exceeded expectations, with some of the deliverables at the level of experienced researchers. The group project allowed the students to practically apply the research methods they were taught in a preceding course in a real-world context, while simultaneously engaging with a socially relevant platform economy topic. Students found the interviews and data analysis to be the most challenging as well as one of the most useful aspects of the project. They also admitted that engaging with platform workers was an eye-opener to them and changed their perspectives on platform companies and the working conditions of platform workers.

This study contributed by showcasing how a student project can be used to align with a real-world ongoing research project in the social sciences, not only to enhance student learning but also making a practical research contribution. Future research could entail replicating this study in different countries and universities as part of the global Fairwork initiative. In fact, projects like these could be seen as a first step to increase the global coverage of the Fairwork research to countries or areas where there are insufficient full-time research resources. Most importantly, the model of basing and aligning a student group-based research project with an existing global research project is not limited to the Fairwork project; any global research project with similar modalities (i.e. those having a clear, explicit research methodology and requiring multiple sets of relatively small but focussed empirical sub-samples) could be used as a model. However, it is important to ensure that some critical success factors, as listed in section 6.3, are in place. Hopefully this linking of rigorous academic research with student research projects and real-world engagement will be explored in many other contexts.

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Guidelines for Theory Development using Qualitative Research Approaches

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Abstract: Qualitative research has been criticised for not building a distinctive body of knowledge, leading to fewer publications and citations. In the light of this critique, this paper offers guidance on how qualitative researchers can contribute to developing a distinctive and cumulative body of knowledge, thereby attracting more attention to their research. In pursuit of this aim, there are four objectives addressed in this paper. The first objective is to explain the relevance and value of deductive qualitative approaches to theory building. Secondly, to illustrate how examining the maturation of a concept can help decide the appropriateness of a particular research approach. This paper explains how in their planning, researchers need to confirm their intention to contribute to theory development and to ensure that this is appropriate, given the stage of maturation of the concept to be investigated. The third objective is to offer guidance on the philosophical assumptions of the researcher and how to test research propositions. Therefore, it is advised that data collection and analysis should take place within a post-positivist paradigm, and that the field work should be designed and carried out with research propositions as a point of departure. The final research objective is to explain how the findings of a deductive qualitative study should be handled to demonstrate the contribution of the study to the body of knowledge. Here guidance is offered on the contextualisation and generalisation of research findings.

Keywords: deductive qualitative research, theory development, explanatory case studies, contextualisation

1. Introduction

Compared to those adopting quantitative methods, qualitative research publications in business research are less prevalent (Bryman 2004; Crick 2020; Fischer, Dietz, & Antonakis 2017; Pearse 2019) and receive fewer citations (Antonakis, Bastardoz, Liu, & Schriesheim 2014). One of the reasons qualitative research is not well represented in scholarly research has been its failure to build a distinctive body of knowledge. This paper aims to offer guidance on how deductively oriented qualitative research approaches can contribute to developing a distinctive and cumulative body of knowledge, thereby attracting more attention to their research. But first, two critiques of this quest to build a distinctive body of knowledge are discussed.

Firstly, a challenge qualitative researchers face is the low level of theoretical consensus (Pfeffer 1993), which is evident in many of their fields of work. In fact, some qualitative researchers reject the assumption that there is a single research approach or paradigm for a given phenomenon or concept. They, therefore, propose abandoning the accumulation of work on a particular topic in favour of promoting multiple theoretical approaches, ideas and methodologies to identify and capture different facets of organisational reality (Palmer 2006). For example, in their review of leadership studies, Glynn and De Jordy (2010) conclude that leadership is a multi-paradigmatic phenomenon with no dominant approach evident. More recent reviews on leadership suggest this has not changed over the last decade, with a diverse range of theoretical approaches still being applied to the study of leadership (Day 2020). This is not surprising, though, given the range of questions that leadership researchers attempt to address (see, for example, Spisak 2020) and the wide range of approaches to conceptualising leadership. This can be attributed in part to the gap between scholars and practitioners (Banks et al. 2016) and the popularisation of the leadership phenomenon amongst practitioners (Iarocci 2015) and academics (O'Mullane 2011) alike.

A second critique is that qualitative research tends to present results in ways that are not easy to replicate (Antonakis, Bastardoz, Liu, & Schriesheim 2014; Bryman 2004), thereby inhibiting the development of a distinctive body of knowledge. In fact, qualitative researchers are often not interested in theory development or the replication of their work. In reviewing the field of organisation studies, Palmer (2006) summarises four objections to theory development, namely: (1) that fundamental changes have made some theories redundant, (2) the nature of some fields are too dynamic to be the object of theorising at this point (or perhaps ever) and will benefit more from descriptive accounts, (3) that a problem-driven approach to research (Davis & Marquis 2005), which draws upon multiple theories rather than advancing one, could be more appropriate, and (4) an obligation to make a theoretical contribution becomes restrictive for researchers who simply want to describe

how things are, or how they have been changing. In essence, many qualitative researchers regard pursuing the objective of theory development as being immaterial or inappropriate.

These two challenges to theory development do not dismiss outright the potential value and contribution of research that is attempting to build on existing theory but rather serve as a caution to researchers to check that their theory-building endeavours are worthwhile. Qualitative researchers, therefore, need to ensure that they are focused on important, relevant, and stable phenomena and that they are mindful of balancing theoretical parsimony with contextual detail. This paper explains how to achieve this.

In addressing the aim of this research, the paper is structured according to some of the phases of the research process, as follows: (1) planning of the research, (2) data collection and analysis, and (3) locating the research findings in the literature. In the section related to research planning, the following objectives are formulated: Firstly, to explain the relevance and value of deductive qualitative approaches to theory building. Secondly, to illustrate how examining the maturation of a concept can help decide the appropriateness of a particular research approach. In explaining how to approach data collection and analysis, a third objective is realised, namely, to offer guidance on the philosophical assumptions of the researcher and the testing of research propositions, including their use in case study research. Finally, in offering guidelines on the location of the research findings, the fourth research objective of the paper is to explain how the findings of a deductive qualitative study should be handled to demonstrate the contribution of the study to the body of knowledge. It does so by discussing the topics of the contextualisation and generalisation of findings.

2. Planning of the research

In conceiving of and planning the research, the researcher needs to confirm that s/he intends to contribute to theory development and then to check that this is appropriate, given the stage of maturation of the concept to be investigated.

2.1 Theory building intention

It is assumed in this paper that one of the primary purposes of conducting research is to contribute to theory development ultimately. Objections and alternatives to this position have been acknowledged earlier. However, the qualitative researcher now needs to confirm that this is their intention, rather than theory generation, problem-driven research, or a descriptive outcome (Palmer 2006). That is, the researcher needs to confirm the relevance and justify the value of theory building.

Consistent with other deductive, theory testing approaches to research, a good review of the literature is required. Theory building is more likely to succeed in areas with a dominant approach evident and greater consensus amongst researchers in the definition of key terms (Pfeffer 1993). Consequently, in reviewing the literature, researchers need to examine the conceptualisation and operationalisation of their key terms and check the levels of agreement in prior research studies. It is essential for researchers to have a good understanding of the nature of the phenomena they are researching. They need to know its historical landscape and context and clarify (and perhaps even defend) their position concerning the potential of their research to contribute to the development of cumulative theoretical knowledge. To reinforce this point, Hunt and Dodge (2000) recognised that leadership was a mature field. They bemoaned the neglect of historical-contextual antecedents, which led to academic amnesia that later promoted a research déjà vu amongst researchers and practitioners alike, as they rediscovered known leadership concepts and insights.

A systematic (Snyder 2019) and chronological (Boyne 2009) review of the literature can help to demonstrate the accumulation of a distinctive body of knowledge. Furthermore, the outcome of this literature review phase is likely to be the development of a theoretical or conceptual framework (Grant & Osanloo 2014; Jabareen 2009) and the formulation of research propositions that are to be tested in the research (Miles, Huberman, & Saldaña 2014).

