Radboud Universiteit

Master thesis

From crisis to progression

Research into causes of and opportunities for better teacher retention within secondary education in the Netherlands

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Preface

Dear reader,

This master thesis is the final hurdle in completing my Master's degree in Organizational Design and Development at Radboud University in Nijmegen. During my years at this master's program, I was able to develop a lot of new knowledge and skills which have allowed me to develop myself at a personal level. All this has contributed to my successful completion of this master's thesis.

The process of writing a master's thesis was not easy. I have faced many challenges along the way, but fortunately no challenge has been too great. In this preface, I would like to thank several people who have helped me in the process of writing this thesis. First and foremost, I would like to thank my supervisor, dr. L. Verelst. His knowledge, insights and feedback have always been of great value. In addition, his motivational words provided the necessary boost at the right time. I would also like to thank my friends and family who have helped me throughout this process. From providing distraction and companionship to motivational and moral support at stressful and more difficult moments. Finally, I would like to thank all the respondents who took the time and effort to participate in this study. Without their input, I could never have brought this study to a successful conclusion!

Now that my time as a student has come to an end, I will enjoy a well-deserved holiday with great relief, after which I will start my professional career rested and full of enthusiasm.

Dennis Vrancken,

Maasbracht, 12 August 2024

Abstract

The Dutch education system has been experiencing various problems for years due to persistent teacher shortages. Solutions to the persistent problems are being sought at both national and regional levels. The Dutch government has made a strong committed to the development of solutions to the ongoing teacher shortage. It focuses on three aspects: increasing the intake of teachers and school leaders, retaining existing teachers and redesigning education. Of all education sectors in the Netherlands, secondary education is experiencing the biggest problems in terms of teacher shortage. Therefore, this research aims to contribute to exploring causes and recommendations for better teacher retention in Dutch secondary education. To this end, the study focuses on investigating the relationship between perceived job design, teacher' job satisfaction, and teacher' turnover intentions. The central research question of this study is as follows: ‘’Is there a relationship between job design and teachers' turnover intentions through job satisfaction in secondary education in the Netherlands?’’

The study was carried out using a quantitative method of research. For this study, the data was collected through the distribution of a questionnaire to teachers working in the Dutch secondary education system. All participating respondents to this study voluntarily consented to participate and were informed about the anonymous and careful handling of the data obtained the final sample sized for this study is 58. SPSS was used to process all data from the data collection process. The data were checked for errors and then processed by performing several statistical analyses.

The research results from these statistical analyses conclude that there are multiple significant relationships between the variables studied. The results of the correlation analysis conducted suggest that there are significant correlations between job design, job satisfaction and turnover intention in this study. The highest correlations were found between job design and job satisfaction, and between job design and turnover intention. Further research was conducted by conducting a simple mediation analysis using PROCESS macro model 4. This showed that job design has a significant relationship with job satisfaction, but not with turnover intention. The relationship between job satisfaction and turnover intention was also found to be significant. These results indicate that the relationship between job design and turnover intention is fully mediated by job satisfaction. By conducting additional simple mediation analyses, the five job characteristics that make up the job design variable in this study were each examined separately for their relationships with both job satisfaction and turnover intentions. The results of these additional analyses suggest that only the job characteristics variety, autonomy and feedback are significant in predicting job satisfaction, that no job characteristic has a significant direct effect on turnover intention, and that the job characteristics autonomy and feedback have a significant indirect effect on turnover intention through job satisfaction.

Based on these research results, a conclusion to the research question was drawn which reads: "A relationship exists between job design and turnover intention through job satisfaction in secondary education in the Netherlands, this relationship comprises of a negative full mediation effect.". The presence of job characteristics autonomy, and feedback lead to increased job satisfaction, which in turn results in lower turnover intention. The results of this study provide insight and opportunities for formulating an approach that can tackle the problem of the persistent teacher shortage within Dutch secondary education. The study formulates a number of recommendations for organizations within the Dutch secondary education system for better retention of current teachers. The application of the job characteristics model and the application of the concept of job satisfaction are further developed in the discussion chapter. A number of research limitations are also identified, including the small sample size used and the use of a cross-sectional research design. Finally, the study provides a number of recommendations for possible follow-up studies.

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Chapter 1,

Introduction

"The problems in education have gotten bigger and bigger, but the money bag is ready" reads the headline of a recent article in the Dutch newspaper Trouw (van Baars, 2021). In recent years, the Dutch education system has been in the news increasingly negatively. This is due to the persistent shortage of teachers. The Dutch education system as a whole consists of five sectors: primary and special education, secondary education, senior secondary vocational education, higher vocational education, and university education. In the academic year 2021/2022, more than 3.7 million students followed education in one of the five sectors, the entire system consisted of 8,170 different institutions, and employment involved 356,000 FTEs (Ministry of education, culture and science, 2022). These figures are an illustration of the complexity of the Dutch education system.

The extent of the teacher shortage problem varies greatly between the different education sectors in the Netherlands. In terms of teacher shortages, the secondary education sector in the Netherlands faces the most serious problems. In 2022, 23.1% of all jobs in secondary education are vacant. This is a significant increase compared to 2021 (16.9%) (van der Aa, 2023). Within the secondary education sector, there are also differences in the extent to which the shortage of teachers is a problem. From a geographical point of view, there is a greater shortage of teachers in the urban areas than in the rural areas of the Netherlands (Ijzerman, 2022). In addition to geographical differences, there are also differences between different subjects in secondary education. By comparison, there is a greater shortage of teachers of mathematics, physics, and chemistry, and of languages such as French, German, and Dutch (Ijzerman, 2022). Both the teachers themselves and the students in the sector are affected by the ongoing shortage of teachers in secondary education. Research shows that 20% of starting teachers in Dutch secondary education change jobs, return to their old job or drop out within five years (Ministerie van Onderwijs, Cultuur en Wetenschao, 2023). For new teachers under the age of 30, this percentage rises to 25%. A number of reasons have been put forward to explain the high level of teacher turnover in secondary education. Teacher incompetence is blamed, and elements of the working environment such as workload and stress are often cited as contributing to high turnover. In 2019, an average of 27.4% of employees in the education sector experienced symptoms of burnout, compared to a national average of 17% (Maij, 2021). There is a reciprocal relationship between teacher shortages and teacher workload: teacher shortages lead to increased workload, which creates feelings of distress and ultimately burnout (Draaisma, et al., 2021). In addition to increased work pressure and symptoms of burnout, the continuing shortage of teachers has potential implications for the quality of education. Secondary education institutions may have difficulty in ensuring the quality of education due to a lack of sufficient and qualified teachers (de Witte & Iterbeke, 2022).

The Dutch government has made a strong commitment to solving the problem of the shortage of teachers. Educational institutions throughout the Dutch education system are eligible for government grants in support of initiatives to address the problem (Minister of Education, Culture and Science, 2023). In addition, the Dutch government has established a national approach to teacher shortage that focuses on solving the problem through three ways: teacher and school leader intake (Promoting lateral entrants), teacher retention(preventing turnover), and organizing education differently(preventing turnover) (Rijksoverheid, 2022). The aim of this study is to provide insights and recommendations on the underlying factors of teacher shortages and, in particular, to improve teacher retention. To this end, the study examines possible antecedents of teacher turnover intentions from a work design perspective. In particular, this thesis aims to examine the relationship between work design and turnover intention through teachers' job satisfaction. Previous studies have shown a link between job satisfaction and turnover intention (Jayaratne & Chess, 1984). Building on these findings, the study aims to examine whether job design in secondary education affects perceived job satisfaction and thus teachers' turnover intentions. Outcomes of the study should contribute to creating a better

understanding through a work design perspective about teacher retention and form the basis for possible recommendations to reduce teacher turnover. The assumption in research on teacher turnover is often that it is the result of individual incompetence (Parker & Jorritsma, 2020). However, this research does not seek to look at the human factor, but at the factors in the job itself that lead to the eventual decision of the teacher to leave the organization.

The study is designed based on theoretical and empirical research on job design, job satisfaction and turnover intentions. Job satisfaction provides insight into the perceived emotions of current employees while doing their job and is also an important influence on aspects such as productivity, loyalty, and employee well-being (Bowen & Ostroff, 2004), while turnover intentions are defined as an individual's awareness of quitting an organization in the near future (Mowday, Porter, & Steers, 1982). The theoretical rationale of this study lies in the job characteristics model developed by Hackman and Oldham (1976). The core of the model states that five job characteristics determine three different psychological states that influence work-related outcomes of employees. Altogether, this leads to the following research question:

Main research question

Is there a relationship between job design and teachers' turnover intentions through job satisfaction in secondary education in the Netherlands?

A quantitative research method will be used for the study. The data collection method for the study will be a questionnaire that will be distributed to secondary school teachers in the Netherlands. All of the information that is collected will then be processed by conducting linear regression analyses in IBM SPSS Statistics.

