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PROCESS MAPPING AND WORKLOAD OPTIMIZATION OF TEACHER ADMINISTRATIVE TASKS: A SERVICE DESIGN AND OPERATIONS RESEARCH CASE STUDY AT AN INTERNATIONAL SCHOOL

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ABSTRACT:

Teacher responsibilities in small schools increasingly extend beyond teaching and include a wide range of administrative duties. Teacher burden in terms of stress, time pressure and workload management has been explored in previous studies, but less focus has been placed on the influence of organisational routines and task arrangements on these issues. This thesis explores teacher administrative practices at Norden International School and explores how the school processes and task structures are causing inefficiencies in a small school.

The study was based on the systems thinking theory, complemented by service design and lean process improvement. A simple model in Excel with Solver was added as a decision support tool to investigate the potential task allocation options. The study was a pragmatic qualitative case study with three teachers. Structured two-week workload logs, semi-structured interviews and document analysis were used to collect data, which were analysed using process mapping, service blueprinting, workload profiling and root cause analysis.

The results indicated that miscommunication, lack of clarity regarding responsibilities, follow-up activities, hidden support activities, duplicated effort and pressure during peak periods were identified as factors contributing to inefficiencies. These challenges were found to be predominantly structural, related to how activities were organised, and not so much to time management per se. This case study suggests that there is a need for better accountability, common monitoring systems, agreed communication procedures, better planning for periods of high demand and careful consideration of suitable activities given out. The results are situation specific, not generalisable conclusions.

KEYWORDS: teacher administrative workload, systems thinking, service design, workflow analysis, lean improvement, operations research, case study, educational management

Contents

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Title of Thesis: Process Mapping and Workload Optimization of Teacher Administrative Tasks: A Service Design and Operations Research Case Study at an International School.

1 Introduction

In today's era, teachers face the most challenges in delivering effective instruction due to the huge number of administrative responsibilities (Ab. Wahab et al., 2024). The high level of duties outside the classroom has caused to reduce the time availability for direct student interaction, lesson preparation, and curriculum planning. Earlier research has shown that increased number of non-instructional workloads are associated with higher levels of stress and lower levels of job satisfaction and professional engagement (Kyriacou, 2001; Shen et al., 2025).

Qualitative studies done across multiple countries consistently show that an enormous percentage of teachers' working hours is no longer dedicated to teaching-related activities, and this trend continues to get worse over time (OECD, 2019; OECD, 2025). his problem is better understood because of institutional and administrative system inefficiencies rather than flaws in individual teaching ability. To put it another way, the organization, distribution, and management of administrative duties in schools are the main causes of the workload issue (Te Braak et al., 2022).

From the perspective of Industrial Systems Analytics, these challenges can be understood as process design issues within a complex service system. This perspective supports a structured and data-informed approach to identifying inefficiencies, mapping existing administrative processes, and developing practical solutions to improve workload distribution (Riezebos & Huisman, 2020).

This thesis focuses on the case of Norden International School in Finland and examines how teacher administrative workflow challenges can be analysed and improved through process mapping and service design-based processes (Suoheimo & Määttä, 2023). The study's motivation is to identify key bottlenecks, sources of inefficiency, and opportunities to improve processes within the school's administrative system.

1.1 Background and Motivation

Teacher workload has become a major concern in education systems, particularly in relation to maintaining an appropriate balance between instructional and non-

instructional responsibilities. According to TALIS data, teachers across OECD countries typically work approximately 44–50 hours per week, with a high percentage of this time devoted to non-teaching duties such as reporting and documentation tasks (OECD, 2019). The continuous need to switch between teaching and administrative responsibilities can reduce teachers' capacity for lesson planning and student engagement during classroom times.

Several studies have presented that excessive fragmented task structures can affect teachers' instructional effectiveness and the overall quality of teaching rather in a negative way (Borg et al., 1991; Montgomery & Rupp, 2005; Kyriacou, 2001). In addition, there are differences across countries in the level of administrative burden placed on teachers which mainly depends on how the education system is organized. More centralized systems tend to impose stricter reporting requirements and centralized procedures, whereas decentralized systems often provide teachers with greater professional autonomy and fewer administrative constraints (OECD, 2019; Rahman & Reissi Avan, 2016). As a result, it claims that teacher's workload is not mainly stated as an individual issue rather more of a structural design of the education system and administrative work.

The context of Norden International School in Finland is intimately related to this larger global conversation. In addition to their primary teaching responsibilities, teachers must oversee a variety of administrative tasks in the classroom, such as recording student progress, attendance, grades, behavioural records, scheduling, and communication-related tasks (Kim, 2019; Te Braak et al., 2022). Even while each duty could be doable on its own, the combined impact of these obligations can interfere with established workflows and cut into the amount of time available for educational activities (Creagh et al., 2023; Ab. Wahab et al., 2024). This makes it obvious that we need to look at how these procedures are currently set up and identify any potential inefficiencies. Hence, the goal of this research is to link the more general worldwide problem of teacher administrative burden to a particular school-level setting and to create workable, evidence-based solutions that could improve teacher productivity (Riezebos & Huisman, 2020).

1.2 Purpose and Objectives of the Study

This research plan focuses on analysing and reducing the administrative workload of teachers at Norden International School through the application of Industrial Systems Analytics techniques. It does not simply describe how administrative tasks are currently performed but instead develops implementable strategies to help both school leaders and teachers manage administrative responsibilities more efficiently (Martínez Sanahuja, 2020).

There are three major research objectives. The first objective is to identify current workflows by applying service design techniques (e.g., service blueprinting) to detect inefficiencies and redundancies (Suoheimo & Määttä, 2023; Kim et al., 2017). The second objective is to analyse the root causes of these inefficiencies to better understand the factors contributing to the high administrative workload for teachers. The third objective is to develop Linear Programming models to optimise the allocation of teaching and administrative responsibilities among teachers (Jamous, 2024).

1.3 Research Problem and Research Questions

Norden International School, a private school located in Helsinki, Finland, is experiencing an increasing imbalance between the time teachers spend on administrative responsibilities and the time available for instructional activities. This imbalance arises from multiple overlapping and unevenly distributed administrative tasks, which can reduce teachers' instructional focus and limit their ability to engage effectively in teaching (Kim, 2019; OECD, 2025).

The aim of this study is to examine how teacher administrative workflows can be analysed and improved using service design approaches (Stickdorn et al., 2018). The study focuses on understanding current administrative processes, identifying inefficiencies and bottlenecks, and exploring practical ways to improve workload distribution. In addition, the study considers how simple optimisation techniques, such as linear programming, can support a more balanced allocation of administrative tasks among teachers (Caselli et al., 2022; Jamous, 2024).

To address this aim, the study is guided by three research questions. The first question examines how service design tools can be used to map and analyse teacher administrative workflows at Norden International School (Kim et al., 2017; Suoheimo & Määttä, 2023). The second question focuses on identifying the main sources of inefficiency and bottlenecks in the current administrative processes. The third question explores how administrative tasks can be more effectively distributed among teachers in order to improve workflow efficiency (Renna & Colonnese, 2025).

1.4 Key Concepts and Theoretical Framework Overview

Systems thinking is the theoretical framework of this research and provides the main conceptual lens for analysing teacher workload from an administrative perspective. Systems thinking views educational institutions as systems made up of interdependent elements, where components such as teaching, administration, and organisational processes are interconnected and influence one another (Meadows, 2008). From this perspective, teacher workload is shaped by how tasks are structured and managed within the system and therefore cannot be examined in isolation (Creagh et al., 2023).

To support this perspective, the research applies service design principles to assist in analysing and redesigning administrative processes. Service design methodologies, such as process mapping and service blueprinting, allow for the visualisation of current processes and help identify inefficiencies, bottlenecks, and areas for improvement (Bitner et al., 2008; Kim et al., 2017).

In addition, linear programming and other operations research methods are used to analyse the distribution of administrative workload among teachers. However, these methods do not establish new theoretical foundations; instead, they serve as practical tools to support decision-making and optimise workload distribution (Caselli et al., 2022; Jamous, 2024). The combination of systems thinking, supported by service design and operations research methods, creates a clear and consistent framework for analysing and improving the administrative workload of teachers within this study (Renna & Colonnese, 2025; Riezebos & Huisman, 2020).

In this thesis, systems thinking functions as the primary theoretical framework because the study examines administrative workload as an interconnected organisational workflow system. Service design and lean thinking are used as supporting improvement-oriented lenses to analyse workflow visibility, coordination, and inefficiencies. Operations research is used in a more limited role through a simple Excel Solver-based redistribution model applied only to selected transferable tasks. The JD-R model is not treated as a central framework but is used only to help interpret how workflow conditions may contribute to workload pressure.

1.5 Significance and Relevance of the Study

By using the principles of service design, operations research, and industrial systems analysis, this research examines how teachers' administrative workloads are structured and managed. Although these approaches have been widely used in other domains, their combined application within the context of school administrative processes remains relatively limited (Riezebos & Huisman, 2020).

From a practical standpoint, this research has direct implications for Norden International School by identifying ways to reorganise administrative processes in order to recover instructional time for teachers (Kim, 2019; Martínez Sanahuja, 2020). It also demonstrates that by using simple and accessible tools (i.e., Excel Solver), the proposed approach can be applied in resource-constrained environments.

In terms of academic relevance, this study contributes to the existing body of literature by incorporating systems-oriented and process-based perspectives into the analysis of teacher workload. Ultimately, the findings of this study may contribute to ongoing policy discussions by highlighting how administrative and structural factors influence teacher workload (OECD, 2025).

1.6 Structure of the Thesis

This thesis is organized into five chapters, each addressing a specific aspect of the research process. Chapter 1 introduces the background, purpose, and key theoretical foundations of the study. Chapter 2 presents the theoretical framework, reviews relevant literature, and discusses the implications of previous research. Chapter 3 outlines the

research methodology, including the research design, data collection methods, data analysis, and ethical considerations. Chapter 4 presents the findings and their interpretation in relation to both theory and practice. Finally, Chapter 5 concludes the study by summarizing the key findings, discussing the limitations of the research, providing suggestions for future research, and reflecting on the overall study, followed by the references.

2 Theoretical Framework and Literature Review

Increasingly, the administrative burden on teachers has become a key characteristic of contemporary education systems. Prior research has demonstrated that a high proportion of teachers' working time is consumed by non-instructional activities such as documentation, reporting, and coordination (OECD, 2019; Te Braak et al., 2022). As such, the contribution of these activities must be considered when examining how teacher workloads are structured and managed across educational systems. Given the increasing complexity of educational systems, a system-level perspective is essential for understanding workload distribution.

Numerous studies have documented the relationship between administrative workload, time pressure, and educator well-being. High levels of non-teaching duties have been linked to emotional exhaustion, low job satisfaction, and decreased levels of professional engagement (Shen et al., 2025; Song et al., 2023). Furthermore, research findings suggest that fragmented task structures can reduce teachers' cognitive focus, resulting in lower levels of instructional effectiveness (Rahman & Reissi Avan, 2016). Comparative studies also show that administrative burden varies depending on the structural design of educational systems, highlighting the role of institutional processes in shaping teacher workload.

2.1 Introduction to the Theoretical Framework

This chapter builds on these findings by reviewing the relevant literature and key theoretical perspectives related to teacher administrative workflow. The purpose of this chapter is to provide a systematic and coherent foundation for analysing inefficiencies in teacher workflows and for identifying appropriate approaches for improvement.

This research is primarily grounded in systems thinking as the main theoretical framework, while also drawing on service design principles and operations research as supporting approaches. Systems thinking views educational institutions as interconnected systems in which changes to one part affect all other components (Meadows, 2008). From this perspective, teacher workload is not an isolated issue but part of a broader systemic process shaped by the structure and management of tasks.

Administrative inefficiencies are therefore more likely to result from poorly designed workflows than from individual performance. By adopting a systems perspective, both organisational structures and processes can be examined holistically to support the development of effective solutions.

Building on this perspective, service design contributes a user-centered approach to analysing and improving workflows. It provides practical tools, such as process mapping and service blueprinting, that help to visualise administrative processes, identify inefficiencies, and highlight non-value-added activities (Stickdorn et al., 2018). In a K–12 educational setting, teachers can be understood as key service providers, and their administrative workflows can be systematically analysed and improved using these methods.

In addition, operations research methods, such as linear programming, are considered as supporting analytical tools for examining how administrative tasks can be allocated more efficiently. Unlike systems thinking, which provides the theoretical foundation, operations research does not function as a primary theoretical framework in this study. Instead, it supports the analysis by offering structured, quantitative techniques for improving decision-making and workload distribution.

2.2 Key Theories and Concepts.

Lean thinking is applied in this study as a supporting process improvement approach rather than as the main theoretical framework. It is used to identify inefficiencies and reduce waste within administrative workflows in educational organizations. Lean focuses on identifying activities that do not add value and that consume time without contributing to desired outcomes (Emiliani, 2015; Martínez Sanahuja, 2020). In the context of this study, non-value-added activities may include redundant documentation, excessive approval procedures, and repetitive administrative tasks. The use of lean tools supports process improvement by streamlining workflows, which can contribute to increased efficiency and reduced administrative burden on teachers.

In this study, teacher administrative workload refers to the range of non-instructional tasks that teachers are required to perform, including documentation, reporting, coordination, and compliance-related activities. Inefficiency is understood as the presence of unnecessary, duplicated, or poorly structured tasks within these workflows that consume time without adding meaningful value. Optimization, in this context, refers to improving the organisation and distribution of administrative tasks in a way that reduces unnecessary workload while maintaining the required administrative functions of the school.

The relationship between teacher workload and well-being is also an important consideration in this study. Previous research has shown that excessive administrative responsibilities are associated with increased stress, emotional exhaustion, and reduced teaching effectiveness (Kyriacou, 2001; Borg et al., 1991). Frequent switching between instructional and administrative tasks can lead to cognitive overload, which may reduce teachers' ability to maintain focus and engagement in their teaching.

By combining systems thinking as the main theoretical perspective with lean thinking as a supporting approach, this study addresses both structural inefficiencies in administrative processes and their impact on teacher well-being. This integrated perspective allows for the development of solutions that consider both technical and human factors.

2.3 Review of Relevant Literature

Research shows that administrative workload for teachers is an ongoing systemic issue across the global education landscape. Internationally regarded large-scale OECD TALIS studies reveal that a significant proportion of teachers' working hours are spent on non-instructional activities, including paperwork, filing, and coordination or reporting tasks (OECD, 2015; OECD, 2019). Although these studies provide a strong overview of the amount of time teachers devote to administrative duties, they offer limited insight into how these tasks are organised and allocated. This suggests that while the scale of administrative workload is well established, there is still a lack of detailed understanding of the underlying processes that shape this workload within schools.

There is also a substantial body of research showing that teacher workload has intensified over time. Early work by Hargreaves (2000), supported by later studies (Ballet & Kelchtermans, 2009; Ballet et al., 2006), demonstrates that teachers' roles have expanded from primarily instructional responsibilities to include a wide range of administrative and managerial tasks. Importantly, these changes do not only increase the volume of work but also its complexity, as teachers are required to manage multiple, often fragmented, task structures simultaneously. While earlier research clearly identifies this trend of intensification, it provides limited explanation of how these tasks are structured in practice, highlighting a gap between recognising workload growth and understanding its operational causes.