2.2 Theory maturation

The body of knowledge on a topic matures. As it does so, different research approaches and methods become more (or less) valuable. Several authors have found the framework of Reichers and Schneider (1990) helpful in describing and reviewing the evolution of a concept from its inception to maturity (Bono & Vey 2005; Davies 2007; Hunt 1999; Rebelo & Duarte Gomes 2008). According to this framework, the concept

introduction/elaboration stage involves introducing, legitimising, and establishing a new concept (or phenomenon or variable). Once introduced, the concept evaluation/augmentation stage involves testing the robustness of the concept and its operationalisation and reviewing and critiquing the evidence from the findings of early studies. At this stage, the concept is often reconceptualised. Finally, in the concept consolidation/accommodation stage, there is growing consensus on the definition of the concept and its related variables (i.e., antecedents, consequences, moderators, and mediators) as it is integrated into conceptual frameworks and then established as a theoretical model. Subsequently, interest in the concept declines, with fewer research studies and publications being produced.

Therefore, it is argued that as concepts develop from an *Introduction and Elaboration* stage, to *Evaluation and Augmentation* and then to *Consolidation and Accommodation* (Reichers & Schneider 1990), different research approaches and methods are appropriate. By implication, qualitative and quantitative methods and inductive and deductive approaches can be complementary, rather than competing, with each having a distinct role to play at different stages in the maturation cycle of a concept (Parkhe 1993). What also becomes evident when examining these stages is that different types of publications and article genres (Montesi & Mackenzie Owen 2008) are more (or less) relevant at the various stages. This is illustrated in Table 1, which can guide researchers in ascertaining the stage of maturity of a concept. The author guidelines of some journals offer further guidance on the nature of different types of articles that they publish, which can be helpful to researchers to make explicit the kind of contribution that they trying to make and the appropriate publication type or genre to use. In other words, in assembling the literature to review chronologically, researchers should also be attuned to changes in the type of research publications and research methods being employed over time, and not only focus on the development of the concept itself.

Table 1: Types of publications associated with concept introduction/elaboration and evaluation/augmentation

Concept Introduction/Elaboration	Concept Evaluation/Augmentation
Books	Applied research articles
Theoretical articles	Qualitative research articles [e.g. Case studies]
Conceptual Articles	Quantitative/empirical research articles [e.g. Surveys]
Comment and opinion articles	Methodological articles
	Monographs
	Reviews [e.g. Literature Reviews, Meta-analysis, Citation Analysis]
	Practice-oriented articles

Source: Author's construction

Bibliographic and citation analysis tools such as those that are available on Web of Science or Scopus are also helpful in determining the maturity of a concept and the type of research and publication genre required. See Vogel, Reichard, Batistič and Černe (2020) for an overview of bibliometric techniques. As an illustration of the use of these citation analysis tools, a search was carried out on Web of Science for the search term "servant leadership" in all fields, which generated 957 publication results. The citation report showed that since the first publication in 1978, there has been an exponential increase in the number of times the concept has been cited in publications. Some 34 years later, in 2012, the milestone of more than 300 citations for the year was reached. Two years later, in 2014, there were over 600 citations, with this number doubling approximately every two years. By 2020 there were over 4700 citations in the year and a cumulative total of almost 20 000 citations. The top ten cited publications are presented in Table 2 below, arranged by year of publication. Of these, three are reviews of the leadership literature, and the remaining articles all adopt a quantitative design, some of which offer competing measurements of servant leadership. The highest-ranked publication that adopted a qualitative approach was Eisenbeiss (2012), who ranked 26th with 144 citations. However, the paper provided illustrative cases of ethical leadership in practice, rather than focusing exclusively on servant leadership. This brief analysis demonstrates that more than 50 years after Robert K. Greenleaf's seminal work on servant leadership (Greenleaf 1970), it is now a mature phenomenon, as indicated by the number of publications and citations. Quantitative approaches dominate the evaluation stage of the concept's maturation, while qualitative research approaches are largely ignored.

Table 2: Top 10 citations on "servant leadership" on Web of Science

Publication Authors	Citation ranking	Total citations[1]	Year of publication	Type of publication
Ehrhart (2004)	4	562	2004	Quantitative, survey
Barbuto & Wheeler (2006)	9	335	2006	Quantitative, scale development
Liden, Wayne, Zhao, & Henderson (2008)	3	607	2008	Quantitative, scale development
Neubert et al. (2008)	8	371	2008	Quantitative, survey
Avolio, Walumbwa, & Weber (2009)	1	1008	2009	Review article, general leadership theories
Walumbwa, Hartnell, & Oke (2010)	6	381	2010	Quantitative, survey
Schaubroeck, Lam, & Peng (2011)	7	379	2011	Quantitative, survey
van Dierendonck (2011)	2	611	2011	Review article, servant leadership
Dinh et al. (2014)	5	490	2014	Review article, general leadership theories
Hoch, Bommer, Dulebohn, & Wu (2018)	10	296	2018	Quantitative, meta-analysis
[1]Data collected 29 October 2021				

Source: Author's construction

3. Data collection and analysis

Within the framework of the maturation process of theory development as described above, it is argued that even though they have not received much attention, qualitative approaches have a role in theory building and refinement, particularly at the evaluation and augmentation stage. When collecting and analysing data, the researcher should be cognisant of the research paradigm adopted. In addition, data should be collected and analysed with the intention of testing the research propositions.

3.1 The use of the post-positivist paradigm

Qualitative research adopts a wide range of research orientations. However, when testing theory deductive qualitative research approaches usually adopt a post-positivist research orientation or paradigm. This paradigm "aims to produce objective and generalizable knowledge about social patterns, seeking to affirm the presence of universal properties/laws in relationships amongst pre-defined variables" (Taylor & Medina 2013 p.3). A realist ontology underpins the post-positivist approach and is concerned with "multiple perceptions about a single, mind-independent reality … value cognizant; conscious of the values of human systems and of researchers" (Krauss 2005 p.761). Both quantitative and qualitative research approaches and methods can be utilised in post-positivist research, as the research topic dictates what is appropriate (Krauss 2005). It is typically associated with deductive approaches to qualitative research and when investigating social phenomena.

In meeting these assumptions of reality, the realist ontology of the post-positivist research paradigm provides the necessary conditions for utilising qualitative data to verify research propositions. That is, the nature of the phenomenon is stable and not temporal or time-bound and does not assume multiple realities, but a singular one that can be "apprehended". Also, the data is objective and not in the form of unverified subjective opinions. By implication, researchers are gathering data in the form of either verifiable observations over time or accounts of the observations of the research participants, which can be triangulated to enhance the credibility of the research and produce a "comprehensive, stable picture of 'reality'" (Varpio et al. 2017 p.44). Qualitative researchers following a deductive approach, therefore, need to ensure that their ontological assumptions are consistent with that of the post-positivist research paradigm and that they collect and analyse their data in a manner coherent with this approach, looking for the commonalities from multiple perspectives and sources. This investigative process can be likened to a judge in a court of law, weighing up the evidence presented from many witnesses and sources to determine what is most likely to have happened before pronouncing a judgment.

3.2 Testing research propositions

Deductive research approaches make use of the extant literature and theory as a point of departure through the generation of research propositions that can be tested (Pearse 2019). Theoretical propositions are derived from a literature review and then used to guide the collection and analysis of data (Boyatzis 1998; Fereday & Muir-Cochrane 2006; Hyde 2000). Developing and using a codebook and a code memorandum is helpful when adopting this approach (Boyatzis 1998; Crabtree & Miller 1999; Fereday & Muir-Cochrane 2006).