This thesis aims to expand knowledge about the job characteristics model by examining the connection between this model and turnover intentions. Until now, the job characteristics model has mostly been linked to job satisfaction, while this research also links it with turnover intentions. The Job Characteristics Model has the distinction of being a General Model designed to explain work-related outcomes. So far, the Job Characteristics Model has mainly been linked with job satisfaction, while this study links the model with turnover intentions. However, the generic nature of the model, through the use of only five job characteristics, may imply that the current model cannot account for outcomes other than job satisfaction. Linking the model to turnover intentions contributes to current knowledge on the model's theoretical applicability. Second, the concept of job satisfaction has been applied in different contexts such as local governments (Taylor J. , 2013), retail stores (Anderson, 1984) and thus also in the education sector. Studies that apply the concept within the context of education mostly look at the factors and consequences of job satisfaction in higher education (Mathur & Mehta, 2015). The context of secondary education may be different from the context of higher education in terms of the composition of the contextual factors. For example, both contexts may have different cultures, staff development, regulations and differences on individual level. Therefore, this study aims to make theoretical contributions to the existing knowledge about job satisfaction by applying the concept to a new context, to see if already known knowledge about the concept is valid within the context of Dutch secondary education. Besides theoretical contributions, the research should also make practical contributions. These practical contributions will consist of providing insight into the causes leading to higher turnover intentions among employees in Dutch secondary education. Specifically, this research aims to contribute to the development of a job-based approach by applying job design to the problem of teacher retention, as opposed to approaching the problem by researching teacher incompetence. And subsequent recommendations on. The aim of this new approach to the problem is to produce workable insights and recommendations for better retention of current teachers.

Chapter 2,

Theoretical framework

2.1 Job Design

Different approaches on job design

Job design, as it is approached by this research, involves the organization and content of work tasks, activities, relationships and responsibilities of a set of tasks to be performed by an individual within an organization (Parker, 2014). Other given definitions of job design include "the specification of the contents, methods, and relationships of jobs in order to satisfy technological and organizational requirements as well as the social and personal requirements of the job holder" (Armstrong & Taylor , 2014) or "the functions of arranging task, duties, and responsibilities into an organizational unit of work" (Aroosiya & Ali, 2014). Although the definitions differ, they are essentially the same and define job design as the arranging of a job.

Research on job design has its origins in economic thinking, inspired by Adam Smith (1776), to distribute labor. Early studies, dating back to the early 19th century, sought to increase workers' efficiency by specializing and simplifying tasks (Belias & Sklikas, 2013). The results of these early studies led to the view that work should be standardized and simply structured as much as possible so that workers could fully focus on developing their work-related skills to achieve optimal productivity (Taylor F. W., 1919). This form of job design is known as scientific management. The application of scientific management has had a positive impact on the productivity of workers, but it has also had negative consequences for workers. Research showed that workers found aspects such as the mechanical pace of work to be the most unpleasant features of their work (Walker & Guest, 1952). Consequently, organizations were faced with high levels of absenteeism and quitting, and in some cases even sabotage (Linstead, 1985).

The negative effects of scientific management have led to the development of approaches to job design that put more emphasis on the social and motivational factors of work. One of the most prominent alternative schools of thought includes Herzberg's 2-factor theory, which emphasizes the relationship between employees' intrinsic motivation and productivity. Herzberg argued that two types of job characteristics can be recognized that jointly influence employees' perceived motivation at their workplace: Hygiene factors and motivators (Herzberg, 1959) (see also Table 1). The motivators are derived from Maslow's growth needs strength. Presence of these factors lead to significantly higher job satisfaction among employees, while absence only leads to a neutral situation. Based on these findings, Herzberg provided pioneering insights in how work could be designed so that it motivates employees and increases job satisfaction: by applying job rotation, job enlargement, and job enrichment.

Hygiene factors	Motivators
Company policies	*Achievement*
Supervision	*Recognition*
Interpersonal relations	*Work itself*
Work conditions	*Responsibility*
Salary	*Advancement*
Status	*Growth*
Job security	

Table 1: *Herzberg's hygiene factors and motivators*

When the principle of job rotation is applied within an organization, employees perform certain tasks for a certain period of time before being assigned a new set of tasks for a certain period of time (Jorgensen, Davis, Kotowski, Aedla, & Dunning, 2005). Successfully applying job rotation can bring many benefits. Research has shown that job rotation can have a positive impact on increasing employee productivity and retention (Jorgensen, Davis, Kotowski, Aedla, & Dunning, 2005), gives

employees a better view of the functioning of the entire organization (Aroosiya & Ali, 2014), and helps reduce employee boredom (Bhadury & Radovilsky, 2006).

Applying job enlargement considers increasing the attractiveness of work by expanding work through more differentiated and expanded tasks (Durai, 2010). Two types of application are distinguished within the concept of job enlargement: horizontal enlargement, and vertical enlargement. Through horizontal enlargement, more tasks are assigned to an employee's existing range of tasks. The objective deemed to be achieved is to reduce aspects such as specialization and boredom at work, which is why horizontal enlargement is often applied in highly structured and complex tasks (Durai, 2010). In contrast to horizontal enlargement, vertical enlargement focuses on the degree of freedom employees have in deciding independently how the work should be performed. Increasing freedom of decision on how to perform tasks has a positive effect on employees' productivity (Gickuki & Munjuri, 2018) and perceived job satisfaction (Saleem, Shaheen, & Saleem, 2012).

Job enrichment includes a tool through which organizations seek to better attract, motivate, and retain talented staff (Choudhary, 2016). A more specific definition of job enrichment includes:: “the technique entails enriching job, which refers to the inclusion of greater variety of work content, requiring a higher level of knowledge and skill, giving workers, autonomy and responsibility in terms of planning, directing, and controlling their own performance, and providing the opportunity for personal growth and meaningful work experience” (Aroosiya & Ali, 2014, p. 5). Assigning greater levels of responsibilities and decision-making powers has the effect of making employees more self-managing and self-sufficient, thus stimulating them in their job efforts (Salau, Edeniji, & Oyewunmi, 2014).

The Job Characteristics Model

One of the leading, and for this research important, job design model is the Job Characteristics Model (JCM) developed by Hackman and Oldham (1976). The model was developed as a practical framework that can be used to develop jobs that optimally motivate employees. The core of the model states that five job characteristics determine three different psychological states that influence work-related outcomes of employees. The five job characteristics are detailed in the table below.

1. Skill Variety	*The degree to which specific skills need to be applied when performing tasks*
2. Task Identity	*The degree to which employees experience the completion and final result of tasks*
3. Task Significance	*The degree to which the tasks to be performed are important for achieving organizational or social goals*
4. Autonomy	*The degree to which employees have decision-making power over determining the performance of tasks*
5. Feedback	*The degree to which employees receive feedback on their performance within the organization on a regular basis*

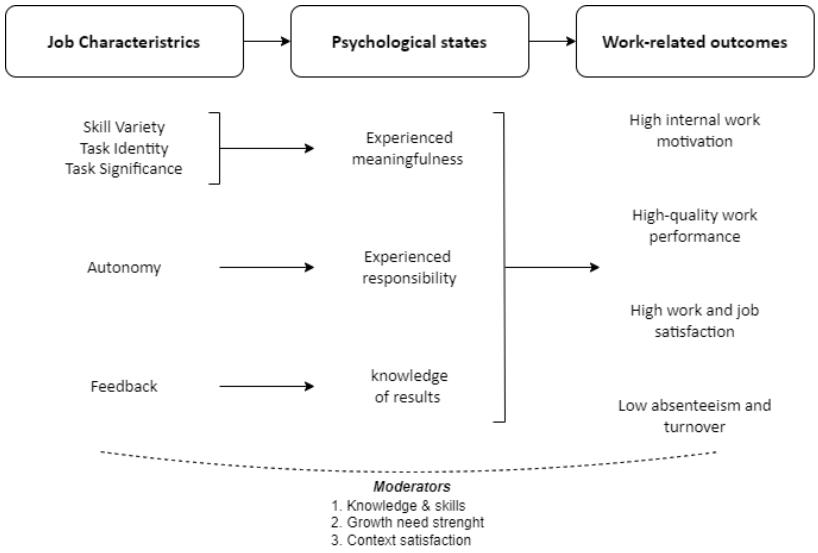
Table 2: *Job characteristics of the Job Characteristics Model*

These five job characteristics are linked by Hackman and Oldham in the model to three psychological states: experienced meaningfulness, experienced responsibility, and knowledge of results.

Here, the job characteristics skill variety, task identity, and task significance are linked to experienced meaningfulness, autonomy to experienced responsibility, and feedback to knowledge of results. When the presence of the five job characteristics achieves these three psychological states, it will result in improved work-related outcomes such as internal motivation, work performance, work satisfaction, and decreasing absenteeism and turnover. To arrive at concrete insights into the extent to which a job leads to internal motivation, Hackman and Oldham propose calculating the Motivational potential Score (MPS) (Hackman & Oldham, 1976). The MPS calculates an individual's potential motivation score based on assessing the five job characteristics. The specific calculation is as follows:(Skill Variety+ Task Identity+ Task Significance/3) *Autonomy*Feedback. Although the model as a practical framework enables organizations to gain more insight into how work organization affects employees' motivation and work outcomes, Hackman and Oldham also make comments on the model. Here, they

argue that not everyone will benefit equally from experiencing the five job characteristics through the presence of three so-called moderators. The three moderators that influence the effect of perceived job characteristics on work-related outcomes include growth needs strength, knowledge and skills, and context satisfaction. Employees who focus less on self-development through work will be less influenced by the job characteristics in their psychological state, and thus their work-related outcomes will also be less.