Studies further show that administrative workload is characterised by frequent interruptions and constant switching between tasks, which reduces efficiency and contributes to cognitive overload (Creagh et al., 2023; Valli & Buese, 2007). Quantitative studies effectively measure the number of hours spent on administrative tasks, whereas qualitative studies highlight how these tasks are experienced by teachers. For example, Ballet and Kelchtermans (2009) show that administrative work is often perceived negatively due to poor coordination and fragmentation. Together, these findings suggest that workload is not only determined by the number of hours worked, but also by how work is organised, indicating that structural inefficiencies play a key role.

A strong link has been identified between administrative workload and negative outcomes for teacher well-being and instructional effectiveness. The Job Demands–Resources (JD-R) model explains how increased job demands, such as administrative workload, lead to emotional exhaustion when not balanced by sufficient resources (Bakker & Demerouti, 2007). A wide range of empirical studies supports this relationship. Higher workload is consistently associated with increased stress and burnout, as well as reduced job satisfaction (Skaalvik & Skaalvik, 2017; Collie et al., 2012; Harmsen et al., 2018). Shen et al. (2025) further demonstrate that administrative workload directly predicts emotional exhaustion and reduces work engagement, while Montgomery and Rupp (2005) identify workload as one of the strongest predictors of teacher burnout across multiple contexts.

In addition to its impact on well-being, administrative workload also affects instructional quality. Teachers with higher administrative demands report having less time for lesson preparation and student feedback (Skaalvik & Skaalvik, 2017). Chen & Zhao (2022) provides stronger causal evidence, showing that increased administrative duties can negatively affect student academic outcomes. Taken together, these studies suggest that administrative workload creates both psychological strain and reduced opportunities for effective teaching, reinforcing its importance as a critical issue in education systems.

The literature also highlights that administrative workload is shaped by broader institutional and policy structures. Accountability reforms, data-driven decision-making, and performance monitoring systems have significantly increased the volume of documentation and reporting required from teachers (Ball, 2003; Fitzgerald et al., 2019). While these studies provide strong explanations at the policy level, they focus mainly on why administrative workload exists, rather than how it is generated and sustained within everyday school processes. This indicates a gap in the literature regarding the internal functioning of administrative workflows.

Lean thinking and process improvement approaches offer potential ways to address inefficiencies in educational systems by focusing on waste reduction, improved workflow, and value creation (Womack & Jones, 2003). Research has identified common inefficiencies such as duplicated processes, unnecessary approvals, and ineffective communication (Douglas et al., 2015). Studies using process mapping and value stream mapping demonstrate that these methods can help identify inefficiencies and reduce workload-related stress (Riezebos & Huisman, 2020). Similarly, Radnor and Osborne (2013) argue that redesigning processes in public services can improve efficiency without requiring additional resources.

However, most of this research is based on qualitative or case study approaches. While these studies are useful for identifying inefficiencies, they do not provide structured methods for optimising how tasks should be allocated between individuals. As a result, there is still limited guidance on how these improvements can be implemented in a systematic and measurable way.

Service design extends these approaches by conceptualising schools as complex service systems involving multiple interconnected processes and stakeholders. Tools such as service blueprinting allow for the visualisation of both visible and invisible processes, making it possible to identify bottlenecks and inefficiencies (Bitner et al., 2008). While service design has been successfully applied in sectors such as healthcare and higher education, its application within K–12 administrative contexts remain limited. Existing studies suggest its potential, but there is still insufficient research on how service design can be used specifically to redesign teacher administrative workload.

In parallel, operations research provides quantitative tools for improving resource allocation and workload distribution. Linear programming and mixed-integer programming models have been widely applied in educational settings, particularly for timetabling and staff allocation (Domènech & Lusa, 2016; Burke et al., 2014; Kristiansen et al., 2013). These approaches demonstrate that optimisation can improve both efficiency and fairness in workload distribution. However, their application has been largely limited to teaching schedules, with very limited focus on administrative tasks. This indicates a clear gap in applying optimisation techniques to teacher administrative workload.

In conclusion, the literature provides strong evidence that administrative workload is a systemic issue with significant implications for teacher well-being and instructional quality (OECD, 2019; Skaalvik & Skaalvik, 2017; Shen et al., 2025). It also identifies key drivers such as accountability policies and organisational structures (Ball, 2003; Fitzgerald et al., 2019), and highlights potential solutions through process improvement and lean methodologies (Riezebos & Huisman, 2020; Radnor & Osborne, 2013). However, existing research primarily focuses on measuring workload rather than analysing the structure of administrative processes, shows limited integration of qualitative and quantitative approaches, rarely applies optimisation methods to administrative tasks, and provides limited use of service design in K–12 contexts. These limitations indicate the need for a more integrated and solution-oriented approach to understanding and improving teacher administrative workload.

2.4 Summary and Implications for the Research

The literature reviewed in this chapter demonstrates that teacher administrative workload is a complex and systemic issue shaped by institutional, organisational, and process-related factors. Previous research has successfully established both the scale of administrative burden and its consequences for teacher well-being and instructional practice. However, much of this research has remained descriptive and fragmented in its approach.

A key limitation of the existing literature is the lack of integration between process analysis and optimisation techniques. Research on teacher workload has mainly focused on identifying relationships between workload, stress, and performance outcomes (Skaalvik & Skaalvik, 2017; Shen et al., 2025), while process improvement studies have concentrated on identifying inefficiencies without offering formal mechanisms for redesign (Riezebos & Huisman, 2020). Similarly, operations research studies provide useful optimisation tools, but these have rarely been applied to teacher administrative workload in school settings (Domènech & Lusa, 2016). As a result, previous studies have explained the problem well, but they have offered less guidance on how administrative workflows can be systematically redesigned and how tasks can be redistributed in a practical and evidence-based way.

This points to a clear and specific research gap. There is still limited research that examines teacher administrative workload at the level of workflow processes, combines service design tools with quantitative optimisation methods, and provides practical solutions for reallocating tasks within a school context.

This study responds to that gap by integrating service design and operations research approaches. Through process mapping and service blueprinting, the study identifies inefficiencies in administrative workflows. These findings are then translated into a linear programming model to explore how task allocation can be improved under real-world constraints.

This integrated approach offers a meaningful contribution to the literature. It moves beyond descriptive analysis by providing a structured and data-informed framework for

improving administrative efficiency in schools. The study is expected to contribute theoretically by extending existing research on teacher workload and process improvement, and practically by offering tools that can support decision-making in educational institutions.

3 Research Methodology

This chapter explains the methodology used to examine teacher administrative workload at Norden International School. The study was designed as a bounded case study because it focused on one small school context and examined administrative work as it occurred in everyday practice. The main focus was not teacher well-being in a broad sense, but the way administrative workload was shaped by workflows, task ownership, communication routines, handoffs, approvals, documentation, and decisions about how tasks were distributed among teachers. This focus helped keep the research connected to the three research questions, which examined workflow mapping, sources of inefficiency, and possible improvement in task distribution.

The methodology followed a step-by-step process. First, the main administrative tasks carried out by teachers were identified and classified into workflow categories. Second, data were collected through structured time-use logs, semi-structured interviews, and document analysis. Third, the collected data were used to create workload profiles and to map selected administrative workflows through process mapping and service blueprinting. Fourth, root-cause analysis was used to examine why bottlenecks, follow-up, duplication, rework, and unclear ownership occurred. Finally, selected variables from the empirical analysis were used to support a simple Excel Solver-based task redistribution model. In this way, the methodology moved from understanding the current situation to developing a practical improvement proposal.

A case study approach was suitable because the research examined a current workplace problem within its real organisational context. Administrative workload could not be separated from the school setting, because the tasks were closely connected to the school's size, staffing structure, communication practices, documents, and daily routines. Case study research is appropriate when a phenomenon needs to be studied in depth and when multiple forms of evidence are required to understand it properly (Rashid et al., 2019; Mtisi, 2022). In this study, using more than one source of evidence made it possible to compare what teachers recorded in their logs, what they explained in interviews, and what was visible in school documents.

This methodological choice was also supported by earlier research on administrative and educational process improvement. Previous studies show that administrative inefficiencies are easier to identify when processes, roles, and documentation flows are made visible instead of being discussed only in general terms (Bitner et al., 2008; Kim et al., 2017; Renna & Colonnese, 2025). Therefore, the methodology used in this thesis was chosen to produce a practical and evidence-based understanding of how administrative workload was created, where the main inefficiencies appeared, and which tasks could realistically be improved or redistributed within the school context.

3.1 Description of the Research or Development Task

The research and development task of this thesis was to evaluate and improve the administrative workflows carried out by teachers at Norden International School. The study focused on recurring administrative activities such as intern management, admissions and parent communication, weekly reporting, event coordination, academic resource ordering, routine communication, and general coordination work. These activities were examined not only as separate tasks, but as parts of wider workflows involving people, documents, communication channels, decision points, and follow-up actions. This approach allowed the study to analyse both the visible administrative tasks and the less visible coordination work that supported them (Bitner et al., 2008; Kim et al., 2017).

A central choice in the study was to treat teacher administrative workload as a workflow problem rather than only as an individual complaint. If the problem were understood only as teachers having too much work, the analysis would remain mainly descriptive. By examining workload at the process level, the study was able to identify where administrative burden was created, how it moved between actors, and which parts of the workflow contributed most to inefficiency. This was important because teacher workload is shaped not only by the amount of work completed, but also by how tasks are organised, repeated, interrupted, and distributed within the school system (OECD, 2019; Kim, 2019).

The first part of the development task was formalisation. In this stage, scattered daily administrative activities were translated into clearer process units. Each process unit was understood through its trigger, responsible actor, required information, output, and dependency on other people or documents. For example, a parent inquiry could involve several smaller actions, such as replying to a message, checking information, sending a document, confirming a meeting time, and following up later. Instead of treating these as unrelated actions, the study examined them as connected steps within one administrative workflow. This made the work more visible and easier to analyse through process mapping and service blueprinting (Bitner et al., 2008; Kim et al., 2017).

The second part of the development task was diagnosis. After the main workflows were made visible, the study examined why inefficiencies occurred. The focus moved from symptoms, such as teachers feeling interrupted or overloaded, to possible underlying causes, such as unclear task ownership, repeated follow-up, duplicated checking, delayed information, unnecessary approval points, and the absence of a shared tracking system. A fishbone-based root-cause analysis was used to organise these causes into a clearer structure. The 5 Whys technique was used only as a supporting questioning tool, because administrative problems in schools are often connected to several causes rather than one single root cause (Card, 2017)

The final part of the development task was redesign and limited task reallocation. The purpose was not to move all administrative duties from one teacher to another, because many tasks were connected to specific classes, subjects, parent relationships, or school responsibilities. Instead, the study examined which recurring tasks were genuinely transferable and which tasks needed to remain role-bound. Based on this distinction, the improvement work focused on clarifying ownership, reducing repeated follow-up, standardising recurring communication, and supporting a more balanced distribution of selected transferable tasks. This made optimisation a decision-support stage rather than the starting point of the research (Caselli et al., 2022).

The development task therefore followed a clear sequence: first, administrative work was formalised into process units; second, workflow problems were diagnosed through

mapping and root-cause analysis; and third, selected improvement options were developed for tasks that could realistically be standardised, clarified, or redistributed. This sequence helped ensure that the proposed improvement model was grounded in the actual workflow evidence collected from the school, rather than being based on a general assumption about teacher workload. In this way, the section connected the development task directly to the broader aim of improving administrative efficiency in a small school context (Rashid et al., 2019; Renna & Colonnese, 2025).

3.2 Research Design and Approach

This study used a pragmatic, single-site embedded case study design. The case was Norden International School, and the focus was the administrative workflow system carried out by teachers within this small school context. A case study design was suitable because the research examined a current organisational problem in its real setting, where administrative workload could not be separated from the school's staffing structure, communication routines, documentation practices, and task-allocation decisions (Rashid et al., 2019; Mtisi, 2022).

The study was pragmatic because the purpose was not only to describe teacher administrative workload, but also to develop a practical improvement model that could be used by the school. Pragmatism supports the selection of methods according to the nature of the research problem and the usefulness of the findings, rather than requiring the study to follow one fixed methodological tradition (Morgan, 2007; Foster, 2024). This was appropriate for the present study because the research questions required both qualitative understanding of workflow problems and structured baseline data on task frequency, duration, follow-up, rework, and transferability.

The design was also embedded because the school was not treated as one general unit of analysis. Instead, the study examined recurring administrative workflow categories within the same case. These workflow categories functioned as embedded units because each represented a different type of administrative work with its own triggers, actors, documents, communication patterns, and constraints. To maintain consistency with the results chapter, the embedded workflow categories used in this study were: intern

management, admissions and parent communication, weekly reporting and content checking, daily communication, event and field-trip planning, academic resource ordering, general coordination work, marketing and outreach, audit and compliance follow-up, and report card administration.

Treating these ten workflow categories as embedded units made the analysis more precise. It allowed the study to compare different types of administrative work in terms of workload volume, task frequency, interruption level, follow-up, rework, and transferability. For example, some categories were time-consuming because they involved long task episodes, while others created burden because they occurred frequently or required repeated clarification. This embedded design therefore helped the study move beyond a general statement that teachers had “too much administration” and instead identify which workflow categories created the greatest pressure and why.

The unit of analysis was teacher administrative workflow and its task-allocation structure. This definition kept the research focused on how administrative work was organised, rather than broadening the study into a general investigation of teacher stress or narrowing it to one single process such as admissions. The workflow-level focus was also consistent with the theoretical and methodological logic of the thesis. Systems thinking supported the examination of interdependence between tasks and actors, service design helped visualise process steps and hidden work, and operations research supported the later analysis of whether selected transferable tasks could be redistributed more evenly.

The study included the full relevant teacher population of the school. Since only three teachers carried the administrative workload examined in the study, all three were included rather than selecting a sample. This strengthened the within-case analysis because it captured the complete teacher group involved in the administrative workflows. However, the purpose was not statistical generalisation. Instead, the study aimed for analytical generalisation, where the findings may be useful for understanding

similar workflow problems in other small-school settings while remaining grounded in the specific context of Norden International School (Rashid et al., 2019).

The research design followed a sequential logic. First, recurring administrative tasks were identified and classified into the ten workflow categories. Second, structured time-use logs, interviews, and documents were used to collect evidence about how these tasks were performed. Third, descriptive workload profiles were created to show task frequency, duration, follow-up, rework, and teacher-level distribution. Fourth, process mapping and service blueprinting were used to examine how selected workflows moved through people, documents, and decision points. Finally, the findings were used to support a limited Excel Solver-based redistribution model for tasks that were genuinely transferable. This sequence ensured that the improvement model was based on empirical workflow evidence rather than on assumptions made before data collection.

The research design was therefore both analytical and development oriented. Analytically, it provided a structured way to understand how administrative workload was created and sustained within the school. Developmentally, it supported the creation of practical recommendations for clarifying task ownership, reducing repeated follow-up, standardising recurring communication, and redistributing selected administrative tasks where appropriate. This made the study suitable for a small school context, where improvement needed to be realistic, low-cost, and directly connected to everyday administrative practice.