Furthermore, deductively oriented case studies can explore and refine theory and confirm or infirm (i.e., call into question) the plausibility of a theory (Kaarbo & Beasley 1999). In considering the manner of using case studies to test a theory, Yin (1981, p. 108) argues that even "data from a single case can be used to test a theory (i.e., a pattern), as long as contrary theories are also compared". Yin (2003, p. 118) argues that these rival explanations should consist of a set of mutually exclusive independent variables. However, it is also possible to triangulate different theories that complement one another, thereby providing a fuller explanation of a phenomenon (Hopper & Hoque 2006). In selecting a single case, Yin (1981) notes that this is based on the occurrence of a phenomenon in its real-life context since case study research recognises that the occurrence of a phenomenon cannot be divorced from its dynamic context. Moving beyond single case designs, comparative case studies provide a focused and structured way to select comparable or diverse cases to confirm or extend theory from an original case (Kaarbo & Beasley 1999). By implication, researchers need to clearly identify the theory or theories they are interested in developing, develop and extract research propositions from a review of the literature related to this theory, and then carefully select suitable cases to analyse.

4. Locating the research findings in the literature

As stated earlier, this paper aims to give guidance on how deductively oriented qualitative research can contribute to developing a distinctive and cumulative body of knowledge. The aim was broken down into four objectives. So far, the first three objectives have been addressed, which cover the planning and data collection and analysis phases of the research. In locating the research findings in the literature, the focus now shifts to the fourth objective, which is to explain how the findings of a deductive qualitative study should be discussed to demonstrate the study's contribution to the body of knowledge. Therefore, this fourth objective guides researchers as to what claims they can make with their research, how they go about doing so, and what the limitations of these claims are. This highlights the importance of the Discussion chapter or section of a research study. Research conducted adopting a genre analysis of articles and dissertations (Hopkins & Dudley-Evans 1988) provides general guidance in structuring and writing the Discussion. These guidelines include commenting on whether the results obtained were expected or not, by comparing the study's results to those obtained in other studies. The researcher then explains results that run counter to those of other studies, providing examples to back up the explanation. Alternatively, prior research is cited in support of the results. Comparing the study's results to those of other studies leads to making recommendations for future research and providing justification for such recommendations (Hopkins & Dudley-Evans 1988). By explicitly referring to other studies in this way, researchers are deliberately considering the contribution of their study, thereby ensuring that they are building a distinctive body of knowledge.

While the analysis by Hopkins and Dudley-Evans (1988) provides a general pattern for formulating a discussion, unique features of qualitative research findings complicate their comparison to those of other studies. This is reflected in the interrelated topics of contextualising and generalising the research findings. In considering these topics, the role of the case study research method is examined in the development of theory.

4.1 Contextualisation of research findings

The critical characteristic of a theory is that it offers explanations for why a phenomenon occurs or provides an explanation for the causal link or mechanism between variables (Davis & Marquis 2005; Sutton & Staw 1995). Quantitative research procedures cannot identify an underlying explanatory mechanism through the techniques and analyses applied, and therefore has to draw from existing theory to do so (Dyer & Wilkins 1991; Emmel 2021). These explanatory mechanisms can only be identified through qualitative research procedures, particularly when a realist ontology is adopted (Emmel 2021). While inductive approaches may assist with theory generation, qualitative deductive approaches can facilitate a deeper exploration and validation of a theory, seeking a balance between theoretical generalisation and contextual specificity.

Qualitative research, therefore, has the advantage of fleshing out the details of the phenomenon in the real world prior to using quantitative methods with large samples that attempt to generalise the theory in a more universalistic manner (Crick 2020). This is not to say that only quantitative methods are able to assist with the generalisation of research findings, but it is one alternative that is available to researchers. As another alternative, it has been argued that certain qualitative methods can be used to generalise findings. That is, qualitative deductive approaches can be used to confirm or falsify the appropriateness of a theory (Barratt, Choi, & Li 2011; Yin 2014). Explanatory case studies focus on addressing questions of causality or offering explanations for identifying the generative mechanisms underlying events or processes (Wynn & Williams 2012; Yin 2014).

This may involve the investigation of single or numerous cases. Yin (1981) has argued that even a single case can provide a valid test of a theory, and the depth and contextual insights from single case studies have proven to be helpful in the past for building theory (Dyer & Wilkins 1991).

Compared to quantitative approaches, the value of qualitative research approaches lies in the level of detail with which the findings can be presented on each case for which data is collected, allowing for a higher degree of contextualisation (Crick 2020; Hyde 2000). Indeed, many qualitative researchers believe that there may be greater value in theory building from detailed, contextual studies that are comprehensive and contribute to substantive theories (Glaser & Strauss 1967). However, this process of generalisation will inevitably require simplifying the findings by removing some of the idiosyncrasies of the case to produce a more parsimonious theory (George 2018). Therefore, researchers will need to identify the more critical features of their findings and present these in a manner that other researchers can build upon them. This means separating the conceptual from the contextual to some degree, while recognising that these are inextricably intertwined in qualitative and case study research (Yin 2014).

4.2 Generalisation of qualitative findings

Much of qualitative research is located within a constructivist or interpretivist research paradigm and adopts a form of naturalistic generalisation (Stake 1978) or transferability as a qualitative equivalent to external validity in quantitative research. With transferability, the reader is provided with a rich and thick account of the findings to facilitate the transfer of any insights by the reader to a new setting (Hellström 2008). However, deductive qualitative approaches are located in a post-positivist research tradition rather than a constructivist or interpretivist one, and so the transferability concept is irrelevant, and instead, generalisation is of interest. Researchers often recommend employing quantitative research methods to generalise research findings. The hypothetico-deductive approach characterising quantitative research is well established. It is assumed that large data samples can be collected to represent a broader population and that generalisation of the results occurs by drawing inferences from sample statistics to population parameters through the application of statistical techniques. For qualitative researchers, this approach to generalisation is problematic in several respects.

Firstly, in contrast to the data used in quantitative research, qualitative research accounts consist of multiple data points collected within small samples or a limited number of cases (Yin 2014). Indeed, the number of variables represented by the data points often exceeds the study's sample size. Qualitative researchers see this as necessary to fully capture the unique or idiographic nature of the case being researched. From the quantitative perspective, this makes generalising the research findings problematic, as inferential statistical analysis can no longer be applied, given the large number of parameters. Therefore, statistical generalisation is not feasible. Secondly, qualitative research is ideographic in nature and not nomothetic. According to Baskerville (1996), generalisation can take one of two forms. In the nomothetic natural sciences, general laws of nature are pursued that cannot be broken, and no exceptions are expected. Here, nomothetic generalisation applies, and theory is developed for all cases. In contrast, social phenomena in the social sciences are idiographic, with generalisation limited by qualifications and exceptions of unique cases. Therefore, statistical generalisation is not suitable for idiographic generalisation.

Given that statistical generalisation is neither feasible nor suitable for idiographic generalisation, an alternative approach is required. Baskerville (1996) states that ideographic generalisation requires a two-stage process, consisting of first creating a general case from one or more base cases. Base cases are the cases that are selected and investigated through data collection and analysis. After that, the general case, which is theoretical, quite abstract, and conceptual, is applied to a goal case to ensure its relevance and “practicability” (i.e., being able to apply the theory in practice). That is, generalisation ultimately occurs when conceptual insights gained from base cases are applied to new goal cases.

It has been argued that explanatory case studies have a lot in common with experiments, where it is possible to generalise from even a single experiment (Yin 2014). Parkhe (1993) observes that selecting multiple cases is incorrectly thought of as being equivalent to increasing the sample size for a survey. Instead, it should be compared to conducting another experiment, where the case is selected because it is expected to either confirm the first case or, for sound reasons, produce predictably contrarian findings. That is, a negative case may be deliberately selected in an attempt to extend a theory (Hyde 2000). This process of analytical generalisation expands and generalises theories rather than attempting to determine the likelihood of their occurrence in a particular population of interest (Hyde 2000; Yin 2014).