Figure 1: *The Job Characteristics Model*



2.2 Job Satisfaction

The concept of job satisfaction refers to the amount or degree of gratification and contentment that an employee fosters towards the overall job that has to be done, factoring into that equation his/her satisfaction with the job itself, the peers at the job, the supervisors, and the policies at work (Locke, 1969). Within scientific research on job satisfaction, two different approaches to the concept can be recognized. On the one hand, you have the approach that views job satisfaction as overall satisfaction attitude, where job satisfaction encompasses an individual's judgment of the job as a whole (Brayfield & Rothe, 1951). Within this approach, job satisfaction is defined as ‘the degree of satisfaction and fulfilment an employee derives from his or her work’ (Brayfield & Rothe, An index of job satisfaction, 1951), or as 'the overall evaluative judgement one has about work’ (Weiss, 2022). Another approach within job satisfaction research seeks to explain the concept by identifying various underlying factors that influence it. This approach defines job satisfaction as consisting of a number of facets that determine an individual's attitude to work, such as work tasks, pay, promotions and supervision (Smith & Kendall, 1969). This study adopts the first approach to job satisfaction as described above, where job satisfaction is defined as an individual's overall satisfaction with their job.

Job satisfaction is one of the most researched concepts within industry/organizational psychology. For example, an estimate by Locke (1976) states that up to 1973 there were around 3,300 published studies available relating to job satisfaction (Locke, 1976). Other indications show that job satisfaction is mentioned in 80% of published articles on job attitude from 1950 onwards (Judge et al, 2017). Studies on job satisfaction have their origins in 1920s and 1930s, joined by the industrial and unemployment crises caused by the economic depression. Retaining a high-performing and adequate workforce is a crucial element in maintaining a well-functioning organization. Original research on job satisfaction, in the 1930s, changed the approach organizations had towards productivity (Hoppock & Spiegler, 1938).

Previously, employee productivity was mostly explained by physical conditions, however, early studies on job satisfaction showed that factors such as emotion and perception strongly influence employee productivity (Uhrbrock, 1934).

These early studies on job satisfaction are characterized by the main focus on demonstrating dissatisfaction among employees (Hoppock, 1935), and the use of questionnaires to investigate the phenomenon (Kornhauser & Sharpe, 1932). Research on job satisfaction developed further with the focus refocusing in the years after World War II on the effects of job satisfaction. Thus, job satisfaction was shown to have a positive effect on job performance (Brayfield & Crockett, 1955), and a negative effect on turnover intentions (Weitz & Nuckols, 1955).

Partly because of these findings, the approach to job satisfaction changed to a more humanistic approach where it was thought that employee satisfaction and productivity could be improved by providing opportunities for self-actualization (McGregor, 2016). Job enlargement, expanding employee influence on choice process, and employee self-direction were important ideas that emerged during this period, and are also influential ideas for job design research. Building on these ideas, further emphasis was placed on defining task characteristics that influenced perceived job satisfaction (Walker & Guest, 1952). These works form the basis for Hackman and Oldham (1975)'s later developed job characteristics model.

2.3 The relationship between job design and job satisfaction

An individual's job satisfaction can be predicted by factors such as reasonable pay, promotional opportunities, and relationships with supervisors and colleagues (Brief, 1998). However, Locke (1976) argues that underlying task environment influences perceived job satisfaction. This assertion further stems from the consideration in research for the use of job characteristics as interpreters of employee job satisfaction (Glisson & Durick, 1988). The Job Diagnostic Survey (JDS) of Hackman and Oldham (1975) is frequently used within scientific research to determine the relationship between job design and job satisfaction using the job characteristics (skill variety, task identity, task significance, autonomy, and feedback). Research has shown that all five job characteristics are positively related to job satisfaction. (Loher & Fitzgerald, 1985).

Further scientific support for the existence of a relationship between job design and job satisfaction is provided by research on the effects of job rotation, enlargement, and orientation on job satisfaction. The implementation of job design through a job rotation strategy has a positive effect on employees' perceptions of job satisfaction (Van Wyk, Swarts, & Mukonza, 2018)). A similar positive effect on job satisfaction was found when implementing job enrichment (Umstot, Bell Jr, & Mitchel, 1976) and job enlargement (Hulin & Blood, 1968) strategies. The implementation of job rotation, enlargement and enrichment is seen in the presence of the five job characteristics of the JCM. The positive relationship between job design and job satisfaction is further supported in scientific research by the effect of job design on a previously mentioned important factor for job satisfaction, self-actualization (Erez, 2010). Job design creates jobs that are more challenging and fulfilling, where employees are given more freedom and responsibility. This context thus facilitates employees' self-actualization, which in turn has a positive effect on perceived job satisfaction (Gopinath, 2020). Based on these findings, the following hypothesis was developed to determine the relationship between job design and job satisfaction in this study.

Hypothesis 1: Job design is positively related to teacher' job satisfaction

2.4 Turnover intentions

The concept of turnover intentions refers to the employee's willingness to leave his/her organization within a given period of time (Lazzari, Alvarez, & Ruggieri, 2022). Turnover intentions are frequently studied in the context of voluntary employee turnover, which comprises the situation in which an employee leaves his/her current job by his/her own will (Perez, 2008). Turnover has manifest visible and invisible costs for organizations (Alkahtani, 2015). Visible costs for an organization usually relate to the process of replacing a departing employee. Thus, a replacement must be sought on the labor market, selected among competing replacements, and the eventually chosen replacement must be trained through formal and informal training to reach the level of the departing employee (Sutherland, 2002). Turnover also results in invisible costs caused by close ties between current employees and departing as well as new employees, and the filling of the departing employees' jobs at a time when no replacement has been arranged (Philips, 1990). These invisible costs include lost production, lost sales, and lost management time, and affect an organization's profitability, customer service and customer satisfaction. In addition, turnover affects the employees who remain employed within the organization. Performing the same work with less staff results in increased workload and decreased motivation (Hay, 2002), factors that affect an individual’s turnover intention (Firth, Mellor, Moore, & Loquet, 2004).

Turnover intention is caused when employees feel that the work does not meet their expectations, or when there is a gap between person and job (Branham, 2005). Factors that lead to turnover vary by organization, so no single specific factor can be identified for contributing to turnover (Shah, Fakhr, Ahmad, & Zaman, 2010). Research has identified underlying factors of turnover intensions, including external environmental factors and organizational factors. An example of an external environmental factor includes times of economic recession, job security is not evident leading to lower turnover intentions of employees. Turnover is also influenced by organizational factors such as industry type, organization size, pay and leadership style. The leadership style used within an organization affects employee turnover intentions (Siew, 2017). Autocratic leadership style has been shown to have a positive relationship with turnover intentions, mainly due to a focus on production rather than on people (Puni, Agyemang, & Asamoah, 2016). In contrast, more democratic leadership styles have a negative effect on turnover intentions, mainly because this style facilitates collective decisions. The financial compensation employees receive for performing tasks is also linked to turnover intentions. Experiencing too low a payment results in benefit dissatisfaction and has a negative influence on employees' turnover intentions (Jolly, McDowell, Dawson, & Abbott, 2021). Furthermore, demographic factors influence turnover intentions. For age, tenure and marital status a negative relation with turnover intention has been proved (Arnold & Feldman, 1982) (Cotton & Tuttle, 1986) (Gerhart, 1990). Level of education has a positive relationship with turnover intentions, with evidence that employees with higher levels of education tend to quit their jobs faster (Berg, 1991).

2.5 The relationship between job satisfaction and turnover intentions

Besides the above-mentioned possible antecedents, Brough and Frama (2004) argue that job satisfaction holds as a strong indicator of employee turnover intentions (Brough & Frame, 2004). This claim finds support in multiple studies that have shown a significant negative relationship between job satisfaction and turnover intentions (Rahman, Naqvi, & Ramay, 2008) (Khatri & Fern, 2001) (Samad, 2006). Further support for the relationship between job satisfaction and turnover intentions is provided in research through the concepts of organizational commitment, and job embeddedness. Organizational commitment includes "the psychological state that characterizes the employees' relationship with the organization and has implications for the decision to continue or discontinue membership in the organization" (Meyer & Allen, 1991, p. 67). Job embeddedness encompasses a broad constellation of psychological, social, and financial influences on employee retention (Mitchell, Holtom, Lee, Sablynski, & Erez , 2001). Experiencing job satisfaction characteristics, as Westlund and Hannon(2008) examined, leads to both improved organizational commitment (Yücel, 2012), and improved job embeddedness (Yu, Ariza-Montes, Giorgi, & Lee, 2020) both of which have a negative relationship with respect to turnover intentions. Based on the above discussion, the following hypothesis was developed to assess the relationship between job satisfaction and turnover intentions in this study.

Hypothesis 2: Job satisfaction is negatively related with teacher' turnover intentions

2.6 The relationship between job design on turnover intentions through job satisfaction

This study assumes that there is a relationship, as described in sections 2.3 and 2.5, between the concepts of job design and job satisfaction, and between job satisfaction and turnover intentions. On the basis of this assumption, job satisfaction has a mediating function, which is assumed to explain the relationship between job design and turnover intention. The following hypothesis was formulated to examine the mediating effect of job satisfaction within this study

Hypothesis 3: Job satisfaction mediates the relationship between job design and turnover intentions

Chapter 3,

Methodology

3.1 Research Design

This research was conducted through the use of quantitative research method. Quantitative research aims to investigate social phenomena, which are considered to be measurable, using statistical and numerical data (Watson, 2015). Thus, this research method fits the research to be conducted on the relationship between job design and job satisfaction and its influence on teachers' turnover intentions in Dutch secondary education. Underlying problem definition of the research comprises of the problems faced by secondary education institutions in the Netherlands in retaining current employees.