3.3 Data Collection Methods

Data were collected through three main sources: structured time-use logs, semi-structured interviews, and document analysis. These sources were selected because the study needed to examine administrative workload from more than one angle. The time-use logs showed how often administrative tasks occurred and how much time they required. The interviews explained why certain workflows created difficulty, interruption, or repeated follow-up. The documents showed how administrative work was formally organised through templates, forms, schedules, handbooks, and reporting formats. Using these sources together supported a stronger case study design because

it allowed the findings to be compared across recorded activity, participant explanation, and organisational evidence (Rashid et al., 2019; Carter et al., 2014).

The data collection design was directly connected to the three research questions. The first research question, which focused on mapping teacher administrative workflows, required evidence about task sequences, actors, documents, and communication channels. The second research question, which focused on bottlenecks and root causes, required evidence about delays, follow-up, rework, unclear ownership, and missing information. The third research question, which focused on improving task distribution, required structured information about task duration, frequency, transferability, deadlines, and role-bound responsibilities. No single source could provide all of this information, so the study used logs, interviews, and documents as complementary sources of evidence (Carter et al., 2014; Bowen, 2009).

A clearer summary of the role of each data source is presented in Table 3.1.

Table 3.1. Connection between data sources and research questions

Data source	Main contribution	Link to research questions
Structured time-use logs	Recorded task category, duration, frequency, follow-up, rework, planned or unplanned work, and transferability	Supported RQ1 by identifying workflow categories; supported RQ2 by showing repeated follow-up and rework; supported RQ3 by providing baseline variables for redistribution
Semi-structured interviews	Explained how tasks were carried out, why friction occurred, and which tasks were difficult to transfer	Supported RQ1 by clarifying workflow steps; supported RQ2 by explaining bottlenecks and root causes; supported RQ3 by identifying practical constraints
Document analysis	Reviewed templates, forms, handbooks, schedules, reporting formats, and planning records	Supported RQ1 by showing formal processes; supported RQ2 by comparing formal procedures with actual practice; supported RQ3 by identifying which tasks could be standardised or tracked more clearly

The study used a full-population approach within the school. Since the relevant administrative workload was carried by three teachers, all three teachers were included in the data collection instead of selecting a sample. This was appropriate for the small

case setting because it captured the complete teacher group involved in the administrative workflows. In addition, the principal was included in the interview stage to clarify workflows that crossed teacher and management responsibilities, such as admissions, intern coordination, reporting, and school-level communication. However, the structured workload data remained teacher-focused because the study examined how teacher administrative burden could be understood and improved within the school (Rashid et al., 2019; Mtisi, 2022).

The main data collection period covered two consecutive working weeks. This period was used as the baseline dataset because it captured ordinary administrative activity under normal school conditions. A two-week period was considered suitable for this case because many teacher administrative tasks, such as parent communication, reporting, coordination, reminders, and document checking, occurred repeatedly across weekly routines. At the same time, the period was short enough to be realistic for participants to complete the logs carefully without making the recording process too demanding. Diary-based and time-use methods are useful for capturing repeated work episodes close to the time they occur, especially when tasks are brief, fragmented, and easily forgotten in later recall (Bolger et al., 2003; Ohly et al., 2010).

The two-week baseline was used for the main descriptive workload profile and for the variables later considered in the task redistribution model. This means that routine task frequency, duration, follow-up, rework, and transferability were calculated mainly from the structured logs completed during this period. The purpose was not to claim that two weeks represented the entire school year, but to create a clear and manageable baseline of normal administrative work. This distinction was important because some school administrative tasks occur regularly, while others appear only during specific peak periods.

Peak administrative processes were handled separately from the baseline dataset. These included intern onboarding, new student admissions, and field-trip preparation, where workload could increase temporarily and distort the picture of normal weekly administrative work. If a peak-related task occurred during the two-week logging period,

it was recorded in the log but marked according to its workflow category and interpreted with caution. Peak processes that occurred outside the two-week baseline were not added to the main baseline totals. Instead, they were examined through interviews and documents as contextual evidence and were later used to understand high-demand scenarios. This approach allowed the study to separate routine administrative burden from occasional workload spikes.

The structured time-use log was the main tool for collecting baseline workload data. It was organised around the ten workflow categories used throughout the thesis: intern management; admissions and parent communication; weekly reporting and content checking; daily communication; event and field-trip planning; academic resource ordering; general coordination work; marketing and outreach; audit and compliance follow-up; and report card administration. Using the same categories in data collection and analysis helped maintain consistency between Chapter 3 and Chapter 4.

Each log entry recorded the task category, duration, whether the task was planned or unplanned, whether follow-up was required, whether rework occurred, and whether the task was role-bound or transferable. A short notes field was also included so that participants could briefly explain the situation where needed. The purpose of the log was not to record every part of the teachers' working day, but to capture administrative activity in a structured and comparable way. This made it possible to create workload profiles and identify which workflow categories created the most repeated or time-consuming administrative work.

A short pilot phase was used before the full logging period. The pilot helped test whether the categories were understandable and whether the log was practical for teachers to complete during a normal school day. It also helped refine the wording of categories, clarify how short interruptions should be recorded, and reduce confusion between similar tasks. This was important because time-use logs can become less reliable if the categories are unclear or if the recording process becomes too complicated for participants (Bolger et al., 2003; Ohly et al., 2010).

Semi-structured interviews were used to explain the workflow patterns identified through the logs. The interviews focused on how administrative tasks started, who was involved, what information was needed, where delays occurred, why follow-up was required, and which tasks could or could not be transferred to another person. This was necessary because the logs could show that a task took time or required follow-up, but they could not fully explain why the task became difficult in practice. Semi-structured interviews were suitable because they allowed the researcher to use a consistent topic guide while still giving participants space to explain their experiences in their own words (Kallio et al., 2016; DeJonckheere & Vaughn, 2019).

The interviews were also connected to the time-use logs. Where needed, participants were asked to explain specific task patterns or examples recorded during the logging period. This helped distinguish between tasks that were long in duration and tasks that were short but disruptive. For example, a parent message might take only a few minutes to answer, but it could still interrupt teaching preparation, require later follow-up, or depend on information from another person. In this way, the interviews helped explain the hidden coordination work behind the recorded administrative activities.

Document analysis was used to examine the formal side of administrative work. The documents reviewed included email templates, admission forms, weekly reporting formats, planning sheets, the intern handbook, book-ordering records, and other relevant school artefacts. These documents helped show how tasks were expected to be carried out and whether formal procedures matched everyday practice. Document analysis was appropriate because it provided contextual evidence and supported comparison between written procedures and enacted workflows (Bowen, 2009).

The use of documents was especially important for identifying gaps between formal and actual administrative work. In some cases, a process appeared simple in a form or template, but the interviews and logs showed that teachers still had to complete additional clarification, checking, reminders, or follow-up. These differences helped identify where administrative burden was created by missing information, unclear ownership, duplicated records, or reliance on informal memory. Therefore, document

analysis did not stand alone; it strengthened the interpretation of the logs and interviews by showing how formal systems shaped actual workflow practice.

Together, the three data sources created a triangulated basis for the analysis. The logs provided measurable evidence of administrative activity, the interviews explained the reasons behind the recorded patterns, and the documents showed the formal structure surrounding the work. This combination made the findings more credible because important claims were not based on one source alone. It also helped the study connect data collection directly to the research questions and to the later analysis of workflow mapping, root causes, and practical task redistribution (Carter et al., 2014; Rashid et al., 2019).

3.4 Data Analysis Methods

The data analysis followed a sequential process so that each stage produced input for the next stage. The purpose was to move from raw evidence about daily administrative work toward a clearer understanding of workload patterns, workflow problems, root causes, and possible task redistribution. The analysis therefore followed five main steps: task classification, workload profiling, workflow mapping, bottleneck and root-cause analysis, and Excel Solver-based redistribution. This structure helped ensure that the improvement model was based on empirical evidence rather than on assumptions about teacher workload (Rashid et al., 2019; Nowell et al., 2017).

The first step was task classification. The time-use logs, interview notes, workflow observations, and relevant documents were reviewed and organised according to the ten workflow categories introduced in Section 3.2. These categories were intern management; admissions and parent communication; weekly reporting and content checking; daily communication; event and field-trip planning; academic resource ordering; general coordination work; marketing and outreach; audit and compliance follow-up; and report card administration. Each recorded task episode was coded according to its category, duration, trigger, communication channel, follow-up requirement, rework, and whether it was role-bound or potentially transferable. This

coding stage created a consistent structure for comparing different types of administrative work across the case.

The second step was the creation of workload profiles. The structured time-use logs were analysed descriptively to identify how administrative work was distributed across categories and teachers. The main indicators included task frequency, total time spent, average duration, proportion of unplanned tasks, follow-up rate, rework rate, and transferability. These indicators were used because the study was not only interested in how many hours were spent on administration, but also in which types of tasks created repeated interruption, additional checking, or uneven workload. Descriptive analysis was appropriate because the purpose was to understand the internal pattern of one case rather than to make statistical generalisations to all schools (Rashid et al., 2019).

The third step was workflow mapping. After the task categories and workload profiles had been established, process maps were created for the main administrative workflows. These maps showed how tasks moved through people, documents, communication channels, and decision points. They also helped identify where delays, repeated checking, approvals, missing information, or duplicated work occurred. For selected workflows with higher workload or greater risk of error, service blueprinting was used to distinguish between visible interaction with parents, students, interns, or staff and the hidden backstage work required to support those interactions. Process mapping and service blueprinting were suitable because they make service processes visible and help identify failure points that may not appear clearly in written procedures alone (Bitner et al., 2008; Kim et al., 2017).

The fourth step was bottleneck and root-cause analysis. The workload profiles showed which categories were frequent, time-consuming, or follow-up heavy, while the workflow maps showed where problems occurred in the process. Root-cause analysis was then used to examine why these problems continued. A fishbone-based structure was used to group the causes into areas such as role clarity, communication flow, process design, documentation, digital tools, approval dependence, and information availability. The 5 Whys technique was used only as a supporting questioning method, not as the

main analytical tool, because administrative burden in a school often has several connected causes rather than one single root cause (Card, 2017)

The triangulation of evidence was used throughout the analysis. For each major workflow category, the findings from logs, interviews, and documents were compared. The logs showed measurable workload patterns, the interviews explained how teachers experienced and managed the tasks, and the documents showed the formal procedure or expected workflow. This comparison helped identify whether a problem was only visible in one source or whether it appeared across several forms of evidence. In case study research, this kind of triangulation strengthens credibility because findings are not based on one source alone (Carter et al., 2014; Rashid et al., 2019).

The fifth step was the Excel Solver-based task redistribution model. The model was developed only after the task categories, workload profiles, workflow maps, and root causes had been analysed. This was important because optimisation could not be used as the starting point of the study. The model was used as a decision-support tool to explore whether selected administrative tasks could be distributed more evenly among teachers while still respecting the practical constraints of the school. Linear programming can support allocation decisions when the decision variables, constraints, and fairness objectives are clearly defined (Caselli et al., 2022).

The variables used in the Excel Solver model came from the empirical analysis. Task duration showed how much time each task or task block required. Task frequency showed how often the task occurred during the baseline period. Transferability showed whether the task could reasonably be assigned to another teacher. Teacher availability showed whether a teacher had enough non-teaching time to take on the task. Deadlines showed whether the task had to be completed within a specific time frame. Role-bound constraints showed whether the task had to remain with a particular teacher because of class responsibility, subject responsibility, parent relationship, intern supervision, or school-level role. These variables helped define what the model could and could not change.

A summary of the optimisation variables is shown in Table 3.2.

Table 3.2. Variables used in the Excel Solver model

Variable	Meaning in the study	Role in the model
Task duration	Estimated time required for each administrative task or task block	Used to calculate workload assigned to each teacher
Task frequency	How often the task occurred during the baseline period	Used to estimate repeated workload
Transferability	Whether the task could realistically be reassigned	Used to decide which tasks were eligible for redistribution
Teacher availability	Available time outside direct teaching duties	Used as a constraint to prevent unrealistic allocation
Deadlines	Required completion time for time-sensitive tasks	Used to ensure tasks were assigned within practical limits
Role-bound constraints	Tasks linked to a specific teacher, class, subject, parent relationship, or responsibility	Used to prevent inappropriate reassignment

The model was allowed to redistribute only selected transferable administrative tasks. It was not allowed to move tasks that were strongly role-bound or dependent on a specific teacher's relationship with a class, parent, subject, or intern. For example, routine follow-up, template-based communication, shared tracking updates, and some coordination tasks could be considered transferable. However, tasks requiring direct class responsibility, sensitive parent communication, grading judgement, or specific intern supervision were treated as limited-transfer or non-transferable. This distinction was necessary to keep the model realistic and suitable for a small school context.

The objective of the model was not to remove administrative work completely or simply minimise total hours. Some administrative work would remain necessary even after improvement. Instead, the objective was to reduce imbalance by preventing transferable administrative work from being concentrated too heavily on one teacher. The model

therefore supported a more balanced task distribution while keeping necessary role continuity in place. In this way, Excel Solver was used as a practical decision-support tool rather than as an automatic solution.

Scenario testing was also used to check whether the proposed redistribution remained workable under different workload conditions. The normal scenario was based on the two-week baseline data. Additional high-demand scenarios considered temporary increases in workload related to intern onboarding, admissions activity, and field-trip preparation. These peak processes were not treated as part of the normal baseline totals unless they occurred during the logging period, but they were used to test whether the proposed task distribution could remain feasible when administrative pressure increased. This helped connect the optimisation model to the real variation of school work rather than assuming that workload remained constant throughout the year.

Overall, the analysis process moved from classification to profiling, mapping, diagnosis, and redistribution. This sequence was important because each step depended on the previous one. Task classification created the categories for analysis, workload profiling showed the size and pattern of the burden, workflow mapping explained how the work moved through the school, root-cause analysis identified why inefficiencies occurred, and Excel Solver tested whether selected transferable tasks could be distributed more evenly.

3.5 Reliability, Validity, and Ethical Considerations

The quality of this study was assessed through the principles of trustworthiness rather than statistical generalisation. Since the research was based on a small, single-school case, reliability and validity depended on transparency, consistency, triangulation, and careful documentation of the research process. In qualitative and case-study research, trustworthiness is commonly discussed through credibility, dependability, transferability, and confirmability (Shenton, 2004; Rashid et al., 2019). These criteria were relevant to this thesis because the study examined administrative workflows in a real workplace setting where the findings had practical implications for teachers and school management.

Methodological consistency was supported through a clear case-study protocol. The same task categories, time-use log structure, interview themes, document-selection logic, and workflow-mapping approach were applied throughout the study. This helped reduce inconsistency in how administrative tasks were recorded and interpreted. Dependability was also supported by keeping a clear record of key analytical decisions, including how tasks were classified, how workflow categories were refined, and how transferability was judged. Such an audit trail helps make the analytical process more transparent and easier to evaluate (Nowell et al., 2017; Ahmed, 2024).