While ideographic generalisation is feasible and appropriate in deductive qualitative research, it is not easy. Trying to develop generalised theory from qualitative studies has been likened to a "map drawn at too large a scale. At best, it does not do its subject justice, missing important details, and at worst, it produces misleading inferences, missing crucial twists and turns in the road" (Palmer 2006 p. 541). A fundamental challenge for the researcher is to locate the research study on an ideographic-nomothetic continuum (Finfgeld-Connett 2010). That is, as discussed earlier, in the interest of generalisation, more parsimonious findings are needed, but this must be balanced with qualifying features and contextual detail. As Flyvbjerg (2006, p. 225) states "Predictive theories and universals cannot be found in the study of human affairs. Concrete, context-dependent knowledge is therefore more valuable than the vain search for predictive theories and universals".

5. Conclusion

Qualitative research has a long history of having to defend its legitimacy in comparison to quantitative research approaches. While many qualitative approaches have rejected a comparison to quantitative methods as a basis for establishing their legitimacy, the approach taken in this paper has been to juxtapose quantitative and qualitative approaches and to demonstrate their complementarity as a body of knowledge matures. In support of theory development and maturation, this paper provides guidelines to assist deductive qualitative researchers in positioning their research and making a more cogent and distinctive contribution to theory development. It is hoped that this will lead to a broader recognition of the contribution made by qualitative research, evidenced by more researchers adopting this approach and in increased citations of qualitative research publications.

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Teaching Research Methods and the Supervision of Undergraduate Projects: Seeking Practical Improvements to a Complex Process

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Abstract: This paper develops a review of teaching research methods and student supervisor relationships, first presented to ECRM20. Last year we tested an extensive literature review with a survey of undergraduate business students, this has now been supplemented with further survey data, interviews and a focus group. This supplementary data has deepened our understanding of the issues and has largely reinforced the findings from the previous paper. At a time when some schools are moving content on-line and seeking new forms of assessment, there is a need to ensure that research continues to fulfil a contribution towards intellectual and practical understanding. Detailed analysis has explored the extent to which the teaching of research methods within a taught degree course and the completion of an individual project has proved effective. Value perceived by the students and supervisors of a major project has been confirmed to influence both success for a candidate at an interview as well as providing a skill set suitable for longer term employment. Learning 'skills for life' was suggested by the students.. The extent to which students and supervisors engage was explored and opportunities for improvement are reported. The importance of adding an element of fun to the process was also raised. Little evidence of supervisors receiving training was found, Feather et al (2010, 2013) and a challenge continues to be the extent to which supervisors are fully briefed on the required dissertation process. In practice, supervisors rely on their own prior experience and this can contribute to an uneven quality of experience for students. Conclusions on the undergraduate data are developed for two specific research questions and next steps for improvement at the school are outlined for the Business School to consider.

Keywords: undergraduate research, teaching research methods, project supervision

1. Introduction

This paper continues recent research Mitchell and Rich, (2019, 2020), with a review of literature on the teaching of research methods and the quality and effectiveness of the student supervisor relationship in managing research projects conducted by students. Data has been collected at a London based Business School through surveys, focus groups and interviews from undergraduate students as well as faculty and staff. This is used to explore where research methods fit within a contemporary Business School curriculum and how they can be included in a way that remains relevant in a rapidly changing environment. The inclusion and supervision of an individual project is closely connected to the teaching of research methods because it provides an opportunity for students to put their learning about methods into practice. Moreover there is a disconnect between project supervision and other aspects of teaching especially in the undergraduate context, as supervision includes a measure of largely unmediated one-to-one contact.

1.1 Research questions

The following questions are explored:

- **RQ1.** What content on research methods is delivered, how useful and relevant to the course as a whole is it?
- **RQ2.** How significant is the supervisor-student relationship where students conduct independent research within their studies, how is it organised and what lessons are learnt?

Section 1 Introduction covers the purpose, background and research questions. Section 2 the literature review, 3 methodology, 4 results, 5 conclusion and finally 6 next steps.

1.2 Background

Both authors have been involved at various schools for some years, with the teaching of research methods, supervising and managing the process for students' dissertations, at undergraduate and postgraduate levels. Business schools have experienced a number of changes in response to competition, pressures to revise curriculums, recruitment and a major shift to eLearning and self-managed learning, Mitchell and Rich (2020);

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pedagogy and evaluation, Brown and Rich (2020). In the year 2020 these pressures have been exacerbated by the onset of the Coronavirus pandemic. Schools that had been doing well have struggled with resources for teaching and learning. Even before the pandemic, changes in teaching approach have changed requirements for the utilisation of space. Others may be trying to cut costs as well as rediscover their competitive edge. Individual projects and dissertations can be expensive to resource and come under scrutiny when costs need to be cut. Evidence is mixed although there has been suggestions that individual student dissertations are now less popular both with faculty and students, and that alternatives be considered, Derounian (2011), Duke and Beck (1999), Healey et al (2012). Research at University of Huddersfield by Feather et al (2010: 2013) suggested that the dissertation made no statistically significant difference to overall marks. That depends on weighting in the marking scheme, and universities will vary in this regard. This raises a question on value, especially if in some way a project and dissertation is 'costlier' to undertake. Arguably for honours level undergraduates a dissertation helps to differentiate the more capable students who develop a variety of valuable skills, assisted with a one-to-one supervisor. Projects also provide the opportunity to assess a number of important facets of students' abilities, that are not at present readily assessed using other conventional methods, such as written examinations, Stefani (1997). Further, the dissertation is often used at exam boards for borderline candidates in relation to the UK honours classification, Booth et al (2003), Webster et al. (2000). There are valid concerns that if the dissertation is compulsory at undergraduate level, it may disadvantage students not of the required calibre, raising the issue of whether such students are suited to university-level study. The question remains as to differences in depth and rigour across dissertations at a bachelor, master and doctoral level and therefore the ease with which comparisons can be made and lessons drawn.

2. Literature review

Given the overall aim of the research (section 1) and the Research questions 1 and 2 above in 1.1 relevant themes are suggested below. The interconnectedness of these themes is apparent both within and across the two questions.

2.1 Curriculum for research methods teaching and its delivery.

The traditional role of a student project, supervision and the associated teaching of research methods has been, and continues to be questioned at some universities Feather et al (2010; 2013). The demand on resources and pressure to offer more online support, as opposed to face to face teaching are relevant factors. This has been given added impetus for business schools and students to provide protection from Coronavirus. It has been suggested that only limited lessons can be translated from research on postgraduate supervision to that of the undergraduate processes Rowley et al (2004).

Many business schools and universities include an introductory module to research methods. Typically, a mixture of classroom and self-study material, designed to give an awareness of the types of project available, which research methodologies are appropriate, along with examples of data analytics, ethics, working with a supervisor, referencing and use of plagiarism software. Practice in crafting aims / objectives and research questions, writing literature reviews and designing data collection surveys is also desirable, particularly at undergraduate level. The choice of material depends upon the curriculum and the level of student research expertise. One popular text, Hair et al (2007) includes chapters on: ethics, defining the problem and reviewing literature, research design, sampling and data collection, primary and secondary data, questionnaire design, analysis and interpretation of data, qualitative and quantitative, hypothesis, regression and communicating the results. A further valuable text in wide use at business schools, which combines an introduction to the concepts of research with practical guidance on data collection and on qualitative and quanititative techniques for analysis, is '*Research methods for Business'* Saunders, Lewis and Thornhill, (2012).

Anecdotal evidence led Stehlik et al (2020) to believe that specialist college curricula requirements were driving trainee research behaviour and was therefore an important target for systematic study. It is reported that this may be contributing to wastage in medical research. This opened the possibility for future work to quantify outcomes of curricula changes put into practice, including quality of trainee research outputs and their subjective experiences. It follows that the extent to which experienced supervisors are also involved in the design and delivery of curricula for teaching research methods may also be an issue for business and management students. Nind et al (2020) argue that teachers and supervisors should attend more carefully to the social, emotional, active and the reflective nature of learning research methods. The interconnections between doing research and teaching research methods are considered central. Hsiung (2016) further reminds

us of the 'inter-dependent and mutually reinforcing' nature of the relationship arguing that insufficient attention has been paid to how teaching can contribute towards research rather than the other way around. Similarly, the authors argue that with research methods education insufficient attention has been paid to how learning can contribute to teaching, and in turn to doing research. Massard de Fonseca (2017) suggests that because qualitative methods are regarded as easier to learn, word-based and traditionally applied less in dissertations, students may not require training under faculty guidance. Much of the discussion regarding research methods teaching occurs in Anglo-Saxon regions ignoring the cultural and political context within which qualitative researchers do their teaching, Hsiung (2016).