Data collection for this research will be conducted by applying a cross-sectional study using a survey. Conducting a cross-sectional study implies that data are only collected at a given point in time (Kesmodel, 2018). The purpose of the study is to draw conclusions about the current state of the phenomenon under investigation. For this reason, the use of a cross-sectional study is considered appropriate for this study. Conducting surveys is frequently used in quantitative research for the same kind of situations and question, as it allows researchers to collect a lot of data on specific populations from which links can be made (Watson, McKenna, Cowman, & Keady, 2008). Further completion of the survey method will be conducted through the preparation of a questionnaire. Further details of the questionnaire can be found under section 3.2. This study specifically looks at teachers working secondary education in the Netherlands, this group therefore comprises the chosen population. Given the time and resources available, it was not within the scope of the study to collect data on the entire population. Nevertheless, to generalize the outcomes of the study to the entire population, a representative sample has been used. A sample comprises a small, selected part of the entire population which is mostly similar in composition to the composition of the entire population (Shukla, 2020). A non-probability purpose sampling technique has been applied. When applying this technique of sampling, respondents are not chosen randomly but based on specific characteristics chosen by the researcher (Campbell, et al., 2020). Respondents in this study were therefore selected on the basis of the characteristic conditions that they fulfil the job of teacher within secondary education in the Netherlands. All levels within Dutch secondary education were included, and no distinction was made between different subjects taught by respondents. For the study, however, organizations providing special education within secondary education were excluded from participation. This selection was made on the basis of organizational structures used. Special secondary education organizations tend to have different organizational structures compared to those providing normal secondary education. To ensure the generalizability of the results, the study only included respondents working within organizations offering normal secondary education.

The snowball sampling technique was mainly used for approaching respondents. In this method of sampling, participating respondents are asked to recommend other contacts who meet the respondent requirements to take part in the study (Browne, 2005). Contacts from the researcher's personal network who met the specified characteristics for respondents were approached as the first group of respondents. Through the use of the snowball sampling technique, the first group of respondents recommended new respondents by reaching out to their networks. This resulted in a second group of respondents, who then continued to recruit new respondents in the study. In addition to snowball sampling, social media channels were also used to seek respondents. Through a digital flyer, a request was distributed through social media channels with the aim of acquiring respondents for the study. The flyer contained clear information about the research purpose, requirements respondents had to meet, and what was ultimately asked of respondents. This digital request resulted in interweaving a portion of the total respondents. No snowballing technique was used in approaching respondents through social media channels.

3.2 Questionnaire design

Constructed questionnaire used for data collection is divided into four sections consisting of: job design, job satisfaction, turnover intentions, and control. The elaboration of each section is further explained below.

3.2.1 Included sections

Job design

Job design theme in the questionnaire consists of 15 questions taken from the Job Diagnostics Survey (JDS) developed by Hackman and Oldham. The JDS assesses the presence of the five job characteristics defined in the job characteristics model also developed by Hackman and Oldham. For this research specifically the version of the JDS revised by Idaszak and Drasgow (1987) is applied. The revised version of the JDS was drafted to eliminate a measurement artifact. Factor analysis revealed that the original JDS was based on six dimensions (Idaszak & Drasgow, 1987). Five factors corresponded to the expected pattern of JDS items. The sixth dimension was recognized as a measurement artefact. The resulted in a reformulation of the original five items in order to avoid this measurement artefact. Overview of the questions and response options are included in Appendix A1.

Job satisfaction

The concept of job satisfaction is measured within this study by applying the three-item job satisfaction scale taken from the Michigan Organizational Assessment Questionnaire (MOAQ). This 3-item job satisfaction scale has been widely used in research and is designed to give an indication of the overall level of perceived job satisfaction. Overview of the questions and response options are included in Appendix A2.

Turnover intentions

Turnover intentions of employees are measured in the questionnaire through the application of the six-item Turnover Intention Scale (TIS-6) developed by Roodt (2004). The TIS-6 is a shortened version of the 15-item turnover intention scale developed by Roodt (2004), but which was never finalized. The TIS-6 uses six questions to generate insight into the intentions of employees to remain employed within their current organizations (Roodt & Jacobs, 2007). Overview of the questions and response options are included in Appendix A3.

Controls

To reduce influence of distorting external variable, and thus increase internal validity, this study includes control variable in the questionnaire. Control variable thus consist of aspects such as age, profession, and experience of the teacher. The results of these questions provide an overall picture of the type of respondents who completed the questionnaire. In addition, obtaining these data enables the study to look more specifically at observed correlations or deviations with regard to the phenomenon under study. Also, the questionnaire contains questions on the variable workload, stress perception and work engagement. These variables are not addressed within the study but could potentially have an effect on the investigated relationship between job design, job satisfaction and turnover intention. Overview of the questions and response options are included in Appendix A4. Table 3 summarizes the underlying survey questions that make up the control variables.

Table 3: *construction of the variables making up job design*

Skill variety	JD3, JD6, JD9
Task identity	JD2, JD7, JD12
Task significance	JD4, JD10, JD15
Autonomy	JD1, JD11, JD14
Feedback	JD5, JD8, JD13

3.2.2 Internal consistency

In order to determine the reliability of the prepared questionnaire, a reliability analysis was carried out by calculating Cronbach's alpha. Cronbach's alpha (α) is a calculation of the internal consistency of a scale, where the internal consistency of a scale is expressed as a value between 0 and 1 (Tavakol & Dennick, 2011). The higher the Cronbach's alpha value, the higher the internal consistency of the scale. Table 3 below shows all of the calculated Cronbach's alpha values that are relevant to this study.

Table 4: *Cronbach Alpha values*

Variable	Items	Cronbach's α
Job design	15	,784
Job satisfaction	3	,775
Turnover intention	6	,691
Workload	7	,646
Stress	7	,912
Work engagement	3	,666

In assessing the values, α values higher than ,70 is defined as satisfactory values for internal consistency. As such, the variables job design, and job satisfaction score sufficiently on internal consistency. With a value α of ,912, the variable stress has very strong internal consistency. The α value for the variable's turnover intention, workload, and work engagement are all below the stated ,70 and are therefore considered questionable. However, the stated α values for these variables are minimally below the specified ,70 making the α values variables within this study concluded as sufficient.

3.3 Sample

The sample used to conduct this study consists of 58 respondents. As mentioned earlier, all respondents fulfil the requirement that they are teachers within secondary education in the Netherlands. The sample comprises respondents working within every level of secondary education in the Netherlands ranging from VMBO to VWO. VMBO is the most common level at which respondents teach (75,9%). Age of respondents within the sample ranged from 18-24 to 55-64, with the largest percentage being in the 25-34 group (39,7%). In addition, 56,9% of the sample has only been practicing their current profession for less than 10 years. A total of 21 types of subjects are taught, of which Dutch (24.1%), mathematics(20,6%), and English(13,8%) are the most commonly taught subjects.

3.4 Data analyzes

3.4.1 Preparing data set

All data collected during the study were combined into one dataset, which was entered and processed using IBM SPSS Statistics version 29. Prior to the use of the data set for the testing of the various hypotheses, the data within the data set were checked for erroneous, significantly different, and missing data. Erroneous, anomalous, or missing data were removed from the dataset to avoid erroneous analyses in later stages of the study.

3.4.2 Testing hypotheses

The research hypotheses will be assessed using a simple mediation model conducted using the PROCESS macro (model 4) in SPSS. The PROCESS macro, developed by Andrew F. Hayes, provides a structured way of conducting mediation analyses based on regression analysis and is widely used in social, economic and health sciences (Hayes, 2022). In order for the PROCESS macro to be used correctly, a number of assumptions need to be met. These assumptions include uncorrelated residuals, absence of strong multicollinearity, homoscedasticity, normality, linearity, and absence of extreme outliers (Regorz, 2021). The assumptions are evaluated using a comprehensive test in which all regression models that process runs are manually reconstructed in SPSS and tested for the assumptions.

3.5 Research ethics

Role of the researcher

During the conduct of the study, the researcher always assumes an independent role. This should prevent external factors, such as possibly educational institutions where respondents are employed, from interfering with the research to be conducted. Outcomes of the research may be perceived as harmful or negative involved parties. Involved parties may be able to influence the results of or availability of the research if they perceive the outcomes as harmful or negative. However, the research should be as transparent as possible, and the researcher will be responsible for conducting and presenting the research thoroughly. To achieve this, clear agreements will be made with educational organizations that allow data to be collected within their organizations on the objective, conduct and handling of this. It will be made clear that it concerns an independent study in which only data need to be collected on samples to formulate statements about the population and thus make specific data, for example, not traceable to a specific organization.

Obtaining and handling data

The participation of organizations and respondents in this research was at all times voluntary and non-binding. In addition, respondents were informed as much as possible during the study. To ensure this, an informed consent form was used and incorporated into the questionnaire that respondents completed. Respondents were asked to confirm that they had read and understood the information in the consent form and that they agreed to take part in the study. Only if the respondent agrees will they be taken to the questionnaire. The consent forms contain all the information about who is conducting the research, the purpose of the research, the context in which the research will be carried out, and how the data collected in the research will be processed and used. It also clearly states to whom respondents can address any questions or comments, and gives details of both the researcher, the data protection officer and the Scientific Integrity Committee of Radboud University. With regard to personal data, the informed consent form provides respondents with information about the handling of the personal data collected. It clearly states that the personal data obtained will at all times be processed in strict confidence, anonymously and in accordance with both Radboud University's ethical guidelines and the European GDPR data protection directive.