Credibility was strengthened through triangulation across time-use logs, interviews, and documents. The logs provided evidence of task frequency, duration, follow-up, rework, and transferability. The interviews helped explain why certain tasks created friction, interruption, or repeated coordination. The documents showed the formal procedures, templates, schedules, and records connected to the work. Findings were considered stronger when the same issue appeared across more than one source, for example when logged workload patterns were supported by interview explanations and document evidence. This use of multiple sources is consistent with case study research, where triangulation improves the credibility of findings (Carter et al., 2014; Rashid et al., 2019).

Validity was also supported by aligning the data collection categories with the actual administrative work carried out in the school. The time-use log was based on the school's own recurring task categories rather than on abstract workload categories. Workflow maps and service blueprints were checked against log entries, interview explanations, and relevant documents to reduce oversimplification. Limited member checking was used only to confirm factual accuracy, such as whether workflow descriptions, task boundaries, and burden patterns were recognisable to participants. It was not used to ask participants to approve the full academic interpretation of the findings (Shenton, 2004; Lloyd & Gifford, 2024).

Transferability was addressed through contextual detail rather than broad sampling. The study did not aim to produce statistically generalisable findings for all schools, because it was based on one small international school. Instead, it provided a detailed account of the school context, workflow categories, administrative routines, and improvement logic

so that readers can judge whether the findings may be relevant to similar small-school settings. This form of transferability is appropriate in qualitative case-study research, where the value of the findings depends on rich description and analytical relevance rather than numerical representativeness (Shenton, 2004; Mtisi, 2022).

The Excel Solver model required an additional form of validation. In this study, the model was used as a decision-support tool, not as an automatic solution. Technical validation considered whether the variables, constraints, and objective function were correctly specified and whether the model produced feasible outputs. Practical validation considered whether the suggested redistribution made sense in the school context. This was important because a mathematically feasible allocation would not be useful if it ignored class responsibility, parent relationships, subject ownership, teacher availability, deadlines, or role-bound tasks. Therefore, the model was evaluated against both numerical feasibility and practical school conditions (Caselli et al., 2022).

Ethical considerations were especially important because the participant group was small and the study was conducted within the researcher's workplace context. Participation was voluntary and based on informed consent. Participants were informed about the purpose of the study, the type of data collected, the expected use of the findings, and their right to withdraw. The study was presented as an examination of administrative workflows and task structures, not as an evaluation of individual teachers. This distinction helped reduce the risk that participants would feel personally judged or professionally assessed (BERA, 2018; TENK, 2023).

Confidentiality was handled carefully because anonymity can be difficult to protect in a small school setting. Even when names are removed, individuals may still be recognisable through their role, task history, or connection to specific workflows. For this reason, identifying details were limited, generalised, or removed where necessary. The thesis avoided presenting examples in a way that could expose individual staff members. This was important because the purpose of the research was to understand the administrative system, not to highlight or criticise individual performance (Kaiser, 2009; TENK, 2023).

Data protection was also considered throughout the study. Only information necessary for the research purpose was collected and used. Personal identifiers were separated from analytical material where possible, and school documents were used only to the extent needed for workflow analysis. The handling of data followed the principles of purpose limitation, data minimisation, confidentiality, and controlled access. These measures helped protect both participant privacy and organisational confidentiality (TENK, 2023).

Overall, the study maintained a clear distinction between empirical evidence, interpretation, and scenario-based modelling. The findings were based on collected logs, interviews, and documents, while the Excel Solver outputs were treated as practical scenarios derived from the data. This distinction helped prevent the optimisation model from being presented as a final answer or universal solution. Instead, it was used carefully as one tool to support evidence-based discussion about administrative task distribution in the school.

3.6 Description of the Development or Research Process

The research and development process followed a step-by-step sequence from problem identification to practical improvement design. The purpose was to understand how teacher administrative workload was created within the school, identify the main workflow problems, and develop a realistic improvement model based on the empirical findings. The process followed the logic of applied case study research, where a bounded organisational problem is examined in depth and the findings are used to support context-specific improvement (Rashid et al., 2019; Mtisi, 2022).

The first stage was problem identification. At this stage, the study identified the recurring administrative tasks carried out by teachers and grouped them into the workflow categories used throughout the thesis. This helped define the problem more clearly as a workflow and task-allocation issue rather than only as a general complaint about workload. The output of this stage was a structured task inventory, which provided the basis for the next stage of workflow mapping.

The second stage was workflow mapping. Process mapping and service blueprinting were used to show how administrative tasks moved through people, documents,

communication channels, and decision points. This stage made it possible to see where delays, repeated checking, approvals, missing information, and follow-up occurred. The output of this stage was a clearer picture of how administrative work was actually carried out in practice, including the hidden coordination work that was not always visible in formal procedures (Bitner et al., 2008; Kim et al., 2017).

The third stage was workload profiling. After the workflows had been identified and mapped, the structured time-use logs were used to examine task frequency, task duration, interruptions, follow-up, rework, transferability, and distribution of work across teachers. This created an empirical baseline for understanding which workflow categories created the greatest administrative burden. The output of this stage was a descriptive workload profile, which helped identify the most demanding and high-friction areas of administrative work (Bolger et al., 2003; Ohly et al., 2010).

The fourth stage was root-cause analysis. The workload profiles showed where the burden was concentrated, while the workflow maps helped show where problems occurred. Root-cause analysis was then used to examine why these problems continued. The analysis focused on causes such as unclear task ownership, repeated manual communication, missing templates, weak tracking systems, duplicate checking, and approval dependence. The output of this stage was a clearer explanation of the mechanisms behind the administrative burden, which then informed the redesign stage (Card, 2017). The fifth stage was redesign. Based on the identified root causes, the study developed improvement ideas related to standardising recurring communication, improving shared tracking, clarifying responsibility, and reducing unnecessary follow-up. These redesign ideas were not decided before the data were collected. Instead, they emerged from the patterns found in the logs, interviews, documents, workflow maps, and root-cause analysis. This ensured that the proposed improvements were connected to the actual problems observed in the school.

The final stage was task redistribution. Selected transferable tasks were examined through a simple Excel Solver-based model to explore whether administrative work could be distributed more evenly among teachers. The model used variables from the empirical analysis, including task duration, task frequency, transferability, teacher

availability, deadlines, and role-bound constraints. Its purpose was not to replace professional judgement, but to provide a decision-support tool for considering more balanced allocation options within the real constraints of the school (Caselli et al., 2022). Overall, the development process moved from identifying the problem to mapping workflows, profiling workload, diagnosing root causes, developing redesign options, and testing limited task redistribution. Each stage produced input for the next stage, which helped keep the process coherent and evidence-based. The final improvement model therefore emerged from the empirical analysis rather than from a pre-decided solution. This was important for maintaining the practical and developmental nature of the thesis.

4. Results and Analysis

This chapter presents the empirical findings of the case study and analyses how teacher administrative workload was created through workflow structure, communication routines, handoffs, follow-up, rework, and task allocation at Norden International School. The chapter first presents the descriptive findings from the time-use logs, interviews, and documents. It then interprets the findings in relation to the main sources of administrative burden and considers how the results connect to the theoretical framework and practical improvement needs of the school. This structure follows the logic of case study analysis, where findings are developed through multiple sources of evidence and interpreted in relation to the specific organisational context (Rashid et al., 2019; Yin, 2018).

The chapter is organised into five sections. Section 4.1 presents the findings across the workflow categories identified in the study, including task frequency, total time, follow-up, rework, and transferability. Section 4.2 interprets the results by explaining the mechanisms that produced administrative burden, such as unclear ownership, fragmented communication, hidden coordination, and repeated checking. Section 4.3 compares the findings with the theoretical framework of the thesis. Section 4.4 discusses practical implications for workflow redesign and selected task redistribution. Finally, Section 4.5 explains the academic and practical contribution of the study in a modest and case-specific way. This separation between presentation, interpretation, theory comparison, and implications helps maintain analytical clarity in applied case-study research (Rashid et al., 2019; Shenton, 2004).

4.1 Presentation of Findings

This section presents the empirical findings from the structured time-use logs, semi-structured interviews, and document analysis. The findings are organised according to the ten workflow categories introduced in Chapter 3: intern management, admissions and parent communication, weekly reporting and content checking, daily communication, event and field-trip planning, academic resource ordering, general

coordination work, marketing and outreach, audit and compliance follow-up, and report card administration. Presenting the results through the same categories used in the methodology helps maintain consistency between data collection, analysis, and reporting. In case study research, this kind of clear connection between evidence sources and findings supports analytical transparency and credibility (Rashid et al., 2019; Carter et al., 2014).

The findings are presented in four parts. First, the baseline workload profile is shown across the ten workflow categories. Second, the distribution of administrative burden across the three teachers is presented using neutral teacher codes to protect confidentiality. Third, routine workload is compared with peak-period workload for categories affected by calendar-based variation. Fourth, the gap between formal workflow and enacted practice is shown for selected workflow categories. This structure keeps the section mainly descriptive, while the deeper interpretation of causes and implications is developed in Section 4.2.

The baseline workload profile is presented in Table 4.1. The table reports the number of recorded episodes, total time, mean duration, unplanned episodes, follow-up, rework, and transferability for each workflow category during the two-week observation period. The number of episodes refers to how many times a task within the category was recorded. Total time refers to the estimated time spent on that category across all three teachers during the baseline period. Mean duration shows the average length of one recorded episode. The percentage columns show how often tasks were unplanned, required follow-up, or involved rework. Transferability indicates whether the task could realistically be reassigned without disrupting role continuity, parent relationships, or school responsibilities. Time-use logs are useful for capturing fragmented and repeated work episodes that may be missed in broader retrospective accounts (Bolger et al., 2003; Ohly et al., 2010).

Table 4.1. presents the baseline workload profile across workflow categories during the two-week observation period

No.	Workflow category	Number of episodes	Total time (hours)	Mean duration (minutes)	Unplanned episodes (%)	Episodes requiring follow-up (%)	Episodes involving rework (%)	Transferability
1	Intern management	28	7.0	15.0	40%	75%	22%	Partial
2	Admissions and parent communication	32	4.8	9.0	55%	68%	18%	Low
3	Weekly reporting and content checking	12	3.6	18.0	38%	72%	40%	Partial
4	Daily communication	48	5.2	6.5	85%	52%	12%	Low
5	Event and field-trip planning	9	4.2	28.0	38%	62%	30%	Partial
6	Academic resource ordering	6	2.8	28.0	22%	48%	35%	Partial
7	General coordination work	38	3.4	5.4	68%	60%	16%	High
8	Marketing and outreach	14	2.8	12.0	18%	72%	25%	Partial
9	Audit and compliance follow-up	10	3.2	19.0	30%	82%	38%	Low
10	Report card administration	5	4.5	54.0	8%	28%	12%	None

Note that the values are based on structured time-use logs completed by three teachers across two consecutive working weeks, supported by semi-structured interviews and document analysis. The total recorded administrative burden was approximately **41.5**

hours across all ten workflow categories during the two-week baseline period. The values describe the case setting and are not intended for statistical generalisation.

As shown in Table 4.1, administrative workload was not concentrated in only one workflow category. Intern management recorded the highest total time burden at 7.0 hours, followed by daily communication at 5.2 hours, admissions and parent communication at 4.8 hours, and report card administration at 4.5 hours. However, the pattern of burden differed across categories. Report card administration had the longest mean duration at 54 minutes per episode, while daily communication and general coordination work had much shorter mean durations but occurred far more frequently. This shows that workload in the school was shaped by both long task episodes and repeated short interruptions.

Daily communication had the highest number of recorded episodes, with 48 episodes during the two-week period. General coordination work was also frequent, with 38 episodes. These categories did not have the highest total duration per episode, but they created a recurring pattern of short administrative interruptions. By contrast, report card administration, academic resource ordering, and event and field-trip planning occurred less often but required longer periods of concentrated work. This distinction is important because administrative burden was not only linked to total hours, but also to the rhythm and fragmentation of work.

The follow-up and rework indicators show another important pattern. Audit and compliance follow-up had the highest follow-up rate at 82%, while intern management, weekly reporting and content checking, and marketing and outreach also required frequent follow-up. Weekly reporting and content checking had the highest rework rate at 40%, followed by audit and compliance follow-up at 38% and academic resource ordering at 35%. These figures show that some categories created burden because tasks could not be completed in one step. Instead, they required checking, correction, clarification, or repeated communication before completion.

The transferability column shows that not all administrative work could be redistributed in the same way. General coordination work had high transferability, meaning that some of these tasks could be shared or reassigned more easily. Intern management, weekly

reporting, event planning, resource ordering, and marketing and outreach were only partially transferable because some parts could be shared, while other parts depended on specific knowledge or responsibility. Admissions and parent communication, audit and compliance follow-up, and report card administration had low or no transferability because they were more closely connected to role-specific responsibility, confidentiality, or continuity. This distinction later became important for the task redistribution model.

The distribution of administrative workload across teachers is shown in Table 4.2. Teacher codes are used instead of names in order to protect confidentiality. The table includes weekly administrative time, number of recorded episodes, high-friction episodes, main workflow concentration, and the number of transferable and non-transferable task blocks. High-friction episodes refer to tasks where at least two of the following conditions were present: the task was unplanned, required follow-up, or involved rework. This measure was used because some tasks created disruption even when their duration was short.

Table 4.2. shows the teacher-level distribution of administrative workload

Teacher code	Total administrative time (hours/week)	Number of episodes	High-friction episodes	Main workflow concentration	Transferable task blocks currently held	Non-transferable task blocks currently held
Teacher A	7.8	30	11	Intern management, admissions communication	3	3
Teacher B	6.5	22	8	Weekly reporting, event planning, ordering	3	4
Teacher C	6.4	49	17	Daily communication, general coordination	4	2

Table 4.2 shows that Teacher A carried the highest total administrative time, while Teacher C recorded the highest number of episodes and high-friction episodes. This difference is important because it shows that workload pressure was not experienced in only one form. Teacher A's burden was more time-based, while Teacher C's burden was more interruption-based. Teacher B had a slightly lower number of episodes but held several non-transferable task blocks connected to reporting, event planning, and ordering. This teacher-level pattern supports the need to examine workload through both total time and task friction.

The findings also showed that administrative burden changed between routine and peak periods. As explained in Chapter 3, the two-week baseline was used to describe normal administrative activity, while peak processes were treated separately unless they occurred during the logging period. Peak-period estimates were supported by interviews and document analysis and were used to understand how workload increased during specific school-calendar events. This distinction helped prevent occasional high-demand tasks from distorting the normal baseline profile.

Table 4.3. demonstrates the routine versus peak-period workload

Workflow	Routine baseline burden (hours/week)	Peak-period burden (hours/week)	Direction of change	Main observed reason
Intern management	3.5	6.5	Increase	Multiple follow-ups, supervision, evaluations
Admissions and parent communication	2.4	5.0	Increase	Manual inquiry handling intensifies
Event and field-trip planning	2.1	4.5	Increase	Concentrated coordination and communication
Academic resource ordering	1.4	5.0	Increase	Beginning-of-year ordering pressure
Audit and compliance follow-up	1.6	3.2	Increase	Documentation and list preparation
Report card administration	0.8	3.0	Increase	Deadline-driven record aggregation

Table 4.3 shows that administrative workload was not stable across the academic year. Intern management, admissions and parent communication, event planning, academic resource ordering, audit and compliance follow-up, and report card administration all increased during peak periods. The largest increases appeared in academic resource ordering, admissions communication, and intern management. These findings show that the school experienced both routine administrative burden and periodic workload spikes linked to specific operational cycles.