In China, some social scientists see qualitative research (QR) as similar to the indigenous '*investigative research'* proposed by a leader of the country's communist reform. Teaching QR in China is challenging due to a short and scattered history with western thinking and complicated domestic socio-political context, Chen (2016). Two approaches are developed to address these challenges: '*knowing and doing'* and *'practical reasoning'*. These strategies resonate with the Chinese cultural beliefs of learning by doing in real contexts and learning with appropriate adaptation and flexibility. Given the recent growth in the number of Chinese students that have chosen to study at western universities this seems significant. The ability to use multimethod data is an increasingly desirable skill set for business practitioners. Projects that allow undergraduate business students to practice mixed methods research create a valuable opportunity to improve work-readiness skills. Some schools have offered options for either an individual research dissertation, group based, or entrepreneurial work-based project; although the dissertation still typically follows a traditional academic format. However, research over several years across some 70 international schools at the University of Gloucester have included running a '*Newsweek*' production using television, radio and online news. At Sheffield Hallam writing a handbook for volunteers in a dementia residential home Derounian (2011); Healey (2012) was a further option.

2.2 Value of research methods knowledge

Frias and Popovich (2020) applied an experiential learning model to create and assess the use of multiple methods for undergraduate projects. They tested the benefits of a mixed methods approach to client-based projects, as a collaborative effort between two marketing classes. The results demonstrated that students reported several professional development benefits, including enhanced communication and teamwork, and data analysis and triangulation skills. This study also provided insights for instructors on the implementation of collaborative projects that include mixed methods research. Recent focus on data analytics as opposed to data collection and choice of method has increased the need to use appropriate software e.g. SPSS and Nvivo and online tutorials are popular in this regard (Saunders et al , 2012). Student satisfaction plays an important role in the quality of university education. Identifying students' satisfaction with their education and acquired skills, or knowing their opinions is crucial when facing challenging demands in the job market e.g. Spain. Martínez-Roget et al (2020) report that a survey conducted among 130 undergraduate economics students helped with an assessment of a dissertation's influence related to intellectual curiosity and the perception of acquired skills. The results also confirm the significant role played by the supervisor.

2.3 Student-supervisor relationship

An example of a thesis being central to the third year of a business degree is in Bucharest, Tănase, and Harba (2020). Support in supervision implies helping with topic selection, dividing the thesis into stages, holding meetings and keeping minutes, helping with deadlines, providing guidelines and feedback on drafts, explaining tasks and performance standards is regarded as part of the ever-changing role for both students and lecturer's in the thesis supervision process. Building a better relationship with the coordinated students, as well as achieving better results in terms of quality, time management, final grade and student satisfaction is something that all teachers desire. Martínez-Roget et al (2020) confirm that the tutor or supervisor's presence throughout the process of completing the undergraduate dissertation at business school is key. Faced with equal skills perception, students who had more personal contact with their supervisors expressed greater satisfaction. The results coincide with those from previous research, in which the supervisor's role is emphasized in performing a dual, pedagogical and psychological role in terms of getting students' attention and interest, encouraging them and providing a sense of security.

2.4 Organisation / delivery

Tănase, and Harba (2020) pose a number of critical questions for both students and supervisors; the answers to which vary between institutions. How close is the relationship between a supervisor and a student? What are

students' expectations when selecting a topic, as well as deciding upon a teacher to support with their work? Are those expectations the same in the beginning and at the end of the collaboration? Do students have similar expectations or do they differ, influenced by various factors? The same questions apply to supervisors. How much do students' expectations vary depending on different factors, such as age, experience and number of students? During collaboration, the supervisor can wear multiple hats, including that of a trainer, leader, coach, boss, manager, evaluator and friend. But these roles very much depend on time and situation, as well as on the student's and teacher's personalities. Even though group supervision has its advantages, it is not a common practice. A method where several students are present during the meeting, but the supervisor may still address each one of them individually, is somehow placed at the borderline between group and individual tutorials. It has some advantages, one of them being that students can interact with each other and ask questions and receive answers that could be of interest to all of them. They also receive individual answers for a specific problem. Some students are shy and do not feel comfortable in groups. For teachers, group supervision is less time consuming and can be a way to highlight individual progress of a specific student in order to motivate and stimulate the rest of the group. On the other hand, individual meetings between teacher and student play an important role in reducing isolation, enhancing understanding of different research methods, contributing to knowledge development and offering encouragement Lessing and Lessing (2004). Nind et al (2020) argue that teachers of research methods and supervisors would do well to attend carefully to the social, emotional, active and reflective nature of learning research methods. Teaching people to be health professionals, teachers or social workers almost inevitably means engagement in pedagogic cultures that recognise and build from a valuing of active and experiential learning. A study at Aberdeen university confirmed that at Masters level a research project is used to enhance skills and employability, hence developing research skills that will equip students with competences necessary in their career Cornelius (2016). A problem that remains however, is that given the high number of masters and undergraduate students, faculty supervision is an expected part of the workload, Cornelius (2016) that lacks the priority and motivation awarded to PhD supervision. The hours allocated by the institution may not reflect the work undertaken (or required) relying on goodwill and professionalism.

2.5 Lessons and value

It is crucial for students to have a close connection with their supervisor and attend meetings on a regular basis, Tănase, and Harba (2020). Most of the undergraduate students have four or five meetings with their supervisor, which is considered enough to complete the thesis. The student needs to be interested and play an active role in these meetings, take notes and consider suggestions. Rather than waiting for students to ask questions, tutors can also play an active role by probing every step of the thesis development. Supervisors are then able to address and correct any potential errors or misunderstandings from an early stage, bearing in mind that undergraduate students who do not always have the experience of producing a major project present different challenges to postgraduate or Ph.D. research students. The supervision process, if properly managed can transform a mandatory activity in an enjoyable one. Through the guidance provided, communication and feedback, supervisors can influence the student perception about this process and contribute to their personal development and boost their self-esteem.

2.6 Synthesis

The key messages that emerge from this review and will impact upon design of the methodology and data collection are:

RQ1. What content on research methods is delivered, how useful and relevant to the course as a whole is it?

- The level, detail, and comprehensiveness vary considerably between schools from undergraduate to doctoral candidates. At the very least, practice in developing research questions, undertaking a literature review and developing the scope of the project are key. Undergraduate business students may be exposed to the use of primary as well as secondary data collection, quantitative as well as qualitative analysis. (2.1 & 2.2)
- Projects that allow business students to practice mixed methods research create a valuable opportunity to improve work-readiness skills (2.1)
- Students report gaining several professional development benefits as a result of participating in a project, including enhanced communication and teamwork, and data analysis and triangulation skills. (2.2)

- Students valued the opportunities to learn about qualitative and quantitative methods, and about how to identify a research question and to review the literature, but there remained serious gaps in their understanding and also their knowledge of practical skills such as the use of software tools. (2.2)
- Teachers of research methods and supervisors would do well to attend carefully to the social, emotional, active and reflective nature of methods learning. (2.3)

RQ2. How significant is the supervisor-student relationship where students conduct independent research within their studies, how is it organised and what lessons are learnt?