The collected data is stored in two secure locations. Firstly, a secure folder on the researcher's computer. This folder is protected, on the one hand, by a unique code that is required to access the folder and, on the other hand, by the unique code that is required to access the computer itself. The second storage location is a backup storage location in the cloud. This backup storage is also protected by a unique access code. All the unique access codes to access the data in both locations are known only to the researcher.

Chapter 4,

Research results

4.1 Descriptive statistics

The descriptive statistics section below provides an overview of the key data characteristics of the data used within this study. Table 4 contains the main descriptive statistics data of this study.

Table 5: *Descriptive statistics*

	Scale	Min	Max	Mean	St. Dev.	Skewness	Kurtosis
Job Design	7	4	6	5.48	.499	-.484	.730
Job Satisfaction	6	3	6	4.84	.903	-.570	-.692
Turnover Intention	5	1	4	2.49	.582	.394	.396
Workload[c]	5	2	5	3.38	.467	.208	.215
Stress[c]	5	1	4	2.62	.793	-.019	-.742
Work Engagement[c]	7	1	6	5.20	.845	-2.203	7.676

[c] = Control variable

Teachers generally score quite high on the independent variable job design (M = 5.48). The reported scores on job design are quite consistent, as can be seen from the standard deviation of 0.499. These data show that teachers in Dutch secondary education generally experience quite a high level of job design characteristics during their work. In contrast to the scores on job design, the scores on the mediator variable job satisfaction are somewhat more spread out. Teachers' views on experiencing job satisfaction at work differ significantly, as indicated by the higher standard deviation of 0.903. Despite the larger differences, teachers still score medium to high on job satisfaction (M = 4.84). Teachers also generally score quite low on the dependent variable of turnover intention (M = 2.49). What is striking about the scores on turnover intention is the presence of more extreme scores, namely the score of 1, which indicates no turnover intention at all. Teachers in Dutch secondary education thus seems to be more vocal about experiencing turnover intention compared to experiencing the other variables.

Teachers' scores on the first control variable, workload, indicate that teachers generally experience an average high workload (M = 3.38). Teachers' scores are highly correlated, as evidenced by the relatively low skewness (.208) and kurtosis (.215). Teachers' scores on the stress variable are fairly average (M = 2.62). However, it is worth noting the higher associated scores for both standard deviation (.793) and kurtosis(-.742). These scores indicate that although teachers are generally average on the stress variables, there are greater differences between them. This can also be seen in the presence of extreme scores, such as in this case the score of 1, which indicates never experiencing stress. On the last control variable, work engagement, teachers have a high average score (M = 5.20). However, the scores are highly dispersed, which is reflected both in the range of 5 and in the very high values of skewness (-2.203) and kurtosis (7.676), indicating a non-normal distribution. Thus, although teachers on average score high on experiencing work engagement, the differences between them are large.

4.2 Correlation analysis

In order to understand the correlation between the variables used in this study, Pearson correlation analysis was used. The results of this analysis are presented in Table 6.

Independent, dependent and mediating variables

The results of the correlation analysis show a significant correlation between the independent, dependent and mediating variables used. The strongest correlation includes the correlation between the variables job satisfaction and turnover intention (Pearson correlation: -.595, p-value <.01). A strong correlation is recognized as a Pearson correlation score of positive or negative minimum .5 (Schrober, Boer, & Lothar, 2018). The negative character of the correlation argues that higher values of job satisfaction negatively affect the values of turnover intention. In addition, job satisfaction also showed a strong significant correlation with job design (Pearson correlation: .387, p-value <.01). High levels of perceived job design thus have a positive effect on perceived job satisfaction. The smallest but also significant correlation between the independent, dependent and mediating variables comprises the correlation between job design and turnover intention (Pearson correlation: -.271, p-value <.05). Unlike the previously mentioned correlations, this correlation is considered significant at a p value of .05. Nevertheless, the results show a significant negative correlation. Job design is thus negatively correlated with turnover intention.

Control variables

In this study, as discussed in Chapter 3, three control variables were included. The researcher expects that these control variables might affect the relationship that is being examined in study. Thus, the added control variables were included in the correlation analyses to establish consistency between the control variables and the other variables within this study. Results of this analysis are also shown in Table 6.

The correlation analysis shows that only a few control variables affect the other variables used within this study. For instance, the main variables job design does not show any significant correlation with each of the added control variables. This is in contrast to the variables job satisfaction and turnover intention, which do show significant correlations with one or more control variables. For example, job satisfaction showed a significant mean correlation with stress (Pearson correlation: -.267, p-value <.05), and a high significant correlation with work engagement(Pearson correlation: .536, p-value <.01). Turnover intention in contrast shows high significant correlation with both stress (Pearson correlation: .565, p-value <.01) and work engagement(Pearson correlation: -.532, p-value <.01). And a medium significant correlation with the control variables workload (Pearson correlation: .282, p-value <.05).

Table 6: *Correlation table*

	1	2	3	4	5
1. Job Design					
2. Job Satisfaction	,387**				
3. Turnover intention	-,271*	-,595***			
4. Workload	-,144	-,227	,282*		
5. Stress	-,099	-,267*	,565***	,461***	
6. Work engagement	,012	,536***	-,532***	-,043	-,259*

*p<.05 **p<.01 ***p<.001

4.3 Mediation analysis

In this study, three hypotheses are tested by conducting a mediation analysis using the PROCESS macro model 4. The mediation model tested in this study is shown in Figure 2. By conducting a mediation analysis, this study aims to gain insight into four relationships:

1. The relationship between the independent variable and the mediator variable (path A)
2. The relationship between the mediator variable and the dependent variable (Path B)
3. The direct relationship between the independent variable and the dependent variable in the presence of the mediator (Path C')
4. The indirect relationship between the independent variable and the dependent variable in the presence of the mediator (Path A*B)

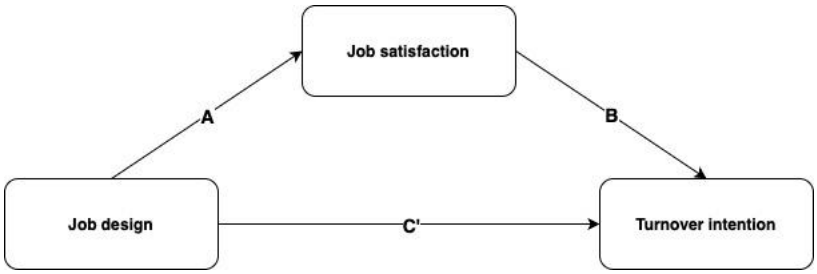


Figure 2: *Mediation model*

The results discussed in this chapter are all derived from the mediation analysis conducted using the PROCESS macro model 4 with job design as the independent variable, turnover intention as the dependent variable, and job satisfaction as the mediator.

4.3.1 Effect of Job design on job satisfaction

The relationship between the independent variable job design and mediator job satisfaction is investigated through the first part of the meditation analysis. The research results of the first part of the mediation analysis are presented in Table 7. These results show that job design has a significant impact on job satisfaction(b=.700, t=3.138, p<0.05). The r-sq(.150) result states that 15% of the change in job satisfaction the is caused by the influence of job design. Path a, as depicted in Figure 2, is thus found to consist of a significant relationship between job design on job satisfaction.

Table 7: *Effect of overall job design on job satisfaction*

Outcome variable: job satisfaction						
Model summary						
R	R-sq	MSE	F	Df1	DF2	P
.387	.150	.706	9.849	1.000	56.000	.003
Model						
	B	Se	T	P	LLCI	ULCI
Constant	1.012	1.226	.825	.413	-1.445	3.468
Job design	.700	.223	3.138	.003	.253	1.147

B = unstandardized regression coefficients

4.3.2 Effect of job design and job satisfaction on turnover intention

The second part of the mediation analysis provides insight into the relationship between job design and turnover intention(path C'), as well as job satisfaction and turnover intention(path B).

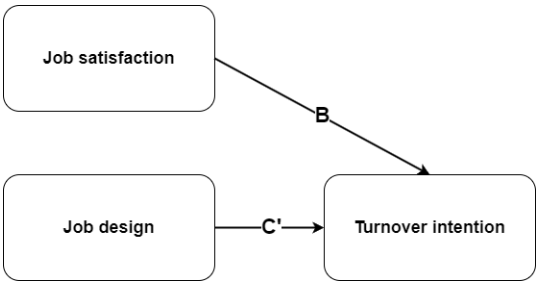


Figure 3: *Path B and C'*

In this study, we first examine the effect of job design on turnover intention, referred to as the direct effect. The research results, table 8, show an insignificant relationship between job design and turnover intention in the presence of the mediator job satisfaction (b=-.057, p>.05). However, the relationship between the mediator job satisfaction and the dependent variable turnover intention is found to be significant in this model (b=3.72, p<.001).

Table 8: *Effects of overall job design and job satisfaction on turnover intention*

Outcome variable: turnover intention						
Model summary						
R	R-sq	MSE	F	Df1	DF2	P
.596	.356	.226	15.185	2.000	55.000	.000
Model						
	B	Se	T	P	LLCI	ULCI
Constant	4.594	.699	6.575	.000	3.194	5.995
Job design	-.057	.137	-.413	.681	-.331	.218
Job satisfaction	-3.72	.076	-4.908	.000	-.523	-.220

B = unstandardized regression coefficients

4.3.3 Effect of job design on turnover intention through job satisfaction

The final part of the mediation analysis examines whether there is a possible indirect relationship between job design and turnover intention through job satisfaction. The research results from this part of the mediation analysis conducted are shown in Table 9. These research results show a significant indirect relationship between job design and turnover intention via job satisfaction, as the lower and upper confidence intervals do not pass 0. This indirect effect includes a full mediation because only a significant indirect effect, and no significant direct effect, is observed. Therefore, all influence of job design on turnover intention is through job satisfaction.