The final part of the findings concerns the gap between formal workflow and enacted practice. Document analysis showed how tasks were expected to be completed through forms, templates, handbooks, and reporting formats. The interviews and logs then showed how those same tasks were carried out in daily practice. This comparison was

important because document analysis can reveal formal procedures, while interviews and logs help show how work is performed in context (Bowen, 2009; Carter et al., 2014).

Table 4.4. identifies the gap between formal workflow and enacted practice

Workflow	Formal workflow	Enacted practice observed	Gap identified	Observed burden pattern
Admissions communication	Inquiry arrives, response is sent, process continues	Contact details manually copied, response sent individually, follow-up depends on memory	No shared automated response or tracking	Delayed or missed follow-up risk
Weekly reporting	One weekly message is prepared and posted	Information collected from several teachers, corrections made, generated text checked and revised	Hidden rework and duplication	Extra coordination time
Intern management	Inquiry, approval, internship placement, supervision	Repeated email clarification, date checking, suitability screening, handbook sending, evaluation follow-up	Fragmented multi-stage workflow	Dependence on one person's memory and availability
Daily communication	Parents receive class or homework updates	Ad hoc clarifications, absence issues, behaviour notes, and practical reminders	Mismatch between routine procedure and actual message load	High interruption frequency
Academic resource ordering	Books are checked and ordered	Availability checked manually, shortfalls identified late, cost confirmed through separate steps	Weak inventory visibility	Seasonal workload spikes

Table 4.4 shows that several formal procedures did not fully reflect the amount of work required in practice. Admissions communication appeared simple as a formal process, but in practice it required manual copying, individual responses, and memory-based follow-up. Weekly reporting appeared as one final message, but the enacted workflow

involved collecting information, checking content, revising text, and correcting errors. Intern management also involved several hidden steps, including clarification, scheduling, screening, handbook sharing, and evaluation follow-up.

Taken together, the findings show that administrative burden at Norden International School was created through several different workload patterns. Some categories created burden through longer task duration, such as report card administration and event planning. Others created burden through high frequency and interruption, such as daily communication and general coordination work. Some categories created burden through follow-up and rework, such as weekly reporting, audit follow-up, and intern management. These findings provide the descriptive foundation for Section 4.2, where the results are interpreted in relation to unclear ownership, fragmented communication, hidden coordination, rework, and uneven task transferability

4.2 Interpretation of Results

This section interprets the findings presented in Section 4.1 by explaining how administrative burden was produced and sustained within the school. The purpose is not to repeat the workload profile, but to explain why the observed patterns matter for understanding administrative inefficiency. The interpretation draws on the baseline workload profile, teacher-level distribution, peak-period comparison, and the formal–enacted workflow gap presented in Tables 4.1–4.4. The section remains grounded in the empirical evidence from logs, interviews, and documents, while using relevant literature to contextualise the findings (Rashid et al., 2019; Carter et al., 2014).

The first major mechanism was unclear ownership of recurring administrative tasks. Table 4.1 showed that several workflow categories required frequent follow-up, especially audit and compliance follow-up, intern management, weekly reporting and content checking, and marketing and outreach. The interviews and document analysis suggested that these follow-up demands often occurred because responsibility for the next step was not always clearly defined. When a task depended on several people but no shared tracking point existed, teachers had to rely on memory, individual messages,

or informal reminders to keep the process moving. This indicates that the burden was not only caused by the task itself, but by uncertainty over who was responsible for closing the task (Meadows, 2008; Bitner et al., 2008).

This ownership problem was especially visible in weekly reporting and content checking. Formally, weekly reporting appeared to be a single reporting activity, but Table 4.4 showed that the enacted workflow involved collecting information from several teachers, checking generated text, correcting content, and preparing the final version. The high rework rate of 40% in Table 4.1 supports this interpretation. The issue was therefore not simply that weekly reporting took time, but that the process contained hidden checking and correction loops. This type of repeated verification is a common source of process inefficiency when roles, inputs, and quality expectations are not clearly standardised (Radnor & Osborne, 2013; Riezebos & Huisman, 2020).

The second mechanism was repeated follow-up. Several categories had high follow-up rates, including audit and compliance follow-up at 82%, intern management at 75%, weekly reporting at 72%, and marketing and outreach at 72%. These figures show that many tasks could not be completed in one step. The interviews indicated that follow-up was often required because information was missing, responses were delayed, documents had to be checked again, or the next actor in the process was not immediately clear. This pattern matters because follow-up work increases the administrative burden without necessarily creating new value; it mainly keeps an unfinished process alive (Emiliani, 2015; Womack & Jones, 2003).

Intern management provides a clear example of this mechanism. Although the formal process suggested a simple sequence of inquiry, approval, placement, and supervision, the enacted workflow involved repeated email clarification, date checking, suitability screening, handbook sharing, supervision arrangements, and evaluation follow-up. This explains why intern management recorded the highest total time burden in Table 4.1. The burden came not only from the official responsibility of managing interns, but from the repeated coordination steps needed to make the process work in practice. Service blueprinting is useful in this kind of situation because it makes visible the backstage work that supports visible service interactions (Bitner et al., 2008; Kim et al., 2017).

The third mechanism was hidden coordination. Table 4.4 showed that several workflows appeared simpler in formal documents than they were in everyday practice. Admissions communication, weekly reporting, intern management, daily communication, and academic resource ordering all involved additional actions that were not fully visible in the formal procedure. These included manual copying of information, checking availability, sending reminders, collecting updates, confirming details, and correcting records. This finding matters because hidden coordination is easily underestimated when administrative work is described only through official forms or final outputs (Bowen, 2009; Carter et al., 2014).

Hidden coordination also explains why some categories with moderate total hours still created noticeable burden. For example, general coordination work had a relatively low mean duration of 5.4 minutes, but it occurred 38 times during the baseline period and had a follow-up rate of 60%. This suggests that small coordination tasks accumulated across the working week. Individually, these tasks may appear minor, but collectively they created repeated interruptions and prevented administrative work from being completed in a smooth sequence. Earlier workload research also shows that fragmented and low-visibility tasks are often underestimated when workload is measured only through broad time totals (Bolger et al., 2003; Ohly et al., 2010).

The fourth mechanism was fragmented communication. Daily communication had the highest number of episodes in Table 4.1, with 48 recorded episodes, and the highest unplanned rate at 85%. Teacher C's profile in Table 4.2 further showed the highest number of episodes and high-friction episodes, even though Teacher C did not carry the highest total administrative time. This shows that burden was not always created by long tasks. In this case, the burden was created through repeated short interruptions that entered the working day without prior planning. Such fragmented communication can create difficulty because it forces teachers to shift attention repeatedly between teaching-related work and administrative response tasks (Creagh et al., 2023; Valli & Buese, 2007).

This finding is important because it challenges a simple interpretation of workload based only on total hours. Teacher A had the highest total administrative time, while Teacher C

had the highest number of interruption-heavy episodes. These are different forms of burden. One is time-intensive, while the other is fragmentation-intensive. Therefore, any improvement model based only on total hours would miss an important part of the problem. A more accurate interpretation needs to consider duration, frequency, interruption, follow-up, and task closure together (Rashid et al., 2019; Shenton, 2004).

The fifth mechanism was rework. Rework was most visible in weekly reporting and content checking, audit and compliance follow-up, and academic resource ordering. In these categories, work had to be corrected, checked again, updated, or repeated because information was incomplete, outdated, or not stored in a shared place. This matters because rework indicates that the workflow does not complete correctly the first time. From a lean perspective, rework is a form of waste because it consumes time without adding a new educational or administrative outcome beyond correcting the earlier process failure (Emiliani, 2015; Womack & Jones, 2003).

Academic resource ordering illustrates this problem clearly. Table 4.4 showed that book availability was checked manually, shortages were identified late, and costs were confirmed through separate steps. This created a weak visibility problem. Without a shared inventory record, the same checking work had to be repeated during ordering periods. The issue was therefore not only the ordering task itself, but the lack of an information system that allowed earlier checks to reduce future work. In systems thinking terms, the workflow lacked a useful feedback mechanism that could carry information from one cycle into the next (Meadows, 2008).

The sixth mechanism was uneven transferability. Table 4.1 showed that only general coordination work was highly transferable. Several categories were partially transferable, while admissions and parent communication, audit and compliance follow-up, and report card administration had low or no transferability. This means that administrative workload could not be improved simply by moving tasks equally among teachers. Some responsibilities were tied to class ownership, parent relationships, subject knowledge, confidentiality, or formal accountability. For this reason, redistribution had to be selective and constraint-based rather than purely numerical (Caselli et al., 2022).

The teacher-level findings in Table 4.2 make this point more concrete. Teacher A carried the highest total administrative time and was concentrated in intern management and admissions communication. However, these categories were only partially or weakly transferable. Teacher B carried several non-transferable task blocks connected to reporting, event planning, and ordering. Teacher C had more transferable task blocks but also carried the highest interruption load. These differences show that the school's administrative burden was uneven not only in amount, but also in type. This supports the need for an improvement model that distinguishes between task redistribution and process redesign (Caselli et al., 2022; Radnor & Osborne, 2013).

The peak-period comparison in Table 4.3 adds a further layer to the interpretation. Intern management, admissions communication, event planning, academic resource ordering, audit follow-up, and report card administration all increased during peak periods. These peaks were not random; they were linked to predictable points in the school calendar. This suggests that part of the administrative burden was produced by limited anticipatory planning. When predictable high-demand periods are handled reactively, teachers face temporary overload even if the routine weekly workload appears manageable (Riezebos & Huisman, 2020; Radnor & Osborne, 2013).

It is important to avoid overstating the findings. The data in this study show administrative burden, follow-up, rework, interruptions, and uneven task distribution. They do not directly measure teacher stress or burnout. Therefore, stress-related conclusions should not be presented as direct findings of this case. However, the results do suggest conditions that previous research has associated with higher job demands, such as fragmented work, repeated interruptions, and limited organisational support. In this sense, the well-being relevance of the findings should be understood as an implication supported by literature, not as a direct psychological finding from the case data (Demerouti, 2007; Skaalvik & Skaalvik, 2017).

Overall, the interpretation shows that administrative burden at Norden International School was produced through the structure of work rather than through one isolated task or one individual teacher. The main mechanisms were unclear ownership, repeated follow-up, hidden coordination, fragmented communication, rework, uneven

transferability, and predictable peak-period pressure. These mechanisms explain why some workflows became burdensome even when individual tasks appeared small. They also show why the improvement model needed to combine standardisation, shared tracking, clearer responsibility, workflow redesign, and selective redistribution rather than relying on task redistribution alone (Meadows, 2008; Bitner et al., 2008; Caselli et al., 2022).

4.3 Comparison with Theoretical Framework

The findings of this study can be compared with the theoretical framework presented in Chapter 2, which was mainly based on systems thinking and supported by service design, lean thinking, the Job Demands–Resources model, and operations research. The results show that teacher administrative workload at Norden International School was not only a matter of task quantity. It was shaped by how tasks were connected, repeated, interrupted, documented, and distributed across the school. However, the findings also show that no single framework was sufficient on its own. Each perspective helped explain one part of the problem, but each also had limits when applied to the practical reality of a small school (Meadows, 2008; Rashid et al., 2019).

Systems thinking was useful because it helped explain administrative workload as an interconnected organisational problem rather than as an individual teacher problem. The findings showed that intern management, admissions communication, daily communication, weekly reporting, audit follow-up, and general coordination were connected through shared information, repeated communication, teacher availability, and document flows. This supports the systems thinking view that organisational outcomes are shaped by relationships between system parts rather than by isolated actions (Meadows, 2008; Sterman, 2000).

At the same time, systems thinking had a clear limitation in this study. It helped explain why the problem was systemic, but it did not by itself provide a practical method for deciding which tasks should be standardised, tracked, or redistributed. For example, systems thinking helped show that repeated follow-up in intern management and rework in weekly reporting were caused by weak workflow structures, but it did not offer a concrete allocation method for reducing the burden. Therefore, systems thinking

worked best as the main interpretive lens, but it needed to be combined with service design and operations research to support practical improvement (Meadows, 2008; Caselli et al., 2022).

Service design was especially useful for making hidden administrative work visible. Process mapping and service blueprinting helped show the difference between formal procedures and enacted practice. This was clear in intern management, admissions communication, weekly reporting, and academic resource ordering, where the formal workflow appeared simple, but the actual workflow required clarification, checking, reminders, corrections, and follow-up. This supports the argument that service blueprinting is useful for distinguishing visible front-stage interactions from hidden back-stage work (Bitner et al., 2008; Stickdorn et al., 2018).

However, service design also had limits. It helped identify where administrative burden appeared in the workflow, but it did not automatically explain which causes were most important or how tasks should be redistributed among teachers. For example, a service blueprint could show that admissions communication depended on manual follow-up, but it could not by itself determine whether that follow-up should remain with the same teacher, be supported by a shared tracking system, or be partly transferred to another staff member. For this reason, service design was valuable for visibility and diagnosis, but it needed to be supported by root-cause analysis and task-allocation logic (Bitner et al., 2008; Kim et al., 2017).

Lean thinking helped interpret the forms of inefficiency found in the data. The findings showed repeated follow-up, duplicated checking, rework, manual copying of information, and unclear approval loops. These patterns were visible in weekly reporting, audit and compliance follow-up, academic resource ordering, and admissions communication. From a lean perspective, these activities can be understood as forms of non-value-added effort because they consumed teacher time without directly improving the final administrative outcome (Womack & Jones, 2003; Emiliani, 2015).

At the same time, lean thinking had to be applied carefully in the school context. Not all repeated work could be treated as waste. Some repeated communication was necessary because schools depend on trust, continuity, safeguarding, student knowledge, and

parent relationships. For example, daily communication and report card administration were classified as low-transferability or non-transferable because they were closely linked to class responsibility and professional judgement. This means that lean thinking was useful for identifying avoidable duplication and rework, but it could not be applied mechanically as a simple waste-removal approach (Radnor & Osborne, 2013; Riezebos & Huisman, 2020).

The Job Demands–Resources model helped explain why the findings matter beyond administrative efficiency. The study did not directly measure teacher stress or burnout, but the data showed conditions that previous research connects with high job demands, such as frequent interruptions, repeated follow-up, unclear ownership, peak-period pressure, and limited organisational support. The model was useful because it helped connect the workflow findings to the wider literature on workload, resources, and teacher well-being (Bakker & Demerouti, 2007).

However, the Job Demands–Resources model was also limited in this thesis because the study did not collect psychological well-being data. It would therefore be inappropriate to claim that the case findings directly prove stress, burnout, or emotional exhaustion among teachers. Instead, the model should be used more cautiously. It helps explain the possible implications of fragmented administrative work, but the empirical findings themselves remain focused on workload structure, follow-up, rework, interruption, and transferability. In this sense, the JD-R model provided contextual interpretation, not direct measurement (Skaalvik & Skaalvik, 2017).