- The extent to which experienced supervisors are also involved in the design and delivery of curricula for teaching of research methods. (2.3, 2.4, 2.5)
- Support in supervision implies helping with topic selection, dividing the thesis into stages, holding meetings and keeping minutes, helping with deadlines, providing guidelines and feedback on drafts, explaining tasks and performance standards is regarded as part of the ever-changing role for both students and lecturers in the dissertation supervision process. (2.3, 2.4)
- The supervisor can wear multiple hats, including that of a trainer, leader, coach, boss, manager, evaluator and friend. But these roles very much depend on time and situation, as well as on the student's and teacher's personalities. The supervisor can provide guidance about the process of carrying out a project, or expertise in the subject matter, or both, for instance when helping students to formulate a research question. (2.4)
- The supervision process, if properly managed can transform a mandatory activity into an enjoyable one. (2.5)
- Faculty contribution to supervision needs to be recognised as part of a balanced workload. It should not be perceived as a chore or a token activity which faculty are expected to take on against their will. (2.4)

3. Methodology

The plan was to use a variety of mixed methods with survey questions of various cohorts in Likert scale, binary format and open-ended free format; interviews and focus groups with students, support staff, faculty and alumni / recent graduates. This would enable some comparison with undergraduate data collected a year ago, where the sample size and response rate was inhibited by Covid-19.

3.1 Data collection

As might be expected the various courses follow different curricula and hence study research methods and work on their dissertations at different times. For this paper we focused on undergraduate students and collected the following data:

- Survey cohort: Final Year Undergraduates BSc (Business Management).
- Interview the Senior Course officer with responsibility for administering undergraduate projects
- Carry out a focus group with newly appointed teaching fellows with responsibility for teaching research methods with the undergraduate cohort starting their final year in 2021.

The cohort of undergraduates carrying out their final year projects in 2020/2021 was the first where a majority of students followed a new structure, introduced with the 2018 intake. The new structure was accompanied by a significant increase in the total number of students taking Business Management courses, from an intake of about 250 to 350, translating into a larger number of projects to be supervised than in previous years. As part of the revised structure the final year included a taught module devoted to research methods and data analytics. This was the culmination of a curriculum throughout which students were encouraged to carry out independent inquiry based on concepts and understanding that they had developed during the course. Some material which had, in the previous structure, been offered through informal workshops to prepare students for their final projects, was subsumed into the new module. As part of the new module the members of this cohort also had much more detailed instruction in how, and why, to use case studies and how to write literature reviews than was offered to their predecessors. UG students experience focus groups as part of their year 1 curriculum when they are learning about market research so this could also be a useful data source.

After the ECRM2021 conference we interviewed the senior course officer for undergraduate projects (see Appendix 1 for questions and responses). We also held a focus group with new teaching / research fellows to disccuss their approaches to teaching research methods (see Appendix 2). The data collection included the following key messages from the literature review (section 2 and 2.6).

- Link between research methods techniques, valued skills and professional development
- Ensure the techniques encouraged can be used and applied correctly for a range of abilities
- Supervisors' familiarity and involvement with research methods teaching and project curriculum
- Clarity on timescales and key milestones
- Appropriate reward for faculty workload and involvement

3.2 Limitations

Our focus has been on undergraduate business students. Given a number of recent changes within the school e.g. amalgamation with the University of London, two name changes, the covid outbreak and a need to work offsite; students were exhausted with completing surveys -hence the poor response rate received. With many students still undertaking distance learning, interviews and focus groups also proved a challenge.

4. Findings and results

4.1 Survey undergraduate students (29 respondents)

Table 1: Value of a research methods module – response (%)

Question	Not well	Slightly well	Moderately well	Very well	Extremely well
Develop academic writing skills	10	10	24	45	3
Scoping a project	3	21	21	38	10
Develop research questions	3	21	31	28	14
Writing literature review	21	10	28	31	7
Develop methodology	10	14	14	41	17
Primary data collection	7	17	14	41	17
Secondary data collection	14	0	31	31	21
Quantitative skills	14	14	28	31	7
Qualitative skills	14	21	24	38	0
Use of mixed methods	14	14	34	28	7
Discussion of findings	21	17	17	38	4
Develop evidence-based conclusions	21	14	10	45	7

- There is a tendency for a respondent to consistently score low or high on most questions
- Overall answers are skewed towards positive responses.
- 94 responses were < moderately well, 159 responses > moderately well
- This may reflect weaker or less motivated students

Table 2: Value of understanding research methods to the project / dissertation – response (%)

Question	Definitely No	Probably No	Might or might not	Probably yes	Definitely Yes
Understanding RM is a key learning objective	3	3	24	48	18
Understanding RM is useful to my future career	3	11	21	31	31

- Negative responses correspond with respondent answering not well or slightly well above in Table 1

Table 3: The role of the supervisor – response (%)

Question	Yes	Maybe	No
1:1 working with a supervisor	62	21	14
Able to choose a supervisor	69	7	21
Able to consult with specialist faculty	14	34	48
Choice of project type	38	31	28
Choice of emphasis on qualitative or quantitative	72	14	10

4.2 Discursive replies

Value of feedback

- The majority, 79% said that verbal and written feedback were of equal importance; among the balance all but one valued written feedback.

Past experience

- As expected little experience of undergraduates writing a dissertation as opposed to essays

Guidance from supervisor

- Provided papers to read
- Clear plan and structure
- Expert guidance
- Choice of research question, plan, ethics and approach

How could supervision be improved?

- More 1:1 meetings and feedback
- More advice on writing
- More accessible
- More consistency and some way of avoiding a minority of students having a poor experience with disengaged supervisors

Autonomy

- Most appreciated a choice on approach. However, some thought there was too much autonomy

Effective preparation for the project

- A full range of responses covering both extremes

How could the process of writing the dissertation be improved?

- More briefing at start of the year
- More practical learning on RM's
- Clearer deadlines, examples and experience from the previous year.

5. Discussion

Research methods Some felt it was key to specific parts of the final year project process, notably creating a methodology section. A corollary of this was that it might not be seen as immediately relevant to other parts of the final year or to students' future careers. One comment was that research methods could be more usefully covered in the second year given that the project was going to be a major component of the final year. Another suggested that an individual assignment, as distinct from a group assignment, on research methods would be useful. There was interest in a more practical emphasis with one respondent mentioning specific training in using SPSS and NVivo. (see Tables 1 & 2).

Supervision 'What guidance has your supervisor been able to provide about how to carry out your project or dissertation?' Elicited three strongly negative comments (others were fairly generic and generally referred to supervisors' subject matter knowledge, familiarity with the process, and expertise). One of the negative comments suggested that the process would have been good if only they had '*somebody helpful'*. A second suggested that the process could be improved by ensuring that the supervisors '*did the work'*. A third observed that their supervisor who they perceived as an academic oriented towards postgraduate students with no interest in undergraduates, had not followed up beyond providing initial reading suggestions. Conversely, there were several very positive observations: these included one who had a great relationship, one who highlighted personalised guidance, one who pointed out the supervisor's relevant subject matter expertise. Several highlighted the supervisor's role in helping to focus on the research question and on aspects such as getting ethics approval. Another respondent observed that email was not necessarily the best platform for supervision discussions.

Several observed that briefing instructions would have been more valuable earlier in the academic year. Most students wanted both written and verbal feedback, several thought that written was most important: only one thought that verbal was most important. (see Table 3).

While there are no surprises this supports an overall view that a good proportion of students have a very good experience indeed with the project but some find it disappointing. It also supports the view that, while we rely on individual supervision, students are at the '*mercy*' of various academics' interests and motivation. There are

indications that the process would benefit from clearer definition of expectations and more consistency between the approaches offered by different supervisors.

In order to understand more fully the above findings we carried out an interview and a focus group. These helped us to understand the process by which supervisore were allocated and the approach planned for the coming year with new faculty teaching research methods.

5.1 Interview with senior course officer (see Appendix 1)

It became apparent from discussions with both students and academic staff that project supervision takes place as part of a complex system, where other pressures on supervisors' time and setting up communication channels between students and supervisors have an impact on the effectiveness of the process. To understand some of this complexity and to gain another perspective on the process we interviewed one of the professional staff responsible for coordinating supervision of undergraduate projects.