Table 9: *Total, direct, indirect effect of overall job design on turnover intention*

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence interval		Conclusion
				Lower Bound	Upper Bound	
Job design -> job satisfaction -> turnover intention	-.317 (.039)	-.057 (.681)	-.223	-.385	-.056	Full mediation

4.4 Additional analyses

In order to examine the relationship between job design and turnover intention in more detail, a second mediation analysis was conducted. Here, the independent variable job design was further disaggregated into the five underlying job characteristics. For the additional analyses, the five job characteristics were each added as independent variables in separately conducted simple mediation analyses using PROCESS macro model 4. The mediator and independent variables did not change in these analyses compared to the first analysis conducted.

The results of the first part of the additional analyses performed, listed in table 10, show that several of the job characteristics have significant relationships with job satisfaction. skill variety has a significant relationship with job satisfaction (B=.287, p<.05, R2=.083). 8.3% of the variation in job satisfaction could be explained by skill variety. Autonomy has a significant relationship with job satisfaction (B=.379, p<.05, R2=.096). 9.6% of the variation in job satisfaction could be explained by autonomy. Feedback has a significant relationship with job satisfaction (B=.388, p<.05, R2=.097). 9.6% of the variation in job satisfaction could be explained by feedback. The other job characteristics task identity and task significance did not show significant relationships with job satisfaction.

In contrast, none of the five job characteristics show significant relationships with the dependent variable turnover intentions, as can be seen by the results in table 11. All five job characteristics are therefore not considered significant in predicting value of turnover intention. However, the results in table 12 do show two significant indirect relationships between job characteristics and the dependent variable turnover intention. The independent variable autonomy has a significant indirect relationship with turnover intention through job satisfaction. And feedback has a significant indirect relationship with turnover intention through job satisfaction. Both independent variables autonomy and feedback have only found significant indirect relationships with turnover intention making both relationships fully mediated relationships.

Table 10: *Effect of the job characteristics on job satisfaction*

	Job satisfaction		
Job characteristic	B	SE	R^2
Skill variety	.287	.028	.083
Task identity	.176	.217	.027
Task significance	.180	.197	.030
Autonomy	.379	.018	.096
Feedback	.388	.017	.097

B = unstandardized regression coefficients

Table 11: *Effect of the job characteristics on turnover intention*

	Turnover intention		
Job characteristic	B	SE	R^2
Skill variety	.145	.120	.373
Task identity	.116	.289	.367
Task significance	-.017	.879	.354
Autonomy	-.211	.061	.394
Feedback	-.148	.193	.374

B = unstandardized regression coefficients

Table 12: *Total, direct, indirect effect of autonomy and feedback on turnover intention*

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence interval		Conclusion
				Lower Bound	Upper Bound	
Autonomy -> job satisfaction -> turnover intention	-,296 (,004)	-,167 (,061)	-,129	-,250	-,019	Full mediation
Feedback -> job satisfaction -> turnover intention	-,256 (,015)	-,119 (,193)	-,137	-,278	-.030	Full Mediation

Chapter 5,

Conclusion

This section formulates an answer to the research question of this study. The formulated answer to the research question is substantiated by aggregating the answers to the sub-questions. All the answers given in this section are based on the empirical findings mentioned in Chapter 4 and are confronted with the literature in Chapter 6.

The objective of the research was to examine the relationship between job design and turnover intention, with job satisfaction acting as a mediator. This study was conducted in the context of investigating potential organizational improvements for enhancing the retention of current teachers in Dutch secondary education. The objective was to examine the significant relationship between job characteristics and both turnover intention and job satisfaction. Additionally, the study tested the relationship between job satisfaction and turnover intention. The research question was:

Is there a relationship between job design and teachers' turnover intentions through job satisfaction in secondary education in the Netherlands?

This study sought to answer the research question by conducting a cross-sectional study comprising a sample of 58 respondents. Constructed hypotheses were tested through the use of several statistical analyses, the results of which formed the basis for the answers to the sub-questions. The answer to the research question was then formulated by combining all answers to the sub-questions.

5.1 Conclusion to the hypothesis

H1: Job design is positively related to teacher' job satisfaction

The first hypothesis of this study expresses the expectation that there is a positive relationship between job design and teachers' job satisfaction. The results described in section 4.3.1 support the assumption of this hypothesis since overall job design is found to be significant in predicting teacher' job satisfaction. In hypothesizing a relationship related to job satisfaction, the variable work design was disaggregated into the five underlying job characteristics. Based on the results of the applied analysis described in section 4.4, it should be concluded that the job characteristics skill variety, autonomy and feedback have a significant effect on teachers' job satisfaction. Consequently, task identity and task significance were not found to have significant relationships with job satisfaction. All relationships found to be significant have a positive effect. The more teachers experience skill variety, autonomy and/or feedback, the higher their job satisfaction. Based on these results, the hypothesis (H1) is adopted.

H2: Job satisfaction is negatively related with teacher' turnover intentions

The second hypothesis of this study stated that job satisfaction would have a negative relationship with turnover intention. Thus, high levels of perceived job satisfaction would result in lower perceived turnover intentions. The acceptance of this hypothesis is based on the results described in section 4.3.2. The results of the regression analysis carried out with job satisfaction as the independent variable and turnover intention as the dependent variable reveals that there is a significant negative relationship between the two variables. Higher levels of perceived job satisfaction lead to lower levels of perceived turnover intention. This result supports hypothesis 2, which should therefore be accepted.

H3: Job satisfaction mediates the relationship between job design and turnover intentions

The study examined the mediating role of job satisfaction on the relationship between job design and turnover intention. The results of this analysis concluded a significant indirect effect of job design on turnover intention (b=-.248, t=), supporting H1. The analysis also concluded an insignificant direct effect between job design and turnover intention (b=, p>0.001). Based on these results, it is demonstrated that job satisfaction has a mediating effect on the relationship between job design and turnover intention. This effect is manifested in the form of a full mediation, the entire effect of job design on turnover intention is through job satisfaction.

5.2 Conclusion to the research question

The results demonstrate a full indirect effect between job design (skill variety, autonomy and feedback) and turnover intention through job satisfaction among teachers in Dutch secondary education. The final answer to the research question is therefore as follows: *''A relationship exists between job design and turnover intention through job satisfaction in secondary education in the Netherlands, this relationship comprises of a negative full mediation effect."*

Chapter 6,

Discussion

This chapter evaluates the importance, significance and relevance of the empirical findings from this study. This evaluation was done through three steps. First, it looked at similarities and differences between the empirical data and the assumed expectations from the theoretical framework. This also considered the contribution of this research to theory building. Second, this section elaborates on practical implications arising from this chapter. And the final section includes research limitations and recommendations for follow-up studies.

5.1 Theoretical implications

The variables job design as approached in this study consist of the five job characteristics defined by Hackman and Oldham (DATE). The results derived from this study thus contribute to the knowledge of the applicability and reliability of the job characteristics model. The model has been applied in previous studies in the context of education, where the results show significant relationships between the five job characteristics and various outcomes in terms of student satisfaction and behavior (Kass, Vodanovich, & Khosravi, 2011). To the best of the researcher's knowledge, the model has never been applied in the context of Dutch secondary education. The significant relationship found between job characteristics and job satisfaction among teachers in Dutch secondary education contributes to the reliability of the model. The hypothesized results posited by Hackman and Oldham through the model hold true in the context of Dutch secondary education. However, in this study only the job characteristics task variety, autonomy and feedback are found to be significant in determining teachers' job satisfaction. These results differ from the results of other studies in which all job characteristics are found to be significant in determining job satisfaction (Blanz, 2017) (Österberg & Rydstedt, 2018)

The main assumption of the job characteristics model is that the presence of the five job characteristics leads to the experience of three psychological states (meaningfulness, responsibility, knowledge of results), which in turn positively influence work-related outcomes, including job satisfaction. The validity and reliability of the job characteristics model has also been critically examined in previous studies, and conclusions have been drawn both for and against the use of the job characteristics model (Boonzaier, Bernhard, & Rust, 2001). The research findings that only three out of five of the job characteristics are considered significant in their relationship with job satisfaction, and that work engagement has a strong influence on work-related outcomes, add to the debate. Perhaps recognizing work engagement as an outcome variable is a more appropriate option than job satisfaction.

The concepts of job satisfaction and work engagement are both widely researched and applied in the literature. Both are seen as crucial factors in the performance and well-being of employees within organizations. And although the concepts are often linked, they are quite different. For example, work engagement focuses more on active involvement and energy at work, whereas job satisfaction emphasizes the overall satisfaction a person has with his or her work (Karanika-Murray & Duncan, 2015). Both concepts are also linked to two different forms of employee well-being. Job satisfaction is related to hedonic well-being where work engagement is related to eudaimonic well-being (Tapas, 2022). Hedonistic well-being is short-lived and characterized by the absence of pain, a sense of well-being and the experience of happiness, and is therefore linked to job satisfaction. Eudaimonic well-being, on the other hand, is long-lasting and characterized by growth and development, including pain and sacrifice (Disabato et al, 2016). It therefore fits better with the concept of work engagement. From this approach to the concepts of job satisfaction and work engagement, it can be argued that work engagement is a more enduring concept. It aims to look beyond general satisfaction, which can change significantly over a short period of time, to a deeper connection that employees feel with their work and their employer. Although the application of job satisfaction within this study, and within the job characteristics model proved its value, the application of work engagement might have brought more.