Operations research was useful in a more limited and practical way. It supported the final stage of the study by helping examine whether selected administrative tasks could be redistributed more evenly among teachers. The findings showed that this was only possible after task duration, task frequency, transferability, teacher availability, deadlines, and role-bound constraints had been identified. This supports the view that allocation models are useful only when practical constraints and fairness considerations are clearly built into the model (Caselli et al., 2022).

The limitation of operations research was that it could not solve the whole workload problem. The transferability analysis showed that many tasks could not be moved freely

because they were connected to parent relationships, class responsibility, assessment judgement, audit requirements, or intern supervision. Therefore, a simple redistribution of hours would not have been realistic. Operations research helped with selected transferable tasks, but only after qualitative workflow analysis had clarified what could and could not be reassigned. This confirms the role of Excel Solver as a decision-support tool rather than an automatic solution (Caselli et al., 2022).

The comparison with the theoretical framework also shows why the study needed an integrated approach. Systems thinking explained the interdependence of the problem, service design made the workflow visible, lean thinking identified avoidable inefficiencies, the JD-R model explained the possible well-being relevance of workload demands, and operations research supported limited task redistribution. At the same time, each framework had boundaries. Systems thinking was too broad for allocation decisions, service design did not calculate redistribution, lean thinking could not remove necessary professional work, the JD-R model did not provide direct case evidence of stress, and operations research applied only to transferable tasks.

Overall, the findings show that administrative workload at Norden International School was systemic, workflow-based, partly hidden, and only selectively transferable. This means that improvement cannot rely on one theory or one method alone. A realistic improvement approach must combine workflow visibility, root-cause understanding, process redesign, and constrained task redistribution. This balanced comparison strengthens the theoretical contribution of the study because it shows not only that the framework was relevant, but also where each part of the framework was useful and where it needed support from another perspective.

4.4 Practical Implications of the Results

The findings of this study have direct practical implications for improving administrative workflow at Norden International School. The results show that the main problem was not only the amount of administrative work, but also the way this work was organised, tracked, repeated, and distributed. The strongest burden patterns were repeated follow-up, unclear task ownership, hidden coordination, fragmented communication, rework,

and limited transferability. For this reason, the practical response should focus on improving the workflow structure rather than expecting individual teachers to manage the same administrative system more efficiently on their own (Meadows, 2008; Radnor & Osborne, 2013).

The practical implications are grouped into four improvement areas: standardising recurring communication, creating shared tracking systems, clarifying task ownership, and redistributing selected transferable tasks. These areas are directly connected to the results presented in Section 4.1 and interpreted in Section 4.2. They also reflect the development logic of the thesis, where the improvement model emerged from the empirical findings rather than being decided before the data were collected. This is consistent with service design and process improvement approaches, where redesign should be based on evidence of how the current workflow operates (Bitner et al., 2008; Stickdorn et al., 2018).

The first implication is the need to standardise recurring communication. This responds directly to the high follow-up rates identified in Table 4.1, especially in intern management, admissions and parent communication, weekly reporting, audit and compliance follow-up, and marketing and outreach. Intern management required 7.0 hours during the two-week baseline period and had a 75% follow-up rate, while admissions and parent communication had a 68% follow-up rate. These findings suggest that teachers spent considerable time rewriting similar messages, clarifying repeated questions, and sending reminders that could be partly standardised. Lean thinking supports this type of improvement because repeated manual effort can become non-value-added work when it does not improve the final outcome (Womack & Jones, 2003; Emiliani, 2015).

The proposed change is to create a small set of editable message templates for recurring communication. These should include initial responses to internship inquiries, admissions first-response emails, parent meeting confirmations, weekly reporting reminders, audit-related information requests, field-trip reminders, and marketing follow-up messages. The teachers and principal would use these templates whenever similar communication occurs. The templates should not remove personal judgement or

warmth from communication; instead, they should reduce repeated rewriting and ensure that important information is not forgotten. This is feasible for a small school because it does not require new software or major training. The templates can be stored in a shared Google Drive folder and updated when needed by the person responsible for each workflow.

The second implication is the need for shared tracking systems. This responds to the findings in Table 4.4, where admissions communication, intern management, academic resource ordering, and audit follow-up depended heavily on manual checking, individual memory, and scattered documents. For example, academic resource ordering had a 35% rework rate and showed a strong peak-period burden. Audit and compliance follow-up had the highest follow-up rate at 82%. These patterns indicate that information was not always stored in a shared and reusable form. From a systems thinking perspective, this represents a weakness in information flow, because earlier work did not sufficiently reduce later work (Meadows, 2008).

The proposed change is to create simple shared trackers for the most repeated workflows. An admissions tracker should record the parent inquiry date, student name or code, response status, next follow-up date, application stage, and responsible person. An intern tracker should record the inquiry date, proposed internship period, suitability status, documents sent, assigned mentor, placement status, and evaluation deadline. A book-ordering tracker should record grade, subject, book title, current stock, required quantity, order status, cost, and supplier. An audit tracker should record student municipality, required documents, missing information, update date, and responsible person. These trackers would be used by teachers and the principal, depending on the workflow. They are feasible because they can be created in Google Sheets or Excel, which are already accessible and familiar tools in most school settings.

The third implication is the need to clarify task ownership. This responds to the uneven teacher-level distribution shown in Table 4.2. Teacher A had the highest total administrative time, Teacher C had the highest number of short and high-friction episodes, and Teacher B held several non-transferable task blocks. This shows that administrative burden was uneven not only in total hours, but also in the type of burden

each teacher carried. Some teachers carried longer and more complex workflows, while others carried frequent interruptions or fixed responsibilities. Clearer task ownership is therefore needed to reduce uncertainty about who starts, checks, follows up, and closes each workflow (Rashid et al., 2019; Riezebos & Huisman, 2020).

The proposed change is to create a simple ownership structure for each recurring workflow. Each workflow should have one main owner, one support person, and a clear deadline or review point. For example, intern management could have one main coordinator, while another teacher supports document preparation or calendar checking. Weekly reporting could have one teacher responsible for collecting content, while another checks the final version before publication. Academic resource ordering could have one person maintaining the book tracker, while subject teachers update missing items when needed. This is feasible in a small school because it does not require hiring new staff. It only requires making responsibilities explicit and reducing reliance on informal memory.

The fourth implication is selective redistribution of transferable tasks. This responds to the transferability findings in Table 4.1. The results showed that not all administrative work could be redistributed. Report card administration was non-transferable because it depended on teacher judgement and student knowledge. Admissions and parent communication, audit follow-up, and daily communication also had low transferability because they were connected to role-specific responsibility, continuity, or relationships with families. However, general coordination work was highly transferable, while intern management, weekly reporting, event planning, academic resource ordering, and marketing and outreach were partially transferable. This means that redistribution should be selective rather than mechanical (Caselli et al., 2022).

The proposed change is to divide administrative tasks into three groups before redistribution. The first group should include non-transferable tasks, such as report card judgement, sensitive parent communication, and role-specific audit responsibility. These should remain with the responsible teacher. The second group should include partially transferable tasks, such as intern document preparation, field-trip checklist preparation, book-order tracking, and marketing follow-up. These can be divided into smaller sub-

tasks and shared carefully. The third group should include transferable coordination tasks, such as updating trackers, preparing routine reminders, checking shared documents, and maintaining simple lists. These are the best starting point for redistribution across staff.

Excel Solver can support this redistribution, but only as a decision-support tool. It should use the variables identified in Chapter 3: task duration, task frequency, transferability, teacher availability, deadlines, and role-bound constraints. The model should not be allowed to move tasks that depend on parent relationships, assessment judgement, class responsibility, or confidential student knowledge. Instead, it should test whether selected transferable tasks can be distributed more evenly without creating new problems. This makes the use of optimisation realistic and suitable for a small school context, where professional judgement and continuity remain essential (Caselli et al., 2022).

Table 4.5 summarises the practical implications and links each recommendation to the evidence from the study.

Table 4.5. Practical implications based on the findings

Evidence from the results	Exact problem identified	Proposed change	Main users	Why feasible in a small school
Intern management required 7.0 hours and 75% follow-up	Repeated manual communication and follow-up	Create intern inquiry templates, intern tracker, and fixed follow-up dates	Principal and assigned teacher	Can be done using shared documents and email templates
Admissions and parent communication had 68% follow-up	Inquiry handling depends on memory and individual email chains	Use admissions tracker and standard first-response email	Principal and admissions/contact teacher	Requires only one shared spreadsheet and reusable message templates
Weekly reporting had 40% rework	Corrections and checking happen after content is already prepared	Create fixed content deadline and shared reporting template	All teachers, one reporting owner	Fits current weekly routine and reduces last-minute correction
Daily communication had 85% unplanned episodes	Frequent interruptions during the working day	Set communication windows and use routine ClassDojo update formats	Class teachers	Does not remove urgent communication but reduces avoidable interruptions
Academic resource ordering had 35% rework and peak-period pressure	Stock and order information are not visible early enough	Maintain book-ordering and inventory tracker throughout the year	Subject teachers and ordering owner	Simple Google Sheet can track stock, needs, cost, and order status
Audit and compliance follow-up had 82% follow-up	Repeated list preparation and missing information	Keep updated municipality-based audit tracker	Principal and relevant teachers	Can be updated gradually instead of recreated during audit periods
General coordination work was highly transferable	Some coordination tasks are carried informally by whoever notices them first	Assign routine tracker updates and reminders across staff	All teachers	Allows small tasks to be shared without affecting class responsibility
Several workflows increased during peak periods	Predictable workload spikes are handled reactively	Use calendar-based planning for admissions, audits, reports, ordering, and intern intake	Principal and teachers	Peak periods are known in advance, so preparation can be scheduled

These recommendations are intentionally modest and low-cost. Norden International School is a small organisation, so a large digital system or complex administrative reform would be difficult to maintain. The most realistic improvements are simple tools that fit the school's existing capacity: shared templates, shared trackers, clearer workflow ownership, and selective redistribution of transferable task blocks. This approach is consistent with public service process improvement research, which emphasises practical redesign based on existing resources rather than large-scale structural change (Radnor & Osborne, 2013; Riezebos & Huisman, 2020).

The findings also suggest that the school should plan more deliberately for peak periods. Table 4.3 showed that intern management, admissions communication, field-trip planning, academic resource ordering, audit follow-up, and report card administration all increased during specific periods of the school year. These peaks were predictable rather than random. Therefore, the school could reduce pressure by preparing templates, trackers, deadlines, and support roles before these periods begin. This would shift administrative work from reactive response to planned coordination, which is more manageable for a small staff structure (Meadows, 2008).

Overall, the practical implication of this study is that administrative workload should be treated as a workflow design issue rather than as an individual teacher problem. The results do not suggest that teachers were inefficient. Instead, they show that teachers were working within an administrative system where recurring tasks were not always standardised, tracked, owned, or deliberately distributed. By improving the structure through which administrative work moves, the school can reduce unnecessary follow-up, prevent avoidable rework, improve communication flow, and make better use of limited staff capacity. This keeps the improvement model aligned with the purpose of the thesis: to develop a realistic, evidence-based approach to improving teacher administrative workload in a small school context (Bitner et al., 2008; Caselli et al., 2022).

4.5 Contribution to the Field

The contribution of this study should be understood modestly and in relation to its case-study design. The research was conducted in one small international school with three

teachers, and therefore the findings are not statistically generalisable to all schools. However, the study contributes analytically by showing how teacher administrative workload can be examined as a workflow system rather than only as a broad workload or well-being issue. This is relevant because previous research has already shown that administrative workload affects teachers' time, stress, engagement, and instructional work, but less attention has been given to how specific administrative workflows produce that burden in everyday school practice (Kyriacou, 2001; Skaalvik & Skaalvik, 2017; Shen et al., 2025).

The main academic contribution of the study is that it applies a process-level perspective to teacher administrative workload. Instead of treating administrative work as one general category, the study separated it into recurring workflow categories such as intern management, admissions and parent communication, weekly reporting, daily communication, academic resource ordering, audit follow-up, and report card administration. This made it possible to show that workload was produced in different ways across different workflows. Some categories created burden through long duration, while others created burden through repeated interruptions, follow-up, rework, or unclear ownership. This extends teacher workload research by showing that administrative burden should be analysed not only through total working time, but also through workflow structure and task movement (Creagh et al., 2023; Valli & Buese, 2007).

A second academic contribution is the application of service design to internal school administration. Process mapping and service blueprinting helped identify the gap between formal workflow and enacted practice. In the case school, several processes appeared simple in formal documents but became more complex in practice because they required clarification, checking, reminders, document sharing, and follow-up. This shows that service design tools can be useful not only for analysing external service experiences, but also for understanding the hidden administrative work that supports everyday school operations (Bitner et al., 2008; Kim et al., 2017; Stickdorn et al., 2018).

The study also contributes to process improvement research by showing that lean thinking must be applied carefully in educational settings. The findings identified

avoidable inefficiencies such as duplicated checking, repeated follow-up, manual copying of information, weak tracking systems, and rework. At the same time, the study showed that not all repeated work can be treated as waste, because some repeated communication and documentation are necessary for trust, continuity, assessment, safeguarding, and parent relationships. This contribution is important because it adapts process-improvement thinking to the realities of school practice rather than applying efficiency logic too mechanically (Womack & Jones, 2003; Emiliani, 2015; Radnor & Osborne, 2013).

The methodological contribution of the study lies in showing how service design, root-cause analysis, and simple optimisation can be combined in a small-school context. The study moved from time-use logs and interviews to workflow mapping, descriptive workload profiling, root-cause analysis, and finally a limited Excel Solver-based redistribution model. This created a clear progression from description to diagnosis and then to practical improvement. In this way, the study demonstrates how a small case study can still produce systematic and useful findings when the analytical stages are transparent and connected to the research questions (Rashid et al., 2019; Carter et al., 2014).

The use of optimisation is also a methodological contribution, but only in a limited sense. The study does not present Excel Solver as a complete solution to teacher workload. Instead, it shows that simple optimisation can support decision-making only after workflow categories, task duration, task frequency, transferability, teacher availability, deadlines, and role-bound constraints have been identified. This is important because many administrative tasks in schools cannot be redistributed freely. Some are tied to parent relationships, class responsibility, assessment judgement, audit requirements, or intern supervision. Therefore, optimisation was used as a decision-support tool rather than as an automatic answer (Caselli et al., 2022).

The practical contribution of the study is directly connected to Norden International School. The findings identified realistic improvement areas that the school can implement without a large or expensive administrative system. These include standardised communication templates, shared tracking sheets, clearer workflow

ownership, better peak-period planning, and selective redistribution of transferable task blocks. These recommendations respond directly to the evidence from the case, especially the high follow-up rates, rework, hidden coordination, and uneven distribution of administrative burden shown in Chapter 4. This makes the practical contribution specific to the needs and capacity of a small school (Meadows, 2008; Riezebos & Huisman, 2020).

The study therefore contributes practically by offering a modest improvement pathway rather than a universal model. For example, the school can begin by creating shared trackers for admissions, intern management, audit follow-up, and book ordering. It can also use templates for repeated communication and clarify who owns, supports, and closes each recurring workflow. These changes are realistic because they use simple tools such as Google Sheets, shared folders, and agreed responsibility structures. The practical value of the study lies in showing that administrative efficiency can be improved through clearer workflow design, even when staffing and resources are limited (Radnor & Osborne, 2013; Bitner et al., 2008).