Changes to final year projects tend be incremental. Common issues are that although the documentation is considered straightforward, it is not widely read by faculty and students alike. Briefings are therefore held by course directors who clarify choices and elective options for students in advance. Students who attempt a full dissertation of 10,000 words are expected to have achieved average grades of 60% plus. Other students can attempt an applied research project, which is a shorter 5000 word dissertation, plus an additional elective module.

Most issues between students and supervisors are resolved over a conversation, there are also personal tutors and a student experience officer who can assist. Faculty workload varies and this may influence the number of students each supervise. A number of faculty will have a preference to supervise postgraduate students with work related to their own research and interests. The business school operates mainly across two sites. Undergraduate teaching is mostly at one site and the majority of faculty and postgraduates function at a second; this typically restricts communication.

5.2 Focus Group with new teaching / research fellows (see Appendix 2)

In the light of increasing student numbers and as part of a programme to strengthen teaching skills within the Business School, a number of early career academics were recruited as teaching fellows. As these fellows had recent experience of PhD study, they were tasked with developing and delivering teaching of research methods. Three fellows, two with expertise in qualitative research and the third with expertise in quantitative research and analytics, participated in a focus group.

There was real enthusiasm for teaching research methods and applying their experience from postgraduate work to an undergraduate audience. A range of useful concepts were discussed - qualitative, quantitative, mixed methods; and the importance of data collection and project management were stressed as key components. One commented "if you want to master something, teach it". Group work and offering the students a choice for assessments were considered important. Reflecting on research methods as providing "skills for life"' not just for a project and dissertation, was emphasized, as was the provision of exercises to practice and learn application. It was agreed that both parties have a responsibility to work at the student-supervisor relationship, and that the process should be an enjoyable one.

6. Conclusion

The overall aim for this paper was to explore where research methods fit within a contemporary Business School curriculum, at undergraduate level for business students, and how to ensure relevance in a rapidly changing environment. In conclusion; the student data evidenced that the majority of students who responded had a positive response to the value added through understanding research methods. Skills for life (4.3), and specific help with interviews and careers (4.1 Table 2) were stated. Most problems with student-supervisor relationships were resolved quickly (4.2). Those students that preferred a shorter project could also do a further elective. Other changes were online learning packages, and team related exercises. New members of faculty with recent research experience plan to add energy, enthusiasm and fun to the taught research methods modules (4.3) during the next term.

Two research questions guided the study:

RQ1. What content on research methods is delivered, how useful and relevant to the course as a whole is it?
The content for final year undergraduates, changed little before a revised structure with a complete module on research methods was introduced. There is more emphasis today on group exercises and choice of approaches and also on the tools that are available for accessing and cleaning data. Evidence from the survey (Tables 1 & 2) showed a majority of respondents found that the research methods module was either very or extremely useful.

New teaching and research fellows who will be teaching undergraduate research methods this term offered a wide range of topics for inclusion, also reinforcing the significance of relevance, practical examples, group work and learning of skills 'for life , not just for a dissertation'.

RQ2. How significant is the supervisor-student relationship where students conduct independent research within their studies, how is it organised and what lessons are learnt?
Evidence from the survey (Table 3) identified areas for improvement especially with timing, communication and the briefing of students and supervisors. The observation about being assigned an '*academic master's member of faculty* ' with no interest in undergraduates remains a challenge and reflects concerns about the perception among faculty both of undergraduate teaching and of project supervision. The manner in which faculty's workload is set and they are incentivised or motivated to supervise student projects is an issue. An interesting observation by '*new*' faculty was to try to make the student – supervisor relationship an enjoyable one with an element of fun in addition to the serious aspects of managing the overall process.

7. Next Steps

Exploring these two research questions has implications for the teaching of research and supervision processes within the Business School. The following should be discussed within the school and actioned where possible:

1. Many of the negative comments from staff and students alike reflected a lack of consistency, most evident in survey responses from students concerned that they were not getting the sound educational experience which they knew some of their peers to have. This could be linked to the complexity of the whole process within the Business School and to some of the difficulties encountered in administering project supervision effectively. Whatever expectations should exist around project supervision, there are clearly difficulties in communicating these effectively and also in ensuring that a common understanding exists. There is also a difficult balance to be achieved between promoting autonomy among students and being prescriptive about the approach to supervision
2. A practical next step arising from these issues is to ensure the briefing for both students and supervisors is clear on what is expected from the process. So far, briefing for students on final year projects has been centred on expectations of what is to be produced, and in fact the guidance on the process and on communication between them and supervisors has been framed as an instruction that they should negotiate the most appropriate channel for communication themselves. This is subject to very few requirements such as to produce a draft on a certain date before the submission was due. Student responses to the survey revealed differing views on matters of process, for example whether group supervision might be appropriate or whether they could consult other members of academic staff. In the future briefing to both staff and students will focus on clarity about these process issues and on a clear and detailed set of expectations for supervision.
3. As alluded to in the interview with the course officer, in the future students will have the option of doing an applied project which will be based around group supervision. For this a much more highly structured approach to supervision will be adopted and because it takes place predominantly in groups students will have a clear view of how their progress compares with their peers.
4. The evidence of some supervisors being perceived as uninterested in undergraduates is cause for concern. This arose in responses to the student survey and also in discussions with the course officer concerned with administration of the project. It is particularly worrying given that this coincided with an expansion in the Business School's undergraduate programme. While it is difficult to change perceptions among faculty members as a whole, a more structured approach and clearer expectations should provide an opportunity to promote undergraduate supervision as a worthwhile activity and not as an academic chore that needs to be done. This also needs to be positioned within an understanding of the other pressures and constraints affecting academics, as a plea to put more work into undergraduate supervision is likely to be very ineffective if it does not take account of the context.

5. In the focus group the teaching fellows demonstrated considerable enthusiasm for research, willingness to share their ideas and understanding with undergraduates, and creativity in how they intended to present the material. They were clearly committed to a refreshed approach to teaching research methods which will combine the very practical skills in which some students expressed with an emphasis on the value of understanding research as an ability which would benefit them in future employment and in life in general. If the students can build on this enthusiasm they will have acquired an understanding and appreciation of research that will enhance their degree and help them considerably in their future careers.

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Appendices

Appendix 1

Wednesday 8th September 10:30 Notes from Zoom meeting

Senior Administrator responsible for undergraduate projects on all degree progs (except Actuarial)

1. Please describe what your job entails in connection with student project work.
   Work with faculty. A change this year is to create a questionnaire for students to select their project preferences earlier than before. Faculty allocate students to supervisors and returns a list to contact the students. Issues include the student changing their mind on the project type or the student – supervisor relationship not working.

   This year Business / management undergraduate can choose an ARP (Applied Research Project) option worth 15 credits as opposed to a normal student FYP dissertation of 10,000 words and 30 credits. Students may need to have earnt 60 / 65%+ average grades to qualify for the FYP. Although the ARP is not an easy option for weaker students.

2. Do you have a view on how documentation regarding the nature, workflow, timing and delivery of projects and dissertations might be improved? How might we ensure that this is then read and used as intended?
   Now avoiding the additional cost of visiting lecturers supervising projects. There is a student handbook that is updated annually. Students and faculty do not always read this as requested. Students usually email questions. Academic matters ought to be addressed to faculty / supervisor. The handbook is suitably 'general' rather than very specific. Minor changes are made year on year. The course director also briefs students at the end of year 2 on the final year project requirements. The students also have a Student Experience officer.

3. What issues do you have to deal with in terms of allocating students and supervisors and dealing with any concerns raised by either party?
   Often a misapprehension over whether a full dissertation is more likely to impress potential employers. 600-700 students per year. A max of 10 students might change supervisors. Most issues are resolved over a conversation. Gaining engagement (of both parties) is crucial. If a student needs to resubmit then aim to keep the same supervisor. All projects are second marked and a sample go to external examiners a majority of issues can be dealt with and do not need to be referred to the Course Director.

4. We have a concern that some supervisors may not be committed to undergraduate teaching and learning (one survey respondent talked about supervisors being more comfortable with master level students). Have you experienced this issue, and any thoughts on what could be done?
   The same faculty each year tend to supervise projects. The workload varies according to other teaching / research duties. There is a variation in commitment and effort expended by both parties. From previous experience working in the MBA office it was easier to persuade many faculty members to put effort into MBA projects than it is for undergraduate projects.

5. When we interviewed one supervisor he mentioned that he had on some occasions taken on a very considerable volume of supervision and been happy to do so, subject to being able to keep track of the various different students he was responsible for. Do you have any thoughts on workload issues such as this?
   Faculty may supervise up to 20 students (range 2-20). With the Covid-19 pandemic, zoom sessions were widely used.

6. In your experience are there any lessons from how postgraduate projects and supervision are organised from an administrative viewpoint?
   It is generally considered harder to engage undergraduates than postgraduate students. Let's see how well the changes made this year work.

7. We wish to explore how supervision is organised, and your perception of what are the problems, what works well, and what could be improved. Your overall thoughts would be appreciated.
   Try to simplify / streamline wherever possible. Some students will always feel disenchanted. One faculty administrator coordinates projects across programmes. Discourage change of supervisor where possible.
   There has been little change over the years in the standard of undergraduate projects. Most of the undergraduate teaching is at Northampton Square. For Postgraduates, Most of the faculty are based at Bunhill Row where postgraduate teaching takes place – this makes communication easier for postgraduates and also the development of relationships.

Appendix 2

Thursday 16th September 10:30 Notes from Zoom meeting

Focus Group with new research / teaching fellows.

Based on your recent Postgraduate experience and with a view to teaching undergraduate and also perhaps Masters students research methods, we would like your thoughts on the following:

1. Students are preparing for perhaps their first major project and dissertation. What do you consider to be the most useful concepts, theories and tools that students need?
- Detailed real world examples.
- Importance of collecting data , students learning about their online community, use of specialized programming languages, SPSS.
- NVivo – basic coding and use of nodes.
- Finding a balance not all students keen on analytics.
- Epistemology and ontology – familiarization with important concepts for critical writing and thinking.
- Paradigms: '*I'm very biased towards teaching the paradigmatic issues at stake in whichever approach is taken'*.
- Objectivism vs interpretivism or constructivist approaches.
- Inductive vs deductive
- What theory is! This is often misunderstood and an UG can graduate without fully appreciating the distinction between theoretical insights and empirical observations.
- Need a detailed plan and milestones

2. How best can these ideas be put across in the classroom? e.g. lecture, on-line, exercise based, group work etc…?
- Joint teaching sessions.Lecture/discussion (Socratic method)
- Exercise in tutorials on the basics of NVivo

3. What are your thoughts on making research methods relevant to final year undergraduates?
- 'My goal would be that they should appreciate (1) what method is right for the questions they've been tasked with answering in the workplace: predictive power vs meanings and culture (2) If they intend to pursue an MA it can help establish which route they might pursue. (3) if they walk away with the basics – we've done our job'

4. Are you planning an assessment as part of the teaching – if so what do think would be suitable?
- Group work, give students options.
- I assume the existing assessments will be used and we may add to them after next weeks meeting

5. Based on your experience of postgraduate studies, what lessons would you offer in managing the project process?
- Clear about how to organize the project breaking it down into sections
- Clear about what assessments they'll be judged against so they address the criteria clearly

6. Again from your own experience, what suggestions do you have for enhancing the student-supervisor relationship?

- Be available, open and approachable. I've seen lectures shut people down too readily.
- Building relationships – forgive the American in me but this is an issue of providing inspiration and understanding the UG experience.
- Regular meetings, availability, deliver on targets – try to make the process fun.

7. What differences would you propose for the teaching of MBA, or MSc students compared with BSc in Business and /or Management?

- At batchelor level students have little research experience and are used to being told. Masters level – clear idea of what they are interested in but do not assume they understand the jargon

8. Any other thoughts?

- Excited at the prospect of teaching research methods to undergraduates, also realistic about personal bias.
- The final project is important as a differentiator for bright students. Also increasingly important for those graduates that will need to collect data, undertake analysis and and write reports in their new jobs.
- About a third of of students will continue with postgraduate studies.
- I love the saying – " *if you want to master something, teach it*". That's why I'm excited to engage with this material. I'll learn a lot from the process and hopefully reach some of my students.

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Editorial by the Editor; Ann Brown

Invitation to our readers to send in their opinions and views by letter to the editor
We want to hear from you. We are always interested in well-argued points of view. All your letters will be read by the Associate Editors and selected ones will be published in a later issue.

The research papers in this issue address diverse issues:

- Case based research
  A case study (in Sweden) that identifies methodological obstacles that can impede research into the success of major complex projects at national and international level (Große, Olausson and Wallman-Lundásen)
- Introduction to The Learning History Method (LHM)
  A fascinating case example of applying LHM to support organizational change (Julie Béliveau and Anne-Marie Corriveau)
- Theoretical - Deductive Qualitative Research Methods
  The case for using Deductive Qualitative Research methods in theory development (Pearse)
- Teaching Research Methods
  Two empirical papers on: undergraduate business student perceptions of value of research methods modules (Mitchell and Rich), and an innovative example of 'learning by doing' for the students on a South African taught Masters programme (Turpin and Van Bell)

The papers

Case based - researching national level critical infrastructure protection (CIP) systems

The critical infrastructure protection (CIP) planning system for power provision in Sweden (STYREL) involves a number of actors from several levels of the state's governance structure at national and local level and other institutions. Große, Olausson and Wallman-Lundásen aim to assess the effectiveness of the system for creating a plan to deal with a crisis involving national power shortage. This case study establishes the complexity of the planning operation and the methodological obstacles to researching national level critical infrastructure protection (CIP) systems.

Introduction to The Learning History Research Method

The Learning History Method (an application of action researchistory) is a powerful tool for fostering collective organizational reflection – an important ingredient of successful organizational change. It is as yet a little used method according to the authors - Béliveau and Corriveau. Their case study on the change programme inspired by the Planetree approach which was carried out in five healthcare institutions in Quebec makes extraordinary reading. This paper is an excellent introduction to the method and it's potential value to any organization in the throes of a major change programme.

Theoretical - Deductive Qualitative Research Methods

Pearse claims that researchers have not made full use of the potential of deductive qualitative research methods for developing a distinctive and cumulative body of knowledge. He argues that for topics such as 'servant leadership' which have reached a mature stage, deductive qualitative methods are appropriate. The paper offers a guide to identifying such topics and applying deductive qualitative methods to enhance existing theory.

Teaching Research Methods

Mitchell and Rich carried out a survey of undergraduate business student within one business school to establish their views on the value of including research methods on their course. While largely positive responses were obtained, the paper identifies some of the more intractable issues involved in teaching this subject. Turpin and Van Bell describe the success of an innovative student-based group research project, in driving home the precepts of a standard lecture research methods. The publically available research methodology for the Fairwork

Reference this paper: Mitchell, A., and Rich, M., 2021. Teaching Research Methods and the Supervision of Undergraduate Projects: Seeking Practical Improvements to a Complex Process. *The Electronic Journal of Business Research Methods*, 19(2), pp. 117-118, available online at www.ejbrm.com

project (assessing gig platforms for their conformance to fair principles of work) formed the basis of the student project. The authors suggest that this could be of value to many other modules on research methods.

The papers

1. Left in the Dark: Obstacles to Studying and Performing Critical Infrastructure Protection by Große, Olausson and Wallman-Lundásen
2. The Learning History Methodology: An Infrastructure for Collective Reflection to Support Organizational Change and Learning by Julie Béliveau and Anne-Marie Corriveau
3. Guidelines for Theory Development using Qualitative Research Approaches by Noel Pearse
4. Teaching research methods and the supervision of undergraduate projects - seeking practical improvements to a complex process by Mitchell and Rich
5. Fast-tracking Research Methodology Immersion for Students: Experiences from a Project on Fairwork in the Gig Economy by Marita Turpin and Jean-Paul Van Belle