It would have given more insight into underlying aspects that influence long-term deeper connections between teachers and their work. Whereas job satisfaction only provides insight into the connection between overall satisfaction and teachers' turnover intentions.

Another point of discussion is the use of the Hackman and Oldham model of job characteristics in this research. Looking at the choice of this model with the research findings and hindsight, this choice is partly questioned. Thus, the job characteristics model is a good fit in terms of the research objective and scope. Application of the model resulted in the identification of several significant relationships between job characteristics and turnover intention through job satisfaction. With this, the application achieved its actual purpose of contributing to formulating a conclusion to the research question and achieving the research goal. However, the model was not as successful as previously thought, as only three of the five job characteristics were found to be significant in their relationship with job satisfaction. A possible explanation for this is the influence of aspects outside the model, such as aspects that focus more on employee well-being. This explanation is supported by the results of the study which suggest significant effects between the additional control variables focusing on employee wellbeing and job satisfaction within this study. The use of another model with a different focus, such as Bakker and Demerouti's Job Demands-Resources model (2006), might have had more impact within this study.

The Job Demands-Resources (JD-R) model, like the Job Characteristics model, aims to explain work-related outcomes such as well-being and performance. However, the JD-R model takes a different approach by recognizing two main processes, namely job resources and job demands. Job resources include aspects of a job that enable employees to achieve goals and objectives for personal development and growth (Bakker & Demerouti, 2017). Examples of job resources include autonomy, feedback and social support. The JD-R model suggests that the presence of these job resources is positively related to employee motivation, performance and commitment. On the other hand, job demands are identified. These job demands include the more mental and physical aspects required for job performance, such as workload and physical strain. High levels of job demands lead to negative effects such as acting out and stress. And thus have a negative impact on employees' well-being and performance. The JD-R model thus aims to explain both employee well-being and performance through two processes, whereas the job characteristics model only looks at specific job characteristics and their influence on employee motivation and performance. On this basis, the JD-R model would have been a better fit for this study than the applied job characteristics model, as it has a broader focus that also looks at factors that influence employee well-being.

5.2 Managerial implications

The practical contributions of this research mainly focus on strengthening the independent and mediating variables of this study. Specifically, it is recommended that organizations within Dutch secondary education make efforts to increase teachers' job satisfaction, which in turn will affect teacher turnover. Higher perceived job satisfaction is expected to lead to a reduction in turnover intentions and ultimately turnover within these organizations. This should help organizations to better retain current teachers, thus providing a solution to the problem of the persistent teacher shortage in the Dutch education system.

Within this study, the presence of the job characteristics skill variety, autonomy and feedback show a significant relationship with teachers' perceived job satisfaction. However, the descriptive statistics of these job characteristics, Appendix B, show a picture in which teachers generally already score quite high in each area, which presents a challenge for organizations as it is often difficult to make a good situation even better. The recommendation that has emerged from this study has therefore been drafted with a broader scope than just the research conducted and its findings. In doing so, the research hopes to formulate a better recommendation that is not only focused on improving a situation that the research already recognizes as being quite strong but is also somewhat more innovative in nature.

Facilitating high job satisfaction through interdisciplinary education

Organizations can increase employees' job satisfaction by creating jobs where different activities have to be performed with different skills (skill variety), where employees are given the freedom to determine the planning and execution of the work independently (autonomy), and where the execution of the work leads to direct and clear feedback on the employee's performance (feedback). To achieve this situation, organizations in Dutch secondary education can think about applying interdisciplinary education ideas.

Interdisciplinary education revolves around bringing together different teachers, disciplines, practices and insights through the implementation of interdisciplinary themes within education (Konings, 2009). Within these interdisciplinary themes, questions are addressed where different insights from different disciplines need to be integrated to find answers. Achieving an integrated approach between different subject areas provides opportunities for teachers to develop both personally and professionally (Goch, 2023). Bringing together different subject knowledge and ways of working offers new opportunities for development in terms of insights and skills; teachers can learn much from each other's knowledge.

Interdisciplinary education requires several new skills from teachers. First, teachers need to have knowledge not only of their own subject area but also of other subject areas with which they can collaborate. This provides opportunities for teachers to broaden their horizons and thus to learn from each other new knowledge about other subject areas and skills, such as other forms of teaching. Teachers can use these new skills and abilities in their work, which can lead to an increase in professional diversity. In addition, the introduction of cross-curricular teaching also offers opportunities to increase teachers' autonomy. Interdisciplinary forms of education should be developed in cooperation between different departments within secondary education. Giving teachers the freedom to design these forms of interdisciplinary education as they wish contributes to the decision-making power (autonomy) that teachers have over the performance of their work. The implementation of interdisciplinary education thus offers educational institutions the opportunity to increase skill variety and autonomy of their staff, which has a positive impact on job satisfaction and, indirectly, on turnover intentions. It should be noted, however, that the application of interdisciplinary education does not help organizations in increasing job characteristic feedback.

The concept of interdisciplinary education is not new in Dutch education but is mainly applied/researched in higher education. Several Dutch universities have acknowledged that they are striving for more interdisciplinary education (Radboud Universiteit, 2019) (Universiteit Utrecht, 2022). However, the concept of interdisciplinary education is also increasingly being applied in the context of secondary education. An example of this is the relatively recent development of the subject research & design in secondary education. This subject focuses on STEM aspects in which issues, also originating from the business world, are addressed through input from different beta and engineering subjects (Meijer, 2023). Another subject taught at secondary level is general science, in which links are made with various physical and scientific subjects (Hoekstra, 2000).

This implementation is not always without problems, as there are often problems such as too small teams, team members with no affinity for interdisciplinary cooperation (Slot, 2021). These types of problems are common when implementing interdisciplinary education within organizations that are structured from monodisciplinary (Lindvig, 2017).

It is to be expected that the application of interdisciplinary education will lead to similar problems in many organizations within Dutch secondary education, as a large part of these organizations are monodisciplinary in structure. If these problems can be overcome and interdisciplinary forms of education can be applied to a greater extent within secondary education, this will enable organizations to increase the diversity of skills in particular. This is done by providing teachers with opportunities to develop new insights and skills that they can apply in their work.

5.3 Research limitations and follow-up research

A number of research limitations were identified during the course of the research.

Sample size

A major limitation of this study is the small sample size. During the data collection phase, several attempts and efforts were made to approach schools and teachers to ask them to participate in the study. However, these efforts were not entirely successful resulting in a final sample size of 58 respondents. Despite the relatively small sample size, it was decided to continue with the study. This decision was made with the agreement of the supervisor. The researcher made every effort to involve more respondents, although this had little effect. Nevertheless, the number of respondents obtained was considered sufficient to carry out the statistical analyses of differences within this study. When interpreting the data, however, it should be borne in mind that it may be less generalizable to the population as a whole. The results of this study provide a clear picture of the relationship between job design and turnover intentions via job satisfaction within Dutch secondary education. However, the results are less reliable in the sense that similar studies with a larger sample size may find different or weaker relationships.

Sampling bias

The research conducted suffers from sampling bias. The research data shows that few to no participating respondents express strong dissatisfaction with their jobs in the research. As a result, the sample consists of a group of respondents who are almost all highly satisfied with their jobs. Because the sample used does not include both satisfied and dissatisfied respondents, the survey results may not be fully representative of the population as a whole, which compromises the validity of the study. People who are generally satisfied with their jobs are more likely to participate in surveys than those who are dissatisfied. The study did not put enough focus on effectively approaching dissatisfied respondents.

Cross-sectional research design

A further limitation of this study is the use of a cross-sectional research design. Although this type of research has advantages, such as being relatively quick and easy to conduct, it also has a number of disadvantages. For example, a cross-sectional research design has the disadvantage that it cannot examine causalities or changes over time. This disadvantage is due to the fact that in this type of research, data is only collected at one specific point in time.

5.4 Follow-up research

Focus on employee well-being

By applying the job characteristics model in this research, the focus is often on explaining turnover intention through the influence of job characteristics on job satisfaction. However, the research results showed that factors that are more focused on employee well-being also influence job satisfaction, which is not frequently discussed in this study. Recommendation for follow-up research is therefore to conduct similar research that focuses more on employee well-being aspects and their relation to job satisfaction and turnover intention in the context of Dutch secondary education.

More specific focus on testing solutions

The findings of this study provide insight into factors that influence teacher turnover intention within secondary education. However, no decisive solutions result from the research. Suggestion for follow-up research would be a more experimental study investigating the effectiveness of different solutions for better teacher retention.

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Appendices

Appendix A: Questionnaire

1 - Job Design questions

Questions from the Job Diagnostic Survey developed by Hackman and Oldham (1974) and revised by Idaszak and Drasgow (1987). Response options to the questions include:

1 = Very inaccurate
2 = Mostly inaccurate
3 = Slightly inaccurate
4 = Uncertain
5 = Slightly accurate
6 = Mostly accurate
7 = Very accurate

Code	Question	Response options
JD 1	I decide on my own how to go about doing the work	1 2 3 4 5 6 7
JD 2	I do a "whole" and identifiable piece of work. It is not a small part of the overall piece of work, which is finished by other people or by automatic machines.	1 2 3 4 5 6 7
JD 3	The job requires me to do many different things, using a variety of my skills and talents	1 2 3 4 5 6 7
JD 4	The results of my work significantly affect the lives and well-being of other people.	1 2 3 4 5 6 7
JD 5	The actual work itself provides clues about how well I am doing--aside from "feedback" co-workers or supervisors provide.	1 2 3 4 5 6 7
JD 6	The job requires me to use a number of complex or high- level skills.	1 2 3 4 5 6 7
JD 7	The job is arranged so that I can do an entire piece of work from beginning to end.	1 2 3 4 5 6 7
JD 8	Just doing the work required by the job provides many chances for me to figure out how well I am doing.	1 2 3 4 5 6 7
JD 9	The job requires me to perform a variety of tasks.	1 2 3 4 5 6 7
JD 10	The job is one where a lot of other people can be affected by how well the work gets done.	1 2 3 4 5 6 7
JD 11	The job gives me a chance to use my personal initiative or judgment in carrying out the work.	1 2 3 4 5 6 7
JD 12	The job provides me the chance to completely finish the piece of work I begin.	1 2 3 4 5 6 7
JD 13	I finish a job; I know whether I performed well.	1 2 3 4 5 6 7
JD 14	The job gives me considerable opportunity for independence and freedom in how I do the work.	1 2 3 4 5 6 7
JD 15	The job itself is very significant and important in the broader scheme of things.	1 2 3 4 5 6 7

2 - Job Satisfaction questions

Questions within the job satisfaction theme have the following response options:

1 = Disagree very much
2 = Disagree moderately
3 = Disagree slightly
4 = Agree slightly
5 = Agree moderately
6 = Agree very much

Code	Question	Response options
JS 1	In general, I don't like my job.	1 2 3 4 5 6
JS 2	All in all, I am satisfied with my job.	1 2 3 4 5 6
JS 3	In general, I like working here.	1 2 3 4 5 6

3 - Turnover intentions questions

Code	Question	Response options
TI 1	How often have you considered leaving your job?	Never 1 – 2 – 3 – 4 – 5 Always
TI 2	How satisfying is your job in fulfilling your personal needs?	Very satisfying 1 – 2 -3 -4 – 5 totally dissatisfying
TI 3	How often are you frustrated when not given the opportunity at work to achieve your personal work-related goals?	Never 1 – 2 – 3 – 4 – 5 Always
TI 4	How often do you dream about getting another job that will better suit your personal needs?	Never 1 – 2 – 3 – 4 – 5 Always
TI 5	How likely are you to accept another job at the same compensation level should it be offered to you?	Highly unlikely 1 – 2 – 3 – 4 -5 highly likely
TI 6	How often do you look forward to another day at work?	Never 1 – 2 – 3 – 4 – 5 Always

4 - Control questions

Code	Question	Response options
CO 1	What is your age?	0-100
CO 2	What subject do you teach?	Dutch, English, German, French, Spanish, classical languages, social studies, LO, art, mathematics, geography, biology, physics, chemistry, history, constitutional law, economics, information science, engineering,
CO 3	How long have you been working in your current profession?	0-100
CO 4	How long have you been working in your current organization?	0-100

The following set of control questions relate to workload and are taken from the ‘Vragenlijst Beleving en Beoordeling van de Arbeid‘ developed by Veldhoven et al (1997). These questions have to following response options:

1 = Never
2 = Sometimes
3 = Regularly
4 = Often
5 = Always

Code	Question	Response options
CO 5	Do you need to work very quickly?	1 2 3 4 5
CO 6	Is your workload unevenly distributed, so that work piles up?	1 2 3 4 5
CO 7	How often do you run out of time to complete your work?	1 2 3 4 5
CO 8	Are you experiencing a backlog of work?	1 2 3 4 5
CO 9	How often can you take it easy without falling behind with your work?	1 2 3 4 5
CO 10	Do you have enough time to complete your work?	1 2 3 4 5
CO 11	Do you have too little to do at work?	1 2 3 4 5

The following set of control questions relate to stress perception. Questions were taken from the MBI-Human Services Survey developed by Maslach, Jackson and Leiter (1996). The respondent is asked how often in the last month he/she experienced the stress factor mentioned in the question. These questions have to following response options:

1 = Almost never
2 = Rarely
3 = Sometimes
4 = Often
5 = Very often

Code	Question	Response options
CO 12	Did you feel emotionally drained by your work?	1 2 3 4 5
CO 13	Did you feel empty at the end of the working day?	1 2 3 4 5
CO 14	Did you feel tired when you got up in the morning and had to go to work for another day?	1 2 3 4 5
CO 15	Did you feel drained or stressed by your work?	1 2 3 4 5
CO 16	Did you suffer from minor health problems such as headaches, insomnia or abdominal pain?	1 2 3 4 5
CO 17	Have you felt nervous and stressed?	1 2 3 4 5
CO 18	Did you feel you could not cope with all the things you had to do?	1 2 3 4 5

The following set of control questions relate to work engagement and are derived from the Utrecht Engagement Scale developed by Schaufeli and Bakker (2003). Respondents are asked how often they experience the emotion described in the questions during their work. These questions have to following response options:

1 = Never
2 = A few times a year or less
3 = Once a month or less
4 = A few times a month
5 = Once a week
6 = A few times a week
7 = Daily

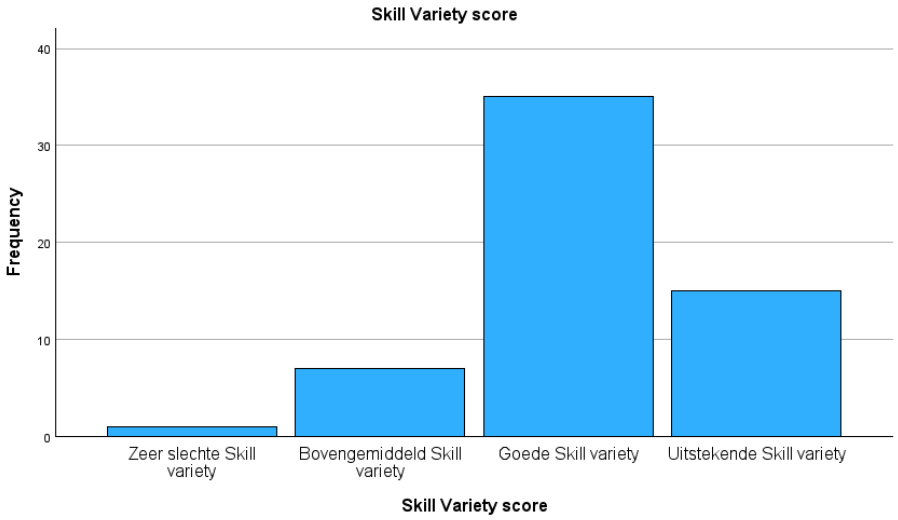
Code	Question	Response options
CO 19	At work I am full of energy	1 2 3 4 5 6 7
CO 20	I am enthusiastic about my job	1 2 3 4 5 6 7
CO 21	I am totally involved in my work	1 2 3 4 5 6 7

Appendix A: Descriptive statistics of skill variety, autonomy, feedback

1. Skill variety

Skill Variety score

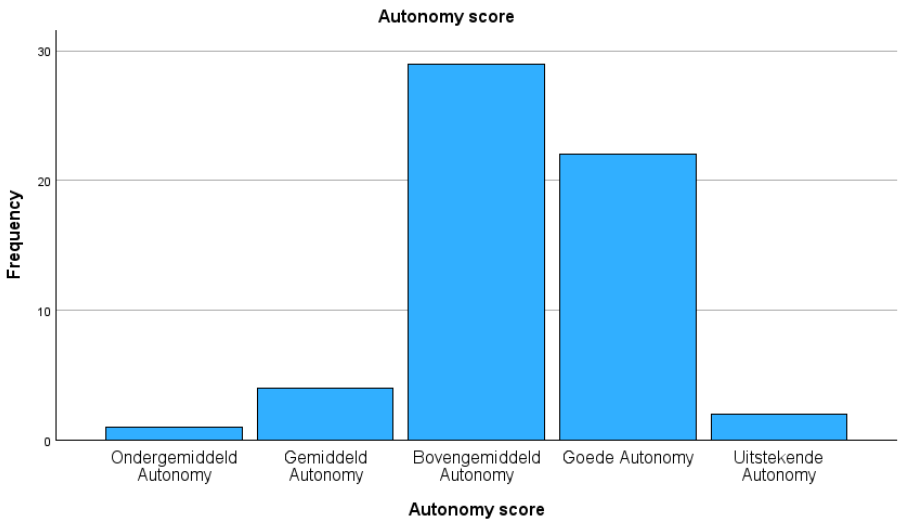
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor Skill variety	1	1,7	1,7	1,7
	Above average Skill variety	7	12,1	12,1	13,8
	Good skill variety	35	60,3	60,3	74,1
	Excellent skill variety	15	25,9	25,9	100,0
	Total	58	100,0	100,0	



2. Autonomy

Autonomy score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below average Autonomy	1	1,7	1,7	1,7
	Average Autonomy	4	6,9	6,9	8,6
	Above average Autonomy	29	50,0	50,0	58,6
	Good Autonomy	22	37,9	37,9	96,6
	Excellent Autonomy	2	3,4	3,4	100,0
	Total	58	100,0	100,0	



3. Feedback

Feedback score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average Feedback	14	24,1	24,1	24,1
	Above average Feedback	28	48,3	48,3	72,4
	Good Feedback	16	27,6	27,6	100,0
	Total	58	100,0	100,0