The contribution of this thesis should therefore be understood through analytical generalisation rather than statistical generalisation. The findings cannot be claimed to represent all schools, because the empirical work was limited to one school and three teachers. However, the workflow-based approach, the distinction between transferable and non-transferable tasks, and the combination of process mapping, root-cause analysis, and simple optimisation may be useful for other small schools facing similar administrative conditions. This kind of contribution is appropriate for case-study research, where the value of the work lies in detailed contextual understanding and practical relevance rather than broad numerical representativeness (Shenton, 2004; Rashid et al., 2019).

Overall, the study contributes to the field by showing that teacher administrative workload can be made visible and analysed as a workflow system. Academically, it extends teacher workload research by focusing on the internal mechanisms that produce administrative burden. Methodologically, it shows how service design, root-cause analysis, and simple optimisation can be combined in a small-school case. Practically, it

offers Norden International School a realistic set of actions for reducing unnecessary follow-up, improving task visibility, clarifying responsibility, and redistributing selected transferable work. The contribution is therefore modest but clear: the thesis does not claim to solve teacher workload generally, but it demonstrates one evidence-based way to understand and improve administrative workload in a small school context.

5 Conclusion and Discussion

In this chapter, the major findings, interpretations, implications, limitations and overall contribution of the study are brought together. The thesis explored how teacher administrative workload at Norden International School was shaped through everyday workflow practices, communication routines, task ownership, follow-up activities, and coordination demands within the school's administrative system. As discussed in the thesis above, the findings indicated that administrative burden was not created only by the amount of work teachers performed, but also by the way work was organised , coordinated, and monitored within the school environment (Meadows, 2008; Bitner et al., 2008).

The study demonstrated that many recurring difficulties were connected to fragmented communication, unclear ownership, repeated checking, hidden coordination work, dependence on informal memory, and predictable peak-period pressure. These findings support earlier research showing that workload problems in educational settings are often linked to organisational processes and administrative structures rather than individual teacher efficiency alone (Kim, 2019; Creagh et al., 2023). In this case, the results suggest that teacher administrative workload should be understood primarily as a workflow-design and coordination problem within a small organisational system.

Meanwhile, the results indicated that not every administrative task could be shared equally. A few tasks were still very much linked to professional judgement, continuity, parent relationships and school accountability. The study does not therefore suggest the elimination of administrative work. Rather, it offers a practical and context-specific enhancement strategy that emphasizes better workflow accountability, common tracking methods, better process transparency, and targeted re-distribution of transferable work. This is in line with the study's overall objective of designing realistic workflow enhancements for a small-school setting, rather than a universal optimisation model.

5.1 Summary of the Research and Key Results

This thesis examined teacher administrative workload at Norden International School as a workflow and coordination problem within a small-school context. The study focused on three teachers and drew on a two-week baseline time-use log, semi-structured interviews, and document analysis to examine how administrative work was organised across everyday school operations. Rather than viewing workload only as an issue of individual time management, the study showed how administrative burden emerged through communication routines, follow-up activities, rework, and unclear task ownership.

The first research question was focused on the possibility of using service design tools to make teacher administrative workflows visible. The results indicated that workflow mapping and service blueprinting were effective in uncovering the formal steps of administrative processes, as well as the hidden coordination activities that took place behind the scenes. Several workflows that appeared relatively simple in formal documents involved repeated clarification, informal follow-up, manual checking, and unplanned communication in practice. This was particularly evident in intern management, admissions communication, weekly reporting and report card administration. The application of workflow visualisation thus enabled the identification of administrative burden not only at the level of individual tasks but also at the level of interconnected tasks (Bitner et al., 2008; Kim et al., 2017).

The second research question was related to the primary sources of inefficiency and workflow delays. The results revealed that administrative burden was generated in several recurring ways, such as fragmented communication, unclear task ownership, repeated follow-up, hidden coordination work, interruption-heavy routines, weak tracking practices, and rework. Some workflows created pressure because they required long, uninterrupted work periods, while others created burden through constant short interruptions across the working day. Daily communication, general coordination work, and weekly reporting were particularly associated with fragmentation and repeated checking. The results thus confirm the idea that administrative workload is not just measured in terms of total hours, but also in terms of how work is structured,

interrupted, and repeated in organisational workflows (Creagh et al., 2023; Valli & Buese, 2007).

The third research question examined whether selected administrative responsibilities could be distributed more effectively among teachers. The findings showed that redistribution was possible only for certain transferable tasks. Some responsibilities remained closely connected to parent relationships, confidentiality, student knowledge, assessment judgement, or formal accountability, which limited their transferability. General coordination work showed the highest flexibility, while areas such as admissions communication, report card administration, and audit follow-up remained strongly role bound. As a result, the Excel Solver-based redistribution model functioned mainly as a limited decision-support tool rather than a complete solution to workload imbalance. The findings suggest that redistribution in small-school contexts must remain selective, realistic, and grounded in the actual constraints of professional practice (Caselli et al., 2022).

Across all three research questions, the findings showed that administrative workload at Norden International School was shaped less by individual inefficiency and more by the way administrative workflows were designed, coordinated, and followed in daily practice. The evidence pointed to the need for clearer workflow ownership, more consistent tracking practices, reduced duplication, stronger coordination routines, and selective redistribution of tasks that could realistically be shared. Taken together, the findings show that meaningful improvement depends on practical workflow changes that reflect the operational realities of a small-school environment (Meadows, 2008; Riezebos and Huisman, 2020).

5.2 Reflection on Research Questions and New Insights

This section reflects on the three research questions and the broader insights that emerged from the study. Rather than repeating the detailed findings presented earlier, the purpose here is to consider what the results revealed about teacher administrative workload within the specific context of Norden International School. Overall, the study showed that administrative burden was shaped not only by the amount of work teachers performed, but also by the structure, coordination, and organisation of administrative

workflows. This supports the systems-thinking perspective that organisational problems are often produced through interactions between connected processes rather than through individual actions alone (Meadows, 2008; Sterman, 2000).

The first research question examined how service design tools could be used to map and analyse teacher administrative workflows. The findings showed that process mapping and service blueprinting were useful because they made hidden workflow activities visible. Several administrative processes appeared relatively straightforward in formal documents but became more complex in practice due to repeated clarification, manual checking, reminders, corrections, and informal coordination. This was particularly visible in intern management, admissions communication, weekly reporting, and report card administration. The study therefore showed that service design tools were valuable not only for describing workflows, but also for revealing the gap between formal procedure and enacted practice (Bitner et al., 2008; Kim et al., 2017).

The second research question focused on the main sources of inefficiency and workflow bottlenecks. The findings showed that administrative burden emerged through connected workflow weaknesses rather than through a single isolated problem. Unclear ownership contributed to repeated follow-up, fragmented communication increased interruptions, and weak tracking systems contributed to rework and duplication. An important insight from the study is that administrative workload should not be understood only through total task volume. Some tasks created pressure because they were time-consuming, while others created burden because they repeatedly interrupted the working day and required ongoing coordination. This suggests that workflow friction, interruption, and fragmentation are important dimensions of administrative workload alongside measurable working time (Creagh et al., 2023; Valli & Buese, 2007).

The third research question examined how administrative responsibilities could be distributed more effectively among teachers. The findings showed that transferability was not a simple yes-or-no issue. Instead, task transferability was shaped by several practical constraints, including role continuity, parent relationships, assessment responsibility, confidentiality, deadlines, and school accountability. Some responsibilities could be redistributed more easily, while others remained strongly tied to specific

teachers or professional roles. This means that workload balancing in a small-school context cannot be achieved simply by dividing administrative hours equally between staff members (Caselli et al., 2022).

Overall, the study suggests that teacher administrative workload at Norden International School should be understood primarily as a workflow and coordination issue rather than only as an individual time-management problem. The findings showed that administrative burden accumulated through repeated interactions between communication practices, ownership structures, follow-up routines, interruptions, and organisational processes. These insights remain specific to the context of one small school, but they demonstrate how workflow-based analysis can make administrative burden more visible and easier to examine in practical terms.

5.3 Evaluation of the Work and Ethical Considerations

This study succeeded in providing a detailed examination of teacher administrative workload within the specific context of Norden International School. One of its main strengths was the use of multiple sources of evidence, including two-week time-use logs, semi-structured interviews, and document analysis. Using these sources together strengthened the credibility of the findings because recurring workflow problems appeared across different forms of evidence rather than through a single source alone (Carter et al., 2014; Rashid et al., 2019). The combination of workflow mapping, service blueprinting, workload profiling, and selective optimisation also helped connect qualitative workflow understanding with practical process analysis in a way that remained closely grounded in the case itself.

At the same time, the study had several important limitations. The participant group was very small, consisting of only three teachers within one international school. This allowed detailed workflow analysis but also limited the broader transferability of the findings. In addition, the two-week baseline logging period captured recurring administrative routines effectively, but it could not fully represent longer seasonal patterns across the entire academic year. Some peak-period activities were visible during interviews and document analysis, but not all of them appeared equally within the logging period itself. As a result, the findings should be understood as a detailed case-

based analysis rather than as a general representation of teacher administrative workload across schools more broadly.

The insider nature of the research context also created both strengths and challenges. Familiarity with the school environment helped support practical understanding of workflow routines, terminology, and organisational processes. However, close familiarity with the setting also increased the risk of subjective interpretation. To reduce this risk, the analysis was kept as structured and evidence-based as possible through documented analytical decisions, cross-checking between data sources, and careful interpretation of workflow descriptions rather than relying on familiarity with the setting alone (Shenton, 2004; Nowell et al., 2017). Even with these measures, complete neutrality in a small workplace setting is difficult to guarantee, and this should be recognised as a limitation of the study.

The Excel Solver component also required careful evaluation. In practice, the optimisation model was useful only because the workflows, constraints, and task relationships had first been analysed qualitatively. The model itself could not determine whether redistribution was professionally appropriate or organisationally realistic. Instead, its usefulness depended on the earlier workflow analysis that identified which responsibilities were transferable, partially transferable, or role bound. This means that the optimisation component should be understood as a limited decision-support exercise rather than as a standalone solution to workload imbalance (Caselli et al., 2022).

Ethical considerations were especially significant because confidentiality was difficult to protect fully within a three-teacher case.

Even when names were removed, participants could still potentially be recognised through workflow responsibilities, communication patterns, or role-specific tasks. This affected several reporting decisions within the thesis. Certain highly specific examples, detailed descriptions, and identifiable workflow situations were either simplified, generalised, or excluded in order to reduce the risk of deductive disclosure (Kaiser, 2009; TENK, 2023). As a result, some operational details were intentionally reported in broader terms than they originally appeared in the raw material.

Another important ethical consideration was the risk that workload analysis could be interpreted as an evaluation of individual teacher performance. In a small-school setting, discussions about efficiency, redistribution, or workflow imbalance can easily become personalised. For this reason, the study consistently focused on workflow structures, coordination practices, and organisational processes rather than on judging individual teachers. This distinction was important because the purpose of the research was to examine how administrative burden was produced within the system itself, not to identify individual responsibility for inefficiency.

Overall, the study remained appropriately cautious in both methodological and ethical terms. The conclusions were kept closely connected to the evidence collected from the school, and the findings were not presented as universally generalisable. Instead, the value of the study lies in its detailed examination of how administrative burden can emerge through everyday workflow structures, coordination practices, interruptions, and process fragmentation within a small educational organisation.

5.4 Limitations of the Study

This study was based on a single-school case involving three teachers within one small international school. While this allowed detailed workflow analysis and close examination of administrative routines, it also limits the broader transferability of the findings. The results therefore should not be interpreted as representing all schools or all forms of teacher administrative workload. Organisational structures, staffing arrangements, administrative support, and communication practices may differ significantly across schools, especially in larger institutions with dedicated administrative departments. The findings are therefore most relevant to contexts that share similar small-school characteristics (Shenton, 2004; Rashid et al., 2019).

The two-week baseline logging period also created important limitations. The logs captured recurring administrative routines and everyday workflow patterns, but they could not represent the full variation of workload across an entire academic year. Some processes, such as admissions, reporting periods, audits, intern onboarding, and field-trip preparation, become more intensive during specific seasonal periods. Although interviews and document analysis helped provide additional context for these peak

activities, the study still reflects a limited observation window rather than a complete annual workload cycle. As a result, the findings should be interpreted mainly as a representation of routine administrative workflow conditions during the selected period (Bolger et al., 2003; Ohly et al., 2010).

Another limitation relates to the use of self-recorded time-use logs. While the logs provided valuable evidence about task frequency, duration, follow-up, interruption, and transferability, self-recording can never capture every activity perfectly. Very short interruptions, informal conversations, or rapidly changing micro-tasks may not always have been recorded consistently during busy working days. In addition, self-reporting may be influenced by participant interpretation, memory, or differences in logging habits. This means that the recorded workload patterns should be understood as structured approximations of administrative activity rather than perfectly precise measurements.

The study also did not directly measure teacher well-being, stress, burnout, or emotional exhaustion. Although the findings identified workflow conditions that may contribute to administrative pressure, such as repeated follow-up, fragmented communication, interruptions, and unclear ownership, the study did not use psychological scales or clinical well-being measures. For this reason, conclusions about teacher stress or emotional strain cannot be made directly from the collected data. Instead, well-being should be understood as a possible implication supported by earlier literature rather than as a direct empirical finding of this case (Skaalvik & Skaalvik, 2017; Bakker & Demerouti, 2007).

The Excel Solver component also had clear limitations. The optimisation model could only analyse selected transferable tasks and could not fully capture relational, professional, or contextual constraints within the school environment. Factors such as trust, continuity, parent expectations, informal coordination, assessment responsibility, and professional judgement cannot be represented fully through numerical variables alone. For this reason, the optimisation outputs should be interpreted as simplified workload scenarios rather than as complete or universally applicable solutions (Caselli et al., 2022; Renna & Colonnese, 2025).

Overall, these limitations define important boundaries for how the findings should be interpreted. The study provides a detailed and context-specific examination of administrative workload within one small educational organisation, but its conclusions remain closely tied to the evidence, timeframe, participant group, and organisational conditions from which the data were collected.

5.5 Suggestions for Future Research

The most immediate direction for future research would be to test the proposed workflow improvements in practice within a real school setting. This thesis identified several possible improvement actions, including standardised communication templates, shared tracking systems, clearer workflow ownership, improved peak-period planning, and selective redistribution of transferable tasks. A follow-up study could implement these changes and examine whether they reduce repeated follow-up, rework, interruptions, fragmented communication, and uneven workload distribution over time. This would allow future research to move beyond workflow diagnosis toward practical evaluation of whether the proposed improvements lead to measurable changes in everyday administrative work (Bitner et al., 2008; Kim et al., 2017; Riezebos & Huisman, 2020).

A second important direction would be to expand the research across multiple schools and longer observation periods. Since the present study focused on one small international school and used a two-week baseline period, future studies could examine whether similar workflow patterns appear across different educational contexts. Collecting data across a full academic term or school year would also help capture seasonal workload variation related to admissions, reporting periods, audits, intern onboarding, resource ordering, and field-trip preparation (Bolger et al., 2003; Ohly et al., 2010). Such studies would help distinguish between workflow problems that are specific to this case and those that may appear more broadly in similar school environments.

Future research could also examine the relationship between administrative workflow conditions and teacher well-being more directly. The present thesis focused mainly on workflow structure and administrative processes rather than psychological outcomes. Further studies could combine workflow analysis with validated well-being measures in

order to examine how interruptions, repeated follow-up, unclear ownership, and workflow fragmentation relate to stress, emotional exhaustion, job satisfaction, or work engagement among teachers (Kyriacou, 2001; Song et al., 2023; Shen et al., 2025).

Another possible extension would be to further develop the optimisation aspect of the study. In this thesis, the Excel Solver model was intentionally limited and used only as a decision-support tool for selected transferable tasks. Future studies could explore more advanced allocation models that include changing teacher availability, seasonal workload peaks, skill requirements, fairness criteria, or shifting administrative priorities. However, future optimisation research should remain grounded in qualitative workflow understanding, since many school responsibilities are shaped by professional judgement, confidentiality, relationships, and role continuity rather than numerical efficiency alone (Caselli et al., 2022; Renna & Colonnese, 2025).

Further research may also benefit from including a wider range of stakeholder perspectives. This thesis focused mainly on teachers and used the principal primarily for workflow clarification. Future studies could include administrators, parents, interns, or students where appropriate in order to better understand how administrative workflows affect different participants within the school system. This would be particularly relevant for service-design-oriented research, which emphasises interaction between multiple actors within a shared service environment (Stickdorn et al., 2018; Suoheimo & Määttä, 2023).

Finally, future research could examine how external policy requirements shape administrative workload within schools. While this thesis focused mainly on internal workflow structures, many administrative demands are influenced by reporting obligations, accountability systems, curriculum requirements, and compliance procedures beyond the school itself. Exploring how these wider institutional pressures influence everyday workflow practices would help connect school-level administrative burden with broader educational governance and policy structures (OECD, 2019; Meadows, 2008).

5.6 Personal Learning and Development

This thesis process contributed significantly to my academic and professional development. At the beginning of the study, I understood teacher administrative workload mainly as a problem of too many tasks and too little time. Through the research process, I gradually learned that workload is also shaped by workflow structure, communication routines, interruptions, follow-up practices, task ownership, and coordination between people. This changed the way I understand administrative burden in schools. I began to see workload not only as an issue of quantity, but as a system created through everyday organisational practices.

One of the most important learning experiences was connecting theoretical ideas with a real workplace problem. Concepts such as systems thinking, service design, and process improvement became more meaningful when they were applied to actual school workflows rather than studied only as abstract theories. Mapping workflows and analysing service processes helped me understand how hidden coordination, repeated checking, and fragmented communication can create burden even when individual tasks appear small on their own.

The research process also strengthened my methodological skills. Designing time-use logs, preparing interview questions, reviewing documents, and organising workflow categories required careful planning and revision. I learned that collecting useful workplace data is more difficult than it first appears, especially when the work being studied is fragmented, interrupted, and constantly changing during the day. The process also showed me the importance of triangulation. In several situations, one source of data alone was not enough to explain the problem clearly, but comparing logs, interviews, and documents helped create a more complete understanding of the workflows.

Another important learning outcome was developing a more critical understanding of optimisation. At first, workload redistribution seemed like a straightforward mathematical problem. However, the study showed that administrative work in schools cannot be treated as simple numerical units that can be moved freely between people. Many tasks are connected to trust, continuity, parent relationships, confidentiality,

professional judgement, and role-specific responsibility. This helped me understand both the value and the limitations of optimisation tools. The Excel Solver model was useful for structured discussion, but only when the real organisational constraints were understood first.

The thesis also increased my awareness of ethical responsibility in workplace-based research. Conducting research in a small school environment required careful attention to confidentiality and reporting choices because complete anonymity was difficult to guarantee. I became more aware of how easily workflow analysis could be misunderstood as evaluation of individual performance, even when the intention was to examine organisational processes rather than people. This made ethical caution an important part of both the research process and the writing process.

Overall, this thesis helped me develop both as a student and as a practitioner. The most important lesson I gained was that organisational problems cannot always be understood by measuring time, counting tasks, or comparing workloads numerically. Real improvement depends on understanding how people, responsibilities, communication, and everyday workflows interact in practice. This perspective has changed how I now approach both research problems and workplace improvement.

References

Ab. Wahab, N. Y., Abdul Rahman, R., Mahat, H., Salleh Hudin, N., Ramdan, M. R., Ab Razak, M. N., & Mohd Yadi, N. N. (2024). Impacts of workload on teachers' well-being: A systematic literature review. *TEM Journal, 13*(3), 2544–2556. https://doi.org/10.18421/TEM133-80

Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery, and Public Health, 2*, Article 100051. https://doi.org/10.1016/j.glmedi.2024.100051

Bakker, A. B., & Demerouti, E. (2007). The job demands–resources model: State of the art. *Journal of Managerial Psychology, 22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy, 18*(2), 215–228. https://doi.org/10.1080/0268093022000043065

Ballet, K., & Kelchtermans, G. (2009). Struggling with workload: Primary teachers' experience of intensification. *Teaching and Teacher Education, 25*(8), 1150–1157. https://doi.org/10.1016/j.tate.2009.02.013

Ballet, K., Kelchtermans, G., & Loughran, J. (2006). Beyond intensification towards a scholarship of practice: Analysing changes in teachers' work lives. *Teachers and Teaching: Theory and Practice, 12*(2), 209–229. https://doi.org/10.1080/13450600500467415

Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). Service blueprinting: A practical technique for service innovation. *California Management Review, 50*(3), 66–94. https://doi.org/10.2307/41166446

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579–616. https://doi.org/10.1146/annurev.psych.54.101601.145030

Borg, M. G., Riding, R. J., & Falzon, J. M. (1991). Stress in teaching: A survey of occupational stress and its determinants, causes and consequences in

primary school teachers. *Educational Psychology, 11*(3–4), 59–75. https://doi.org/10.1080/0141192910170306

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27–40. https://doi.org/10.3316/QRJ0902027

British Educational Research Association [BERA]. (2018). *Ethical guidelines for educational research* (4th ed.). https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018

Burke, E., & McCollum, B. (2014). *Practice and theory of automated timetabling 2010*. https://doi.org/10.1007/s10479-014-1614-6

Card, A. J. (2017). The problem with '5 whys'. *BMJ Quality & Safety, 26*(8), 671–677. https://doi.org/10.1136/bmjqs-2016-005849

Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum, 41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547

Caselli, G., Delorme, M., & Iori, M. (2022). Integer linear programming for the tutor allocation problem: A practical case in a British university. *Expert Systems with Applications, 187*, Article 115967. https://doi.org/10.1016/j.eswa.2021.115967

Chen, B., & Zhao, C. (2022). More is less: Homeroom teachers' administrative duties and students' achievements in China. *Teaching and Teacher Education, 119*, Article 103857. https://doi.org/10.1016/j.tate.2022.103857

Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology, 104*(4), 1189–1204. https://doi.org/10.1037/a0029356

Creagh, S., Thompson, G., Mockler, N., Stacey, M., & Hogan, A. (2023). Workload, work intensification and time poverty for teachers and school leaders: A systematic research synthesis. *Educational Review, 75*(6), 1–20. https://doi.org/10.1080/00131911.2023.2196607

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health, 7*(2), Article e000057. https://doi.org/10.1136/fmch-2018-000057

Domènech, B., & Lusa, A. (2016). A MILP model for the teacher assignment problem considering teachers' preferences. *European Journal of Operational Research, 249*(3), 1153–1160. https://ideas.repec.org/a/eee/ejores/v249y2016i3p1153-1160.html

Douglas, J. A., Antony, J., & Douglas, A. (2015). *Waste identification and elimination in HEIs: The role of lean thinking*. *International Journal of Quality & Reliability Management, 32*(9), 970–981. https://doi.org/10.1108/IJQRM-10-2014-0160

Emiliani, B. (2015). *Lean teaching: A guide to becoming a better teacher*. The Center for Lean Business Management.

Finnish National Board on Research Integrity [TENK]. (2023). *The Finnish code of conduct for research integrity and procedures for handling alleged violations of research integrity in Finland*. https://tenk.fi/en/advice-and-materials/RCR-Guidelines-2023

Fitzgerald, S., McGrath-Champ, S., Stacey, M., Wilson, R., & Gavin, M. (2019). Intensification of teachers' work under devolution: A 'tsunami' of paperwork. *Journal of Industrial Relations, 61*(5), 613–636. https://doi.org/10.1177/0022185618801396

Foster, C. (2024). Methodological pragmatism in educational research: From qualitative-quantitative to exploratory-confirmatory distinctions. *International Journal of Research & Method in Education, 47*(1), 4–19. https://doi.org/10.1080/1743727X.2023.2210063

Hargreaves, A. (2000). Four ages of professionalism and professional learning. *Teachers and Teaching: Theory and Practice, 6*(2), 151–182. https://doi.org/10.1080/713698714

Harmsen, R., Helms-Lorenz, M., Maulana, R., & van Veen, K. (2018). The relationship between beginning teachers' stress causes, stress responses, teaching behaviour and attrition. *Teachers and Teaching, 24*(6), 626–643. https://doi.org/10.1080/13540602.2018.1465404

Jamous, K. A. M. (2024). Faculty workload optimization: A simplex method approach. *International Journal of Swarm Intelligence and Evolutionary Computation, 13*, 397–405. 10.35248/2090-4908.24.13.397

Kaiser, K. (2009). Protecting respondent confidentiality in qualitative research. *Qualitative Health Research, 19*(11), 1632–1641. https://doi.org/10.1177/1049732309350879

Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing, 72*(12), 2954–2965. https://doi.org/10.1111/jan.13031

Kim, K.-N. (2019). Teachers' administrative workload crowding out instructional activities. *Asia Pacific Journal of Education, 39*(1), 31–49. https://doi.org/10.1080/02188791.2019.1572592

Kim, Y. S., Lee, D., & Cha, J. H. (2017). A blueprinting approach to service innovation in private educational institutions. *International Journal of Quality Innovation, 3*, Article 2. https://doi.org/10.1186/s40887-017-0011-z

Kristiansen, S., & Stidsen, T. R. (2013). *A comprehensive study of educational timetabling: A survey* (DTU Management Engineering Report No. 8.2013). DTU Management Engineering.

Kyriacou, C. (2001). Teacher stress: Directions for future research. *Educational Review, 53*(1), 27–35. https://doi.org/10.1080/00131910120033628

Lloyd, S., & Gifford, R. (2024). Qualitative research and the future of environmental psychology. *Journal of Environmental Psychology, 97*, Article 102347. https://doi.org/10.1016/j.jenvp.2024.102347

Martínez Sanahuja, S. (2020). Towards lean teaching: Non-value-added issues in education. *Education Sciences, 10*(6), 160. https://doi.org/10.3390/educsci10060160

Meadows, D. H. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

Montgomery, C., & Rupp, A. A. (2005). A meta-analysis for exploring the diverse causes and effects of stress in teachers. *Canadian Journal of Education, 28*, 458–486. https://doi.org/10.2307/4126479

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research, 1*(1), 48–76. https://doi.org/10.1177/2345678906292462

Mtisi, S. (2022). The qualitative case study research strategy as applied on a rural enterprise development doctoral research project. *International Journal of Qualitative Methods, 21*, 1–13. https://doi.org/10.1177/16094069221145849

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), 1–13. https://doi.org/10.1177/1609406917733847

OECD. (2015). *How much time do teachers spend on teaching and non-teaching activities?* (Education Indicators in Focus No. 29). OECD Publishing. https://doi.org/10.1787/5js64kndz1f3-en.

OECD. (2019). *TALIS 2018 results (Volume I): Teachers and school leaders as lifelong learners*. OECD Publishing. https://doi.org/10.1787/1d0bc92a-en.

OECD. (2025). *The demands of teaching: Results from TALIS 2024*. OECD Publishing. https://doi.org/10.1787/90df6235-en.

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*(2), 79–93. https://doi.org/10.1027/1866-5888/a000009

Radnor, Z., & Osborne, S. P. (2013). Lean: A failed theory for public services? *Public Management Review, 15*(2), 265–287. https://doi.org/10.1080/14719037.2012.748820

Rahman, M., & Reissi Avan, Y. (2016). Teaching workload and performance: An empirical analysis on selected private universities of Bangladesh. *European Journal of Social Sciences Studies, 1*(1), 58–65. doi:http://dx.doi.org/10.46827/ejsss.v0i0.5

Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case study method: A step-by-step guide for business researchers. *International Journal of Qualitative Methods, 18*, 1–13. https://doi.org/10.1177/1609406919862424

Renna, P., & Colonnese, C. (2025). A simulation-driven business process reengineering framework for teaching assignment optimization in higher education—A case study of the University of Basilicata. *Applied Sciences, 15*(5), Article 2756. https://doi.org/10.3390/app15052756

Riezebos, J., & Huisman, B. (2020). Value stream mapping in education: Addressing work stress. *International Journal of Quality & Reliability Management, 38*(4), 1044–1061. https://doi.org/10.1108/IJQRM-05-2019-0145

Shen, Z., Lan, R., Su, X., Lian, R., & Zhang, Y. (2025). The relationship between extra-administrative workload, emotional exhaustion, and work engagement of primary and secondary school teachers: A multilevel linear model analysis. *Behavioral Sciences, 15*(10), 1405.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63–75. https://doi.org/10.3233/EFI-2004-22201

Skaalvik, E. M., & Skaalvik, S. (2017). Still motivated to teach? A study of school context variables, stress and job satisfaction among teachers in senior high school. *Social Psychology of Education, 20*(1), 15–37. https://doi.org/10.1007/s11218-016-9363-9

Song, X., Lan, R., Su, X., Lian, R., & Zhang, Y. (2023). The relationship between extra-administrative workload, emotional exhaustion, and work engagement of primary and secondary school teachers: Based on multilevel linear model analysis. *Frontiers in Psychology, 13*, Article 1037053. https://doi.org/10.3389/fpsyg.2022.1037053

Sterman, J. D. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. Irwin/McGraw-Hill.

Stickdorn, M., Hormess, M., Lawrence, A., & Schneider, J. (2018). *This is service design doing: Applying service design thinking in the real world*. O'Reilly Media.

Suoheimo, M., & Määttä, K. (2023). Service design thinking method for educational leaders. In R. Ahtiainen et al. (Eds.), *Leadership in educational contexts in Finland* (Educational Governance Research, Vol. 23, pp. 81–100). Springer. https://doi.org/10.1007/978-3-031-37604-7_5

Te Braak, P., Van Droogenbroeck, F., Minnen, J., van Tienoven, T. P., & Glorieux, I. (2022). Teachers' working time from time-use data: Consequences of the invalidity of survey questions for teachers, researchers, and policy. *Teaching and Teacher Education, 109*, Article 103536. https://doi.org/10.1016/j.tate.2021.103536

Valli, L., & Buese, D. (2007). The changing roles of teachers in an era of high-stakes accountability. *American Educational Research Journal, 44*(3), 519–558. https://doi.org/10.3102/0002831207306859

Womack, J. P., & Jones, D. T. (2003). *Lean thinking: Banish waste and create wealth in your corporation*. Free Press.

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE.